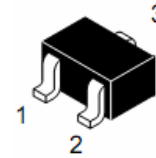


WNM2023

Single N-Channel, 20V, 3.2A, Power MOSFET

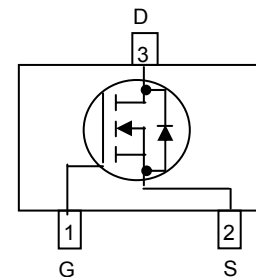
V_{DS} (V)	$R_{ds(on)}$ (Ω)
20	0.038@ $V_{GS}=4.5V$
	0.044@ $V_{GS}=2.5V$
	0.052@ $V_{GS}=1.8V$



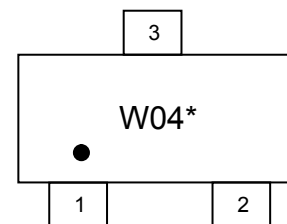
SOT-23-3L

Descriptions

The WNM2023 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 WNM2023 is Pb-free.



Pin configuration (Top view)



W04= Device Code

* = Month (A~Z)

Marking

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOT-23-3L

Applications

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

Order information

Device	Package	Shipping
WNM2023-3/TR	SOT-23-3L	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V _{DS}	20		V
Gate-Source Voltage		V _{GS}	±8		
Continuous Drain Current ^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 ^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 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	$t \leq 10 \text{ s}$	$R_{\theta JA}$	125	150	$^{\circ}\text{C/W}$
	Steady State		140	175	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	150	180	
	Steady State		165	210	
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, $t_p=10\mu\text{s}$, Duty Cycle=1%

d Repetitive rating, pulse width limited by junction temperature $T_J=150^{\circ}\text{C}$.

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

WNM2023

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			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	0.45	0.6	1	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 3.2A		38	47	mΩ
		V _{GS} =-2.5V, I _D =3.1A		44	55	
		V _{GS} = 1.8V, I _D = 1.5A		52	66	
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, V _{DS} = 10 V		500		pF
Output Capacitance	C _{OSS}			62		
Reverse Transfer Capacitance	C _{RSS}			58		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =4.5 V, V _{DS} =10 V, I _D = 3.1A		8.05		nC
Threshold Gate Charge	Q _{G(TH)}			0.45		
Gate-to-Source Charge	Q _{GS}			0.6		
Gate-to-Drain Charge	Q _{GD}			2.65		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 4.5 V, V _{DS} = 10 V, R _L =3.5Ω, 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	
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1.0A	0.5	0.62	1.5	V