WNM2027

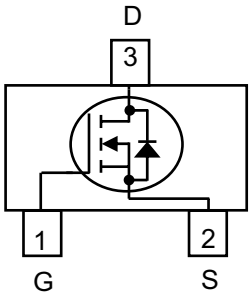
N-Channel, 20V, 3.6A, Power MOSFET

$V_{(BR)DSS}$	Rds(on) (Max. mΩ)	Id (A)
20	45 @ 4.5V	3.6
	55 @ 2.5V	3.1
	66 @ 1.8V	1.5

SOT-23

Descriptions

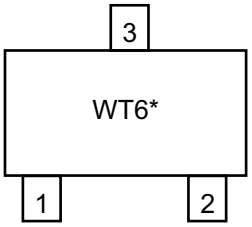
The WNM2027 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion and power switch applications. Standard Product WNM2027 is Pb-free.



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



WT6 = Device Code

* = Month (A~Z)

Marking

Applications

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

Order Information

Device	Package	Shipping
WNM2027-3/TR	SOT-23	3000/Tape&Reel

WNM2027

ABSOLUTE MAXIMUM RATINGS TA = 25 °C, unless otherwise noted

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±8		
Continuous Drain Current (T_J = 150 °C)[a]	T_A=25°C	I_D	3.2	2.9	A
	T_A=70°C		2.5	2.3	
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 (T_J = 150 °C)[b]	T_A=25°C	I_D	2.9	2.7	A
	T_A=70°C		2.3	2.1	
Maximum Power Dissipation [b]	T_A=25°C	P_D	0.6	0.5	W
	T_A=70°C		0.4	0.3	
Pulsed Drain Current [c]		I_{DM}	10		A
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	125	150	°C/W
	Steady State		140	175	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	150	180	
	Steady State		165	210	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	60	76	

a Surface mounted on FR4 Board using 1 in sq pad size, 1oz Cu.

b Surface mounted on FR4 board using the minimum recommended pad size, 1oz Cu.

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

d Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=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	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =16 V, V_{GS} = 0V			0.5	uA
Gate-to-source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8.0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250uA	0.4	0.6	1	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 3.6A		40	45	mΩ
		V_{GS} = 2.5V, I_D = 3.1A		47	55	
		V_{GS} = 1.8V, I_D = 1.5A		55	66	
		V_{GS} = 1.5V, I_D = 1.0A		65	75	
Forward Transconductance	g_{FS}	V_{DS} = 5 V, I_D = 3.1A		11		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz,		500	700	pF
Output Capacitance	C_{OSS}	V_{DS} = 10 V		68	150	
Reverse Transfer Capacitance	C_{RSS}			60	90	
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DS} = 10 V, I_D = 2.7 A		6.5		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.6		
Gate-to-Source Charge	Q_{GS}			0.8		
Gate-to-Drain Charge	Q_{GD}			1.5		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 4.5 V, V_{DS} = 10 V, R_L=3 Ω, R_G=6 Ω		5	8	ns
Rise Time	tr			6	9	
Turn-Off Delay Time	td(OFF)			30	45	
Fall Time	tf			8	12	
DRAIN−SOURCE DIODE CHARACTERISTICS						
Forward Recovery Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1.0A	0.5	0.62	0.9	V