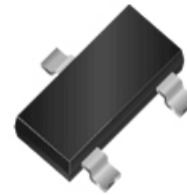


**WNM4006**

**Single N-Channel, 45V, 1.7A, Power MOSFET**

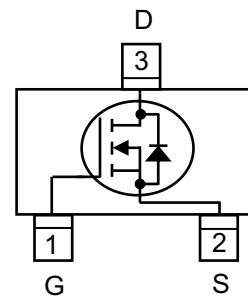
V <sub>DS</sub> (V)	R <sub>ds(on)</sub> (Ω)
45	0.126@ V <sub>GS</sub> =10V
	0.142@ V <sub>GS</sub> =4.5V
	0.147@ V <sub>GS</sub> =4.0V
	0.208@ V <sub>GS</sub> =2.5V



**SOT-23**

**Descriptions**

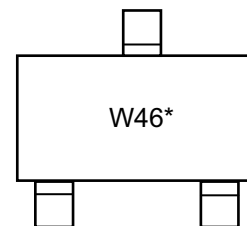
The WNM4006 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent R<sub>DS(ON)</sub> with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM4006 is Pb-free.



**Pin configuration (Top view)**

**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		$V_{GS}$	$\pm 20$		
Continuous Drain Current <sup>a</sup>	$T_A=25^\circ\text{C}$	$I_D$	1.7	1.5	A
	$T_A=70^\circ\text{C}$		1.3	1.2	
Maximum Power Dissipation <sup>a</sup>	$T_A=25^\circ\text{C}$	$P_D$	0.8	0.7	W
	$T_A=70^\circ\text{C}$		0.5	0.4	
Continuous Drain Current <sup>b</sup>	$T_A=25^\circ\text{C}$	$I_D$	1.5	1.4	A
	$T_A=70^\circ\text{C}$		1.2	1.1	
Maximum Power Dissipation <sup>b</sup>	$T_A=25^\circ\text{C}$	$P_D$	0.7	0.6	W
	$T_A=70^\circ\text{C}$		0.4	0.3	
Pulsed Drain Current <sup>c</sup>		$I_{DM}$	8		A
Operating Junction Temperature		$T_J$	150		$^\circ\text{C}$
Lead Temperature		$T_L$	260		$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	-55 to 150		$^\circ\text{C}$

**Thermal resistance ratings**

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	120	145	$^\circ\text{C/W}$
	Steady State		132	170	
Junction-to-Ambient Thermal Resistance <sup>b</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	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 $<380\mu\text{s}$ , 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
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	45			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 45\text{ V}, V_{GS} = 0\text{ V}$			1	$\mu\text{A}$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	0.5	1.2	1.5	V
Drain-to-source On-resistance <sup>b, c</sup>	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 2.0\text{ A}$		126	160	m $\Omega$
		$V_{GS} = 4.5\text{ V}, I_D = 2.0\text{ A}$		142	180	
		$V_{GS} = 4.0\text{ V}, I_D = 2.0\text{ A}$		147	185	
		$V_{GS} = 2.5\text{ V}, I_D = 1.5\text{ A}$		208	250	
Forward Transconductance	$g_{FS}$	$V_{DS} = 10\text{ V}, I_D = 2.0\text{ A}$		3		S
<b>CAPACITANCES, CHARGES</b>						
Input Capacitance	$C_{ISS}$	$V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz},$ $V_{DS} = 25\text{ V}$		315		pF
Output Capacitance	$C_{OSS}$			18		
Reverse Transfer Capacitance	$C_{RSS}$			15		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5\text{ V},$ $V_{DS} = 25\text{ V},$ $I_D = 2.0\text{ A}$		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		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = 10\text{ V},$ $V_{DS} = 25\text{ V},$ $R_L = 25\Omega,$ $R_G = 6\Omega$		4.8		ns
Rise Time	$t_r$			3.0		
Turn-Off Delay Time	$t_d(OFF)$			27		
Fall Time	$t_f$			2.6		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS} = 0\text{ V}, I_S = 0.8\text{ A}$		0.8	1.5	V