WNM4006

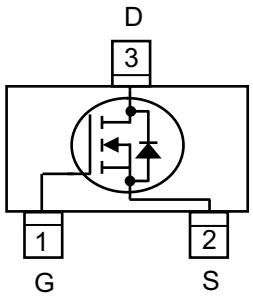
Single N-Channel, 45V, 1.7A, Power MOSFET

V_{DS} (V)	Rds(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

Descriptions

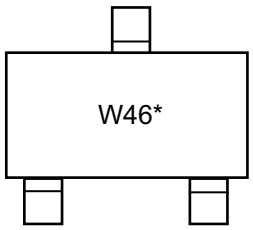
The WNM4006 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM4006 is Pb-free.



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)

Marking

Applications

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

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 ≤ 10 s	$R_{\theta JA}$	120	145	°C/W
	Steady State		132	170	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	145	174	
	Steady State		158	202	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	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<380μs, Duty Cycle<2%

d Maximum junction temperature T_J=150°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,		315		pF
Output Capacitance	C_{OSS}	f = 1.0 MHz,		18		
Reverse Transfer Capacitance	C_{RSS}	V_{DS} = 25 V		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