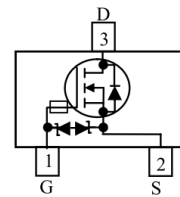
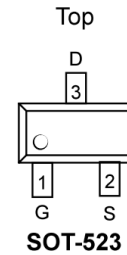
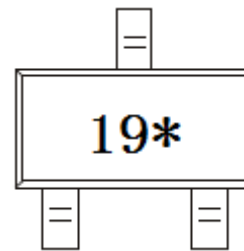


WNM3019
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)
Small Signal N-Channel, 50V, 0.2A, MOSFET

V _{DS} (V)	Typical R _{ds(on)} (Ω)
50	1.2@ V _{GS} =10V
	1.4@ V _{GS} =4.5V
	1.9@ V _{GS} =2.5V
	5.4@ V _{GS} =1.8V
ESD Rating: 2000V HBM	


Descriptions

The WNM3019 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 small signal switch. Standard Product WNM3019 is Pb-free and Halogen-free.

Pin configuration (Top view)


19 = Device Code
 * = Month (A-Z)

Marking
Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- HBM ESD protection >2 kV
- Small package SOT-523

Applications

- Driver: Relay, Solenoid, Lamps, Hammers etc.
- Power supply converters circuit
- Load/Power Switching for potable device

Order information

Device	Package	Shipping
WNM3019-3/TR	SOT-523	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	50		V
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current ^{a d}	$T_A=25^\circ\text{C}$	I_D	0.25	0.23	A
	$T_A=70^\circ\text{C}$		0.20	0.18	
Maximum Power Dissipation ^{a d}	$T_A=25^\circ\text{C}$	P_D	0.37	0.31	W
	$T_A=70^\circ\text{C}$		0.24	0.20	
Continuous Drain Current ^{b d}	$T_A=25^\circ\text{C}$	I_D	0.22	0.20	A
	$T_A=70^\circ\text{C}$		0.17	0.16	
Maximum Power Dissipation ^{b d}	$T_A=25^\circ\text{C}$	P_D	0.28	0.23	W
	$T_A=70^\circ\text{C}$		0.18	0.15	
Pulsed Drain Current ^c		I_{DM}	1.0		A
Operating Junction Temperature		T_J	-55 to 150		$^\circ\text{C}$
Lead Temperature		T_L	260		$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150		$^\circ\text{C}$

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$	285	335	$^\circ\text{C/W}$
	Steady State		340	405	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	385	450	
	Steady State		455	545	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	260	300	

a Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper

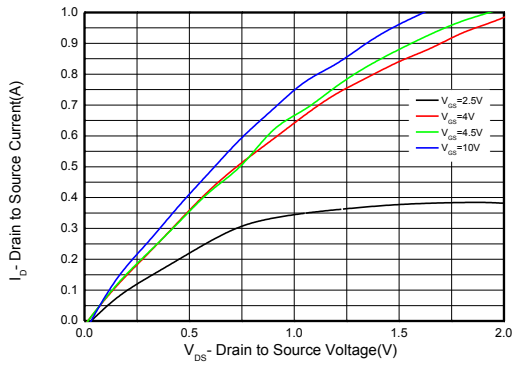
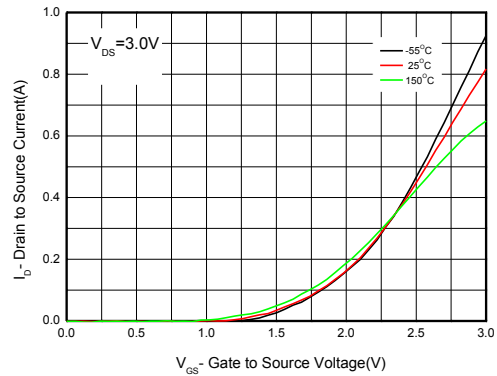
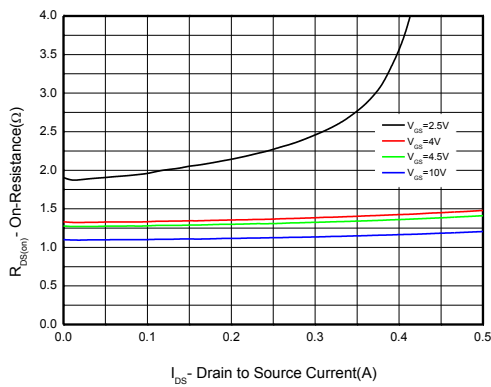
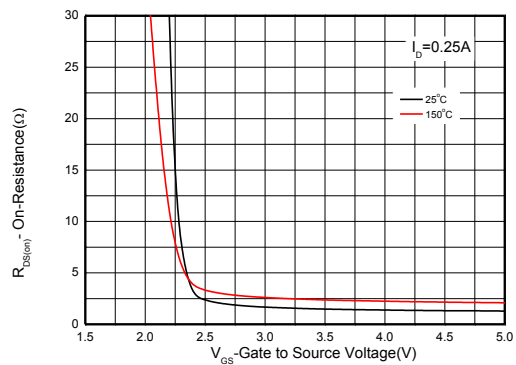
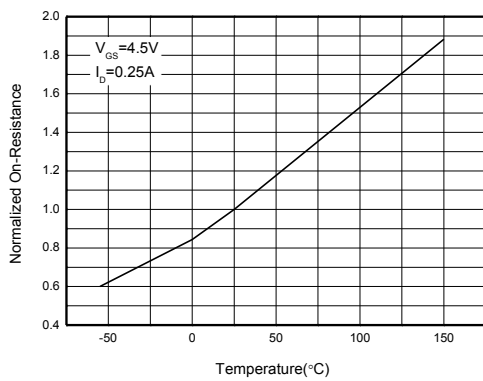
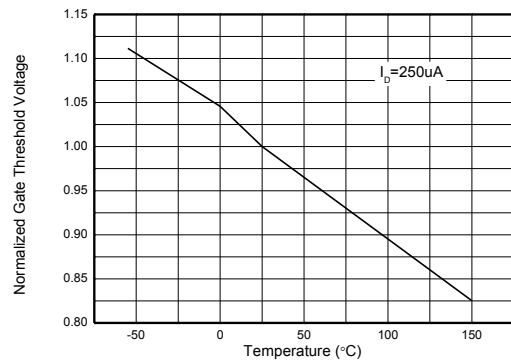
b Surface mounted on FR-4 board using minimum pad size, 1oz copper

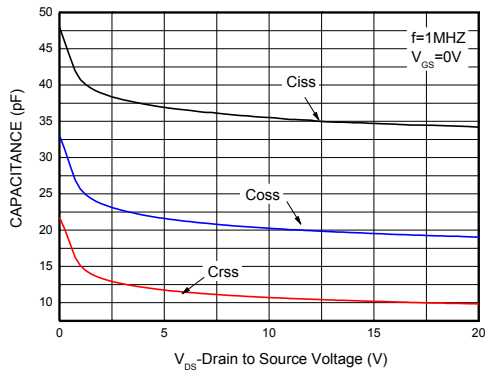
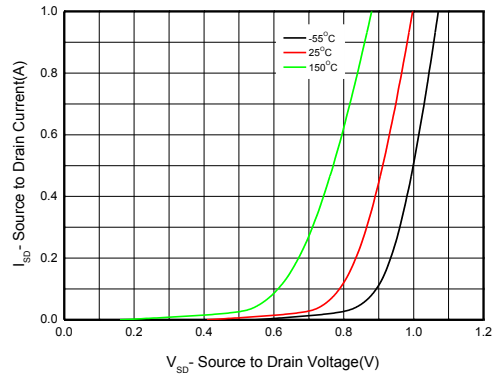
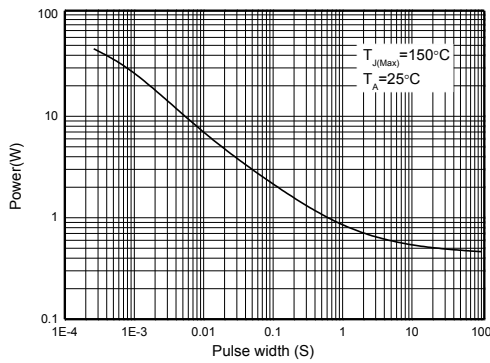
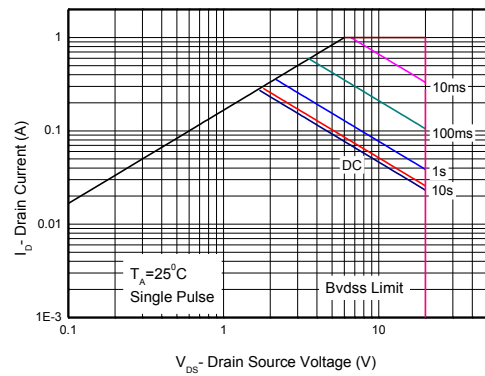
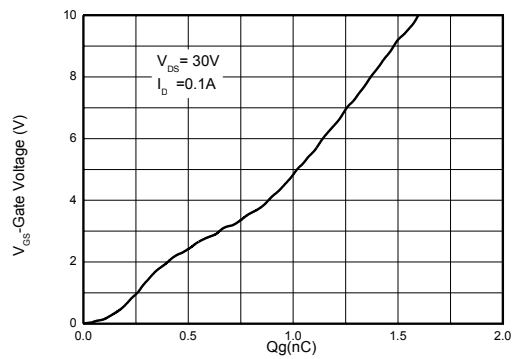
c Pulse width $<380\mu\text{s}$, Duty Cycle $<2\%$

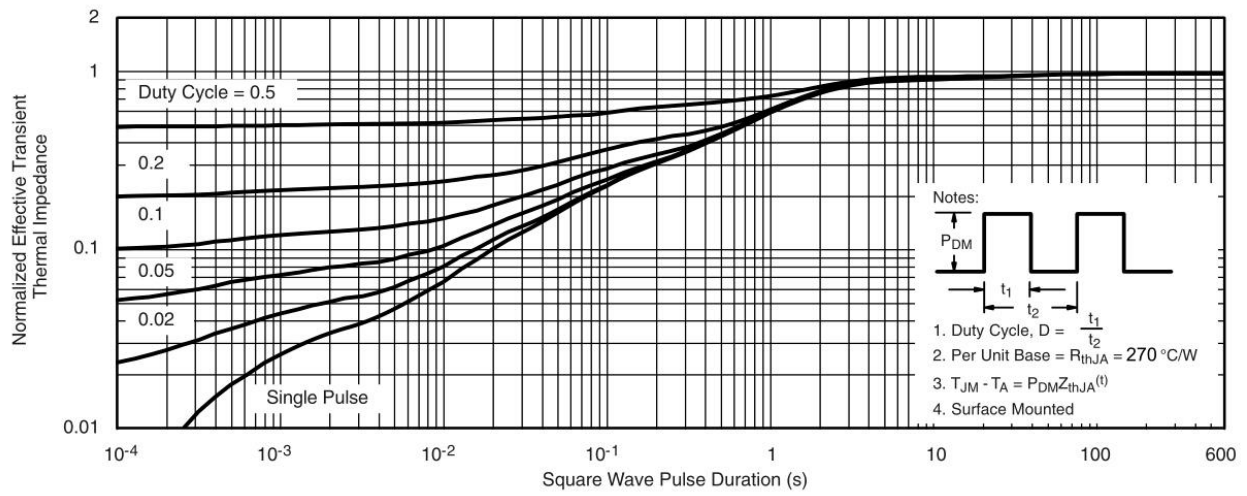
d Maximum junction temperature $T_J=150^\circ\text{C}$.

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

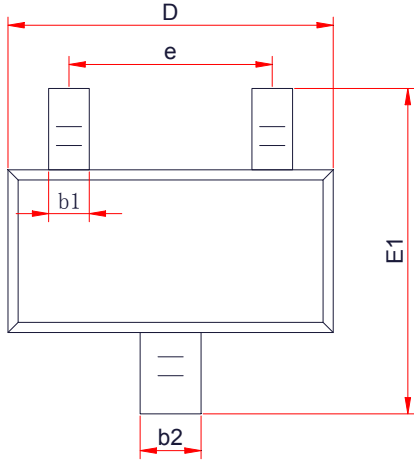
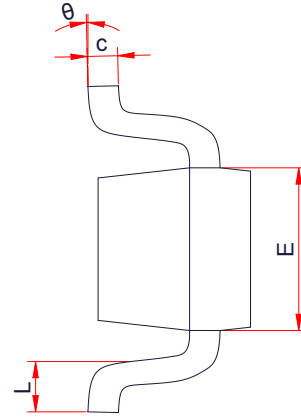
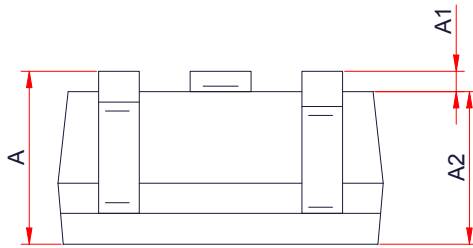
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	50			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$			1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 5	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	0.8	1.0	1.5	V
Drain-to-source On-resistance ^{b, c}	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.45A$		1.2	3	Ω
		$V_{GS} = 4.5V, I_D = 0.25A$		1.3	4	
		$V_{GS} = 4.0V, I_D = 0.25A$		1.4	4	
		$V_{GS} = 2.5V, I_D = 0.01A$		1.9	6	
		$V_{GS} = 1.8V, I_D = 0.01A$		5.4	15	
Forward Trans conductance	g_{fs}	$V_{DS} = 15V, I_D = 0.1A$		0.5		S
CAPACITANCES, CHARGES						
Input Capacitance	C_{ISS}	$V_{GS} = 0V,$ $F = 1.0MHz,$ $V_{DS} = 5V$		36		pF
Output Capacitance	C_{OSS}			22		
Reverse Transfer Capacitance	C_{RSS}			12		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 10V,$ $V_{DD} = 30V,$ $I_D = 0.1A$		1.6		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.25		
Gate-to-Source Charge	Q_{GS}			0.4		
Gate-to-Drain Charge	Q_{GD}			0.45		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = 5V,$ $V_{DD} = 5V,$ $R_L = 500\Omega,$ $R_G = 10\Omega, I_D = 10mA$		8.6		ns
Rise Time	t_r			4		
Turn-Off Delay Time	$t_d(OFF)$			23.8		
Fall Time	t_f			14.2		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 0.25A$		0.8	1.5	V

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

Output characteristics

Transfer characteristics

On-Resistance vs. Drain current

On-Resistance vs. Gate-to-Source voltage

On-Resistance vs. Junction temperature

Threshold voltage vs. Temperature

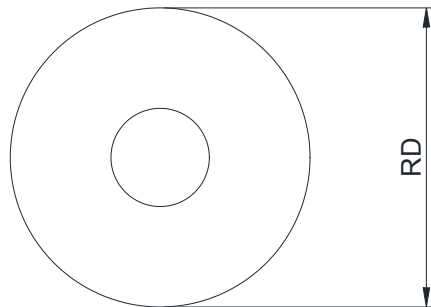
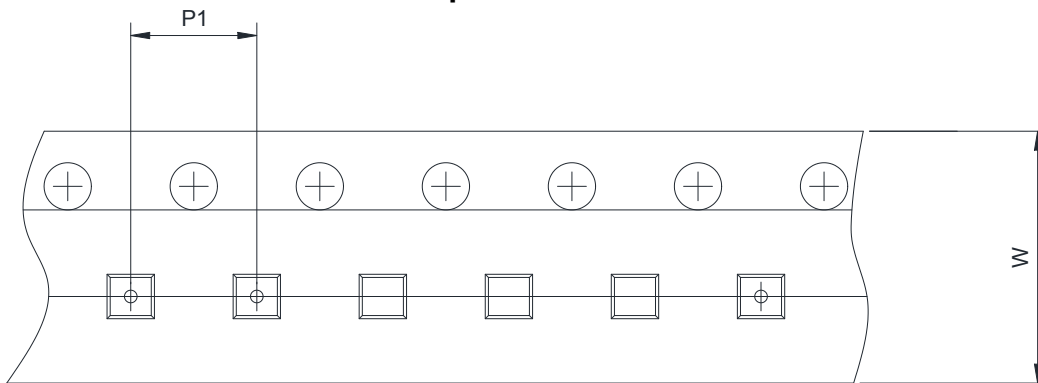
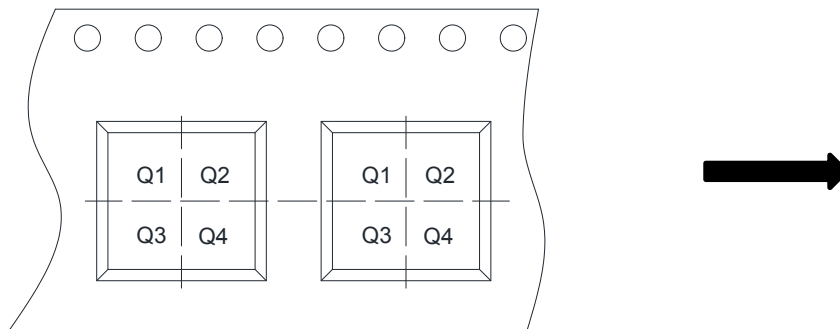

Capacitance

Body diode forward voltage

Single pulse power

Safe operating power

Gate charge Characteristics



Transient thermal response (Junction-to-Ambient)

Package outline dimensions
SOT-523

TOP VIEW

SIDE VIEW

SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.65	0.80	0.95
A1	0.00	-	0.10
A2	0.65	0.75	0.85
b1	0.15	0.20	0.25
b2	0.25	0.30	0.35
c	0.05	-	0.20
D	1.50	1.60	1.70
E	0.70	0.80	0.90
E1	1.45	1.60	1.75
e	0.90	1.00	1.10
L	0.17	-	-
θ	0°	-	8°

TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape


RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch	<input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm	<input type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm	<input checked="" type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input type="checkbox"/> Q1	<input type="checkbox"/> Q2 <input checked="" type="checkbox"/> Q3 <input type="checkbox"/> Q4