



Resistive and Sensor Products

Technology for Every Frontier



A Subsidiary of TT electronics plc

IRC has been an innovative leader in the design, development and manufacture of passive components for more than eighty years. What differentiates IRC from other component companies is the focus on resistor application solutions for each customer. IRC's goal is to be more than just another resistor supplier—rather than taking a commodity approach to every application, IRC believes that customer needs dictate the right product and the right service.

IRC, along with its sister company in the UK, Welwyn Components Limited, meets worldwide customer needs in the automotive, telecommunications, computer and military markets with a comprehensive product line, including advanced film, metal glaze and wirewound resistor products.

IRC and Welwyn products are sold throughout the world by a network of manufacturers' representatives and franchised distributors. In Europe, Welwyn and IRC products are supported by wholly-owned sales offices in Italy, France and Germany. In Asia, TT electronics sales offices in India, Singapore, Japan and China support a worldwide network of sales representatives.



IRC's proven resistor technology gives you the performance advantages you need—whether your applications call for thick film, thin film or wirewound resistive products.



Our wirewound resistors feature an alloy resistance wire precision-wound to a heat-conducting ceramic substrate, with welded endcaps and lead terminations, and silicone conformal coating protecting the resistive element.

IRC pioneered and perfected the tantalum nitride TaNFilm® process as the high-reliability alternative to nichrome for high humidity applications that require precision resistors.



The Wirewound and Film Technologies Division in Boone, NC manufactures high-reliability, wirewound and thick film cylindrical surface mount and leaded resistors.



The Advanced Film Division in Corpus Christi, TX uses a proprietary TaNFilm® process to produce consistent, inherently stable precision resistors with excellent temperature coefficients (TCR) and tolerances.

IRC's class 100 clean room allows the latest in thin film technology to produce a series of TaNFilm® surface mount resistors and TaNSil® resistor networks that are widely used in military/aerospace, commercial and precision applications.



IRC Surface Mount Resistive Product Selector Guide

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Page
Precision (Discrete)	PFC	TaNFilm® precision chip resistor	0.05, 0.1, 0.25, 0.33, 0.35, 0.8, 1	5 - 1M	0.02, 0.05, 0.1, 0.5, 1, 2, 5	10, 15, 25, 50, 100	21
	PFC-Gold	Gold terminations precision thin film chip resistor	0.05 - 1	5 - 1M	0.02, 0.05, 0.1, 0.5, 1, 2, 5	10 - 100	22
	CHP	Cylindrical Metal Glaze® power resistor	0.125 - 2	0.1 - 2.2M	0.25, 0.5, 1, 2, 5	25, 50, 100	16
	PCF	Precision Nichrome chip resistor	0.05, 0.0625, 0.1, 0.125, 0.25, 0.5	1 - 2M	0.01, 0.05, 0.1, 0.5, 1	5, 10, 15, 25, 50, 100	21
	WBA	TaNFilm® precision wire bondable ceramic resistor	0.25	10 - 20K	0.1, 0.25, 0.5, 1, 5, 10	25, 50, 100	28
	WBC	TaNSil® precision wire bondable silicon resistor	0.25	10 - 1M	0.1, 0.25, 0.5, 1, 5, 10	25, 50, 100	28
	PPC	Metal glaze precision power chip	0.125 - 2	100 - 10K	0.1 - 1	25	22

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (± %)	TCR (±ppm/°C)	Page
Current Sense	LRC	Thick film low value chip resistor	0.5 - 2	0.025 - 1	1, 2, 5	100	19
	LRF	Thick film low value flip chip resistor	0.5 - 2	0.002 - 0.025	1, 2, 5, 10	contact factory	19
	LRF3W	Power thick film resistor	3	0.002 - 0.2	1, 2, 5, 10	100	19
	CHP	Cylindrical Metal Glaze® power resistor	0.125 - 2	0.1 - 2.2M	0.25 - 5	25, 50, 100	16
	CHP-1X	Cylindrical Metal Glaze® power resistor	1	0.1 - 10K	1, 2, 5	25, 50, 100	16
	OARS-3	Open air current sense resistor	1	0.002 - 0.05	1, 5	40, 240	21
	OARS-XP	Open air current sense resistor	3 - 5	0.001 - 0.25	1-5	40	21
	ULR	Metal element chip resistor	1, 1.5, 2, 2.5, 3	0.0005 - 0.05	1, 5	50, 75, 100	28
	WSM	Molded power wirewound resistor	1, 2, 3	0.01 - 3K	1, 2, 5, 10	20, 100	30
	WSML	Current detecting chip resistor	1, 2	0.005 - 10K	1, 5	100, 180	30
	LRMA	Low resistance metal alloy current sense resistor	1, 1.5, 3	0.003 - 0.1	1, 2, 5	75, 100	19

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Absolute Tolerance (±%)	Ratio Tolerance (±%)	TCR (±ppm/°C)	TCR Tracking (±ppm/°C)	Page
Precision (Network)	QSOP	TaNSil® surface mount QSOP resistor networks	0.5 - 1	10 - 250K	0.1, 0.25, 0.5, 1, 2, 5	0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250	5, 10, 50, 100	24
	SOIC	TaNSil® surface mount SOIC resistor networks	0.4 - 1.5	10 - 250K	0.1, 0.25, 0.5, 1, 2, 5	0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250	5, 10, 50	26
	TSSOP	TaNSil® surface mount TSSOP resistor networks	0.8 - 1	10 - 250K	0.1, 0.25, 0.5, 1, 2, 5	0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250	5, 10, 50, 100	28
	CHC-Precision	TaNFilm® precision ceramic ball grid array resistor network	0.4 - 0.8	10 - 100K	0.1, 0.25, 0.5, 1, 2, 5	0.05, 0.1, 0.5, 1	25, 50, 100	5, 10, 20	16
	FP	TaNFilm® precision flat pack resistor network	0.325-0.4	10-200K	0.1, 0.5, 1, 2, 5	0.01, 0.02, 0.025, 0.05, 0.1	15 - 300	5, 10, 20	18
	FP-U	Tantalum Ultrade® ultra-precision flat pack network	0.025	1K - 50K	0.02, 0.05, 0.1, 0.25, 0.5, 1	0.01	10, 15, 25	1, 2, 5	18
	CCN	TaNFilm® precision chip carrier resistor network	1	10 - 250K	0.1 - 5	0.01	25 - 100	5, 10, 25, 50	15
	GUB	TaNFilm® precision SOIC resistor network	1 - 1.5	10 - 1000K	0.1 - 1	0.05	25, 50, 100	5, 10, 20	18
	SON	TaNFilm® Mil-qualified outline leadless resistor networks	0.4 - 0.8	10 - 100K	0.1 - 5	0.01	25 - 100	5, 10, 20	26
	SON-U	Tantalum Ultrade™ small outline ultra precision resistor networks	0.025	1K - 50K	0.02, 0.05, 0.1, 0.25, 0.5, 1	0.01, 0.025, 0.02, 0.05, 0.1	10, 15, 25	1, 2, 5	26
	PFC-D	TaNFilm® precision chip voltage divider	0.25	10 - 200K	0.05, 0.1, 0.5, 1	0.01, 0.02, 0.05, 0.1	25, 50, 100	5, 10, 20, 50	21
	PFC-UD	Tantalum Ultrade™ ultra precision divider networks	0.025	1K - 50K	0.02, 0.05, 0.1, 0.25, 0.5, 1	0.01, 0.025, 0.02, 0.05, 0.1	10, 15, 25	1, 2, 5	22
	DIV23	TaNFilm® precision voltage divider network	0.25	10 - 100K	0.1, 0.25, 0.5, 1, 5, 10	0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250	2, 10, 25, 50	17
	SOT143	TaNFilm® precision resistor network	0.25	100 - 100K	0.1, 0.25, 0.5, 1, 5, 10	0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250	2	26

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Absolute Tolerance (±%)	Ratio Tolerance (±%)	TCR (±ppm/°C)	TCR Tracking (±ppm/°C)	Page
Networks	AC Line Terminator	TaNCap® AC Line Termination Network	R=1.6 - 1.8	R= 10-100	R=10 C=20	N/A	R=100	N/A	14
	Ladder	TaNSil® R2R Ladder Network	C=N/A N/A	C=10pF - 200pF 10K - 50K	2	±1 LSB	C=N/A 25, 50, 100	5	19

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Networks (cont.)	QRC1284x2	TaNCap® IEEE 1284 integrated filter network	R=2.6 C=N/A	R=33-4.7K C=180pF – 220pF	R=10 C=20	N/A	R=100 C=N/A	N/A	24
	QS001	TaNSil® 0.025” lead pitch high frequency resistor network	1	30 - 100	5, 10, 20	N/A	25, 50, 100	5	24
	QS013	TaNSil® integrated audio passive network	1	100 – 6.8K	5	1	100	10	24
	Tapped Filter	TaNSil® tapped filter network	R = 0.8 C = N/A	R = 10 –100 C = 10pF – 200pF	R = 10 C = 20	N/A	R = 100 C = N/A	N/A	27
	T-Filter	TaNSil® T-Filter Network	R = 1.6 C = N/A	R = 10 – 100 C = 10pF – 200pF	R = 10 C = 20	N/A	R = 100 C = N/A	N/A	28

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Page
Power	CHP	Cylindrical Metal Glaze® power resistor	0.125 - 2	0.1 - 2.2M	0.25, 0.5, 1, 2, 5	25, 50, 100	16
	WSM	Molded power wirewound resistor	1, 2, 3	0.01 - 3K	1, 5	20, 100	30
	PPS-1	Cylindrical Metal Glaze® high power ceramic package resistor	1	0.1 - 348K	1, 2, 5	25, 50, 100	22
	HSC	Cylindrical Metal Glaze® high surge compliant terminal resistor	1, 2	10 - 2M	1, 2, 5	50, 100	18
	SC-3	High power dissipation thick film resistor	3	1 - 100K	1, 2, 5	100	26
	SMC	Cylindrical Metal Glaze® compliant terminal resistor	1, 2	10 - 2M	1, 2, 5	50, 100	26
	SMHP	High voltage D2PAK/ TO-263AB thick film power resistor	20	0.01 - 51K	1, 5	100, 250	26
	SMHP35	Series power resistor	35	0.01 - 51K	1, 5	50, 100, 250	26

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Page
General Purpose	CHP	Cylindrical Metal Glaze® power resistor	0.125 - 2	0.1 - 2.2M	0.25, 0.5, 1, 2, 5	50, 100, 25	16
	MRC	Cylindrical Metal Glaze® high power density resistor	0.5 - 1	0.1 - 10K	0.2, 0.5, 1, 2, 5	50, 100, 200	20
	MM	Cylindrical Metal Glaze® power resistor	0.25, 1, 2	0.1 - 2.21M	1 - 5	50, 100	20
	CR	Thick film chip resistor	0.063, 0.1, 0.125, 0.25	1 - 100M	0.25, 0.5, 1, 2, 5	100, 200, 250, 350	17
	WCR	Thick film chip resistor	0.05, 0.063, 0.1, 0.125, 0.25, 0.5, 1	1 - 1M	1, 5	100, 200, 300, 400	29

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Absolute Tolerance (dB)	TCR (ppm/°C)	Page
Ball Grid Array	CHC	Ceramic BGA termination arrays	0.6 - 1.2	10 - 10K	1, 2, 5	100	16
	CHC-Thevenin	Chipscale Thevenin termination network	1	R1= 50 - 75 R2= 22 - 25	1	100	16
	CHC-SCSI	Chipscale SCSI LVD terminator network	1	R1 = 475, R2 = 121	1	100	16
	CHC-Precision	Precision ceramic ball grid arrays	0.4 - 0.8	10 - 100K	0.1, 0.25, 0.5, 1	25, 50, 100	16

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Absolute Tolerance (± %)	Ratio Tolerance (± %)	Absolute TCR (± ppm/°C)	TCR Tracking (± ppm/°C)	MIL-Spec	Page
Military & Space (Network)	FP	TaNFilm® Mil-screened precision flat pack resistor network	0.325 - 0.4	20 - 121K	0.1, 0.5, 1, 2, 5	0.01, 0.02, 0.05, 0.1, 0.25, 0.5, 1	50 - 300	5, 10, 20, 50	MIL-PRF-83401	18
	FP-Space	TaNFilm® space flight surface Mount flat packs resistor networks	0.325 - 0.4	20 - 121K	0.1, 1, 2, 5	0.05, 0.1, 0.5, 1, 2	25, 50, 100, 300	5, 10, 20	MIL-PRF-83401	18
	CCN	TaNFilm® Mil-screened precision chip carrier resistor network	1	10 - 250K	0.1 - 5	0.01	25 - 300	5, 10, 25, 50	DSSC 87016 DSSC 87017	15
	SON	TaNFilm® Mil-screened flat precision resistor array	0.4 - 0.8	10 - 100K	0.1 - 5	0.01	25 - 100	5, 10, 20	DSSC 87064	26
	GUB	TaNFilm® Mil-screened precision small outline IC resistor network	1 - 1.5	10 - 1000K	0.1 - 1	0.05	25, 50, 100	5	DSSC 87013	18

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Page
Surge	HSF	Cylindrical Metal Glaze® surge resistor	0.125, 0.5, 1, 2	5 - 300	10	50, 100	18
	PWC	Pulse withstanding thick film chip resistor	0.125, 0.5, 1, 2	1 - 10M	0.5, 1, 5	100, 200	23

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Surge (Cont.)	SC-3 HSC	High power dissipation Cylindrical Metal Glaze® high surge compliant terminal resistor	3 1, 2	1 - 100K 10 - 2M	1, 2, 5 1, 2, 5	100 50, 100	26 18		
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	MIL-Spec	Page	
Military & Space (Discrete)	PFC	TaNFilm® Mil-qualified precision chip resistor	0.1 - 0.25	10 - 125K	0.1 - 10	25 - 300	MIL-PRF-55342, DSCC 94015/16	21	
	MCHP	Cylindrical Metal Glaze® Mil-qualified resistor	0.125 - 2	0.1 - 2.2M	1, 2, 5	100	DSCC 95011, DSCC 94048 DSCC 95006, DSCC 94047	20	
	TMC-Mil	Thick Film Mil-qualified precision chip resistor	0.25, 0.8, 1	5 – 15M	1, 2, 5, 10	100, 300	MIL-PRF-55342	28	
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Limiting Element Voltage (Volts)	Page	
High Voltage	SMHP	High voltage D2PAK/ TO-263AB thick film power resistor	20	0.01 - 51K	1, 5	100, 250	500	26	
	HVC	High voltage chip resistor	0.3, 0.5, 1	100K - 100M	0.5, 1, 2, 5, 10	100	1000, 2000, 3000	19	
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Absolute Tolerance (±%)	Ratio Tolerance (±%)	Absolute TCR (±ppm/°C)	TCR Tracking (±ppm/°C)	Page
Wire-Bondable	WBC	TaNSil® precision wire bondable silicon resistor	0.25	10 - 1M	0.1, 0.25, 0.5, 1, 5, 10	0.05, 0.1, 0.25, 0.5, 1, 2, 5	25, 50, 100	2, 5, 10, 25, 50	28
	WBD-Divider	TaNSil® precision wire bondable silicon resistor network array	0.25	10 - 1M	0.1, 0.25, 0.5, 1, 5, 10	0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 300	5	29
	WBD-NET	TaNSil® wire bondable silicon network array resistor	0.4, 0.8, 1	10 - 2.5M	0.1	0.05, 0.1	25	5	29
	WBC-CAP	TaNCap® wire bondable chip capacitor	20V - 55V	10pF - 1000pF	5, 10, 20	N/A	N/A	N/A	28
	WBD-Multi-tap	TaNSil® wire bondable multi-tap chip resistor silicon network	0.25	100 - 80K	5, 10, 20	N/A	25, 50, 100	N/A	29
	WBC-RC	TaNSil® wire bondable chip resistor/capacitor network	0.25	R = 33 - 100 C = 47pF - 80pF	R = 10 C = 20	N/A	R = 150 C = 200	N/A	29
	WBA	TaNFilm® precision wire bondable ceramic resistor	0.25	10 - 20K	0.1, 0.25, 0.5, 1, 5, 10	0.05, 0.1, 0.25, 0.5, 1, 2, 5	25, 50, 100	2, 5	28
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Limiting Element Voltage (Volts)	Page	
High Ohmic Value (Discrete)	CR	Thick film chip resistor	0.063, 0.1, 0.125, 0.25	1 - 100M	0.25, 0.5, 1, 2, 5	100, 200, 250, 350	50, 100, 150, 200	17	
	HR	High ohmic value thick film chip resistor	N/A	10M - 50G	5, 10, 25, 50	0 to -2000	50, 100, 150, 200	18	
	HVC	High voltage chip resistor	0.3, 0.5, 1	100K - 100M	0.5, 1, 2, 5, 10	100	1000, 2000, 3000	19	
Type	Series	Description	Power (Watts)	Supply Voltage (Volts)	Diode Forward Voltage (Volts)	Channel Leakage Current (µAmps)	Channel Input Capacitance (pF)	ESD Protection (Volts)	Page
Schottky Diode Networks	DNR-QDN001	Schottky diode termination network	1	-0.3 min. 7 max.	0.5 @ 10mA 0.8 @ 50mA	0.1	5 @ V _{IN} = 2.5V, V _{DD} = 5V 12pF max.	±4KV max.	24
	DNR-QDN002	Schottky diode 17-channel ESD protection network	1	-0.3 min. 12 max.	0.65	1	12pF max.	±15KV (HBM, method 3015) ±8kV (Contact discharge)	24
	DNR-QDN003	Schottky diode 18-channel termination network	1	-0.3 min. 7 max.	0.55 @ 1mA 1 @ 12mA	0.1	12pF max.	±15KV (HBM, method 3015) ±8kV (Contact discharge)	24
Type	Series	Description	Power (Amps)	Resistance Range	Tolerance (±%) (Ohms)	TCR (±ppm/°C)	Page		
Zerohm	LRZ	Ultra low resistance jumper resistor	20-35A	<0.002	N/A	N/A	19		
	OARS-Z	Open air zerohm jumper resistor	65A	<0.0005	N/A	N/A	21		
	WCA	Eight terminal package	0.65W	0.05	N/A	N/A	29		
	ZCHP	Cylindrical zerohm jumper resistor	0.63W	0.02 - 0.35	N/A	N/A	30		

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Type	Series	Description	Power (Watts)	Resistance Range	Tolerance (±%) (Ohms)	TCR (±ppm/°C)	Page
Wirewound	WSM	Molded power wirewound resistor	1, 2, 3	0.01 - 3K	1, 5	20, 100	30

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Page
High Temperature	PFC-D-HT	High temperature TaNFilm® voltage divider	0.125	100 - 25K	0.1, 0.5, 1	25, 50, 100	22
	PFC-HT	High temperature TaNFilm® chip resistor	0.0625, 0.1, 0.125	5 - 85K	1, 2, 5	25, 50, 100	22
	PWC	Pulse Withstanding Chip resistor	0.125, 0.5, 1, 2	1.0 - 10M	0.5, 1, 5	100, 200	23
	HTC	High temperature thick film chip resistor	0.2, 0.5, 0.75	1 - 10M	0.5, 1.5	100	18

Type	Series	Description	Power (Watts)	Impedance (Ohms)	Tolerance (dB)	TCR (ppm/°C)	Attenuation (dB)	Page
Microwave (Attenuators)	PAT-P	High power flanged attenuators	5, 10	50	0.2, 0.3, 0.5		0 - 20	21
	PAT-S	High frequency surface mount attenuators	0.032, 0.064, 0.1, 0.125, 0.25	50, 75	0.3, 0.5, 1	50	0 - 20	21
	PAT-W	High frequency surface mount attenuators	0.25, 0.5	50	0.1, 0.2, 0.3, 0.4, 0.5		0 - 20	21
	PFC-A1206	Thin film attenuators	0.125	50, 75	0.3 - 2	100	1 - 20	21
	RFAXX	High frequency surface mount attenuators	0.25	50	0.2, 0.3, 0.4		1 - 40	25
	RFAXXX - 0	High frequency surface mount attenuators	100, 150	50	0.4		20, 30	25

Type	Series	Description	Power (Watts)	Impedance (Ohms)	Tolerance (dB)	TCR (ppm/°C)	Attenuation (dB)	Page
Microwave (Impedance Converter)	PCH1632	High frequency surface mount impedance converter	0.125	50, 75	0.3			21

Type	Series	Description	Power (Watts)	Impedance (Ohms)	Tolerance	TCR (ppm/°C)	Page
Microwave (Terminators)	MWR	TaNFilm® microwave chip resistor	0.125, 0.25	50, 75, 100	1, 2, 5, 10	25, 50, 100	20
	PCS-P	Split ground high power thin film terminator	5, 30, 80	50			21
	PCS-R	High power high frequency terminator	12.5	50			21
	PCS-S	Fixed surface mount microwave line terminators	0.063, 0.1, 0.125, 0.25	50		50	21
	PFC-HF	High frequency chip resistor terminators	0.05, 0.1, 0.25, 0.333	50, 75	1, 2, 5, 10	25, 50, 100	22
	PFC HF Mil	Mil-screened high frequency chip resistors	0.1, 0.15, 0.25	50, 75	1, 2, 5, 10	25, 50, 100, 300	22
	RFRF	Flanged RF power terminators	10, 40, 50, 100, 150, 250	50, 100, 150, 200	1, 2, 5	50	25
	RFTF	High frequency surface mount terminators	10, 50, 100, 150, 250	50, 75, 100	1	50	25
	RFTS	High power surface mount RF terminators	5, 10, 50, 100, 250	50	1	50	25
	RFTXXX-1	High power flanged RF terminators	10, 50, 100, 250	50	1	50	25
	RFX	High frequency surface mount terminators	10	50, 100, 150, 200 250, 300, 400, 600, 800	1	50	25

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Page
Temperature Sensors	RTD	Platinum film temperature sensor	N/A	100, 1K	0.5, 1, 2, 5	+3850	26
	CHPT	Cylindrical Metal Glaze® thermally sensitive resistor	0.4	500 - 10K	2, 5, 10	-2500	16
	PTS	Platinum temperature sensor chip	N/A	100, 1K	0.12, 0.24	+3850	23

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Typical Blow Times	Page
Fusible	FCR	Fusible chip resistor	0.5	10 - 51	2, 5	350	<50 Sec	17

IRC Through Hole Resistive Products Selector Guide

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)		Page
Current Sense	2500	Low resistance value metal film resistor	1.5	0.025 - 1	1, 2, 5, 10	100 - 350		14
	4LPW	Four terminal wirewound resistor	3 - 15	0.005 - 1	1, 2, 3, 5, 10	40		14
	CSL	Four terminal open air low ohm resistor	5	0.00025 - 0.0025	1, 2, 5	30		17
	LOB	Low resistance metal element resistor	1 - 5	0.005 - 0.1	1, 3, 5	varies with resistance value		19
	LPW	Low resistance power wirewound resistor	3 - 15	0.005 - 0.15	1 - 10	30 - 500		19
	OAR	Open air sense resistor	1 - 5	0.001 - 0.1	1 - 5	varies with resistance value (20 - 450)		20
	OAR-TP	Open air tight pitch resistor	1 - 5	0.001 - 0.1	1, 5	varies with resistance value (20 - 450)		21
	PLO	Extremely low resistance power wirewound resistor	3 - 15	0.005 - 0.18	1, 2, 3, 5, 10	30 - 500		22
	PWRL	Low resistance stand-up power wirewound resistor	3 - 10	0.01 - 0.18	1, 2, 3, 5, 10	50 - 500		23
Dynamic Braking	PW (axial)	Power wirewound resistor	2, 3, 5, 7, 10, 15, 18, 22, 25	0.1 - 30K	5, 10	300 - +5500		23
	PW (radial)	Power wirewound resistor	20, 30, 40, 50	0.08 - 2K	5, 10	300, 600		23
	PWHW	Automotive dropping resistor	30, 45, 115	0.1 - 0.9	5	150		23
	WDBR	Ultra low profile dynamic braking/ power resistor	0.5, 1, 2, 3, 5, 7k	5 - 270	10	contact factory		29
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Typical Blow Times	Page
Fusible	ALFR-2/LFR-2	Telecommunications line feed resistor	2	1.8 - 1600	1, 5	50	<30 Sec	14
	F-500	Precision controlled fusible resistor	0.3 - 1	0.2 - 200	2, 5, 10	50, 150	<0.5 Sec	17
	FA8025	Fusible metal film resistor	0.25, 0.5, 1.5	0.1 - 22K	5	250	<30 Sec	18
	SP20F	Fail-safe fusible molded wirewound resistor	1	0.1 - 1200	5, 10	150, 180	<30 Sec	27
	SPF	Fail-safe fusible molded wirewound resistor	2	0.1 - 2400	5, 10	150, 180	<30 Sec	27
	WFF	Fast fusible metal film resistor	0.25, 0.5, 1	0.1 - 27K	5	250, 350	<30 Sec	30
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)		Page
General Purpose	ARG	High power Metal Glaze® resistor	1	1 - 5.1M	2, 5	100		14
	AS	Semi-precision power wirewound resistor	0.25 - 14	0.1 - 175	0.5, 1, 3, 5	20		14-15
	CCR	Carbon ceramic resistor	1	220 - 22K	5, 10, 20	200, 300		15
	CMO	Metal oxide resistor	0.5, 1, 2, 3, 5	0.1 - 180K	1, 5	200		17
	GF	Thick film metal glaze resistor	0.5 - 3	0.4 - 2M	1, 2, 5	50, 100, 200		18
	GP	Precision metal film resistor	0.125, 0.25, 0.5	10 - 10M	0.1, 0.25, 0.5, 1	25, 50, 100		18
	IBT	Carbon composition resistor	0.25, 0.5	1 - 20M	5, 10	250 - 2500		19
	LAS	Economical semi-precision power wirewound resistor	1, 3	0.1 - 18K	0.5, 1, 3, 5	20		19
	MOM	Metal oxide mini resistor	0.5, 1, 2, 3, 5	0.1 - 150K	1, 5	200		20
	PW (axial)	Power wirewound resistor	2, 3, 5, 7, 10, 15, 18, 22, 25	0.1 - 30K	5, 10	300 - +5500		23
	PW (radial)	Radial terminal power wirewound resistor	20, 30, 40, 50	0.08 - 2K	5, 10	300, 600		23
	PWR	Standup power wirewound resistor	3, 5, 7, 10	0.1 - 18K	5, 10	300 - +5500		23

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Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)		Page
General Purpose	PWRG	Standup power Metal Glaze® resistor	3, 5	1 - 1M	1, 2, 5, 10	100		23
	RG	Commercial thick film Metal Glaze® resistor	0.125 - 1	0.4 - 5.1M	0.1, 0.5, 1, 2, 5	25, 50, 100, 200		25
	SP20	Fail-safe molded wirewound resistor	1	0.1 - 1200	5, 10	150, 180		27
	SPH	Fail-safe molded wirewound resistor	2	0.1 - 2400	5, 10	150, 180		27
	SPP	Economical conformal coated wirewound resistor	1, 2, 3	0.1 - 2400	5, 10	300, 600		27
	T Wirewound	Commercial semi-precision power wirewound resistor	0.7 - 14	0.1 - 300K	0.1 - 10	20, 50, 400, 650		27
	W	Vitreous enamelled power wirewound resistor	3, 5, 7, 10, 14	0.1 - 100K	1, 2, 5	+75, +200		28
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Limiting Element Voltage (Volts)	Page
High Ohmic Value (Discrete)	3800	Ultra-high ohmic value thick film resistor	voltage-limited	100M - 1T	1, 2, 5, 10, 20	-500, -3500	500, 1000	14
	CGH	High ohmic value thick film resistor	0.25, 0.5, 1, 2, 3, 5	100K - 2G	0.5, 1, 2, 5	50, 100	750 - 20000	16
	CGX	High voltage precision thick film resistor	0.5, 1	50K - 1.5G	1, 2, 5	50, 100	3000 - 5000	16
	F43/F44	High voltage thick film resistor	0.07, 1.3	2M - 150G	2, 5, 10	250, -2000	4000 - 28000	17
	GC	High voltage precision thick film resistor	0.5	47K - 1G	1, 2, 5	100	3500	18
	GS-3	High ohmic value semi-precision Metal Glaze® resistor	3	1 - 3M	1, 2, 5	50, 100	1000	18
	MH	High voltage metal film resistor	0.25, 0.5	100K - 10M	1, 2, 5	100	1600, 3500	20
	T-44	High voltage precision thick film resistor	1.5, 3.5, 10	1K - 45G	1, 2, 5	25, 50, 100	4000 - 100000	27
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)		Page
High Temperature	1900HT	TaNFilm® high temperature DIP networks	1.12, 1.28,	100 - 100K	0.1, 0.25, 1, 2, 5	25, 50, 100		14
	4700HT	TaNFilm® high temperature networks	0.24, 0.32	50 - 50K	0.1, 0.25, 1, 2, 5	25, 50, 100		
	RG	Commercial thick film Metal Glaze® resistor	0.125 - 1	0.4 - 5.1M	0.1, 0.5,	25, 50,		
	T Wirewound	Commercial semi-precision power wirewound resistor	0.7 - 14	0.1 - 300K	0.1 - 10	20, 50, 400, 650		
	W	Vitreous enamelled power wirewound resistor	3, 5, 7, 10, 14, 1, 2, 5	0.1 - 100K, 100, 200	1, 2, 5	+75, +200		28
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Limiting Element Voltage (Volts)	Page
High Voltage	3800	Ultra-high value thick film resistor	voltage - limited	100M - 1T	1, 2, 5, 10	-500, -3500, 20	500, 1000	14
	CGH	High value thick film resistor	0.25, 0.5, 1, 2, 3, 5	100K - 2G	0.5, 1, 2, 5	50, 100	750 - 20000	16
	CGX	High voltage precision thick film resistor	0.5, 1	50K - 1.5G	1, 2, 5	50, 100	3000 - 5000	16
	F43/F44	High voltage thick film resistor	0.07, 1.3	2M - 150G	2, 5, 10	-250, -2000	4000 - 28000	17
	GC	High voltage precision thick film resistor	0.5	47K - 1G	1, 2, 5	100	3500	18
	GS-3	High value semi-precision Metal Glaze® resistor	3	1 - 3M	1, 2, 5	50, 100	1000	18
	MH	High voltage metal film resistor	0.25, 0.50	100K - 2M	1, 2, 5	100	1600, 3500	20
	MHP	Heat sink mountable thick film power resistor	20 - 600	0.01 - 5 51K	1, 5	100, 250	500, 700	20
	T-44	High voltage precision thick film resistor	1.5, 3.5, 10	1K - 45G	1, 2, 5	25, 50, 100	4000 - 100000	27

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Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	MIL-Spec	Page
Military (Discrete)	CMH	Thick film high voltage MIL-qualified Metal Glaze® resistor	0.25 - 5	330K - 1G	1, 2, 5	100	MIL-R-49462	17
	RB	Precision MIL-qualified wirewound resistor	0.125 - 0.5	0.1 - 1M	0.01, 1	10, 15, 30, 90	MIL-R-93	24
	RBR	Precision MIL-qualified wirewound resistor	0.125 - 0.5	0.1 - 1.21M	0.01, 1	10, 15, 30, 90	MIL-R-39005	25
	RL	Semi-precision MIL-qualified Metal Glaze® resistor	0.25 - 0.5	4.3 - 470K	2, 5	200	MIL-R-22684	25
	RLR	Established reliability MIL-qualified Metal Glaze® resistor	0.125 - 0.5	10 - 3.01M	1, 2	100	MIL-R-39017	25
	RN	Precision MIL-qualified Metal Glaze® resistor	0.05 - 0.25	10 - 1M	0.1, 1, 5	25, 50, 100	MIL-R-10509	26

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Absolute Tolerance (±%)	Absolute TCR (±ppm/°C)	MIL-Spec	Page
Military (Network)	1900	TaNFilm® Mil-qualified DIP resistor network	1.3 - 1.6	50 - 100K	0.1, 0.5, 1, 2, 5	50, 100, 300	MIL-PRF-83401	14
	4700	TaNFilm® Mil-qualified SIP resistor network	0.6 - 1.08	100 - 100K	0.1, 0.5, 1, 2, 5	50, 100, 300	MIL-PRF-83401	14
	FP	TaNFilm® Mil-qualified precision flat pack resistor network	0.325 - 0.4	20 - 121K	0.1, 0.5, 1, 2, 5	50, 100, 300	MIL-PRF-83401	18

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Absolute Tolerance (±%)	Ratio Tolerance (±%)	TCR (±ppm/°C)	TCR Tracking (±ppm/°C)	Page
Networks	1900	TaNFilm® Precision DIP resistor network	1.3 - 1.6	10 - 400K	0.1, 0.5, 1, 2, 5	0.05, 0.1, 0.5, 1, 2	15, 25, 50, 100, 300	5, 10, 20, 50	14
	4700	TaNFilm® Precision SIP resistor network	0.6 - 1.08	50 - 400K	0.1, 0.5, 1, 2, 5	0.05, 0.1, 0.25, 0.5, 1, 2	15, 25, 50, 100, 300	5, 10, 15, 20	14
	FP	TaNFilm® precision flat pack resistor network	0.325 - 0.4	10 - 200K	0.1, 0.5, 1, 2, 5	0.01 - 1	15, 25, 50, 100, 300	5, 10, 20, 50	18
	C	Thick film conformal coated SIP network	0.375 - 1.45	22 - 1M	1, 2, 5	N/A	100, 200	N/A	15
	CL	Thick film conformal coated low profile SIP network	0.375 - 1.45	22 - 1M	1, 2, 5	N/A	100, 200	N/A	17
	DIP-U	Tantalum Ultrade™ ultra-precision DIP network	0.16 - 0.32	1.0K - 100K	0.02, 0.05, 0.1, 0.25, 0.5, 1	0.01, 0.025, 0.02, 0.05, 0.1, 0.05	10, 15, 25	1, 2, 5	17
	M900	TaNFilm® precision molded DIP resistor network	0.7 - 1.6	10 - 400K	0.1, 0.5, 1, 2, 5	0.05, 0.1, 0.5, 1, 2	25, 50, 100, 300	5, 10, 20	19
	SIP-U	Tantalum Ultrade™ ultra-precision SIP network	0.12 - 0.2	1.0K - 100K	0.02, 0.05, 0.1, 0.25, 0.5, 1	0.01, 0.02, 0.025, 0.05, 0.1	10, 15, 25	1, 2, 5	26

Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Page
Power	AL	Chassis mounted power wirewound resistor	5 - 50	0.1 - 180K	0.1, 0.5, 1	20, 50, 90	14
	AS	Semi-precision power wirewound resistor	0.25 - 14	0.1 - 175	0.5, 1, 3, 5	20	14-15
	B	Beryllia core silicone coated wirewound resistor	1 - 18	0.1 - 150K	0.1 - 1	20, 50, 400, 650	15
	GS-3	High ohmic value semi-precision Metal Glaze® resistor	3	1 - 3M	1, 2, 5	50, 100	18
	LAS	Economical semi-precision wirewound resistor	1, 3	0.1 - 18K	0.5, 1, 3, 5	20	19

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Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Limiting Element Voltage	Page
Power	MHP	Heat sink mountable thick film power resistor	20 - 600	0.01 – 51K	1, 5	100, 250	500, 700	20
	MO-S	Power metal oxide resistor	1, 2, 3, 5	10, 100K	5, 10		350	20
	PPW	Semi-precision power wirewound resistor	2, 3, 5, 7, 10, 15	0.1 - 5000	1, 2, 3		20	22
	PW (axial)	Power wirewound resistor	2, 3, 5, 7, 10, 15, 18, 22, 25	0.1 - 30K	5, 10		300 - +5500	23
	PW (radial)	Radial terminal power wirewound resistor	20, 30, 40, 50	0.08 - 2K	5, 10		300, 600	23
	PWHW	Automotive dropping resistor	30, 45, 115	0.100 - 0.900	5		150	23
	PWR	Standup power wirewound resistor	3, 5, 7, 10	0.1 - 18K	5, 10		300 - +5500	23
	PWRG	Standup power Metal Glaze® resistor	3, 5	1 - 1M	1, 2, 5, 10		100	23
	SP20	Fail-safe molded wirewound resistor	1	0.1 - 1200	5, 10		150, 180	27
	SPH	Fail-safe molded wirewound resistor	2	0.1 - 2400	5, 10		150, 180	27
	SPP	Economical conformal coated power wirewound resistor	1, 2, 3	0.1 - 2400	5, 10		300, 600	27
	T Wirewound	Commercial semi-precision wirewound resistor	0.7 - 14	0.1 - 300K	0.1 - 10		20, 50, 400, 650	27
	W	Vitreous enamelled power wirewound resistor	3, 5, 7, 10, 14	0.1 - 100K	1, 2, 5		+75, +200	28

Type	Series	Description	Power (Watts)	Resistance Range	Tolerance (±%) (Ohms)	TCR (±ppm/°C)	Page
Precision (Discrete)	CAR	Ultra-precision metal film resistor	0.25, 0.33, 0.50	10 - 10M	0.01, 0.02, 0.05, 0.1, 0.25, 0.5, 1	5, 10, 15, 25, 50	15
	GP	Precision metal film resistor	0.125, 0.25, 0.5	10 - 10M	0.1, 0.25, 0.5, 1	25, 50, 100	18
	PR4	Precision metal film resistor	0.25	100 - 240K	0.1, 0.25	25	23
	RB	Precision MIL-qualified wirewound resistor	0.125 - 0.5	0.1 - 1M	0.01, 1	10, 15, 30, 90	24
	RBR	Established reliability precision MIL-qualified wirewound resistor	0.125 - .5	0.1 - 1.21M	0.01, 1	10, 15, 30, 90	25
	RC	Precision metal film resistor	0.25, 0.50, 1	1 - 10M	0.05, 0.1, 0.25, 0.5, 1	5, 10, 15, 25, 50, 100	24

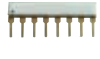
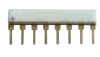
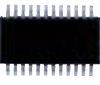
Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Absolute Tolerance (±%)	Ratio Tolerance (±%)	TCR (±ppm/°C)	TCR Tracking (±ppm/°C)	Page
Precision (Network)	1900	TaNFilm® precision DIP resistor network	1.3, 1.4, 1.5, 1.6	10 - 400K	0.1, 0.5, 1, 2, 5	0.05, 0.1, 0.25, 0.5, 1, 2	15, 25, 50, 100, 300	5, 10, 20, 50	14
	4700	TaNFilm® precision SIP resistor network	0.6 - 1.08	50 - 400K	0.1, 0.5, 1, 2, 5	0.01, 0.05, 0.1, 0.25, 0.5, 1, 2	15, 25, 50, 100, 300	5, 10, 20, 50	14
	DIP-U	Tantalum Ultrade™ ultra-precision DIP network	0.16 - 0.32	1.0K - 100K	0.02, 0.05, 0.1, 0.25, 0.5, 1	0.01, 0.025, 0.02, 0.05, 0.1	10, 15, 25	1, 2, 5	17
	M900	TaNFilm® precision molded DIP resistor network	0.7 - 1.6	10 - 400K	0.1, 0.5, 1	0.05	25, 50, 100	5	19
	SIP-U	Tantalum Ultrade™ ultra-precision SIP network	0.12 - 0.2	1.0K - 100K	0.02, 0.05, 0.1, 0.25, 0.5, 1	0.01, 0.025, 0.02, 0.05, 0.1	10, 15, 25	1, 2, 5	26

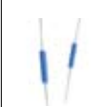
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Type	Series	Description	Power (Watts)	Resistance Range (Ohms)	Tolerance (±%)	TCR (±ppm/°C)	Page
Surge	AL	Chassis mounted power wirewound resistor	5 - 50	0.1 - 180K	1	20, 50, 90	14
	ALFR-2/LFR-2	Telecommunications line feed resistor	2	1.8 - 1600	1, 5	50	14
	AS	Semi-precision power wirewound resistor	0.25 - 14	0.1 - 175	0.5, 1, 3, 5	20	14-15
	GS-3	High value semi-precision resistor	3	1 - 3M	1, 2, 5	50, 100	18
	LAS	Economical semi-precision power wirewound resistor	1, 3	0.1 - 18K	0.5, 1, 3, 5	20	19
	PPW	Semi-precision power wirewound resistor	2, 3, 5, 7, 10, 15	0.1 - 5000	1, 2, 3	20	22
	PW (axial)	Power wirewound resistor	2, 3, 5, 7, 10, 15, 18, 22, 25	0.1 - 30K	5, 10	300 - +5500	23
	PW (radial)	Radial terminal power wirewound resistor	20, 30, 40, 50	0.08 - 2K	5, 10	300, 600	23
	PWHW	Automotive dropping resistor	30, 45, 115	0.100 - 0.900	5	150	23
	PWR	Standup power wirewound resistor	3, 5, 7, 10	0.1 - 18K	5, 10	300 - +5500	23
	PWRG	Standup power Metal Glaze® resistor	3, 5	1 - 1M	1,2, 5, 10	100	23
	RG	Commercial thick film Metal Glaze® resistor	0.125 - 1	0.4 - 5.1M	0.1, 0.5, 1, 2, 5	25, 50, 100, 200	25
	W	Vitreous enamelled power wirewound resistor	3, 5, 7, 10, 14	0.1 - 100K	1, 2, 5	+75, +200	28
Temperature Sensors	RGT	Thick film temperature compensation resistor	N/A	740, 1K, 10K	2, 5, 10	-3000	25
	T Wirewound	Commercial semi-precision power wirewound resistor	0.7 - 14	0.1 - 300K	0.1 - 10	5600	27
Wirewound	AL	Chassis mounted power wirewound resistor	5 - 50	0.1 - 180K	0.1, 0.5, 1, 20,	20, 50, 90	14
	AS	Semi-precision power wirewound resistor	0.25 - 14	0.1 - 175	0.5, 1, 3, 5	20	14-15
	B	Beryllia core silicone coated wirewound resistor	1 - 18	0.1 - 150K	0.1 - 1	20, 50, 400, 650	15
	LAS	Economical semi-precision power wirewound resistor	1, 3	0.1 - 18K	0.5, 1, 3, 5	20	19
	PPW	Semi-precision power wirewound resistor	2, 3, 5, 7, 10, 15	0.1 - 5000	1, 2, 3	20	22
	PW (axial)	Power wirewound resistor	2, 3, 5, 7, 10, 15, 18, 22, 25	0.1 - 30K	5, 10	300 - +5500	23
	PW (radial)	Radial terminal power wirewound resistor	20, 30, 40, 50	0.08 - 2K	5, 10	300, 600	23
	PWR	Standup power wirewound resistor	3, 5, 7, 10	0.1 - 18K	5, 10	300 - +5500	23
	RB	Precision MIL-qualified wirewound resistor	0.125 - 0.5	0.1 - 1M	0.01, 1	10, 15, 30, 90	24
	RBR	Precision MIL-qualified wirewound resistor	0.125 - .5	0.1 - 1.21M	0.01, 1	10, 15, 30, 90	24
	SP20	Fail-safe molded wirewound resistor	1	0.1 - 1200	5, 10	150, 180	27
	SP20F	Fail-safe fusible molded wirewound resistor	1	0.1 - 1200	5, 10	150, 180	27
	SPF	Fail-safe fusible molded wirewound resistor	2	0.1 - 2400	5, 10	150, 180	27
	SPH	Fail-safe molded wirewound resistor	2	0.1 - 2400	5, 10	150, 180	27

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Type	Series	Description	Power (Watts)	Resistance Range	Tolerance (±%) (Ohms)	TCR (±ppm/°C)	Page
Wirewound	SPP	Economical conformal coated wirewound resistor	1, 2, 3	0.1 - 2400	5, 10	300, 600	27
	T Wirewound	Commercial semi-precision power wirewound resistor	0.7 - 14	0.1 - 300K	0.1-10	20, 50, 400, 650	27
	W	Vitreous enamelled power wirewound resistor	3, 5, 7, 10, 14	0.1 - 100K	1, 2, 5	+75, +200	28
Type	Series	Description	Power (Amps)	Resistance Range	Tolerance (±%) (Ohms)	TCR (±ppm/°C)	Page
Zerohm	Zerohm	Molded jumper wires	3A	<0.01	N/A	N/A	30

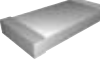
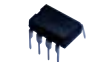
	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TRC Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes					
							L	W	H	D							
1900 - TaNFilm® Mil-qualified DIP resistor network																	
	1987 1989 1998 1999	1.3 1.4 1.5 1.6	10 - 400K	0.1 - 5 /	15, 25, 50, 100, 300 /	100	17.98 17.98 20.32 20.32	6.35 6.35 6.35 6.35	2.03 2.03 2.03 2.03	0.5 0.5 0.5 0.5	-55 to +150	Available in 14 & 16-pin packages; MIL-PRF-83401 / 01 & 02 / 13 & 14					
				0.05, 0.25, 0.1, 0.5, 1, 2	5, 10, 20, 50												
1900-HT - TaNFilm® Mil-qualified SIP resistor network																	
	1987HT 1989HT 1998HT 1999HT	1.12 1.12 1.28 1.28		1 - 50K 100 - 100K 1 - 50K 100 - 100K	5, 2, 1.0 0.25, 0.1		25, 50, 100	100	17.78, 6.35, 2.03, 0.5 17.78, 6.35, 2.03, 0.5 20.32, 6.35, 2.03, 0.5 20.32, 6.35, 2.03, 0.5					-50 to +200	Available in 14 & 16-pin packages		
2500 - Low resistance value metal film resistor																	
	2504	1.5	0.025 - 1	1, 2, 5, 10	100 - 350	N/A	14.5	5.1	—	0.8	-55 to +150	Non-inflammable, low-inductance metal film resistor					
3800 - Ultra-high ohmic value thick film resistor																	
	3810 3811 3812	voltage limited	100M - 1T 100M - 1T 1T - 100T	10, 20 1, 2, 5, 10 2, 5, 10	500, - 3500	500, 1000	25.0 42.9 48.0	6.0 6.0 6.0	— — —	0.6 0.6 0.6	-40 to +100	Ceremetox® resistive film, hermetically sealed package					
4700 - TaNFilm® Mil-qualified SIP resistor network																	
	476X 478X 470X	0.6 0.84 1.08	100 - 100K	0.1, 0.5, 1, 2, 5 /	15, 25, 50, 100 /	100	15.2 20.3 25.4	1.8 1.8 1.8	4.7 4.7 4.7	N/A N/A N/A	-55 to +125	MIL-PRF-83401/07/08/09/21 /22/23					
				0.01, 0.02, 0.05, 0.1, 0.25, 0.5, 1	5, 10, 15, 20												
4700-HT - TaNFilm® Mil-qualified DIP resistor network																	
	4761HT 4769HT 4781HT 4789HT	0.24 0.24 0.32 0.32		2 - 25K 50 - 50K 2 - 25K 50 - 50K	5, 2, 1.0 0.25, 0.1		25, 50, 100	50	15.2 15.2 20.3 20.3	1.8 1.8 1.8 1.8			4.7 4.7 4.7 4.7	0.5 0.5 0.5 0.5	-50 to +200	Available in 6 & 8-pin packages	
4LPW - Four terminal wirewound resistor																	
	4LPW-3 4LPW-5 4LPW-7 4LPW-10 4LPW-15	3 5 7 10 15	0.005 - 1 0.005 - 1 0.01 - 1 0.01 - 1 0.01 - 1	1, 2, 3, 5, 10	40	$\sqrt{PR}$	22.4 22.4 35.3 47.8 47.8	7.87 9.65 9.65 9.65 12.7	9.65 10.4 11.9 11.9 16.0	0.9 0.9 0.9 0.9 0.9	-55 to +250	Four-terminal "Kelvin connection"					
AC Line terminator - TaNCap™ AC line termination network																	
	GUS-QS20-P/V (20-pin QSOP) GUS-SL20-P/V (20-pin SOIC) GUS-TS20-P/V (20-pin TSSOP)	R = 1.6 - 1.8 C = N/A	R = 10 - 100 C = 10pF-200pF				R = 10, 20 C = 10, 20 /	R = 100 C = N/A /	C = 25	8.66 12.75 6.5			3.91 7.49 4.4	1.63 2.49 1.1	N/A N/A N/A	-55 to +125	Integrated termination network replaces up to 36 discretes
AL - Chassis mounted power wirewound resistor																	
	AL-5 AL-10 AL-25 AL-50	5 10 25 50	0.1 - 16K 0.1 - 25K 0.1 - 55K 0.1 - 180K	0.1, 0.5, 1	20, 50, 90	$\sqrt{PR}$ or 2500	15.24 19.1 26.97 49.99	16.4 20.3 27.43 28.96	8.31 10.2 13.5 15.6	1.27 2.18 2.18 2.18	-55 to +275	Non-inductive winding available					
ALFR-2 - Telecommunications line feed resistor																	
	ALFR-2	2	1.8 - 1600	1, 5	50	$\sqrt{PR}$	26.5	6.73	11.43	0.58/ 0.81	-55 to +275	<30 Sec Typical Blow Times; meets GR-1089, UL-1459, & UL-497A					
ARG - High power Metal Glaze® resistor																	
	ARG-07	1	1 - 5.1M	2, 5	100	250	6.4	2.3	—	0.64	-55 to +175	Excellent power/pulse handling and thermal transfer characteristics					
AS - Semi-precision power wirewound resistor																	
	AS-1/4 AS-1/2 AS-1	0.5 0.5 1	0.1 - 1K 0.1 - 6K 0.1 - 7.5K				6.4 7.9 9.3	2.4 2.4 3.2	— — —	0.5 0.5 0.5 / 0.64							

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
AS - Semi-precision power wirewound resistor												
	AS-1C	1	0.05 - 2K	0.5, 1, 3, 5	20	√PR or 1000	6.5	2.9	—	0.5 / 0.8	-55 to +200	
	AS-2	2	0.1 - 20K				12.2	6.3	—	0.8		
	AS-2B	3	0.1 - 24K				13.7	5.6	—	0.8		
	AS-2C	2	0.1 - 18K				11.0	4.0	—	0.8		
	AS-3	3	0.1 - 30K				17.5	7.2	—	1.0		
	AS-5	5	0.1 - 60K				22.2	8.8	—	1.0		
	AS-7	7	0.1 - 90K				31.8	8.8	—	1.0		
	AS-10	10	0.1 - 175K				46.0	9.8	—	1.0		
B - Beryllia core silicone coated wirewound resistor												
	B-1	1	0.1 - 2K				6.4	2.2	—	0.5		Increased power ratings over standard resistors
	B-2	1.5	0.1 - 3.4K				7.9	2.0	—	0.5		
	B-3	2.25	0.1 - 65K		20, 50, 400, 650 /		10.3	2.4	—	0.5		
	B-5	4	0.1 - 22K				14.3	4.8	—	0.8		
	B-5A	4.5	0.1 - 34K	0.1 - 1			20.6	4.8	—	0.8	-55 to 350	
	B-5C	5	0.1 - 18K		500, 1000		12.7	5.5	—	1.0		
	B-6	6	0.1 - 40K				15.7	6.4	—	1.0		
	B-10	7	0.1 - 54K				22.2	7.9	—	1.0		
	B-12	10	0.1 - 75K				31	7.9	—	1.0		
	B-15	15	0.1 - 150K				45.2	7.9	—	1.0		
CAR - Ultra-precision metal film resistor (Lead-free only)												
	CAR											Highest stability metal film; Matched sets and networks
	CAR5	0.25	10 - 3M	0.01, 0.02, 0.05, 0.1, 0.25, 0.5, 1	5, 10, 15, 25, 50	250	7.2	2.5	—	0.6	20 to +85	
	CAR6	0.33	10 - 5M			350	10.0	3.7	—	0.6		
	CAR7	0.5	10 - 10M			500	15.5	5.5	—	0.8		
CCN - TaFilm® Mil-screened precision chip carrier resistor network												
	7900	1	10 - 100K	0.1 - 2 /	25 - 100 /		8.9	8.9	1.9	—	-55 to +150	MIL-PRF-83401 DSCC 87016 and 87017
	7907		10 - 50K			N/A	8.9	8.9	1.9	—		
	7908		10 - 50K	0.01	5, 10, 25, 50		8.9	8.9	1.9	—		
	7909		10 - 250K				8.9	8.9	1.9	—		
CGH - High ohmic value thick film resistor												
	CGH-1/4	0.25	100K - 100M			750	6.98	2.22	—	0.81	-65 to +175	Voltage Coefficient of Resistance (VCR) = 0 to -5ppm/V
	CGH-1/2	0.5	100K - 500M			1500	10.16	3.51	—	0.81		
	CGH-1	1	50K - 750M	0.5, 1, 2, 5	50, 100	3000	17.53	7.54	—	0.81		
	CGH-2	2	100K - 1500M			5000	26.97	7.54	—	0.81		
	CGH-3	3	200K - 2000M			10000	52.37	7.54	—	0.81		
	CGH-5	5	300K - 2000M			20000	77.77	7.54	—	0.81		
CGX - High voltage precision thick film resistor												
	CGX-1/2	0.5	3000 - 500K - 1G	1, 2, 5	50, 100	3000	17.40	3.55	—	0.81	-65 to +175	
	CGX-1	1	1M - 1.5G			5000	26.97	3.55	—	0.81		

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TRC Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
CHC (Commercial) - Ceramic BGA termination arrays												
	CHC-CB0565A CHC-CB0565B CHC-CD0865A CHC-CD0865B CHC-CD1065A CHC-CD1065B CHC-CC0910A CHC-CC0910B CHC-CD0910A CHC-CD0910B	0.6 0.6 1.2 1.2 1.6 1.6 1.2 1.2 1.2 1.2	10 - 10K 10 - 4.7K 10 - 10K 10 - 4.7K 10 - 10K 10 - 4.7K 10 - 10K 10 - 4.7K 10 - 10K 10 - 4.7K	1, 2, 5	100	N/A	3.2 3.2 5.1 5.1 6.4 6.4 9.0 9.0 9.0 9.0	1.2 1.2 2.5 2.5 2.5 2.5 3.0 3.0 4.0 4.0	0.64 0.64 0.64 0.64 0.64 0.64 1.42 1.42 1.42 1.42	N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	-40 to +85	Lead-free version available 0.65mm ball pitch 0.65mm ball pitch 0.65mm ball pitch 0.65mm ball pitch 0.65mm ball pitch 0.65mm ball pitch 1.0mm ball pitch 1.0mm ball pitch 1.0mm ball pitch 1.0mm ball pitch
CHC (Precision) - TanFilm® precision ceramic ball grid array resistor network												
	CHC-CH4A CHC-CH8A	0.4 0.8	10 - 100K	0.1, 0.25, 0.5, 1, 2, 5 / 0.05, 0.1, 0.5, 1, 2	25, 50, 100 / 5, 10, 20	50	5.08 10.2	6.35 6.35	1.47 1.47	N/A N/A	-55 to +150	1.27mm ball pitch
CHC-SCSI - Chipscale SCSI LVD terminator network												
	CHC-CD0927K	1	R1 = 475 R2 = 121	1	100	25	11.43	5.08	1.47	N/A	0 to +70	9 LVD termination lines; SCSI Ultra2 and Ultra3 compliant; 1.27mm ball pitch
CHC-Thevenin - Chipscale Thevenin termination network												
	CHC-CC0910L	1	R1 = 50 - 75 R2 = 22 - 25	1	100	25	9.0	3.0	1.42	N/A	0 to +70	JEDEC-standard 8-9A compatible; 1.0mm ball pitch
CHP - Cylindrical Metal Glaze™ power resistor												
	CHP-1/8 CHP-1/2 CHP-1 CHP-2	0.25 0.5 1 2	0.1 - 1M 0.1 - 348K 0.1 - 2.21M 0.2 - 2.21M	0.25, 0.5, 1, 2, 5 1, 2, 5 0.25, 0.5, 1, 2, 5 1, 2, 5	25 in some ranges (contact factory) 50, 100	400 600 700 1000	3.25 5.08 6.38 9.32	1.45 2.01 2.01 2.67	– – – –	N/A N/A N/A N/A	-55 to +150	Metal Glaze® resistive element offers low TCR and high surge capability
CHP-1X - Cylindrical Metal Glaze® power resistor												
	CHP-1X	1	0.1 - 10K	1, 2, 5	50, 100	600	5.08	2.01	–	N/A	-55 to +150	1W power in 1/2-watt package; superior surge capability
CHPT - Cylindrical Metal Glaze® thermally sensitive resistor												
	CNTC-1/8	0.4	500 - 10K	2, 5, 10	-2500	400	3.25	1.45	–	N/A	-55 to +150	Negative temperature coefficient device with superior linearity and curve tolerance
CMH - Thick film high voltage MIL-qualified Metal Glaze® resistor												
	CMH-1/4 CMH-1/2 CMH-1 CMH-2 CMH-3 CMH-5	.25 .5 1 2 3 5	330K - 100M 330K - 392M 330K - 499M 330K - 499M 330K - 1G 330K - 1G	1, 2, 5	100	750 1500 3000 5000 10000 20000	6.98 10.16 17.53 26.97 52.37 77.77	2.22 3.51 7.54 7.54 7.54 7.54	– – – – – –	0.81 0.81 0.81 0.81 0.81 0.81	-65 to +175	MIL-R-49462; Voltage Coefficient of Resistance (VCR) = 0 to -5ppm/V
CMO - Metal oxide resistor												
	CMO-1/2 CMO-1 CMO-2 CMO-3 CMO-5	0.5 1 2 3 5	0.1 - 75K 0.1 - 120K 0.1 - 150K 1 - 150K 1 - 180K	1, 5	200	250 350 350 500 750	9.0 11.0 15.0 25.0 41.0	3.0 4.0 5.5 8.5 8.5	– – – – –	0.7 0.7 0.8 0.8 0.8	-55 to +200	Flameproof; Meets overload test of UL-1412

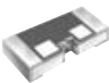
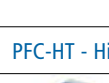
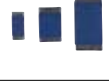
	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
CR - Thick film chip resistor												
	CR0503 CR0805 CR1005 CR1206	0.063 0.1 0.125 0.25	1 - 100M	0.25, 0.5, 1, 2, 5	50 100 150 200	350	1.25 2.0 2.5 3.2	0.063 1.25 1.25 1.6	0.07 0.07 0.07 0.07	N/A N/A N/A N/A	-55 to +125	Any resistance value available within specified range
CSL - Four terminal open air low ohm resistor												
	CSL	5	0.00025 - 0.0025	1, 2, 5	30		21.9	1.57	10.8	1.57	-55 to +125	55 amp continuous operating current
DIP-U - Tantalum Ultrade™ dual inline package ultra precision resistor networks												
	DIP-U1989 DIP-U1999	0.16 0.32	1K - 100K	0.02, 0.05, 0.1, 0.25, 0.5, 1 / 0.01, 0.025, 0.02, 0.05, 0.1	10, 15, 25 / 1, 2, 5	50	17.78 20.32	6.35 6.35	2.03 2.03	0.5 0.5	-55 to +125	No internal solder connections; Custom schematics and values available
DIV-23 - TaNFilm® precision voltage divider network												
	SOT-DIV23	0.25	10 - 100K	0.1, 0.25, 0.5, 1, 5, 10 / 0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250 / 2, 5, 10, 25, 50	100	2.86	1.29	0.77	0.457	-55 to +125	Industry standard 3-pin package; old SOT23 is now DIV-23
F43/F44 - High voltage thick film resistor												
	F43-X F44-X	0.7 1.3	2M - 100G 2M - 150G	2, 5, 10	250, -2000	4000 - 8000 14000 - 28000	25.4 50.8	8.4 8.4	— —	0.8 0.8	-55 to +100	Optional screw terminations for assembling a series chain; Matched sets available
F-500 - Precision controlled fusible resistor												
	F-5XX	0.3 - 1	0.2 - 200	2, 5, 10	50, 150		10.2	3.6	—	0.5	-55 to +150	<0.5 Sec Typical Blow Times; UL approved
FCR - Fusible chip resistor												
	FCR-1/2	0.5	10 - 51	2, 5	350	100	5.0	2.6	0.55	N/A	-55 to +125	<50 Sec Typical Blow Times
FP - TaNFilm® Mil-qualified precision flat pack resistor network												
	FP-8987 FP-8989 FP-8998 FP-8999	0.325 0.35 0.375 0.400	20 - 121K	0.1 - 2 /	50 - 300 /	N/A	9.52 9.52 9.9 9.9	7.75 7.75 7.75 7.75	1.9 1.9 1.9 1.9	0.127 0.127 0.127 0.127	-65 to +125	MIL-PRF-83401; 14- and 16-pin packages; Isolated and bussed schematics
FP Space - Space flight surface mount flat pack resistor network												
	FP-8987 FP-8989 FP-8998 FP-8999	0.325 0.35 0.375 0.4	20 - 100K 20 - 121K 20 - 100K 20 - 121K	0.1, 1, 2, 5 0.05, 0.1, 1, 2	5, 10, 20	50	9.52 9.52 9.91 9.91	7.75 7.75 7.75 7.75	1.9 1.9 1.9 1.9	0.127 0.127 0.127 0.127		MIL-PRF-83401; 14- and 16-pin packages Space upgrade screened to NASA EEE-INST-002
FP-U – Flat pack ultra precision networks												
	FP-U89xx	0.025	1K - 50K	0.02/0.01	10/1	50	9.52	20.95	1.9	0.127	-55 to +150	Ultra-stable, high stability Tantalum Ultrade™ film
GC - High voltage precision thick film resistor												
	GC65	0.5	47K - 1G	1, 2, 5	100	3500	10.0	3.7	—	0.6	-55 to +155	High stability thick film resistive element
GF - Thick film Metal Glaze® resistor												
	GF-55 GF-07 GF-60 GF-20 GF-3	0.5 0.5 0.75 0.75 2, 3	0.4 - 2M 0.4 - 2M 0.4 - 2M 0.4 - 2M 1 - 2M	1 2, 5 1 2, 5 1, 2, 5	50, 100 100 50, 100 100 100	250 250 350 350 750	6.4 6.4 9.9 9.9 13.0	2.3 2.3 3.8 3.8 5.7	— — — — —	0.64 0.64 0.64 0.64 0.81	-65 to +150	Flame-resistant construction

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TRC Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
GP - Precision metal film resistor												
	GP-50	0.125	10 - 2.37M	0.1, 0.25, 0.5, 1	25, 50, 100	200	3.2	1.85	–	0.45	-55 to +165	Meets requirements of MIL-R-10509
	GP-55	0.25	10 - 10M			250	6.0	2.4	–	0.6		
	GP-60	0.5	10 - 10M			300	8.5	2.8	–	0.7		
GS-3 - High ohmic value semi-precision Metal Glaze® resistor												
	GS-3	3	1 - 3M	1, 2, 5	50, 100	1000	13.1	5.7	38.1	90.81	-65 to +150	Effective as carbon comp replacement
GUB - TaFilm® Mil-qualified precision small outline IC resistor network												
	GUB-GMX (14-pin)	1	10 - 150K	0.1, 0.25, 0.5, 1 / 0.05, 0.1, 0.25, 0.5, 1	25, 50, 100 / 5	N/A	9.9	5.59	2.28	0.43	-55 to +125	
	GUB-GLX (16-pin)	1.2	10 - 1000K				11.18	5.59	2.28	0.43		
	GUB-GLOX (20-pin)	1.5	10 - 1000K				12.8	7.54	2.67	0.43		
HR-1 - High ohmic value thick film chip resistor												
	HR-0805	0.1	100M - 50G	5, 10, 25, 50	0 to -2000 0 to -1500 0 to -1000	100	2.0	1.25	0.07	N/A	-55 to +125	Low voltage coefficient of resistance
	HR-1005	0.125				150	2.5	1.25	0.07	N/A		
	HR-1206	0.25				200	3.2	1.6	0.07	N/A		
HSC – Cylindrical Metal Glaze® high surge compliant terminal resistor												
	HSC-1	1	10 - 1M	0.5, 1, 2, 5 1, 2, 5	50, 100	650	6.35	3.1	–	N/A	-55 to +150	Contact factory for values
	HSC-2	2	10 - 2M			1000	9.32	3.1	–	N/A		
HSF - Cylindrical Metal Glaze® surge resistor												
	HSF-0125 HSF-05 HSF-1 HSF-2	0.125, 0.5, 1, 2	5 - 270 (call factory for available values)	10	50, 100	350	6.38	2.01	–	N/A	-55 to +150	10x the surge rating of conventional cylindrical resistors; contact factory for other resistance values and special requirements
HTC – High temperature thick film chip resistors												
	HVC-1206	0.2	1 - 10M	0.5, 1, 5	100	200	3.2	1.6	0.7	N/A	-55 to +200	Standard chip sizes available from 1206 to 2512
	HVC-2010	0.5				400	5.1	2.5	0.8	N/A		
	HVC-2512	0.75				500	6.5	3.2	0.8	N/A		
HVC - High voltage chip resistor												
	HVC-1206	0.3	100K - 100M	1, 2, 5, 10 1, 2, 5, 10 0.5, 1, 2, 5, 10	100	1000	3.2	1.6	0.6	N/A	-55 to +155	Continuous voltage ratings up to 3KV
	HVC-2010	0.5				2000	5.1	2.5	0.7	N/A		
	HVC-2512	1				3000	6.5	3.2	0.7	N/A		
IBT - Carbon composition resistor												
	IBT-1/4	0.25	1 - 5.6M	5, 10	250 - 2500	500	6.3	2.4	–	0.6	-55 to +150	Meets EIA RS-172 performance standards
	IBT-1/2	0.5	1 - 20M			700	9.5	3.6	–	0.7		
Ladder - TaNSil® R2R ladder network												
	GUS-QS009 (20-pin)	N/A	10K - 50K	2 /	25 - 100 /	N/A	8.66	3.9	1.62	0.25	-55 to +125	Available in other packages
	GUS-QS014 (16-pin)			1 LSB	5		4.9	3.9	1.62	0.25		
LAS - Economical semi-precision power wirewound resistor												
	LAS-1	1	0.1 - 7.5K 0.1 - 18K	0.5, 1, 3, 5	20	500	8.84	2.8	–	0.53	-55 to +200	Special LAS-3 version available to meet GR-1089 requirements
	LAS-3	3					12.47	3.8	–	0.81		
LOB - Low resistance metal element resistor												
	LOB-1	1	0.005 - 0.1	1, 3, 5	varies with resistance (contact factory)	$\sqrt{1 \times R}$	9.9	3.6	–	0.81	-65 to +150	Inherently non-inductive (≤0.02µH @ 0.5MHz)
	LOB-3	3				$\sqrt{3 \times R}$	14.22	5.33	–	0.81		
	LOB-5	5				$\sqrt{5 \times R}$	23.37	8.38	–	1.02		

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
LPW - Low resistance power wirewound resistor												
	LPW-3 LPW-5 LPW-7 LPW-10 LPW-15	3 5 7 10 15	0.005 - 0.15 0.005 - 0.15 0.01 - 0.15 0.01 - 0.15 0.01 - 0.15	1, 2, 3, 5, 10	30 to +500	√PR	22.4 22.4 35.3 47.8 47.8	7.87 9.65 9.65 9.65 12.7	7.87 8.89 8.89 8.89 12.7	1.02 1.02 1.02 1.02 1.02	-55 to +250	Flameproof high temperature ceramic case; standoffs optional
LRC - Thick film low value chip resistor												
	LRC-LRF-1206 LRC-LRF-2010 LRC-LRF-2512	0.5 1 2	0.025 - 1	1, 2, 5, 10		N/A	3.2 5.23 6.5	1.63 2.64 3.25	0.61 0.74 0.74	N/A N/A N/A	-55 to +150	Ceramic current sense resistor
LRF - Thick film low value chip resistor												
	LRC-LRF-1206 LRC-LRF-2010 LRC-LRF-2512	0.5 1 2	0.002 - 0.025	1, 2, 5, 10		N/A	3.2 5.23 6.5	1.63 2.64 3.25	0.61 0.74 0.74	N/A N/A N/A	-55 to +150	Flip chip ceramic current resistor sense
LRF3W - Power thick film resistor												
	LRC-LRF3W	3	0.002 – 0.1	1, 2, 5, 10	100	N/A	6.5	3.25	0.81	N/A	-65 to +150	High power current sense resistor with Kelvin connection
LRMA – Low resistance metal alloy current sense resistor												
	LRMA-N-0815 LRMA-P-2512 LRMA-P-2010	1 3 1.5	0.003 - 0.02 0.003 - 0.1 0.01 - 0.06	1, 2, 5 1, 2, 5 1, 2, 5	100 75 75	N/A	3.8 6.4 5	2.1 3.2 2.5	0.7 0.7 0.75	0.5 0.9 0.6	-55 to +125	Designed for current sense circuits in power electronic and automotive systems
LRZ - Ultra low resistance jumper resistor												
	LRC-LRZ-1206 LRC-LRZ-2010 LRC-LRZ-2512	20A 30A 35A	<0.002	N/A	N/A	N/A	3.2 5.23 6.5	1.63 2.64 3.25	0.61 0.74 0.74	0.48 0.48 0.48	-65 to +125	Zerohm jumper chip
LVC – Miniature current sense surface mount chip resistors												
	LVC-0402 LVC-0603 LVC-0805 LVC-1206 LVC-2010 LVC-2512	0.0625 0.1 0.125 0.25 0.75 1	0.01 - 1	1, 2, 5	200, 300, 400, 600	N/A	1 1.6 2 3.05 5 6.35	0.5 0.8 1.25 1.55 2.45 3.15	0.32 0.45 0.55 0.55 0.6 0.6	– – – – – –	-55 to +155	RoHS compliant
M900 - TaNFilm® precision molded DIP resistor network												
	M954 (8-pin) M959 (8-pin) M987 (14-pin) M989 (14-pin) M998 (16-pin) M999 (16-pin)	0.7 0.8 1.3 1.4 1.5 1.6	50 - 200K 10 - 400K 50 - 200K 10 - 400K 50 - 200K 10 - 400K	0.1, 0.5, 1 / 0.05	25, 50, 100 / 5, 10, 20	N/A	11.81 11.81 19.43 19.43 21.97 21.97	7.87 7.87 7.87 7.87 7.87 7.87	4.57 4.57 4.57 4.57 4.57 4.57	0.48 0.48 0.48 0.48 0.48 0.48	-55 to +150	Custom designs and schematics available
MCHP - Cylindrical Metal Glaze® Mil-qualified resistor												
	MCHP-1/8 MCHP-1/2 MCHP-1 MCHP-2	0.125 0.5 1 2	0.1 - 1M 0.1 - 1.6M 0.1 - 2.2M 0.2 - 2.2M	1, 2, 5	100	400 600 700 1000	3.25 5.08 6.38 9.32	1.45 2.01 2.01 2.67	– – – –	N/A N/A N/A N/A	-55 to +150	DSCC 85083, DSCC 87037 DSCC 95011, DSCC 94048 DSCC 95006, DSCC 94047
MFP - Fireproof metal film power resistor												
	MFP-05 MFP-1 MFP-2	0.5 1 2	7 - 15 0.1 - 1M 1 - 1M	1, 2, 5	100 100, 200, 300 100	350	3.5 6.2 10.0	1.8 2.3 4.0	– – –	0.5 0.6 0.8	-55 to +155	
MF-S - Power metal film resistor												
	MF-1/2-S MF-1-S MF-2-S MF-3-S	0.5 1 2 3	0.1 - 1M 0.1 - 1M 0.1 - 470K 0.1 - 470K	1, 2, 5, 10	150 150 150, 350 150, 350	350	6.2 9.0 12.5 14.5	2.3 3.4 4.2 5.1	– – – –	0.6 0.8 0.8 0.8	-55 to +235	Flameproof safety resistor
MH - High voltage metal film resistor												
	MH-25 MH-37	0.25 0.5	100K - 2.2M 100K - 1M	1, 2, 5	100	1600 3500	6.2 9.0	2.3 3.7	– –	0.6 0.8	-55 to +155	

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TRC Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
MHP – High voltage thick film power resistor (Lead-free only)												
	MHP-20	20	0.01 - 51K	1, 5	100, 250	500	10.16	14.61	4.45	0.47	-55 to +155	Previously MHP-TO-220, MHP-TO-247 and SOT227; Non-inductive (<50nH)
	MHP-35	35	0.01 - 51K			500	10.16	14.61	4.45	0.47	-55 to +155	
	MHP-50	50	0.01 - 51K			500	10.16	14.61	4.45	0.47	-55 to +155	
	MHP100	100	0.01 - 51K			700	20.0	16.0	4.8	0.8	-55 to +155	
	MHP140	140	0.01 - 51K			700	20.0	16.0	4.8	0.8	-55 to +155	
	MHP150	150	0.1 - 1K			√PR	38	25	11.8	–	-55 to +120	
	MHP200	200	0.1 - 1K			38	25	11.8	–	-55 to +120		
	MHP250	250	0.1 - 1K			38	25	11.8	–	-55 to +120		
	MHP300	300	0.1 - 1K			38	25	11.8	–	-55 to +120		
	MHP550	550	50 - 1K			38	25	11.8	–	-55 to +155		
MHP600	600	50 - 1K	38	25	11.8	–	-55 to +155					
MM - Cylindrical Metal Glaze® power resistor												
	MMA0204	0.25	0.1 - 1M	1	50, 100	400	3.25	1.45	–	N/A	-55 to +150	Superior surge characteristics
	MMB0207	1	0.1 - 2.21M			700	6.38	2.01	–	N/A		
	MMC0310	2	0.2 - 2.21M			1000	9.32	2.67	–	N/A		
MOM - Metal oxide mini resistor												
	MOM-1/2	0.5	0.1 - 47K	1, 5	200	250	6.0	2.3	–	0.6	-55 to +200	Flameproof; Meets overload test of UL-1412
	MOM-1	1	0.1 - 75K			350	9.0	3.0	–	0.7		
	MOM-2	2	0.1 - 100K			350	11.0	4.0	–	0.8		
	MOM-3	3	0.1 - 120K			350	15.0	5.5	–	0.8		
	MOM-5	5	1 - 150K			500	25.0	8.5	–	0.8		
MO-S - Power metal oxide resistor												
	MO-1/2S	0.5	10 - 50K	5, 10	350	250	6.2	2.3	–	0.6	-55 to +155	Flameproof
	MO-1S	1	10 - 100K			350	9.0	3.4	–	0.8		
	MO-2S	2	10 - 100K			350	12.5	4.2	–	0.8		
	MO-3S	3	10 - 100K			350	14.5	5.1	–	0.8		
	MO-5S	5	10 - 100K			500	25.0	8.5	–	0.8		
MRC - Cylindrical Metal Glaze® high power density resistor												
	MRC-1/2	0.5	0.1 - 10K	0.2, 0.5, 1, 2, 5	50, 100	400	3.25	1.60	–	N/A	-55 to +150	Superior surge handling capability
	MRC-1	1	0.05 - 1			700	6.38	2.67	–	N/A		
MWR - TaNFilm® microwave chip resistor												
	MWR-MWC-01	0.25	50, 75, 100	1, 2, 5, 10	25, 50, 100	50V	0.76	0.61	0.381	N/A	-55 to +100	Performance characterized to 40GHz
OAR - Open air sense resistor												
	OAR-1	1	0.003 - 0.1	1, 5	Varies with resistance value (20 – 450)	√PR	11.43	1.65	5.08	1.02	-40 to +125	Flameproof; Low inductance (<10nH)
	OAR-3	3	0.0025 - 0.05				15.24	1.65	15.3	1.02		
	OAR-5	5	0.003 - 0.1				20.32	1.65	8.9	1.02		
OARS - Open air sense resistor - surface mount												
	OARS-1	1	0.002 - 0.05	1, 5	40, 240	N/A	12.0	3.5	3.5	N/A	-55 to +125	Flameproof open air resistor; Flameproof; Low inductance (<10nH)
OARS-XP - Open air sense resistor - extended power												
	OARS-XP	5	0.001 - 0.25	1, 5	40, 240	N/A	12.0	7.0	3.5	N/A	-55 to +125	Extended power range; Flameproof; Low inductance (<10nH)
OAR-TP - Open air tight pitch resistor												
	OAR-1TP	1	0.003 - 0.1	1, 5	Varies with resistance (20 – 450)	N/A	7.0	1.65	7.8	1.02	-40 to +125	Tight pitch board saves space
	OAR-3TP	3	0.0025 - 0.1				5.0	1.65	32	1.02		
OARS-Z - Open air zerohm jumper resistor												
	OARS-1Z	65A	<0.0005	N/A	N/A	N/A	12.0	3.5	3.5	N/A	-55 to +125	Ideal jumper for high- current applications
PAT-P – High power flanged attenuators												
	PAT-3042P	5	50 (Impedance)	±0.2 dB, ±0.3 dB, ±0.5dB	N/A	N/A	15	4.2	2.5	0.4	-55 to +125	Attenuation 0-20dB
	PAT-3060P	10					13	6	2.5	0.4		

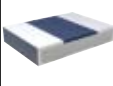
	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
PAT-S – High frequency surface mount attenuators												
	PAT-0510SLF PAT-0816LF PAT-1220LF PAT-1632LF PAT-3042SCLF PAT-3042SDLF	0.032 0.064 0.1 0.125 0.25 0.25	50 (Impedance)	±0.3dB, ±0.5dB, ±1dB	50	N/A	1 1.6 2 3.2 4.2 4.2	0.5 0.8 1.25 1.6 3 3	0.3 0.4 0.4 0.4 0.8 0.8	N/A N/A N/A N/A N/A N/A	-55 to +125	Attenuation 0-20dB
PAT-W – High frequency surface mount attenuators												
	PAT-3042 PAT-4556	0.25 0.5	50 (Impedance)	±0.1dB, ±0.2dB, ±0.3dB, ±0.4dB, ±0.5dB	50	N/A	4.2 5.6	3.02 4.5	0.8 0.8	N/A N/A	-55 to +125	Attenuation 0-20dB
PCH1632 – High frequency surface mount attenuators												
	PCH-1632	0.125	50, 75 (Impedance)	±0.3dB	N/A	N/A	3.2	1.6	0.5	N/A	-55 to +125	
PCS-P – Split ground high power thin film terminators												
	PCS-3042P PCS-3060P PCS-3080P	5 30 80	50 (Impedance)	N/A	50 13	N/A 8	13 13 2.5	8 8 N/A	2.5 2.5 N/A	N/A N/A N/A	-55 to +125	Up to 10GHz operation
PCS-R – High power, high frequency terminators												
	PCS-3040R	12.5	50	N/A	50	N/A	7	4	1.4	N/A	-55 to +80	
PCS-S – Fixed surface mount microwave line terminators												
	PCS-0816S PCS-1220S PCS-1632S PCS-3042S	0.063 0.1 0.125 0.25	50 (Impedance)	N/A	50	N/A	1.6 2 3.2 4.2	0.8 1.25 1.6 3	0.4 0.4 0.4 0.4	N/A N/A N/A N/A	-40 to +125	Up to 10GHz operation
PCF - Precision Nichrome chip resistor												
	PCF-W0201LF PCF-W0402LF PCF-W0603LF PCF-W0805LF PCF-W1206LF PCF-W1210LF PCF-W2010LF PCF-W2512LF	0.05 0.0625 0.0625 0.1 0.125 0.25 0.25 0.5	10 - 22K 10 - 200K 2 - 800K 1 – 2M 1 – 2M 100 – 2M 1 – 2M 1 – 2M	0.5, 1 0.01, 0.05, 0.1, 0.25, 0.5, 1 0.01, 0.05, 0.1, 0.25, 0.5, 1 0.01, 0.05, 0.1, 0.25, 0.5, 1 0.1, 0.5 0.01, 0.05, 0.1, 0.25, 0.5, 1 0.01, 0.05, 0.1, 0.25, 0.5, 1	25, 100 5, 10, 15, 25, 50 5, 10, 15, 25, 50 5, 10, 15, 25, 50 5, 10, 25 5, 10, 15, 25, 50 5, 10, 15, 25, 50	15 25 50 100 150 200 150 150	0.61 0.99 1.6 2.0 3.2 3.2 4.9 6.3	0.305 0.508 0.787 1.245 1.6 2.59 2.39 3.1	0.23 0.35 0.46 0.46 0.46 0.53 0.53	N/A N/A N/A N/A N/A N/A N/A	-55 to +155	Wide ohmic range available
PCF-RC - Thick film resistor capacitor chip												
	PCF-RC1206	R = 0.125 C = N/A	R = 10 - 1K C = 10pF - 200pF	R = 10 - 20 C = 20 /	R = 200 C = 20 - 55 /	R = 5 C = 50	3.2	1.6	0.7	N/A	-55 to +125	Resistor and capacitor on a single 1206 chip
PFC-A - TaNFilm® thin film attenuators												
	PFC-A1206	0.125	50, 75 (impedance)	±0.3dB, ±0.5dB, ±1.0dB, ±2.0dB	100	N/A	3.2	1.47	0.61	N/A	-55 to +150	Attenuation 1 - 20dB
PFC-COM TaNFilm® precision chip resistor												
	PFC-W0402 PFC-W0603 PFC-W0805 PFC-W1206 PFC-W1505 PFC-W2010 PFC-W2512	0.05 0.1 0.25 0.33 0.35 0.8 1	50 - 30K 5 - 100K 5 - 267K 5 - 1M 5 - 1M 5 - 1M 5 - 1M	0.02, 0.05, 0.1, 0.5, 1, 2, 5	10, 15, 25, 50, 100	75 75 100 200 100 175 200	1.02 1.6 2.0 3.2 3.9 5.16 6.5	0.533 0.787 1.245 1.6 1.27 2.62 3.15	0.304 0.508 0.508 0.61 0.61 0.61 0.61	N/A N/A N/A N/A N/A N/A N/A	-55 to +150	Screening for COTS precision chip resistor applications available

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TRC Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
PFC-D - TaFilm® precision chip voltage divider												
	PFC-D1206	0.25	10 - 150K	0.05, 0.01, 0.5, 1 / 0.01, 0.02, 0.05, 0.1, 0.5, 1	25, 50, 100 / 5, 10, 20, 50	100	3.2	1.47	0.61	N/A	-65 to +150	Superior alternative to matched resistor sets
PFC-D- HT - High temperature TaFilm® voltage divider												
	PFC-D1206-HT	0.125	100 - 25K	1 / 0.1, 0.5, 1	25, 50, 100 / 5	100	3.2	1.47	0.61	N/A	-65 to +200	Superior alternative to matched high temperature resistor sets
PFC-HF - High frequency chip resistor terminator												
	PFC-W0402-HF PFC-W0603-HF PFC-W0805-HF PFC-W1206-HF	0.05 0.1 0.25 0.333	50, 75	1, 2, 5, 10	25, 50, 100	100	1.02 1.6 2.0 3.2	0.533 0.787 1.25 1.6	0.304 0.508 0.508 0.61	N/A N/A N/A N/A	-55 to +125	Performance characterized to 6GHz
PFC-HF-MIL – Mil-screened high frequency chip resistors												
	W0603HF W0805HF W1206HF	0.1 0.15 0.25	50, 75	1, 2, 5, 10	25, 50, 100	N/A	1.6 2.06 3.2	0.787 1.27 1.6	0.508 0.508 0.61	N/A N/A N/A	-55 to +150	MIL-PRF-55342
PFC- Gold terminations precision thin film chip resistor												
	PFC-W0402-RJ PFC-W0603-RJ PFC-W0805-RJ PFC-W1206-RJ PFC-W1505-RJ PFC-W2010-RJ PFC-W2512-RJ	0.05 0.1 0.25 0.33 0.35 0.8 1	50 - 30K 5 - 100K 5 - 267K 5 - 1M 5 - 1M 5 - 1M 5 - 1M	0.02, 0.05, 0.1, 0.5, 1, 2, 5	10 - 100	75 75 100 200 100 175 200	1.02 1.6 2.06 3.2 3.94 5.16 6.48	0.53 0.79 1.27 1.6 1.27 2.62 3.15	0.3 0.51 0.51 0.61 0.61 0.61 0.61	N/A N/A N/A N/A N/A N/A N/A	-65 to +150	Mil screening available
PFC-HT - High temperature TaFilm® chip resistor												
	PFC-W0603-HT PFC-W0805-HT PFC-W1206-HT	0.0625 0.1 0.125	10 - 10K 10 - 20K 5 - 85K	1, 2, 5	25, 50, 100	33.3 50 100	1.6 2.0 3.2	0.787 1.25 1.6	0.508 0.508 0.61	N/A N/A N/A	-55 to +200	Characterized to 200°C
PFC-MIL - TaFilm® Mil-qualified precision chip resistor												
	PFC-UD1206	0.05	1K - 50K	0.05, 0.1, 0.25, 0.5, 1 / 0.01, 0.02, 0.05, 0.1	10, 15, 25 / 1, 2, 5	50	3.2	1.47	0.61	N/A	-55 to +125	Superior stability and precision
PFC-UD - Tantalum Ultrade™ ultra precision divider networks												
	PFC-RM0603 PFC-RM0705 PFC-RM1206 PFC-RM1505	0.1 0.15 0.250 0.5	10 - 59K 10 - 125K 10 - 125K 10 - 125K	0.1, 1, 2, 5, 10	25, 50, 100, 300	50 50 100 125	1.6 2.0 3.2 3.9	0.787 1.245 1.6 1.27	0.508 0.508 0.61 0.635	N/A N/A N/A N/A	-65 to +150	MIL-PRF-55342 DSCC 94015/16
PLO - Extremely low resistance power wirewound resistor												
	PLO-3 PLO-5 PLO-7 PLO-10 PLO-15	3 5 7 10 15	0.005 - 0.18 0.005 - 0.18 0.01 - 0.18 0.01 - 0.18 0.01 - 0.18	1, 2, 3, 5, 10	30 to +500	√PR	22.4 22.4 35.3 47.8 47.8	7.87 9.65 9.65 9.65 12.7	7.87 8.89 8.89 8.89 12.7	1.02 1.02 1.02 1.02 1.02	-55 to +250	Flameproof high temperature ceramic case; standoffs optional
PPC – Metal Glaze® surface mount precision power chip												
	PPC-1/8 PPC-1/2 PPC-1 PPC-2	0.125 0.5 1 1.33, 2	100-10K	0.1, 0.25, 0.5	50, 100	200 300 350 500	3.15 5.08 6.38 9.32	1.45 2.01 2.01 2.67	N/A N/A N/A N/A	N/A N/A N/A N/A	-55 to +150	Metal Glaze® resistive element offers low TCR and high surge capability
PPS-1 - Cylindrical Metal Glaze® high power ceramic package resistor												
	PPS-1	1	0.1 - 348K	1, 2, 5	50, 100	700	5.08	3.3	2.67	N/A	-65 to +150	Ceramic package provides superior temperature rise profile

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
PPW - Semi-precision power wirewound resistor												
	PPW-2 PPW-3 PPW-5 PPW-7 PPW-10 PPW-15	2 3 5 7 10 15	0.1 - 1600 0.1 - 1600 0.1 - 1600 0.1 - 2500 0.1 - 5000 0.1 - 5000	1, 2, 3	20	√PR	17.05 22.4 22.4 35.3 47.8 47.8	6.99 7.87 9.65 9.65 9.65 12.7	6.99 7.87 8.89 8.89 8.89 12.7	0.8 0.8 0.8 0.8 0.8 0.8	-55 to +250	Superior pulse and surge characteristics; Flameproof high temperature ceramic case; standoffs optional
PR4 - Precision metal film resistor												
	PR4	0.25	100 - 240K	0.1, 0.25	25	250	6.2	2.3		0.6	-55 to +155	Uses solder coated copper wire as resistance element.
PTS – Platinum Temperature Sensor Chip												
	P0603 P0805 P1206	N/A	1000 100, 1000 100, 1000	0.12, 0.24 0.12, 0.24 0.12, 0.24	+3,850	N/A	1.7 2.25 3.2	0.9 1.4 1.6	0.45 0.6 0.6	N/A N/A N/A	-55 to +130	Wide temperature range - very fast response time
PW (axial) - Power wirewound resistor												
	PW-2 PW-3 PW-5 PW-7 PW-10 PW-15 PW-18 PW-22 PW-25	2 3 5 7 10 15 18 22 25	0.15 - 2.4K 0.1 - 7.5K 0.1 - 8.5K 0.1 - 18K 0.18 - 30K 0.18 - 30K 0.18 - 22K 0.27 - 18K 0.27 - 18K	5, 10	300 to +5500	√PR	17.05 22.4 22.4 35.3 47.8 47.8 47.8 63.5 63.5	6.99 7.87 9.65 9.65 9.65 12.7 12.7 12.7 12.7	6.99 7.87 8.89 8.89 8.89 0.91 0.91 1.0 1.0	0.8 0.91 0.91 0.91 0.91 0.91 0.91 1.0 1.0	-55 to +250	Flameproof high temperature ceramic case; standoffs optional
PW (radial) - Power wirewound resistor												
	PW-20E PW-30 PW-40 PW-50E	20 30 40 50	0.1 - 2.0K 0.5 - 1.2K 0.65 - 1.5K 0.08 - 1.8K	5, 10	300, 600	√PR	63.5 64.77 76.2 92.075	12.7 19.05 19.05 19.05	12.7 19.05 19.05 19.05	6.35 7.16 7.16 7.16	-55 to +250	Steatite ceramic case with radial leads, bracket available
PWC - Pulse withstanding thick film chip resistor												
	PWC PWC-0805 PWC-1206 PWC-2010 PWC-2512	0.125 0.33 0.75 1.5	1 - 10M	0.5, 1, 5	100, 200	150 200 400 500	2.0 3.2 5.1 6.5	1.25 1.6 2.5 3.2	0.6 0.4 0.8 0.8	N/A N/A N/A N/A	-55 to +155	Superior pulse-handling characteristics
PWHW - Automotive dropping resistor												
	PWHW-30 PWHW-45 PWHW-115	30 45 115	0.100 - 0.900	5	150	√PR	72.29 64.11 80.0	34.82 29.85 36.83	15.75 11.86 15.75		-55 to +125	Wiring harness, connectors and brackets available; Resettable or one-time fuse version available
PWR - Standup power wirewound resistor												
	PWR-3 PWR-5 PWR-7 PWR-10	3 5 7 10	0.1 - 7.5K 0.1 - 8.5K 0.1 - 18K 0.18 - 18K	5, 10	300 to +5500	√PR	12.0 12.7 12.7 16.0	8.1 8.8 8.8 13.2	25.4 25.4 38.1 35.3	0.91 0.91 0.91 0.91	-55 to +250	Flameproof high temperature ceramic case; inorganic encapsulant
PWRG - Standup power Metal Glaze® resistor												
	PWRG PWRG-3 PWRG-5	3 3 5	1 - 1M	1, 2, 5, 10	100	√PR	12.0 12.7	8.1 8.9	25.4 25.4	0.81 0.81	-55 to +250	Flameproof high temperature ceramic case; inorganic encapsulant
PWRL - Low resistance stand-up power wirewound resistor												
	PWRL-3 PWRL-5 PWRL-7 PWRL-10	3, 5, 7, 10	0.01 - 0.18	1, 2, 3, 5, 10	50 to +500	√PR	12.0 12.7 12.7 16.0	8.1 8.8 8.8 13.2	25.4 25.4 38.1 35.3	1.02 1.02 1.02 1.02	-55 to +250	Flameproof high temperature ceramic case; inorganic encapsulant

	Part Number	Power (Watts)	Supply Voltage (Volts)	Diode Forward Voltage (Volts)	Channel Leakage Current (μAmps)	Channel Input Capacitance (pF)	ESD Protection (Volts)	Max. Volts (V)	L	W	H	S	Operating Temp. (°C)	Notes
DNR-QDN001 - Schottky diode termination network														
	DNR-QDN001	1	-0.3 min. 7 max.	0.5 @ 10mA 0.8 @ 50mA	0.1	5 @ $V_{IN} = 2.5V$, $V_{DD} = 5V$	±4KV max.	7	8.66	3.91	1.62	N/A	0 to +70	36 Schottky diodes integrated into a single package
DNR-QDN002 - Schottky diode 17-channel ESD protection network														
	DNR-QDN002	1	-0.3 min. 12 max.	0.65 1	1	12pF max.	±15KV (HBM, method 3015) ±8kV (Contact discharge)	12	8.66	3.91	1.62	N/A	-20 to +85	Reduces overshoot/undershoot for all data line types
DNR-QDN003 - Schottky diode 18-channel termination network														
	DNR-QDN003	1	-0.3 min. 7 max.	0.55 @ 1m 1 @ 12mA	0.1	12pF max.	±15KV (HBM, method 3015) ±8kV (Contact discharge)	7	8.66	3.91	1.62	N/A	0 to +70	Effective termination for both controlled/uncontrolled line

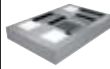
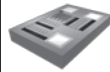
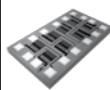
	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
QRC1284x2 - TaNSil® IEEE-1284 filter network												
	GUS-QRC1284x2	R = 2.6 C = N/A	R = 33-4.7K C = 180pF-220pF	R = 10 C = 20	R = 100 / C = N/A	N/A	9.88	3.91	1.63	N/A	-55 to +125	28-pin QSOP package; Replaces up to 43 discrete components
QS001 - TaNSil® high frequency resistor network												
	GUS-QS001	1	30 - 100	5, 10, 20	25, 50, 100 / 5	100	8.66	3.91	1.63	N/A	-55 to +125	24-pin QSOP package; Replaces up to 22 discrete components
QS013 - TaNSil® integrated audio passive network												
	GUS-QS013	1	100 - 6.8K	5 / 1	100 / 10	N/A	9.88	3.91	1.63	N/A	-55 to +125	28-pin QSOP package for AC97 audio codec.
QSOP - TaNSil® silicon .025 pitch resistor network												
	GUS-QS8 (16-pin)	0.75	10 - 250K	0.1, 0.25, 0.5, 1, 2, 5 /	25, 50, 100, 200 /	N/A	4.9	3.91	1.63	N/A	-55 to +125	16- 20- and 24-pin QSOP package with 0.025" pitch; Isolated and bussed schematics
	GUS-QS0 (20-pin)	1		0.05, 0.1, 0.25, 0.5, 1, 2	5, 20, 25, 50, 100, 200		8.66	3.91	1.63	N/A		
	GUS-QSC (24-pin)	1					8.66	3.91	1.63	N/A		
RB - Precision MIL-qualified wirewound resistor												
	RB-56	0.125	0.1 - 127K	0.01, 1	10, 15, 30, 90	200	8.7	6.3	—	0.8	-65 to +145	Qualified to MIL-R-93; commercial equivalents available (VA/7000 Series)
	RB-55	0.15	0.1 - 176K			300	12.7	6.3	—	0.8		
	RB-54	0.25	0.1 - 226K			300	19.0	6.3	—	0.8		
	RB-53	0.33	0.1 - 604K			500	19.0	9.5	—	0.8		
	RB-52	0.5	0.1 - 1M			750	25.4	9.5	—	0.8		
RBR - Precision MIL-qualified wirewound resistor												
	RBR-56	0.125	0.1 - 220K	0.01, 1	10, 15, 30, 90	200	8.7	6.3	—	0.8	-65 to +145	Qualified to MIL-R-39005; commercial equivalents available (HR Series)
	RBR-55	0.15	0.1 - 332K			300	12.7	6.3	—	0.8		
	RBR-54	0.25	0.1 - 526K			300	19.0	6.3	—	0.8		
	RBR-53	0.33	0.1 - 1.1K			500	19.0	9.5	—	0.8		
RC - Precision metal film resistor (Lead-free only)												
	RC-RC55	0.25	1 - 4M	0.05, 0.1, 0.25, 0.5, 1	5, 10, 15, 25, 50, 100	350 350 500	7.2	2.5	—	0.6	-55 to +155	Conformally coated; matched sets available
	RC-RC65	0.5	1 - 4M				15.5	3.7	—	0.6		
	RC-RC70	1	1 - 10M					5.5	—	0.8		

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
RFRF – Flanged RF power terminator												
	RFRF-10LF RFRF-40LF RFRF-50LF RFRF-100LF RFRF-150LF RFRF-250LF	10 40 50 100 150 250	50, 100, 150, 200	1, 2, 5	50	√PxR	7.6 13 20.3 20.3 20.3 25	5.1 6.35 5.7 5.7 5.7 9.53	3.1 3.1 3.1 3.1 3.1 4.6	N/A N/A N/A N/A N/A N/A	-55 to +155	High power dissipation to 250W
RFTF – High frequency surface mount terminator												
	RFTF-10 RFTF-50 RFTF-100 RFTF-150 RFTF-250	10 50 100 150 250	50	1	50	√PxR	7.6 20.3 20.3 20.3 25	5.1 5.7 5.7 5.7 9.53	3.1 3.1 3.1 3.1 4.6	N/A N/A N/A N/A N/A	-55 to +155	Long life, temperature stable thin film technology
RFTS – High power, surface mount RF terminators												
	RFTS-05 RFTS-10 RFTS-50 RFTS-100 RFTS-250	5 10 50 100 250	50	1	50	N/A	2.54 5.08 5.08 5.84 9.52	1.27 2.54 5.08 8.89 9.52	1 1 1.2 1.2 1.2	N/A N/A N/A N/A N/A	-55 to +155	High frequency operation up to 3GHz
RFX – High frequency surface mount terminators												
	RFH52LF RFH72LF RFK52LF RFK72LF	10 10 10 10	50, 100, 150, 200, 250, 300, 400, 600, 800	1	50	N/A	5 7 5 7	2.5 2 2.5 2	1.2 1.2 1.2 1.2	N/A N/A N/A N/A	-55 to +155	Frequency operation to 3GHz
RFAXX – High frequency surface mount attenuators												
	RFA53SDF RFA54DDLF RFA55SDF RFA55DDLF RFA84SDF RFA84DDLF RFA37DDLF	0.25 0.25 0.25 0.25 0.5 0.5 1	50	±0.2dB, ±0.3dB, ±0.4dB	50	N/A	5 5 5 5 8 8 13	2.7 3.8 4.5 4.5 5.25 5.25 7	0.7 0.7 0.7 0.7 0.7 0.7 0.7	N/A N/A N/A N/A N/A N/A N/A	-55 to +125	Attenuation 1-40dB
RFAXX-0 – High frequency surface mount attenuators												
	RFA100-0 RFA150-0	100 150	50	±0.4dB	N/A	N/A	8.89- 11.43	5.84- 7.62	1.1 N/A	N/A	-50 to +155	Attenuation 20dB, 30dB
RFTXXX-1 – High power flanged RF terminators												
	RFT010-120 RFT050-110 RFT100-110 RFT250-110	10 50 100 250	50	1	50	N/A	7.1 13.08 20.3 25	5.1 5.7 6.35 9.53	3.1 3.1 3.1 4.5	N/A N/A N/A N/A	-55 to +155	High frequency operation up to 5GHz
RG - Commercial thick film Metal Glaze® resistor												
	RG-1/8 RG-1/4 RG-1/2	0.25 0.5 1	0.4 - 1.5M 0.4 - 5.1M 0.4 - 5.1M	2, 5 5 5	200 250 350	200 250 350	3.8 6.4 9.9	1.7 2.3 3.6	– – –	0.41 0.64 0.81	-65 to +150	Flame retardant versions available
RGT - Thick film temperature compensation resistor												
	RGT-1 RGT-2	N/A	740, 1K, 10K	2, 5, 10	-3000	N/A	6.35 3.81	2.29 1.7	– –	0.64 0.41	-55 to +175	Effective temperature compensation for positive TC devices, semiconductors and copper
RL - Semi-precision MIL-qualified Metal Glaze® resistor												
	RL-07 RL-20	0.25 0.5	51 - 150K 4.3 - 470K	2, 5	200	250 350	6.4 9.9	2.3 3.6	– –	0.64 0.81	-55 to +150	MIL-R-22684
RLR - Established reliability MIL-qualified Metal Glaze® resistor												
	RLR-05/S RLR-07/S RLR-20/S	0.125 0.25 0.5	10 - 301K 10 - 301M 4.3 - 3.01M	1, 2	100	200 250 350	3.8 6.4 9.9	1.7 2.3 3.6	– – –	0.41 0.64 0.81	-55 to +150	MIL-R-39017, approved to "S" level

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TRC Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
RN - Precision MIL-qualified Metal Glaze® resistor												
	RN-50 RN-55 RN-60	0.05 0.1, 0.125 0.125, 0.25	10 - 100K 10 - 301K 10 - 1M	1 0.1, 1, 5 0.1, 1, 5	50 25, 50, 100 25, 50, 100	200 200 250 300	3.8 6.4 9.9	1.7 2.3 3.6	— — —	0.41 0.64 0.64	-65 to +150	MIL-R-10509
SC-3 - High power dissipation thick film resistor												
	SCW-SC-3	3	1 - 100K	1, 2, 5	100	100	6.35	3.175	0.76	N/A	-55 to +150	Three-watt rating for one-watt chip size; reverse termination
SIP-U - Tantalum Ultrade™ single inline package ultra precision resistor networks												
	SIP-U4769 (6-pin) SIP-U4789 (8-pin) SIP-U4709 (10-pin)	0.12 0.16 0.2	1K - 100K	0.02, 0.05, 0.1 / 0.01, 0.025, 0.02, 0.05, 0.1	10, 15, 25 / 1, 2, 5	50	15.19 20.27 25.35	1.78 1.78 1.78	3.302 3.302 3.302	0.508 0.508 0.508	-55 to +125	No internal solder connections; Custom schematics and values available
SMC - Cylindrical Metal Glaze® compliant terminal resistor												
	SMC-1 SMC-2	1 2	10 - 1M 10 - 2M	0.5, 1, 2, 5 / 1, 2, 5	50, 100	650 1000	6.35 9.32	3.1 3.1	— —	N/A N/A	-55 to +150	Capped terminals provide thermal and mechanical compliance with PC board
SMHP - High voltage D2PAK/TO-263AB thick film power resistor (Lead-free only)												
	TFP-SMHP	25	0.01 - 51K	1, 5	50, 100, 250	500	10.6	10.3	4.5	0.75	-55 to +155	Non-inductive thick film power resistor
SMHP35 - Series power resistor												
	TFP-SMHP35	35	0.01 - 51K	1, 5	50, 100, 250	500	10.6	10.3	4.5	0.75	-55 to +155	D2Pak product with a higher reflow temperature (270°C) and higher power rating (35W)
SOIC - TaNSil® silicon .05" pitch network												
	GUS-SS4 (8-pin narrow) GUS-SS7 (14-pin narrow) GUS-SS8 (16-pin narrow) GUS-SL8 (16-pin wide) GUS-SL0 (20-pin wide)	0.4 0.7 0.8 1.2 1.5	10 - 250K	0.1, 0.25, 0.5, 1, 2, 5 / 0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250 / 5, 10, 20, 25, 50, 100, 200	100	4.9 8.66 9.9 10.21 12.75	3.89 3.89 3.89 7.49 7.49	1.55 1.55 1.55 2.49 2.49	0.41 0.41 0.41 0.41 0.41	-55 to +125	Standard JEDEC 0.050" lead spacing; COTS screen available
SON - TaNFilm® Mil-qualified precision small outline leadless resistor networks												
	SON-NS4X (8-pad, 150 Series) SON-NS7X (14-pad, 150 Series) SON-NS8X (16-pad, 150 Series) SON-N95X (8-pad, 210 Series) SON-N98X (14-pad, 210 Series) SON-N99X (16-pad, 210 Series)	0.4 0.4 0.7 0.7 0.8 0.8	10 - 100K 10 - 50K 10 - 100K 10 - 50K 10 - 100K 10 - 50K	0.1, 0.5, 1 / 0.01, 0.02, 0.025, 0.05, 0.1, 0.5, 1	25, 50, 100, 300 / 5, 10, 15, 20, 25	50	5.33 5.08 9.14 8.89 10.41 10.16	3.81 5.33 3.81 5.33 3.81 5.33	0.71 0.71 0.71 0.71 0.71 0.71	N/A N/A N/A N/A N/A N/A	-55 to +150	MIL-PRF-83401, Characteristic H
SON-U - Tantalum Ultrade™ small outline ultra precision resistor networks												
	SON-U959 SON-U989 SON-U999	0.1 0.18 0.2	1K - 50K	0.02, 0.05, 0.1, 0.25, 0.5, 1, 2, 5 / 0.01, 0.025, 0.02, 0.05, 0.1	10, 25, 50 / 1, 2, 5	50	5.08 8.89 0.16	5.33 5.33 5.33	0.71 0.71 0.71	N/A N/A N/A	-55 to +125	No internal solder connections; Custom schematics and values available
SOT-143 - TaNFilm® precision resistor network												
	SOT-SOT143	0.25	100 - 100K	0.1, 0.25, 0.5, 1, 5, 10 / 0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250 / 2	100	2.8	1.2	0.8	0.37 / 0.76	-55 to +125	Industry standard 4-pin package; Standard and custom circuits available

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
SP20 - Fail-safe molded wirewound resistor												
	SP-20	1	0.1 - 1200	5, 10	150, 180	√PR	9.91	3.56	—	0.813	-55 to +160	One-watt rating in half-watt package; Drop-in replacement for BW20 Series
SP20F - Fail-safe fusible molded wirewound resistor												
	SP-20F	1	0.1 - 1200	5, 10	150, 180	√PR	9.91	3.56	— — —	0.813	-55 to +160	<30 Sec Typical Blow Times; One-watt rating in half-watt package
SPF - Fail-safe fusible molded wirewound resistor												
	SPF	2	0.1 - 2400	5, 10	150, 180	√PR	14.3	5.72	—	0.813	-55 to +160	<30 Sec Typical Blow Times; Two-watt rating in one-watt package
SPH - Fail-safe molded wirewound resistor												
	SPH	2	0.1 - 2400	5, 10	150, 180	√PR	14.3	5.72	—	0.813	-55 to +160	Two-watt rating in one watt package; Drop-in replacement for BWH Series
SPP - Economical conformal coated wirewound resistor												
	SPP-1 SPP-2 SPP-3	1 2 3	0.1 - 1200 0.1 - 2400 0.1 - 2400	5, 10	300, 600	√PR	10.16 14.48 14.48	3.76 4.32 4.32	— — —	0.81 0.81 0.81	-55 to +160	Positive high TCR available on request; Color band standard identification
T Wirewound - Commercial semi-precision power wirewound resistor												
	T-1/2 T-1/2-A81 T-1-A T-1A-71 T-1C T-1-80 T-2A T-2A-69 T-2B-79 T-3 T-5 T-5-74 T-6 T-6-67 T-7 T-7A-55 T-10A-56 T-10 T-10-78 T-10-67	0.7 1 1 1 2 2 3, 3.7 3 3 4, 5.5 5, 6.5 5 6, 7.5 5, 6.5 7, 9 7 14 10, 13 10 11	0.1 - 4K 0.1 - 4.5K 0.1 - 12K 0.1 - 12K 0.1 - 12K 0.1 - 12K 0.1 - 25K 0.1 - 20K 0.1 - 40K 0.1 - 38K 0.1 - 45K 0.1 - 94K 0.1 - 65K 0.1 - 92K 0.1 - 115K 0.1 - 200K 0.1 - 300K 0.1 - 300K 0.1 - 300K	0.1, 0.5, 1	20, 50, 400, 650, +6000	1000	8.4 6.4 10.3 10.3 7.1 10.3 12.7 12.7 14.2 15.8 22.2 22.2 25.4 25.4 30.0 35.0 50.8 46.0 45.2 47.6	2.0 2.2 2.4 2.4 2.4 2.4 4.8 4.8 4.8 6.3 7.9 7.9 8.0 8.0 8.0 12.0 12.0 9.5 9.5 8.7	— —	0.5 0.5 0.5 0.5 0.5 0.5 0.8 0.8 0.8 1.0 1.0 1.0 1.0 0.8 1.0 0.8 0.8 1.0 1.0 0.8	-55 to +350	Non-inductive windings available; High-temperature versions available
T-44 - High voltage precision thick film resistor												
	T-43 T-44 T-48	1.5 3.5 10	1K - 4G 1K - 15G 1K - 45G	1, 2, 5	25, 50, 100	4000, 8000 14000, 28000 50000, 100000	25.4 50.8 150.0	8.4 8.4 8.4	— — —	0.8 0.8 0.8	-55 to +100	Screw terminations available for series connection; Matched sets available
Tapped Filter - TaNSil® Tapped filter network												
	GUS-QS20-R (20-pin QSOP) GUS-SL20-R (20-pin SOIC) GUS-TS20-R (20-pin TSSOP)	R = 0.8 C = N/A	R = 10 - 100 C = 10pF-200pF	R = 10 C = N/A	R = 100 C = N/A	C = 25-200	8.66 12.75 6.5	3.91 7.49 4.4	1.63 2.49 1.1	N/A N/A N/A	-55 to +125	Highly integrated filter network - replaces up to 16 discretes

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TRC Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
Tapped Filter - TaNSil® T-filter network												
	GUS-QS24-M (24-pin QSOP) GUS-SL20-T (20-pin SOIC) GUS-SL24-M (24-pin SOIC) GUS-TS20-T (20-pin TSSOP) GUS-TS24-M (20-pin TSSOP)	R = 1.6 C = N/A	R = 10 - 100 C = 10pF-200pF	R = 10, 20 C = 10, 20	R = 100 C = N/A	N/A	8.66 12.75 15.4 6.5 7.8	3.91 7.49 7.49 4.4 4.4	1.63 2.49 2.49 1.1 1.10	N/A N/A N/A N/A N/A	-55 to +125	Highly integrated R-C filter network - replaces up to 24 discretes; "M" schematic is for high frequency applications
TMC-Mil - Precision military qualified chip resistors												
	RM0603 TaNfilm® RM0705 TaNfilm® RM1505 TaNfilm® RM1206 TaNfilm® RM1206 Thick Film RM2010 Thick Film RM2512 Thick Film	0.1 0.15 0.15 0.25 0.25 0.8 1	100R - 125K 100R - 125K 100R - 125K 100R - 125K 5R62 - 10M 5R62 - 15M 5R62 - 15M	0.1, 1, 2, 5, 10 0.1, 1, 2, 5, 10 0.1, 1, 2, 5, 10 0.1, 1, 2, 5, 10 1, 2, 5, 10 1, 2, 5, 10 1, 2, 5, 10	100, 300 125 100 100 150 200	50 50 125 100 100 150 200	1.6 2.06 3.94 3.2 3.2 5.31 6.58	0.787 1.27 1.27 1.6 1.6 2.49 3.15	0.508 0.508 0.635 0.61 0.61 0.71 0.71	N/A N/A N/A N/A N/A N/A N/A		MIL-PRF-55342; Thin and thick film available
TSSOP - Surface mount TSSOP resistor networks												
	16-pin TS8A TS8ALF TS8B TS8BLF 20-pin TS0A TS0ALF TS0B TS0BLF 24-pin TSCA TSCALF TSCB TSCBLF	0.8 1 1	10-250K	0.1, 0.25, 0.5, 1, 2, 5 / 0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 250 / 5, 10, 50, 100	100	5 6.5 7.8	6.4 6.4 6.4	1.1 1.1 1.1	0.1 0.1 0.1		Standard Sn/Pb and Pb-free terminations available
ULR - Metal element chip resistor (replacement for CSS)												
	1206 Chip Size ULR-G1 ULR-B1 2010 Chip Size ULR-G15 ULR-B1 2512 Chip Size ULR-G1 ULR-G2 ULR-G25 ULR-G3 ULR-B1 ULR-B2	1 1 1.5 1 1 2 2.5 3 1 2	1-10M 5-20M 1-10M 3-30M 11-20M 7-10M 4-6M 0.5-3M 2.5-7M 0.5-2M	1, 5	50 75, 100 50 75, 100 50 50 50 50, 100 75 100	100 100 100 100 200 200 200 200 200 200	3.2 3.2 5.08 5 6.35 6.35 6.35 6.35 6.35 6.35	1.6 1.6 2.54 2.5 3 3 3 3 3.18 3.18	0.6 0.6 0.6 0.75 0.6 0.6 0.6 0.6 0.5-1.4 0.5-1.4	N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A	-55 to +170	Chip thickness varies with resistance value, Higher wattage devices feature PCB clearance gap Other resistance values also available
W - Vitreous enameled power wirewound resistor												
	W21 W215 W22 W23 W24	3 5 7 10 14	0.1-10K 0.1-15K 0.1-20K 0.15-60K 0.2-100K	1, 2, 5	<+75, +200	100 160 200 500 750	12.7 22.0 22.2 38.0 53.5	5.6 7.0 8.0 8.0 8.0	- - - - -	0.8 0.8 0.8 0.8 0.8	-55 to +200	Ideal for overload protection circuits, harsh environments
WBA - TaNFilm® precision wire bondable ceramic resistor												
	WBA-T0303	0.25	10-20K	0.1, 0.25, 0.5, 1, 5, 10 / 0.05, 0.25, 0.5, 1, 2, 5	25, 50, 100 / 2, 5	100	0.762 0.762 0.381 N/A				-55 to +150	Custom values, sizes, schematics available; Ideal for hybrid circuit applications

	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TCR Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
WBC - TaNSil® precision wire bondable silicon resistor												
	WBC-R0202 WBC-B0202 WBC-T0303	0.25	10 - 1M	0.1, 0.5, 1, 2, 5, 10 / 0.05, 0.1, 0.25, 0.5, 1, 2, 5	25, 50, 100 / 2, 5, 10, 25, 50	100	0.508 0.508 0.762	0.508 0.508 0.762	0.254 0.254 0.254	N/A N/A N/A	-55 to +150	Discrete and tapped versions; Custom values, sizes, schematics available
WBC - CAP - TaNCap® wire bondable chip capacitor												
	WBC-C0202 WBC-C0303 WBC-C0404 WBC-C0505 WBC-C0606	20V - 55V	10pF - 1000pF	5, 10, 20	N/A	40 55 50 20 20	0.508 0.762 1.016 1.397 1.524	0.508 0.762 1.016 1.397 1.524	0.254 0.254 0.254 0.254 0.254	N/A N/A N/A N/A N/A	-55 to +125	Silicon substrate with gold backing; Screening to MIL-STD-833 available
WBD-Divider - TaNSil® precision wire bondable silicon voltage divider network												
	WBC-DSOT-23 (3-pad) WBC-DSOT-143 (4-pad)	0.25	10 - 1.0M	0.1, 0.25, 0.5, 1, 5, 10 / 0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 100 300 / 2, 5, 10, 25, 50		0.889 0.889	0.635 0.737	0.241 0.241	N/A N/A	-55 to +150	Three- and four-pad versions available
WBD-Multi-tap - TaNSil® wire bondable silicon multi-tap chip resistor network												
	WBD-M0303	0.25	100 - 80K	5, 10, 20	25, 50, 100, 300	100	0.813	0.813	0.254	N/A	-55 to +150	High resistor density; MIL-screening available
WBD-RC - TaNSil® wire bondable chip resistor/capacitor network												
	WBD-DSOT-23V (AC terminator) WBD-DSOT-23T (T-filter) WBD-DSOT-23R (Tapped filter)	0.25	R = 47, C = 47pF R = 100, C = 80pF R = 33 C = 47pF	R = 10 C = 20	R = 150 C = 200 /	25	0.889 0.889 0.889	0.635 0.635 0.635	0.254 0.254 0.254	N/A N/A N/A	-55 to +125	Integrated resistor-capacitor networks
WBD-NET - TaNSil® wire bondable silicon network array resistor												
	WBD-DSS-4 (8-pad) WBD-DSS-8 (16-pad) WBD-DQSC (24-pad)	0.4 0.8 1	10 - 2.5M	0.1, 0.25, 0.5, 1, 2, 5 / 0.05, 0.1, 0.25, 0.5, 1, 2	25, 50, 100, 300 / 5, 10, 20, 25, 50, 100, 200	100	1.778 3.556 2.921	1.778 2.032 2.032	0.406 0.406 0.406	N/A N/A N/A	-55 to +150	Higher component density
WCA - Thick film chip resistor arrays												
	WCA- WCA-08 (8-terminal)	0.065	10 - 1M	1, 5	200	50	3.2	1.6	0.4	N/A	-55 to +125	8-terminal chip array with 4 isolated resistors
WCC – Thickfilm chip array resistor network												
	WCC	0.65	10 - 1M	N/A	200	50	0.126	0.063	–	0.016	-55 to +125	
WCR - Thick film chip resistor												
	WCR-WCR-0402 WCR-WCR-0603 WCR-WCR-0805 WCR-WCR-1206 WCR-WCR-1210 WCR-WCR-2010 WCR-WCR-2512	0.063 0.1 0.125 0.25 0.25 0.5 1	4.7 - 1M 1 - 1M 1 - 10M 1 - 10M 1 - 10M 1 - 22M 1 - 22M	1, 5 0.5, 1, 2, 5 0.5, 1, 2, 5 0.5, 1, 2, 5 0.5, 1, 2, 5 0.5, 1, 2, 5 0.5, 1, 2, 5	50, 100, 200 50, 100, 200, 400 50, 100, 200, 400 50, 100, 200, 400 100, 200, 400 50, 100, 200, 400 50, 100, 200, 400	50 50 150 200 200 200 200	0.99 1.6 2.0 3.175 3.2 5.0 6.29	0.508 0.813 1.24 1.6 2.59 2.49 3.09	0.356 0.508 0.508 0.61 0.61 0.61 0.61	N/A N/A N/A N/A N/A N/A N/A	-55 to +125	Seven standard chip sizes available
WDBR - Ultra low profile dynamic braking/power resistor												
	WDBR-2 WDBR-5	0.5, 1, 2, 3, 5, 7	5 - 270	10	contact factory	contact factory	60.96 122	40.64 70	0.9 0.9	N/A N/A	contact factory	Thick film on steel planar resistor; low inductance

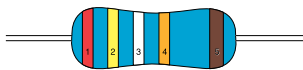
	Part Number	Power (Watts)	Resistance Range (Ohms)	Tolerance/ Ratio Tol. (±%)	TCR/ TRC Tracking (±ppm/°C)	Max. Volts	Dimensions (mm)				Operating Temperature (°C)	Notes
							L	W	H	D		
WSM - Molded power wirewound resistor												
	WSM-1 WSM-2 WSM-3	1 2 3	0.01 - 1K 0.01 - 2K 0.01 - 3K	1, 2, 5, 10	20, 100	√PR	7.0 10.5 16.0	4.2 6.6 7.0	3.94 5.5 6.5	N/A N/A N/A	-55 to +155	Surface mount wirewound device; flexible terminations
ZCHP - Cylindrical zerohm jumper resistor												
	ZCHP-1/8	3A 4A 5A 6A	<0.02 <0.30 <0.35 <0.35	N/A	N/A	N/A	3.25 5.08 6.38 9.32	1.45 2.01 2.01 2.67	– – – –	N/A N/A N/A N/A	-55 to +150	Superior solderability
Zerohm - Molded jumper wires												
	YZO/RG	3A	<0.01	N/A	N/A	N/A	6.35	2.3	–	0.63	-65 to +150	MIL version available under DESC drawing #87009

Standard Resistance Values For the 10 to 100 Decade (ALSO USABLE IN DECADE MULTIPLES OR SUB-MULTIPLES)

RESISTANCE TOLERANCE ($\pm$)

E192	E96	E24	E12	E6	E192	E96	E24	E12	E6	E192	E96	E24	E12	E6	E192	E96	E24	E12	E6	E192	E96	E24	E1	E6
0.1%					0.1%					0.1%					0.1%					0.1%				
0.25%	1%	2%	10%	20%	0.25%	1%	2%	10%	20%	0.25%	1%	2%	10%	20%	0.25%	1%	2%	10%	20%	0.25%	1%	2%	10%	20%
0.5%		5%			0.5%		5%			0.5%		5%			0.5%		5%			0.5%		5%		
10.0	10.0	10	10	10	15.8	15.8	—	—	—	24.9	24.9	—	—	—	39.2	39.2	39	39	—	62.6	—	—	—	—
10.1	—	—	—	—	16.0	—	16	—	—	25.2	—	—	—	—	39.7	—	—	—	—	63.4	63.4	—	—	—
10.2	10.2	—	—	—	16.2	16.2	—	—	—	25.5	25.5	—	—	—	40.2	40.2	—	—	—	64.2	—	—	—	—
10.4	—	—	—	—	16.4	—	—	—	—	25.8	—	—	—	—	40.7	—	—	—	—	64.9	64.9	—	—	—
10.5	10.5	—	—	—	16.5	16.5	—	—	—	26.1	26.1	—	—	—	41.2	41.2	—	—	—	65.7	—	—	—	—
10.6	—	—	—	—	16.7	—	—	—	—	26.4	—	—	—	—	41.7	—	—	—	—	66.5	66.5	—	—	—
10.7	10.7	—	—	—	16.9	16.9	—	—	—	26.7	26.7	—	—	—	42.2	42.2	—	—	—	67.3	—	—	—	—
10.9	—	—	—	—	17.2	—	—	—	—	27.1	—	27	27	—	42.7	—	—	—	—	68.1	68.1	68	68	68
11.0	11.0	11	—	—	17.4	17.4	—	—	—	27.4	27.4	—	—	—	43.2	43.2	43	—	—	69.0	—	—	—	—
11.1	—	—	—	—	17.6	—	—	—	—	27.7	—	—	—	—	43.7	—	—	—	—	69.8	69.8	—	—	—
11.3	11.3	—	—	—	17.8	17.8	—	—	—	28.0	28.0	—	—	—	44.2	44.2	—	—	—	70.6	—	—	—	—
11.4	—	—	—	—	18.0	—	18	18	—	28.4	—	—	—	—	44.8	—	—	—	—	71.5	71.5	—	—	—
11.5	11.5	—	—	—	18.2	18.2	—	—	—	28.7	28.7	—	—	—	45.3	45.3	—	—	—	72.3	—	—	—	—
11.7	—	—	—	—	18.4	—	—	—	—	29.1	—	—	—	—	45.9	—	—	—	—	73.2	73.2	—	—	—
11.8	11.8	—	—	—	18.7	18.7	—	—	—	29.4	29.4	—	—	—	46.4	46.4	—	—	—	74.1	—	—	—	—
12.0	—	12	12	—	18.9	—	—	—	—	29.8	—	—	—	—	47.0	—	47	47	47	75.0	75.0	75	—	—
12.1	12.1	—	—	—	19.1	19.1	—	—	—	30.1	30.1	30	—	—	47.5	47.5	—	—	—	75.9	—	—	—	—
12.3	—	—	—	—	19.3	—	—	—	—	30.5	—	—	—	—	48.1	—	—	—	—	76.8	76.8	—	—	—
12.4	12.4	—	—	—	19.6	19.6	—	—	—	30.9	30.9	—	—	—	48.7	48.7	—	—	—	77.7	—	—	—	—
12.6	—	—	—	—	19.8	—	—	—	—	31.2	—	—	—	—	49.3	—	—	—	—	78.7	78.7	—	—	—
12.7	12.7	—	—	—	20.0	20.0	20	—	—	31.6	31.6	—	—	—	49.9	49.9	—	—	—	79.6	—	—	—	—
12.9	—	—	—	—	20.3	—	—	—	—	32.0	—	—	—	—	50.5	—	—	—	—	80.6	80.6	—	—	—
13.0	13.0	13	—	—	20.5	20.5	—	—	—	32.4	32.4	—	—	—	51.1	51.1	51	—	—	81.6	—	—	—	—
13.2	—	—	—	—	20.8	—	—	—	—	32.8	—	—	—	—	51.7	—	—	—	—	82.5	82.5	82	82	—
13.3	13.3	—	—	—	21.0	21.0	—	—	—	33.2	33.2	33	33	33	52.3	52.3	—	—	—	83.5	—	—	—	—
13.5	—	—	—	—	21.3	—	—	—	—	33.6	—	—	—	—	53.0	—	—	—	—	84.5	84.5	—	—	—
13.7	13.7	—	—	—	21.5	21.5	—	—	—	34.0	34.0	—	—	—	53.6	53.6	—	—	—	85.6	—	—	—	—
13.8	—	—	—	—	21.8	—	—	—	—	34.4	—	—	—	—	54.2	—	—	—	—	86.6	86.6	—	—	—
14.0	14.0	—	—	—	22.1	22.1	22	22	22	34.8	34.8	—	—	—	54.9	54.9	—	—	—	87.6	—	—	—	—
14.2	—	—	—	—	22.3	—	—	—	—	35.2	—	—	—	—	55.6	—	—	—	—	88.7	88.7	—	—	—
14.3	14.3	—	—	—	22.6	22.6	—	—	—	35.7	35.7	—	—	—	56.2	56.2	56	56	—	89.8	—	—	—	—
14.5	—	—	—	—	22.9	—	—	—	—	36.1	—	36	—	—	56.9	—	—	—	—	90.9	90.9	91	—	—
14.7	14.7	—	—	—	23.2	23.2	—	—	—	36.5	36.5	—	—	—	57.6	57.6	—	—	—	92.0	—	—	—	—
14.9	—	—	—	—	23.4	—	—	—	—	37.0	—	—	—	—	58.3	—	—	—	—	93.1	93.1	—	—	—
15.0	15.0	15	15	15	23.7	23.7	—	—	—	37.4	37.4	—	—	—	59.0	59.0	—	—	—	94.2	—	—	—	—
15.2	—	—	—	—	24.0	—	24	—	—	37.9	—	—	—	—	59.7	—	—	—	—	95.3	95.3	—	—	—
15.4	15.4	—	—	—	24.3	24.3	—	—	—	38.3	38.3	—	—	—	60.4	60.4	—	—	—	96.5	—	—	—	—
15.6	—	—	—	—	24.6	—	—	—	—	38.8	—	—	—	—	61.2	—	—	—	—	97.6	97.6	—	—	—
															61.9	61.9	62	—	—	98.8	—	—	—	—

Standard Color Code



PRECISION - Have three significant-figure bands, a multiplier band and a tolerance band. Tolerances 1% or less.

GENERAL PURPOSE - Have two significant-figure bands, a multiplier band and a tolerance band. Tolerances 2% or greater.

	PRECISION	GENERAL PURPOSE
1ST BAND	NOMINAL	NOMINAL
2ND BAND	NOMINAL	NOMINAL
3RD BAND	NOMINAL	MULTIPLIER
4TH BAND	MULTIPLIER	TOLERANCE
5TH BAND	TOLERANCE	

Black	0	1	—
Brown	1	10	1
Red	2	100	2
Orange	3	1K	—
Yellow	4	10K	—
Green	5	100K	0.5
Blue	6	1000K	0.25
Violet	7	—	0.1
Gray	8	—	—
White	9	0.001	—
Silver	—	0.01	10
Gold	—	0.1	5

Nominal

Multiplier

Tolerance (%)

Absolute/Ratio Tolerance Code:

A=±0.05%; B=±0.1%; C=±0.25%; D=±0.5%; F=±1.0%; G=±2.0%; H=3.0%; J=5.0%;
P=0.02%; Q=±0.02%; T=±0.01% W=0.05%

Precision MIL-Qualified Metal Glaze® Resistors (Boone, NC)

MIL P/N or Style	MIL Qualification	IRC Type	Rated Dissipation	Approved Resistance Range	Tolerance	TCR (ppm/°C)
RL07	MIL-R-22684	RGR07	0.25W @ 70°C	51Ω-150KΩ	±2, ±5%	200
RL20	MIL-R-22684	RGR20	0.5W @ 70°C	4.3Ω-470KΩ	±2, ±5%	200
RLR05/S	MIL-R-39017	RGR05	0.125W @ 70°C	10Ω-301KΩ	±1, ±2%	100
RLR07/S	MIL-R-39017	RGR07	0.25W @ 70°C	10Ω-3.01MΩ	±1, ±2%	100
RLR20/S	MIL-R-39017	RGR20	0.5W @ 70°C	4.3Ω-3.01MΩ	±1, ±2%	100

Other TCR's available within RNC family. Contact factory.

Thick Film High Voltage Resistors (Boone, NC)

MIL P/N or Style	MIL Qualification	IRC Type	Rated Dissipation	Approved Resistance Range	Tolerance	TCR (ppm/°C)
RHV30	MIL-R-49462	CMH 1/4	0.25W @ 70°C	330KΩ-100MΩ	±1, 2, 5%	100
RHV31	MIL-R-49462	CMH 1/2	0.5W @ 70°C	330KΩ-392MΩ	±1, 2, 5%	100
RHV32	MIL-R-49462	CMH 1	1W @ 70°C	330KΩ-499MΩ	±1, 2, 5%	100
RHV33	MIL-R-49462	CMH 2	2W @ 70°C	330KΩ-499MΩ	±1, 2, 5%	100
RHV34	MIL-R-49462	CMH 3	3W @ 70°C	330KΩ-1GΩ	±1, 2, 5%	100
RHV35	MIL-R-49462	CMH 5	5W @ 70°C	330KΩ-1GΩ	±1, 2, 5%	100

Precision Wirewound Resistors (Smithfield, NC)

MIL P/N or Style	MIL Qualification	IRC Type	Rated Dissipation	Approved Resistance Range	Tolerance	TCR (ppm/°C)
RB56	MIL-R-93	VA10	0.125W	0.1Ω-127KΩ	±0.5 to 1%	10
RB55	MIL-R-93	VA12	0.150W	0.1Ω-176KΩ	±0.5 to 1%	10
RB54	MIL-R-93	VA14	0.250W	0.1Ω-226KΩ	±0.5 to 1%	10
RB53	MIL-R-93	VA34	0.330W	0.1Ω-604KΩ	±0.5 to 1%	10
RB52	MIL-R-93	VA36	0.500W	0.1Ω-1MΩ	±0.5 to 1%	10
RB71 (radial)	MIL-R-93	PC8	0.125W	0.1Ω-100KΩ	±0.5 to 1%	10
RB70 (radial)	MIL-R-93	4065	0.250W	0.1Ω-301KΩ	±0.5 to 1%	10
RBR56	MIL-R-39005	HR10	0.125W	0.1Ω-220KΩ	±0.01 to 1%	10
RBR55	MIL-R-39005	HR12	0.150W	0.1Ω-332KΩ	±0.01 to 1%	10
RBR54	MIL-R-39005	HR14	0.250W	0.1Ω-562KΩ	±0.01 to 1%	10
RBR53	MIL-R-39005	HR34	0.330W	0.1Ω-1.1MΩ	±0.01 to 1%	10
RBR52	MIL-R-39005	HR36	0.500W	0.1Ω-1.21MΩ	±0.01 to 1%	10
RBR71 (radial)	MIL-R-39005	HR8	0.125W	0.1Ω-150KΩ	±0.01 to 1%	10
RBR81 (radial)	MIL-R-39005	HR340	0.100W	0.1Ω-200KΩ	±0.01 to 1%	10
RBR80 (radial)	MIL-R-39005	HR341	0.100W	0.1Ω-120KΩ	±0.01 to 1%	10

* RBR/RB 100Ω-up

MIL-PRF-83401 - Precision TaFilm Resistor Networks (Corpus Christi, TX)

MIL P/N or Style	MIL Qualification	IRC Type	Rated Dissipation	Approved Resistance Range	Tolerance	TCR (ppm/°C)
M83401/01/13	RZ010/RZ130	1989/1987	14 pin DIP	50Ω-100KΩ	±0.1 to 5%	50, 100, 300
M83401/02/14	RZ020/RZ140	1999/1998	16 pin DIP	50Ω-100KΩ	±0.1 to 5%	50, 100, 300
M83401/03/15	RZ030/RZ150	8989/8987	14 pin Flat Pack	49.9Ω-121KΩ	±0.1 to 5%	50, 100, 300
M83401/07/21	RZ070/RZ210	4761/4769	6 pin SIP	100Ω-100KΩ	±0.1 to 5%	50, 100, 300
M83401/08/22	RZ080/RZ220	4781/4789	8 pin SIP	100Ω-100KΩ	±0.1 to 5%	50, 100, 300
M83401/09/23	RZ090/RZ230	4701/4709	10 pin SIP	100Ω-100KΩ	±0.1 to 5%	50, 100, 300
M83401/10	RZ100	8999/8998	16 pin Flat Pack	100Ω-100KΩ	±0.1 to 5%	50, 100, 300

MIL-PRF-55342 - Precision TaFilm Chip Resistors (Corpus Christi, TX)

MIL P/N or Style	MIL Qualification	IRC Type	Rated Dissipation	Approved Resistance Range	Tolerance	TCR (ppm/°C)
M55342/6	RM0705	W0805R	flat chip (0805)	10Ω-125KΩ	±0.1 to 10%	25, 50, 100, 300
D55342/7	RM1206	W1206R	flat chip (1206)	10Ω-125KΩ	±0.1 to 10%	25, 50, 100, 300
M55342/4	RM1505	W1505R	flat chip (1505)	10Ω-125KΩ	±0.1 to 10%	25, 50, 100, 300
M55342/12	RM0603	W0603R	flat chip (0603)	10Ω-59KΩ	±0.1 to 10%	25, 50, 100, 300
M55342/12	RM0603	W0603R	flat chip (0603)	100Ω-59KΩ	±0.1	25

MIL-PRF-55342-Thick Film Chip Resistors (Corpus Christi, TX)

MIL P/N or Style	MIL Qualification	IRC Type	Rated Dissipation	Approved Resistance Range	Tolerance	TCR (ppm/°C)
D55342/7	RM1206	TMC1206	0.250W	5.62Ω-1MΩ	±1 to 10%	100, 300
M55342/8	RM2010	TMC2010	0.600W	5.62Ω-15MΩ	±1 to 10%	100, 300
M55342/9	RM2512	TMC2512	0.750W	5.62Ω-15MΩ	±1 to 10%	100, 300

STATE	SALES REP	WEBSITE ADDRESS	CITY/ZIP	PHONE	FAX
ALABAMA	RO Whitesell and Associates	www.whitesell.com	Huntsville 35801	256-883-5110	256-882-9626
ARIZONA	Thom Luke Sales	www.thomlukesales.com	Scottsdale 85258	480-451-5400	480-451-0172
	Thom Luke Sales	www.thomlukesales.com	Phoenix 85008	602-214-0000	602-626-3515
CALIFORNIA	James S. Heaton Company	www.jsheaton.com	Mountainview 94043	650-962-5300	650-962-5309
	O'Donnell South, Inc.	www.odas.com	Torrance 90502	310-781-2255	310-781-9174
COLORADO	Thom Luke Sales	www.thomlukesales.com	Englewood 80112	303-649-9717	303-649-9719
CONNECTICUT	Coakley, Boyd & Abbett	www.cbane.com	Cheshire 06410	203-265-7050	580-820-4607
FLORIDA	Graham Associates	www.grahamrep.com	Rockledge 32955	321-504-1042	978-418-6540
GEORGIA	RO Whitesell and Associates	www.whitesell.com	Atlanta 30071	770-449-9190	770-449-9197
IDAHO	Halbar-RTS	www.halbar.com	Beaverton 97008	503-624-5741	503-684-1803
ILLINOIS	Carlson	www.cesa.com	Elk Grove 60007	847-956-8240	847-956-8289
INDIANA	RO Whitesell and Associates	www.whitesell.com	Indianapolis 46268	317-876-9000	317-876-0434
	RO Whitesell and Associates	www.whitesell.com	Fort Wayne 46825	260-489-0588	260-489-5733
IOWA	M.I.N.K. Associates, Inc.	www.minkassoc.com	Cedar Rapids 52402	319-393-0373	316-395-0428
KANSAS	M.I.N.K. Associates, Inc.	www.minkassoc.com	Overland Park 66212	913-341-8309	913-341-2605
	M.I.N.K. Associates, Inc.	www.minkassoc.com	Godard 67052	316-729-7500	316-729-7509
	M.I.N.K. Associates, Inc.	www.minkassoc.com	St. Louis 63146	314-995-5355	314-995-5736
KENTUCKY	RO Whitesell and Associates	www.whitesell.com	Lexington 40503	859-277-4904	859-277-5116
MASSACHUSETTS	Coakley, Boyd & Abbett	www.cbane.com	Framingham 01702	508-820-0800	508-820-4607
MAINE	Coakley, Boyd & Abbett	www.cbane.com	Framingham 01702	508-820-0800	508-820-4607
MICHIGAN	RO Whitesell and Associates	www.whitesell.com	Jenison 49428	616-457-1717	616-457-2280
MINNESOTA	Comstrand	www.comstrand.com	Minneapolis 55432	763-574-9480	763-574-9486
	RO Whitesell and Associates	www.whitesell.com	Clarkston 48346	248-620-9640	248-620-9680
MISSOURI	M.I.N.K. Associates, Inc.	www.minkassoc.com	St. Louis 63146	314-995-5355	314-995-5736
NEW JERSEY	Coakley, Boyd & Abbett	www.cbane.com	Saddle Brook 07663	201-444-6262	508-820-4607
NEW MEXICO	Thom Luke	www.thomlukesales.com	Phoenix 85008	602-214-0000	602-626-3515
NEW YORK	Electra Sales	www.electrasales.com	Rochester 14623	585-427-7860	585-427-0614
	Electra Sales	www.electrasales.com	East Syracuse 13057	315-463-1248	315-463-1717
NORTH CAROLINA	Alliance EMG	www.aemg-reps.com	Raleigh 27518	919-785-2744	866-340-1903
OHIO	RO Whitesell and Associates	www.whitesell.com	Cleveland 44134	216-661-2613	216-661-3192
	RO Whitesell and Associates	www.whitesell.com	Dayton 45459	937-298-9546	937-298-2586
	RO Whitesell and Associates	www.whitesell.com	Columbus 43229	614-888-9396	614-888-8792
OREGON	Halbar-RTS	www.halbar.com	Beaverton 97008	503-624-5741	503-684-1803
OKLAHOMA	Fralia	www.fralia.com	North Richland Hills 76180	817-581-8300	817-581-1325
PENNSYLVANIA	Colrud-Lowery	www.colrud-lowery.com	Media 19063	610-566-6686	610-566-6690
TENNESSEE	RO Whitesell and Associates	www.whitesell.com	Knoxville 37919	865-694-9476	865-691-9693
TEXAS	RO Whitesell and Associates	www.whitesell.com	Brownsville 78520	956-542-1718	956-541-4732
	Fralia	www.fralia.com	North Richland Hills 76180	817-581-8300	817-581-1325
	Fralia	www.fralia.com	Austin 78759	512-217-1480	No fax #
	Fralia	www.fralia.com	Tomball 77375	281-290-7433	281-290-8298
UTAH	Thom Luke Sales	www.thomlukesales.com	Centerville 84014	801-298-5649	801-296-2934
WASHINGTON	Halbar-RTS	www.halbar.com	Kirkland 98033	425-893-8400	425-893-8500
WISCONSIN	Carlson	www.cesa.com	Waukesha 53186	262-970-6720	262-970-6725

Please call your choice of distributor and they can put you through to an office in your area. For further details, please reference our full line catalog.

IRC UNITED STATES DISTRIBUTORS

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	TTI, Inc.	www.ttiinc.com	Fort Worth, TX 76106	817-740-9000	817-740-9898
	Arrow Electronics	www.arrow.com	Englewood, CO 80112	303-645-8999	303-645-8996
	Electro Sonic	www.e-sonic.com	Toronto, Ont. M2H 3B3	416-494-1666	416-496-3030
	Future Electronics	www.future.ca	Pointe Clarie, QC H9R 5C7	514-694-7710	514-695-3707
	WPG Americas, Inc.	www.wpgamericas.com	Hauppauge, NY 11788	631-273-5500	631-273-5799
	Justin Electronics	www.justinelectronics.com	Hauppauge, NY 11788	631-951-4900	631-951-4747
	LXI Components	www.lxicomponents.com	Tampa, FL 33619	800-595-5134	813-663-0094
	Mouser	www.mouser.com	Mansfield, TX 76063	800-346-6873	817-804-3899
	New Yorker Electronics	www.newyorkerelectronics.com	Northvale, NJ 07647	201-750-1171	201-750-1174
	Newark Electronics	www.newark.com	Chicago, IL 60640	773-784-5100	888-551-4801
	Hughes-Peters	www.hughespeters.com	Huber Heights, OH 45424	888-264-6535	937-235-7111
	Projections Unlimited, Inc.	www.gopui.com	Tustin, CA 92780	714-544-2700	714-544-8711
	Spirit Electronics	www.spiritelectronics.com	Phoenix, AZ 85085	480-998-1533	480-798-1427
	Edge Electronics	www.edgeelectronics.com	Bohemia, NY 11716	631-471-3343	631-471-3405
	Semi Dice	www.semidice.com	Los Alamitos, CA 90720	562-594-4631	562-430-5942

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COUNTRY	INTERNATIONAL SALES OFFICE	WEBSITE ADDRESS	CITY	PHONE	FAX
AUSTRALIA	Arrow Electronics Australia	www.arrowasia.com	Melbourne	61-3-9737-4900	61-3-9737-4999
	TTI, Inc. - Australia	www.ttiinc.com	Maisach-Gernlinden	49-8142-6680-0	49-8142-6680-490
CANADA	Halbar	www.halbar.com	Kirkland, WA, USA	425-893-8400	425-893-8500
	Kaltron	www.kaltron.ca	Vaughan, Ontario	905-264-3968	905-264-3975
	Kaltron	www.kaltron.ca	Almonte, Ontario	613-256-8627	613-256-0009
	Kaltron	www.kaltron.ca	Montreal-Ouest, Quebec	514-907-2780	905-264-3975
	Kaltron	www.kaltron.ca	Surrey, British Columbia	604-582-7127	604-582-7128
CHINA/HONG KONG	Arrow Asia Co.	www.arrowasia.com	Nanjing	86-25-472-7458	86-25-472-7458
	Arrow Electronics China Ltd.	www.arrowasia.com	Nanjing	86-25-8454 7458	86-25-8440 9035
	Arrow Electronics China Ltd.	www.arrowasia.com	Shenzhen	86-755-8359 2920	86-755-8359 2377
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	Arrow Electronics Distribution Co. Ltd.	www.arrowasia.com	Shanghai	86-21-2893 2000	86-21- 2893 2333
	Chinamax Technologies Ltd.	www.chinamax.com.hk	Beijing	86-10-6313-2002	86-10-6313-2003
	Eurotone Electric Limited	www.etpec.com	Shanghai	86-21 6464 3322	86 21 5425 6855
	Eurotone Electric Limited	www.etpec.com	Shenzhen	86-755-8343-8233	86-755-8343-8023
	Maxmega Electronics International	www.maxmega.com	Shenzhen	86-755-8355-8770	86-755-8355-8767
	Maxmega Electronics International	www.maxmega.com	Xiamen	86-592-5610 361	86-592-5610 362
	Maxmega Kunshan	www.maxmega.com	Kunshan City	86-512-5733 2665	86-512-5733 2667
FRANCE	TTI Electronics (HK) Ltd.	www.ttasia.com	Hong Kong	852-2628-0970	852-2628-0966
	TT electronics SA	www.ttelectronics.com	Orly Cedex	331-4512-3880	331-4512-3879
GERMANY	TT electronics-GMBH	www.ttelectronics.com	Freising	49-816-14908-0	49-816-14908-99

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INDIA	TT electronics India	www.irctt.com	Bengaluru	91-93-4241-9009	91-93-4293-7138
	Advent Infotech Pvt. Ltd.	www.adventelectronics.com	Bengaluru	91-80-4123-9455	91-80-4123-9466
	Arrow Electronics Pvt. Ltd.	www.arrowasia.com	Bengaluru	91-80-4135-3800	91-80-4112-7784
	BBS Electronics Intl' Pvt. Ltd.	www.bbs.com	Bengaluru	91-80-2530-6611	91-80-2530-6610
	FE Global Electronics India Pvt. Ltd.	www.fe-global.com	Bengaluru	91-80-2520-3449	91-80-2520-4300
	Maxmega Electronics Pte. Ltd.	www.maxmega.com	Bengaluru	91-80-2679-3997	NO FAX #
	Serial Microelectronics Pte. Ltd.	www.serialmicro.com	Bengaluru	91-80-4132-0394	NO FAX #
	SM Electronic Technologies Pvt. Ltd.	www.smetgroup.com	Bangalore	91-80-2330-1030	91-80-2338-7197
	TTI Electronics Asia Pte. Ltd.	www.ttiasia.com	Bangalore	91-80-4147-7191	NO FAX #
ISRAEL	Phoenix Technologies	www.phnx.co.il	Kfar-Saba	972-9-7644817	972-9-764-4800
	TTI, Inc.	www.ttiinc.com	Ra'anana	972-9-7433336	972-9-7433355
ITALY	TT electronics Srl	www.ttelectronics.com	Milano	390-2688-8951	390-2689-6995
	TTI Italy Srl	www.ttiinc.com	Assago	02-822521	02-82252233
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	TTI, Inc. - Kowloon	www.ttiasia.com	Kwun Tong	852-3658-4700	852-2628-0966
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	Serial Microelectronics PTE Ltd.	www.serialmicro.com	Seoul	82-2-6202-6623	82-2-6202-6624
	YEL Electronics Korea	www.yel-electronics.com	Seoul	82-2-2163 0680	82-2-2163 0686
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	Maxmega Electronics (M) Sdn Bhd.	www.maxmega.com	Penang	604-642-3918	604-642-1669
	Serial System Sdn. Bhd.	www.serialmicro.com	Penang	02-04-657 0204	02-04-656 2762
	TTI, Inc. - Malaysia	www.ttiasia.com	Singapore	656-788-9200	656-788-9300
MEXICO	R.O. Whitesell & Assoc.	www.whitesell.com	Brownsville, TX, USA	956-542-1718	956-541-4732
PHILIPPINES	Arrow Electronics Labuan Pte. Ltd.	www.arrowasia.com	Alabang	632-772-3053	632-772-3054
	BI Technologies Japan Ltd. - Philippines	www.bitechnologies.com	Tokyo, Japan	81-3-3615-1811	81-3-3647-2443
	BBS Electronics Pte Ltd	www.bbs.com.sg	Muntinlupa City	63-2-772 1832/3	63-2-772 1831
SCOTLAND	BI Technologies Ltd.	www.bitechnologies.com	Glenrothes	441-598-662200	441-592-662299
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	Maxmega Electronics Pte Ltd.	www.maxmega.com	Singapore	65-6769-1118	65-6769-2221
	Serial Microelectronics Pte Ltd.	www.serialmicro.com	Singapore	65-6510-2408	65-6510-2407
	TT electronics	www.ttelectronics.com	Singapore	656-445-5166	656-445-1983
	TTI Electronics Asia Pte Ltd.	www.ttiasia.com	Singapore	656-788-9200	656-788-9300
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	Serial Microelectronics Inc. - Taiwan	www.serialmicro.com	Taipei	886-2-2799-1001	886-2-2799-1881
	TTI Electronics Asia Pte Ltd - Taiwan	www.ttiasia.com	Taipei	886-2-2796 8305	886-2-2796 8315
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	Maxmega Electronics	www.maxmega.com	BangKok	66-2-576 1672	66-2-576 1673
	Serial Microelectronics Pte Ltd.	www.serialmicro.com	Bangkok	66-2645 3196/98	66-2645 3199
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