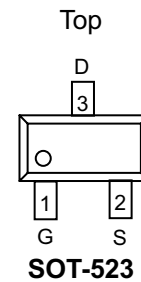


WNM4001

Small Signal N-Channel, 20V, 0.5A, MOSFET

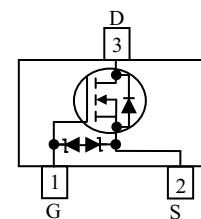
[Http://www.willsemi.com](http://www.willsemi.com)

$V_{(BR)DSS}$	$R_{DS(on)}$ Max.	I_D MAX
20 V	0.7Ω@ 4.5V	0.5A
	0.85Ω@ 2.5V	0.3A
	1.25Ω@ 1.8V	0.1A



Descriptions

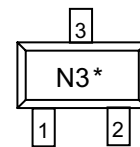
The WNM4001 is the N-Channel enhancement MOS Field Effect Transistor, uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in small signal switch. Standard product WNM4001 is Pb-free.



Pin Configuration

Features

- Trench N-Channel
- Supper high density cell design for extremely low $R_{ds(on)}$
- Exceptional ON resistance and maximum DC current capability
- Small package design with SOT-523



N3 = Device Code

* = Month

Marking

Applications

- Driver: Relays, Solenoids, Lamps, Hammers
- Power supply converters circuit
- Load/Power Switching for potable device

Order Information

Device	Package	Shipping
WNM4001-3/TR	SOT-523	3000/Tape&Reel

Absolute Maximum Ratings

 (T_A=25°C unless otherwise noted)

Symbol	Parameter	Ratings	Unit
V _{DSS}	Drain-to-Source Voltage	20	V
V _{GSS}	Gate-to-Source Voltage	±6.0	V
I _D	Drain Current – Continue Note1	0.5	A
	Drain Current – Pulsed (t<300us, Duty<2%) Note1	0.8	A
P _D	Power Dissipation – Note1	0.25	W
T _J	Operation junction temperature range	150	°C
T _{SG}	Storage temperature range	-55~150	°C

Thermal Resistance Ratings

 (T_A=25°C unless otherwise noted)

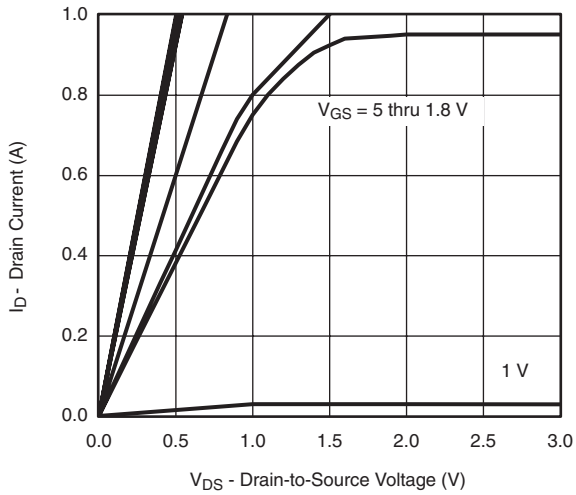
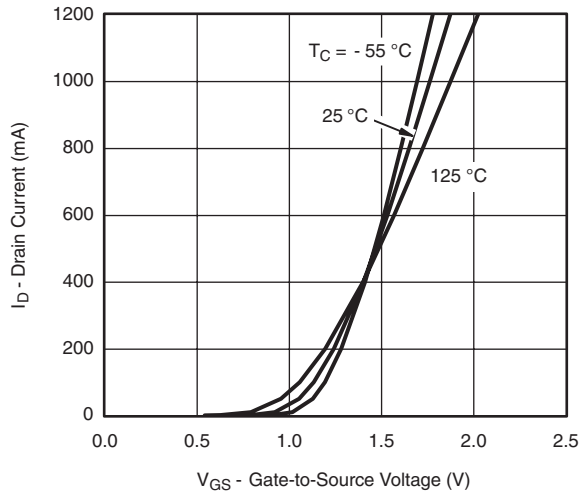
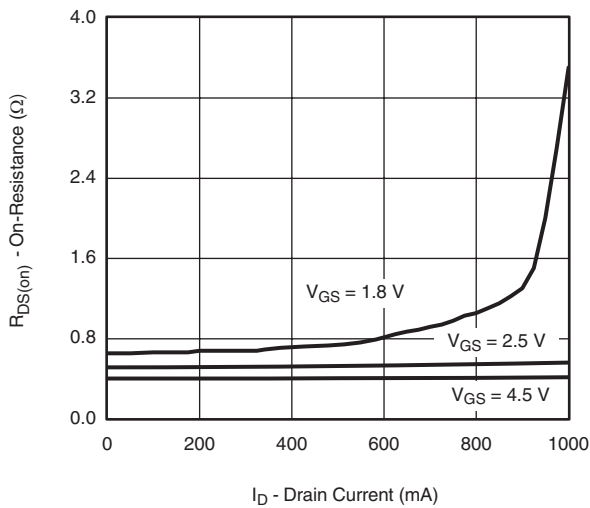
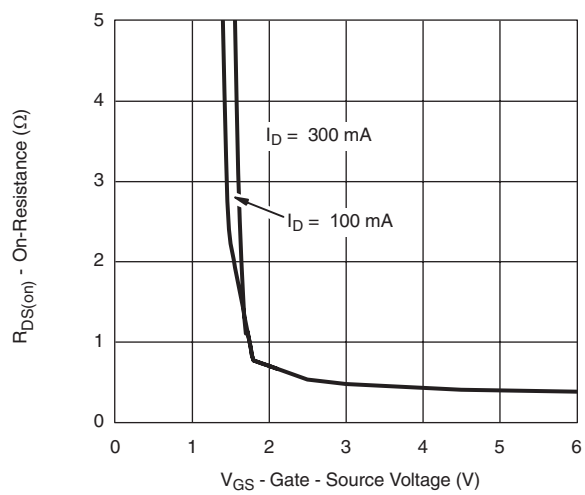
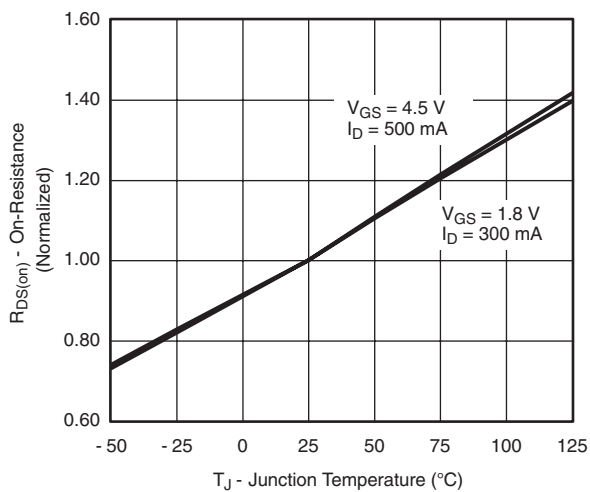
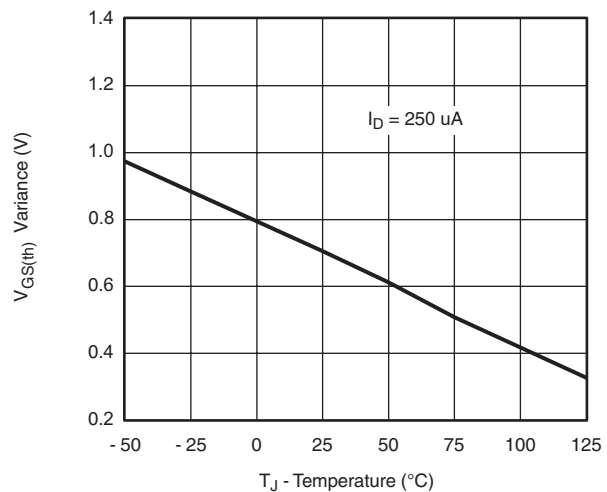
Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance, Junction to Ambient – Note1	500	620	°C/W

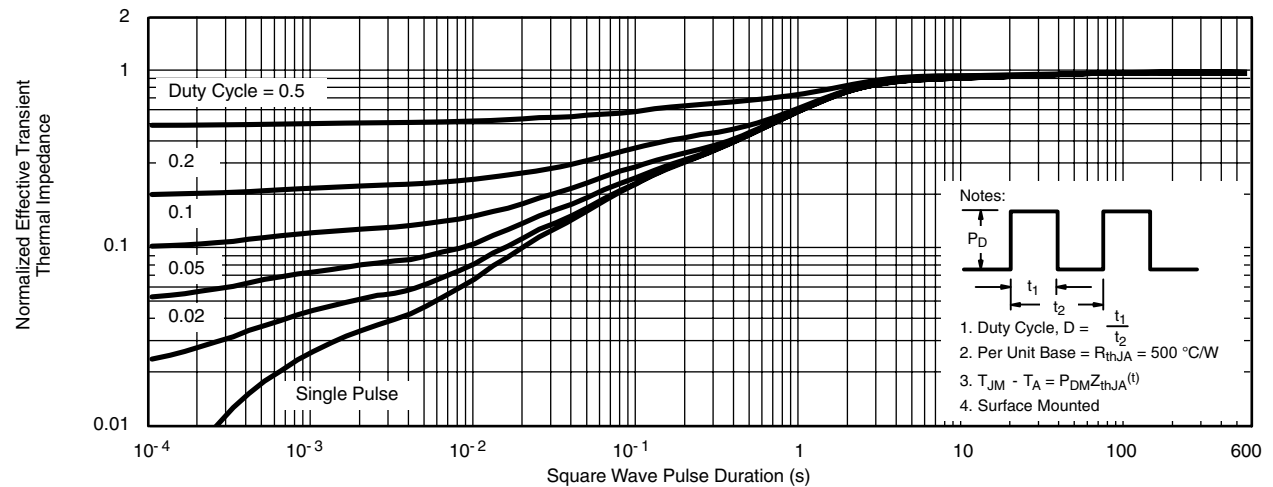
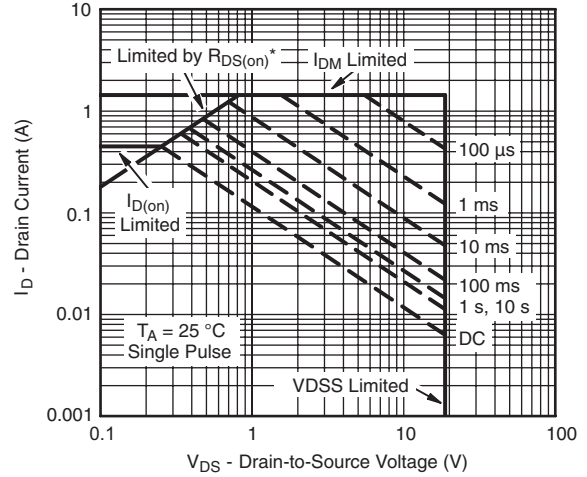
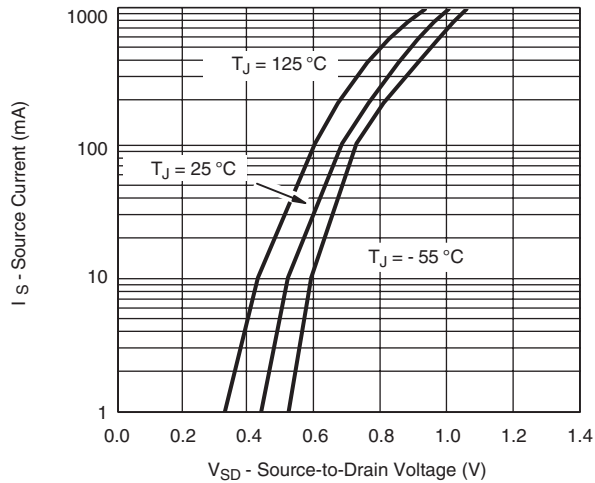
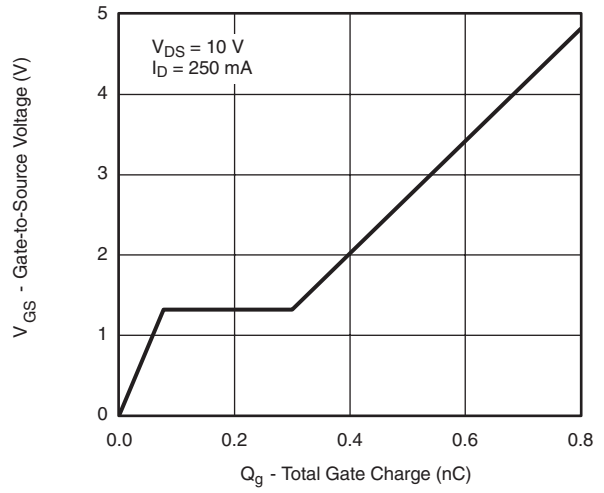
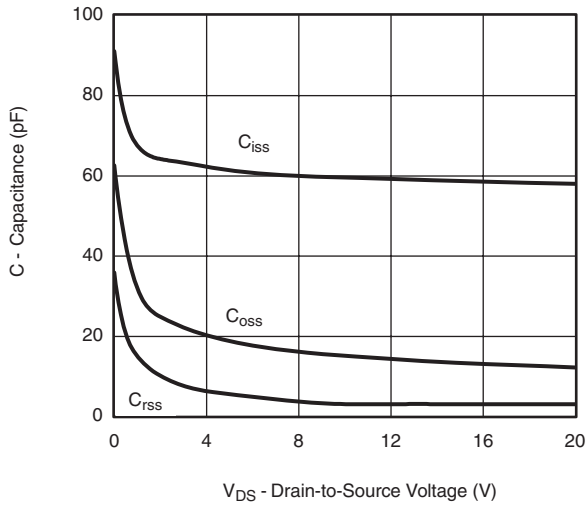
Note1: Surface mounted on a 2 oz copper, 1 in² pad, FR-4 board.

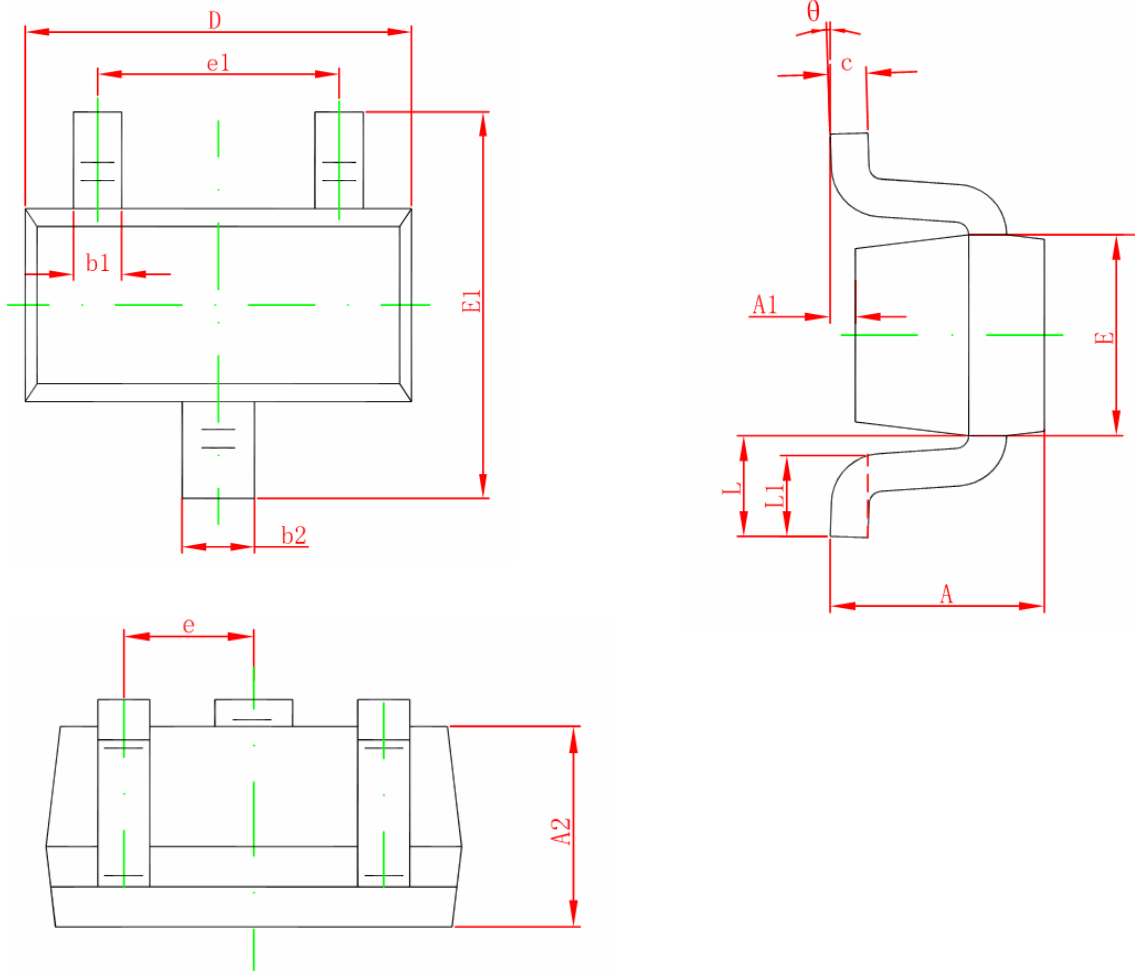
Electronics Characteristics

 (T_A=25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ.	Max	Unit
Off Characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	uA
I _{GSS}	Gate –Source leakage current	V _{DS} =0V, V _{GS} =±12			100	nA
ON Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250uA	0.35		1.0	V
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =0.5A		410	700	mΩ
		V _{GS} =2.5V, I _D =0.3A		530	850	mΩ
		V _{GS} =1.8V, I _D =0.1A		700	1250	mΩ
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =0.4A		1.0		S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, F=1MHz		67		pF
C _{oss}	Output Capacitance			10		pF
C _{rss}	Reverse Transfer Capacitance			8		pF
Q _{G(TOT)}	Total Gate Charge	V _{DS} =10V, V _{GS} =4.5V, I _D =0.25A		0.75		nC
Q _{GS}	Gate-Source Charge			0.075		nC
Q _{GD}	Gate-Drain Charge			0.225		nC
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =10V, V _{GS} =4.5V, I _D =0.25A, R _L =10Ω, R _G =6Ω		5		ns
t _r	Turn-On Rise Time			5		ns
t _{d(off)}	Turn-Off Delay Time			25		ns
t _f	Turn-Off Fall Time			11		ns
Drain-to-Source Diode Characteristics						
V _{SD}	Forward Diode Voltage	V _{GS} =0V, I _S =0.15A		-0.7		V

Typical Performance Graph

Output Characteristics

Transfer Characteristics

On Resistance vs. Drain Current

On Resistance vs. Gate - Source Voltage

On Resistance vs. Junction Temperature

Threshold Voltage



Package Outline Dimension
SOT-523


Symbol	Dimension in Millimeters	
	Min.	Max.
A	0.700	0.900
A1	0.000	0.100
A2	0.700	0.800
b1	0.150	0.250
b2	0.250	0.350
c	0.100	0.200
D	1.500	1.700
E	0.700	0.900
E1	1.450	1.750
e	0.500 Typ.	
e1	0.900	1.100
L	0.400 Ref.	
L1	0.260	0.460
theta	0°	8°