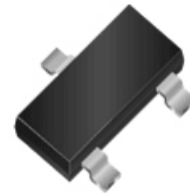
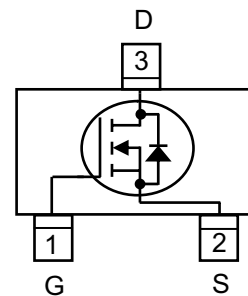


WNM4006
Single N-Channel, 45V, 1.7A, Power MOSFET
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

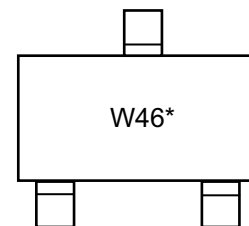
V_{DS} (V)	$R_{ds(on)}$ (Ω)
45	0.126@ $V_{GS}=10V$
	0.142@ $V_{GS}=4.5V$
	0.147@ $V_{GS}=4.0V$
	0.208@ $V_{GS}=2.5V$


SOT-23

Pin configuration (Top view)
Descriptions

The WNM4006 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM4006 is Pb-free and Halogen-free.

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOT-23



W46 = Device Code
* = Month (A~Z)

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Marking
Order information

Device	Package	Shipping
WNM4006-3/TR	SOT-23	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V _{DS}	45		V
Gate-Source Voltage		V _{GS}	±20		
Continuous Drain Current ^a	T _A =25°C	I _D	1.7	1.5	A
	T _A =70°C		1.3	1.2	
Maximum Power Dissipation ^a	T _A =25°C	P _D	0.8	0.7	W
	T _A =70°C		0.5	0.4	
Continuous Drain Current ^b	T _A =25°C	I _D	1.5	1.4	A
	T _A =70°C		1.2	1.1	
Maximum Power Dissipation ^b	T _A =25°C	P _D	0.7	0.6	W
	T _A =70°C		0.4	0.3	
Pulsed Drain Current ^c		I _{DM}	8		A
Operating Junction Temperature		T _J	150		°C
Lead Temperature		T _L	260		°C
Storage Temperature Range		T _{stg}	-55 to 150		°C

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$	120	145	$^{\circ}\text{C/W}$
	Steady State		132	170	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	145	174	
	Steady State		158	202	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	60	75	

a Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper

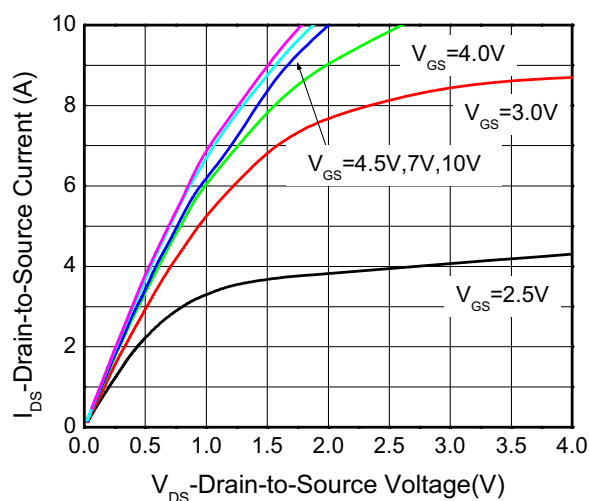
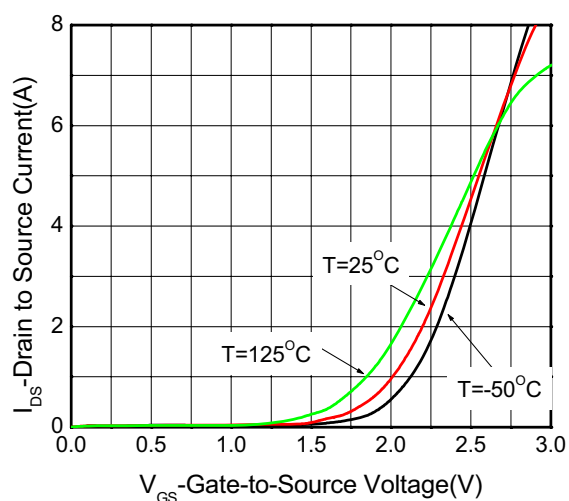
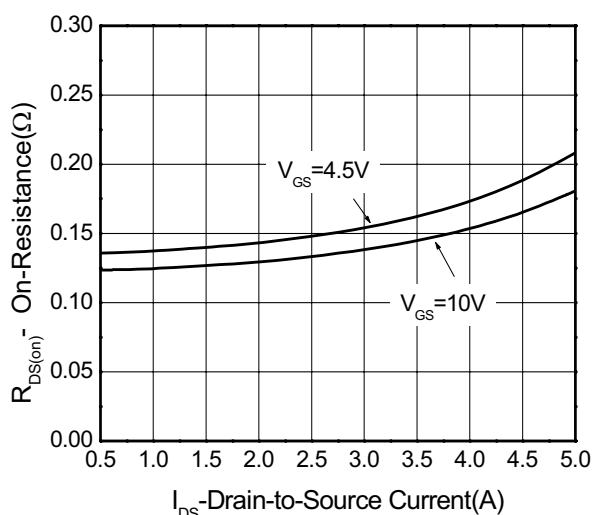
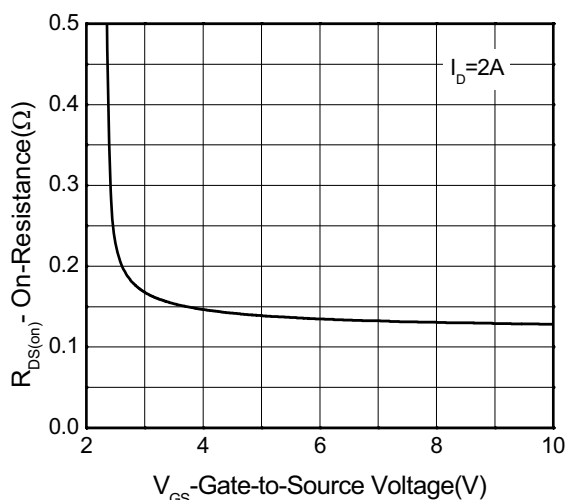
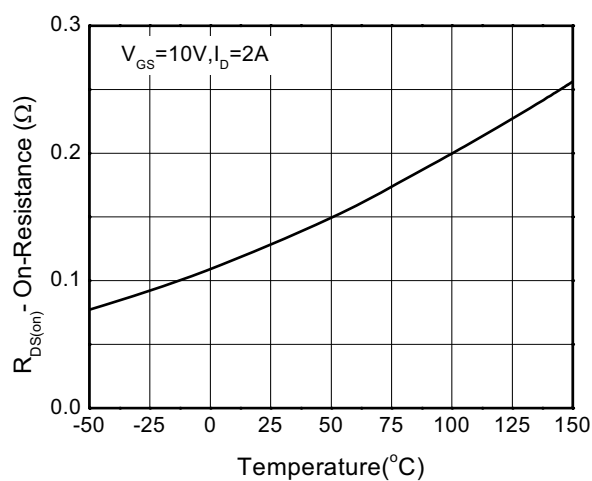
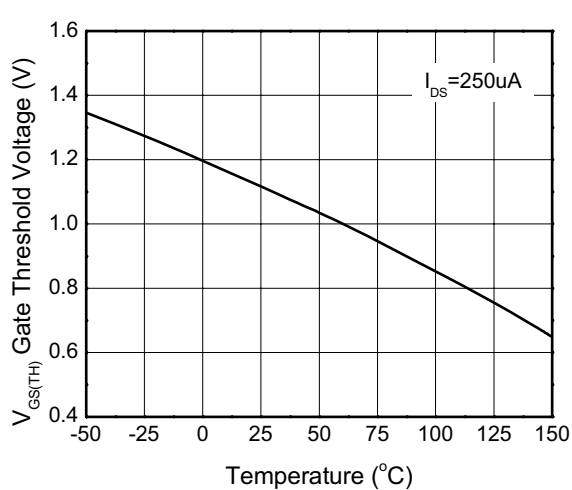
b Surface mounted on FR-4 board using minimum pad size, 1oz copper

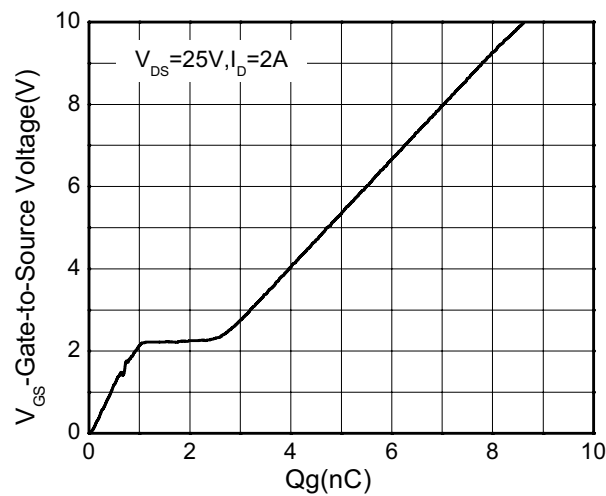
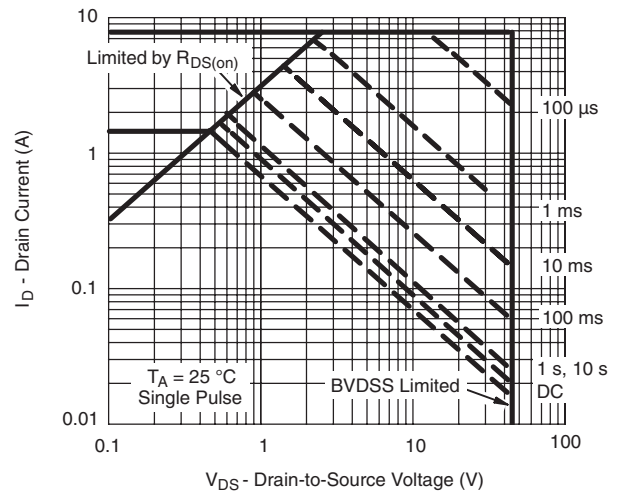
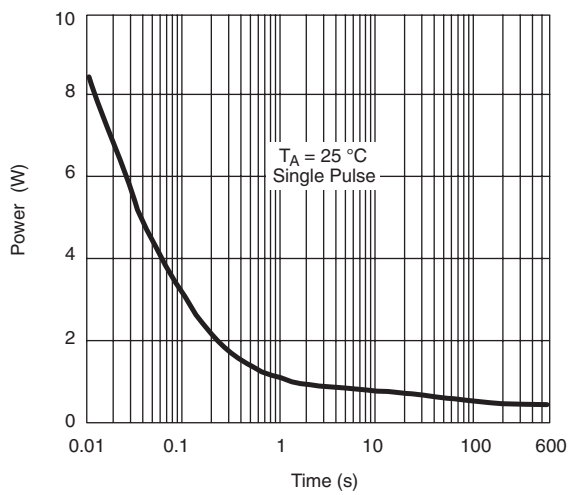
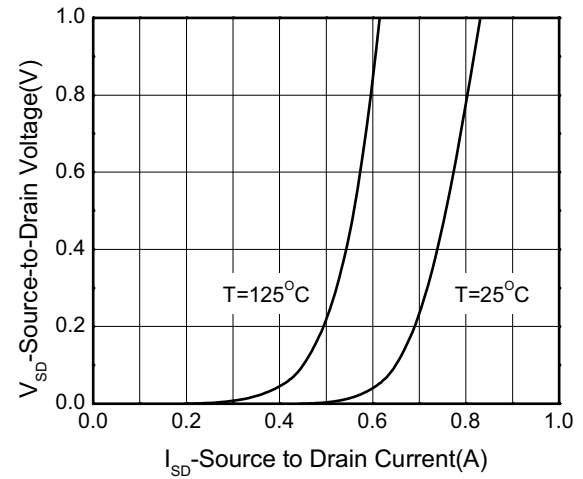
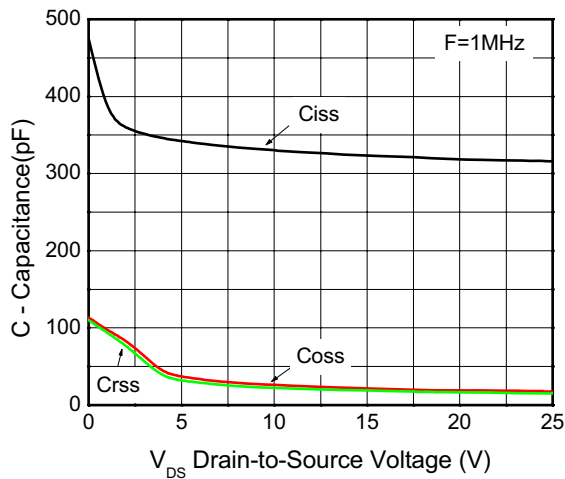
c Pulse width<380 μs , Duty Cycle<2%

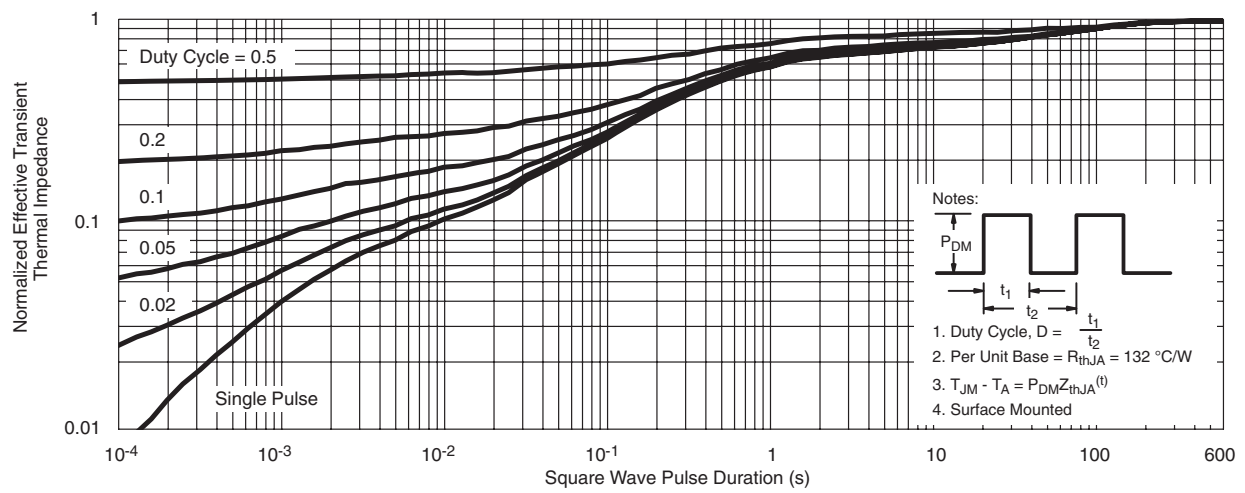
d Maximum junction temperature $T_J=150^{\circ}\text{C}$.

Electronics Characteristics (Ta=25°C, unless otherwise noted)

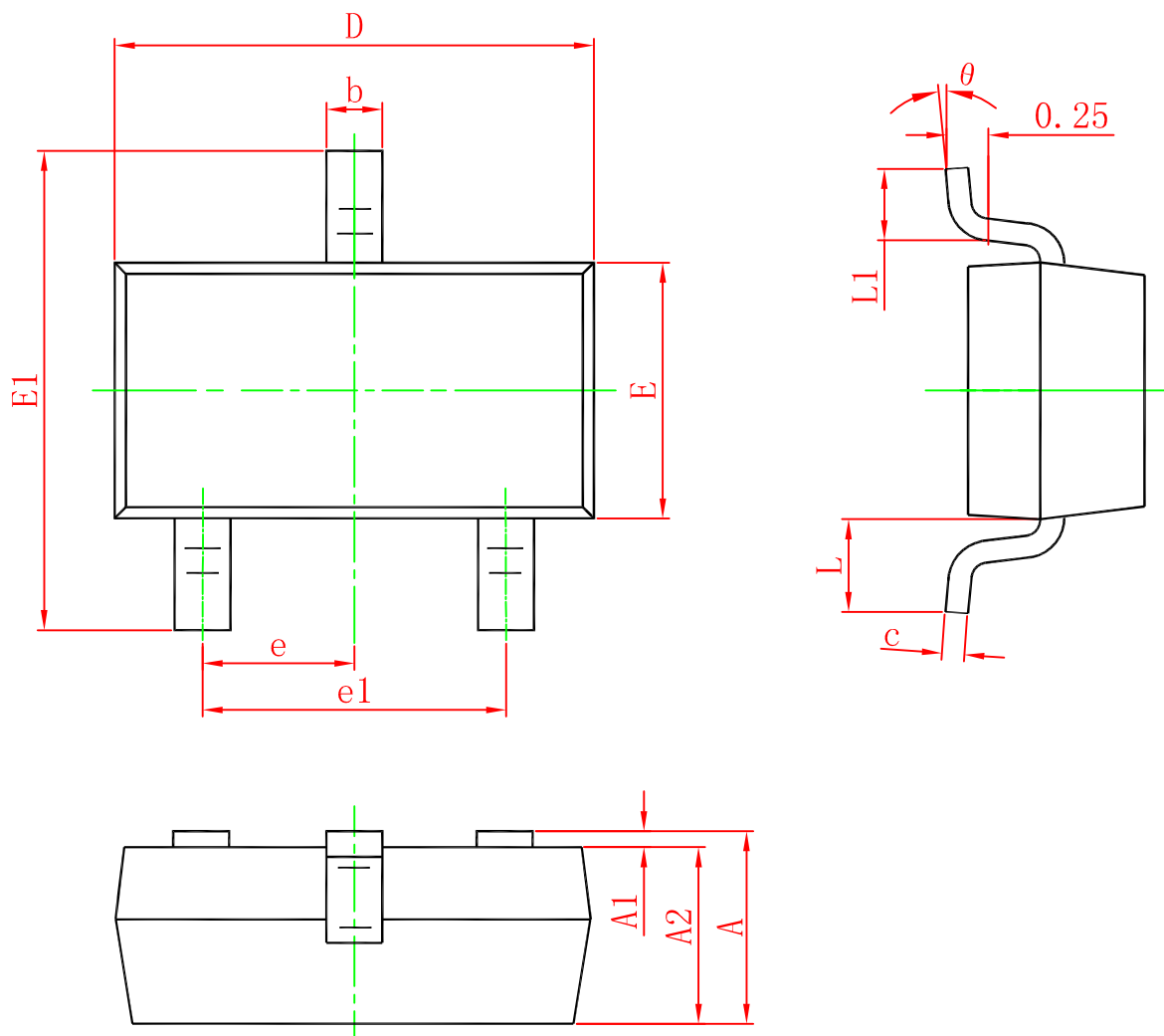
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250uA	45			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 45 V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} =±20V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	0.5	1.2	1.5	V
Drain-to-source On-resistance ^{b, c}	R _{DS(on)}	V _{GS} = 10V, I _D = 2.0A		126	160	mΩ
		V _{GS} = 4.5V, I _D = 2.0A		142	180	
		V _{GS} = 4.0V, I _D = 2.0A		147	185	
		V _{GS} = 2.5V, I _D = 1.5A		208	250	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D = 2.0A		3		S
CAPACITANCES, CHARGES						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0 MHz, V _{DS} = 25 V		315		pF
Output Capacitance	C _{OSS}			18		
Reverse Transfer Capacitance	C _{RSS}			15		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 4.5 V, V _{DS} = 25 V, I _D = 2.0A		4.20		nC
Threshold Gate Charge	Q _{G(TH)}			0.51		
Gate-to-Source Charge	Q _{GS}			0.76		
Gate-to-Drain Charge	Q _{GD}			1.85		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10 V, V _{DS} =25 V, R _L =25Ω, R _G =6 Ω		4.8		ns
Rise Time	tr			3.0		
Turn-Off Delay Time	td(OFF)			27		
Fall Time	tf			2.6		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 0.8A		0.8	1.5	V

Typical Characteristics (Ta=25°C, unless otherwise noted)

Output characteristics

Transfer characteristics

On-Resistance vs. Drain current

On-Resistance vs. Gate-to-Source voltage

On-Resistance vs. Junction temperature

Threshold voltage vs. Temperature





Transient thermal response (Junction-to-Ambient)

Package outline dimensions
SOT-23


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 (Typ.)	
e1	1.800	2.000
L	0.550 (Typ.)	
L1	0.300	0.500
θ	0°	8°