WNM3003

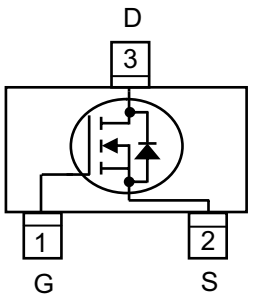
N-Channel, 30V, 4.0A, Power MOSFET

$V_{(BR)DSS}$	Rds(on) (Ω)
30V	0.033@ 10V
	0.033@ 10V
	0.043 @ 4.5V

SOT-23

Descriptions

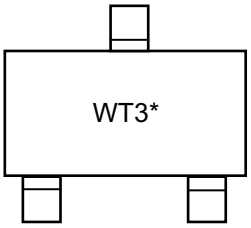
The WNM3003 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion and power switch applications. Standard Product WNM3003 is Pb-free.



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



WT3 = 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
WNM3003-3/TR	SOT-23	3000/Tape&Reel

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current [a]	T_A=25°C	I_D	4.0	3.7	A
	T_A=70°C		3.2	3.0	
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	3.7	3.4	A
	T_A=70°C		2.9	2.7	
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}	10		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	168	
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 FR4 Board using 1 square inch pad size, 1oz copper

b Surface mounted on FR4 board using minimum pad size, 1oz copper

c Repetitive rating, pulse width limited by junction temperature, t_p=10μs, Duty Cycle=1%

d Repetitive rating, pulse width limited by 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	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =24 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	1.0	1.6	3.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 3.1A		33	47	mΩ
		V_{GS} = 10V, I_D = 2.5A		33	47	
		V_{GS} = 4.5V, I_D = 2.0A		43	59	
Forward Transconductance	g_{FS}	V_{DS} = 4.5V, I_D = 2.8A		5.8		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz, V_{DS} = 15 V		570		pF
Output Capacitance	C_{OSS}			72		
Reverse Transfer Capacitance	C_{RSS}			64		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} =10 V, V_{DS} =15 V, I_D = 3.1A		11.6		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.8		
Gate-to-Source Charge	Q_{GS}			1.25		
Gate-to-Drain Charge	Q_{GD}			3.0		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 10 V, V_{DS} = 15 V, I_D=1A, R_G=6 Ω		5		ns
Rise Time	tr			3.3		
Turn-Off Delay Time	td(OFF)			39		
Fall Time	tf			4.4		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1.5A	0.50	0.84	1.50	V