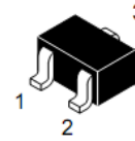
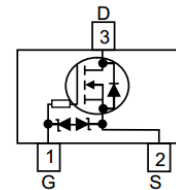
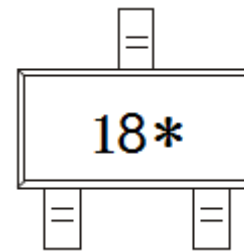


**WNM3018**
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)
**Small Signal N-Channel, 50V, 0.2A, MOSFET**

V <sub>DS</sub> (V)	Typical R <sub>ds(on)</sub> (Ω)
50	1.2@ V <sub>GS</sub> =10V
	1.4@ V <sub>GS</sub> =4.5V
	1.9@ V <sub>GS</sub> =2.5V
	5.4@ V <sub>GS</sub> =1.8V
ESD Rating: 2000V HBM	


**SOT-323**

**Pin configuration (Top view)**


18 = Device Code

\* = Month (A-Z)

**Marking**
**Descriptions**

The WNM3018 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent R<sub>DS(ON)</sub> with low gate charge. This device is suitable for use in small signal switch. Standard Product WNM3018 is Pb-free and Halogen-free.

**Features**

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- HBM ESD protection >2 kV
- Small package SOT-323

**Applications**

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

**Order information**

Device	Package	Shipping
WNM3018-3/TR	SOT-323	3000/Reel&Tape

**Absolute Maximum ratings**

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		$V_{DS}$	50		V
Gate-Source Voltage		$V_{GS}$	$\pm 20$		
Continuous Drain Current <sup>a d</sup>	$T_A=25^\circ\text{C}$	$I_D$	0.25	0.23	A
	$T_A=70^\circ\text{C}$		0.20	0.18	
Maximum Power Dissipation <sup>a d</sup>	$T_A=25^\circ\text{C}$	$P_D$	0.37	0.31	W
	$T_A=70^\circ\text{C}$		0.24	0.20	
Continuous Drain Current <sup>b d</sup>	$T_A=25^\circ\text{C}$	$I_D$	0.22	0.20	A
	$T_A=70^\circ\text{C}$		0.17	0.16	
Maximum Power Dissipation <sup>b d</sup>	$T_A=25^\circ\text{C}$	$P_D$	0.28	0.23	W
	$T_A=70^\circ\text{C}$		0.18	0.15	
Pulsed Drain Current <sup>c</sup>		$I_{DM}$	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 <sup>a</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	285	335	$^\circ\text{C/W}$
	Steady State		340	405	
Junction-to-Ambient Thermal Resistance <sup>b</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	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

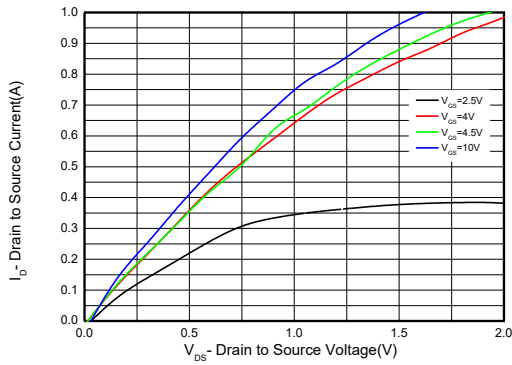
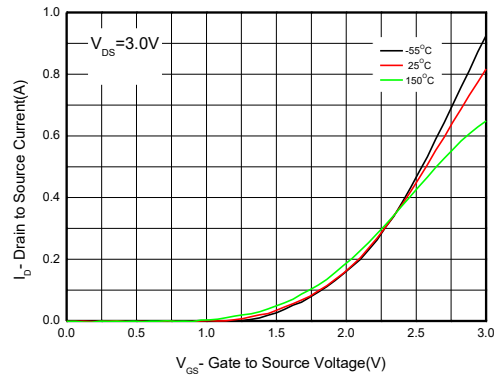
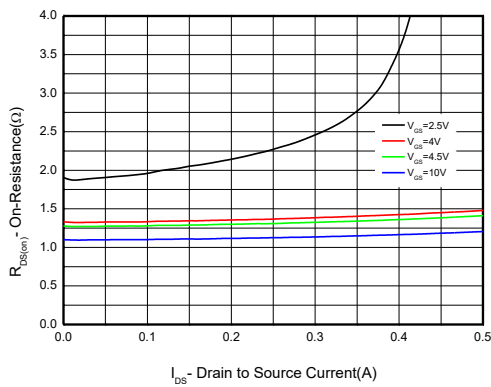
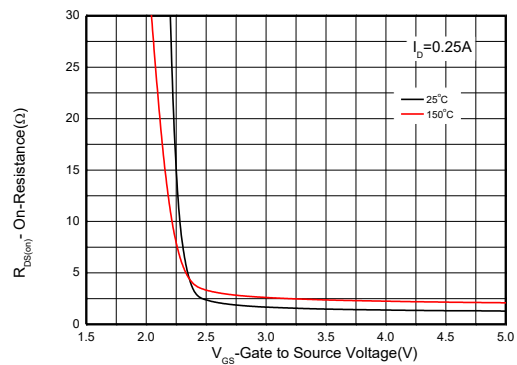
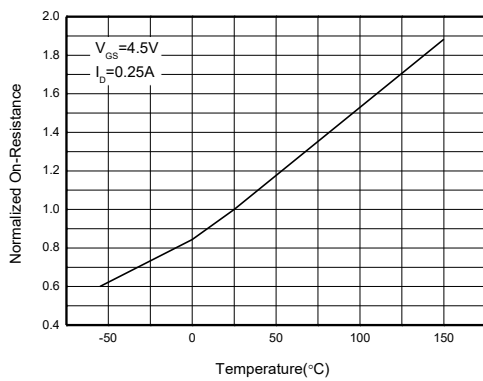
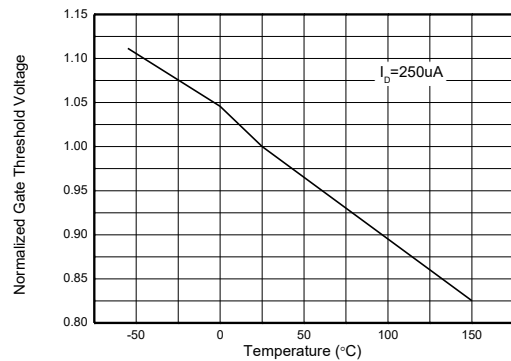
b Surface mounted on FR-4 board using minimum pad size, 1oz copper

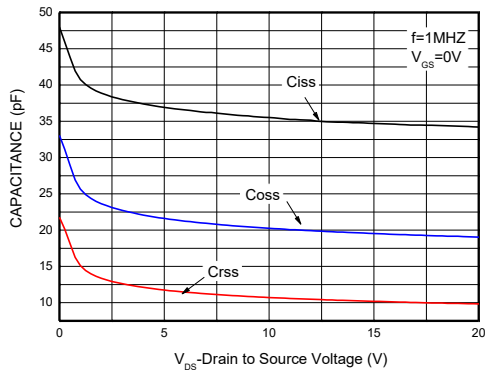
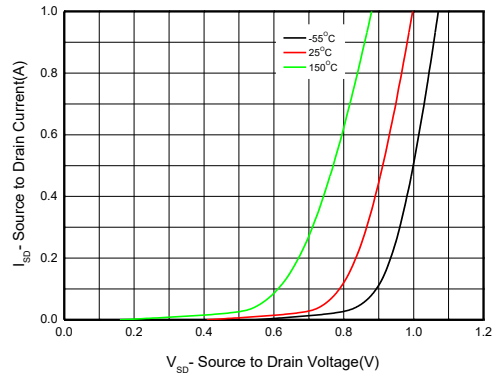
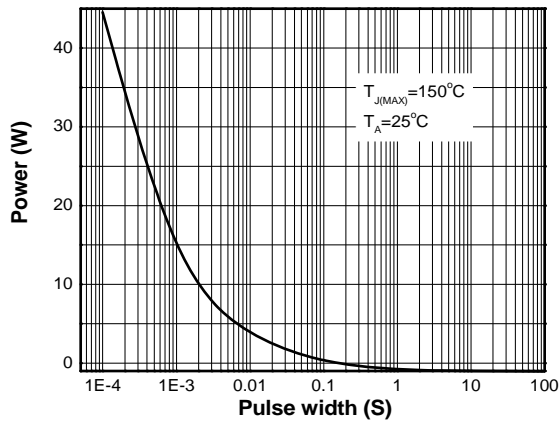
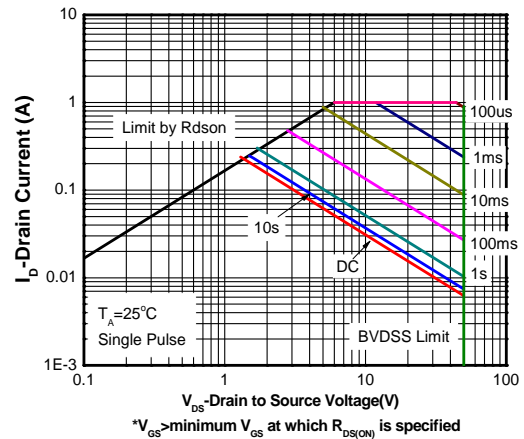
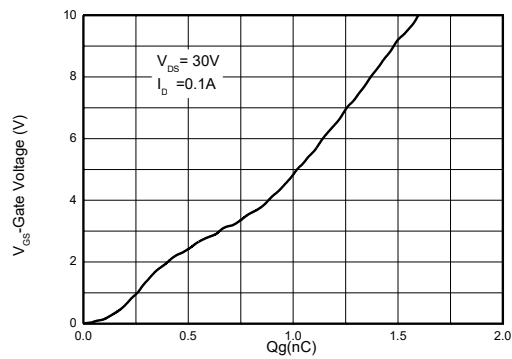
c Pulse width $<380\mu\text{s}$ , Duty Cycle $<2\%$

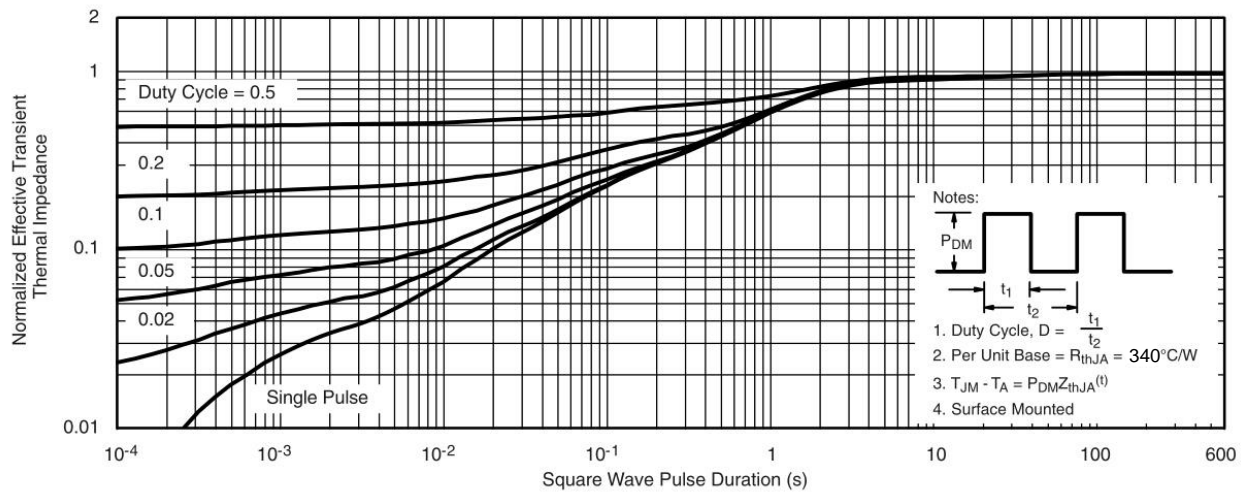
d Maximum junction temperature  $T_J=150^\circ\text{C}$ .

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

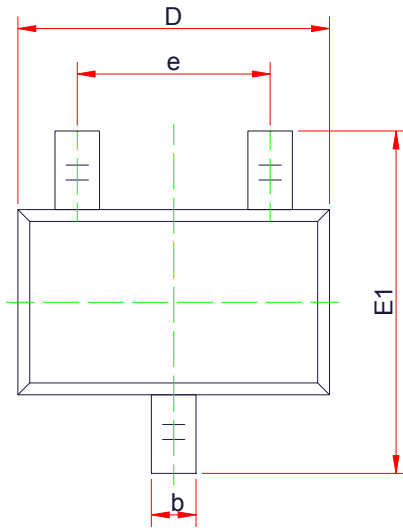
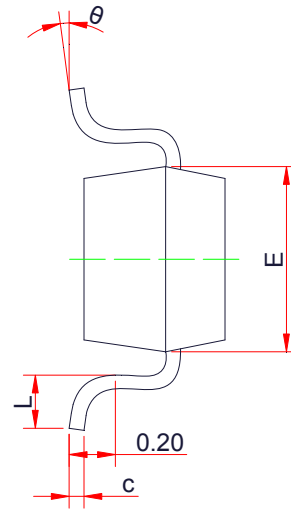
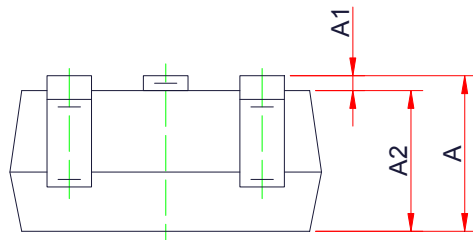
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	50			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24V, V_{GS} = 0V$			1	$\mu A$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 5$	$\mu A$
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	0.7	1.0	1.5	V
Drain-to-source On-resistance <sup>b, c</sup>	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.45A$		1.2	3	$\Omega$
		$V_{GS} = 4.5V, I_D = 0.25A$		1.3	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
<b>CAPACITANCES, CHARGES</b>						
Input Capacitance	$C_{ISS}$	$V_{GS} = 0V,$ $F = 1.0\text{ MHz},$ $V_{DS} = 5V$		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		
<b>SWITCHING CHARACTERISTICS</b>						
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		
<b>BODY DIODE CHARACTERISTICS</b>						
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**

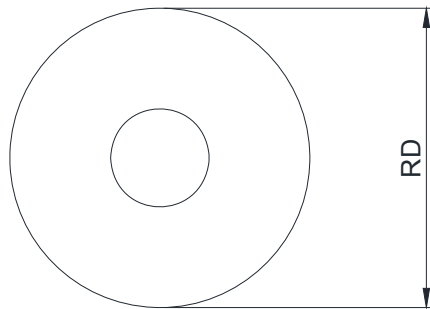
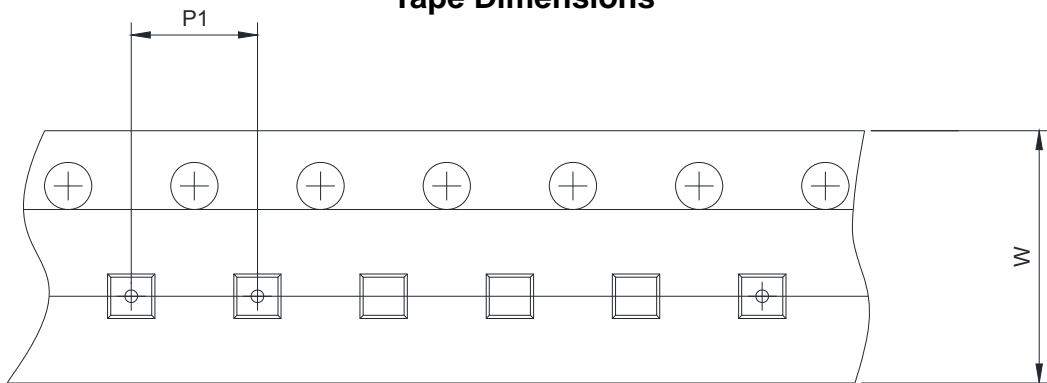
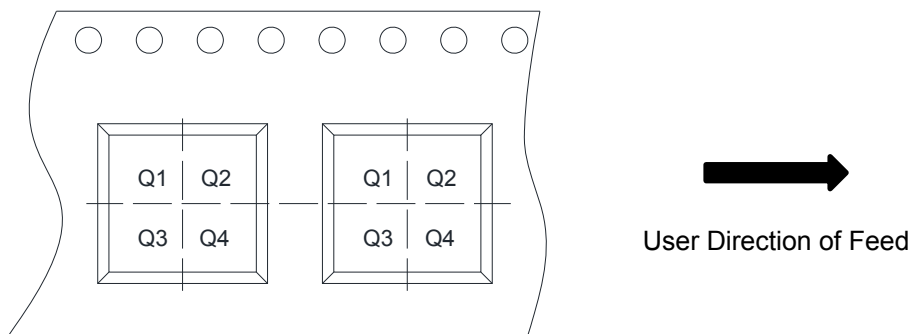

**Capacitance**

**Body diode forward voltage**

**Single pulse power**

**Safe operating power**

**Gate charge Characteristics**



**Transient thermal response (Junction-to-Ambient)**

**Package outline dimensions**
**SOT-323**

**TOP VIEW**

**SIDE VIEW**

**SIDE VIEW**

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.80	0.95	1.10
A1	0.00	-	0.10
A2	0.65	0.83	1.00
b	0.20	0.30	0.40
c	0.05	-	0.15
D	1.90	2.05	2.20
E	1.15	1.25	1.35
E1	2.00	2.23	2.45
e	1.20	1.30	1.40
L	0.20	0.33	0.46
$\theta$	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



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