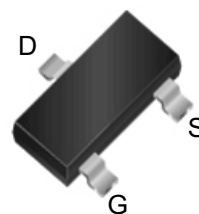
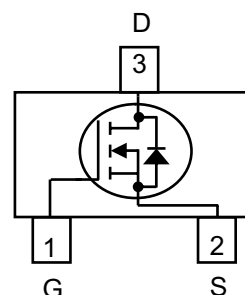


N-Channel, 20V, 3.2A, Power MOSFET

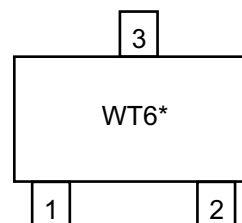
V_{DS} (V)	Typical $R_{DS(on)}$ (m Ω)
20	40 @ $V_{GS}=4.5V$
	47 @ $V_{GS}=2.5V$
	55 @ $V_{GS}=1.8V$


SOT-23
Descriptions

The WNM2016 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 WNM2016 is Pb-free and Halogen-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
WNM2016-3/TR	SOT-23	3000/Tape&Reel

ABSOLUTE MAXIMUM RATINGS TA = 25 °C, unless otherwise noted					
Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		VDS	20		V
Gate-Source Voltage		VGS	±8		
Continuous Drain Current (TJ = 150 °C) ^a	TA=25°C	ID	3.2	2.9	A
	TA=70°C		2.5	2.3	
Maximum Power Dissipation ^a	TA=25°C	PD	0.8	0.7	W
	TA=70°C		0.5	0.4	
Continuous Drain Current (TJ = 150 °C) ^b	TA=25°C	ID	2.9	2.7	A
	TA=70°C		2.3	2.1	
Maximum Power Dissipation ^b	TA=25°C	PD	0.6	0.5	W
	TA=70°C		0.4	0.3	
Pulsed Drain Current ^c		IDM	10		A
Operating Junction and Storage Temperature Range		TJ, Tstg	-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	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, $t_p = 10\mu\text{s}$, Duty Cycle=1%

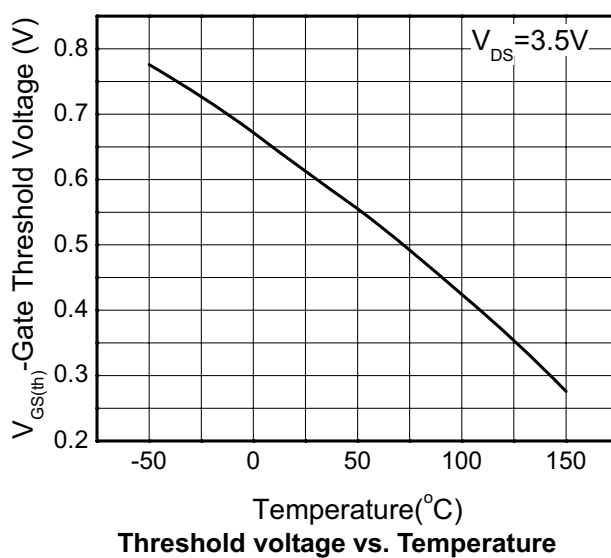
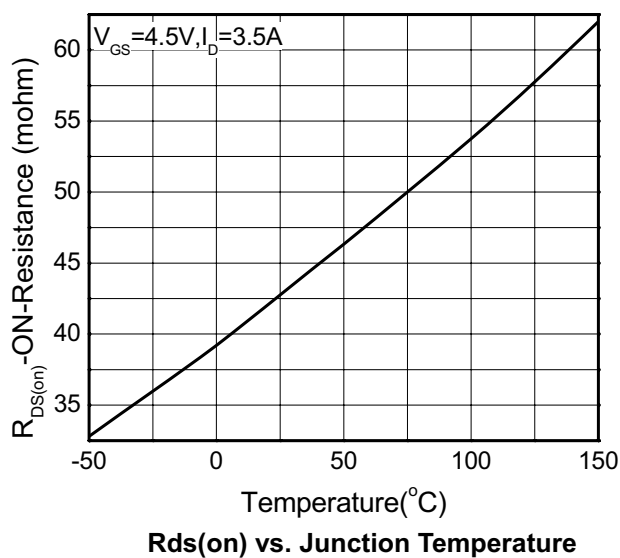
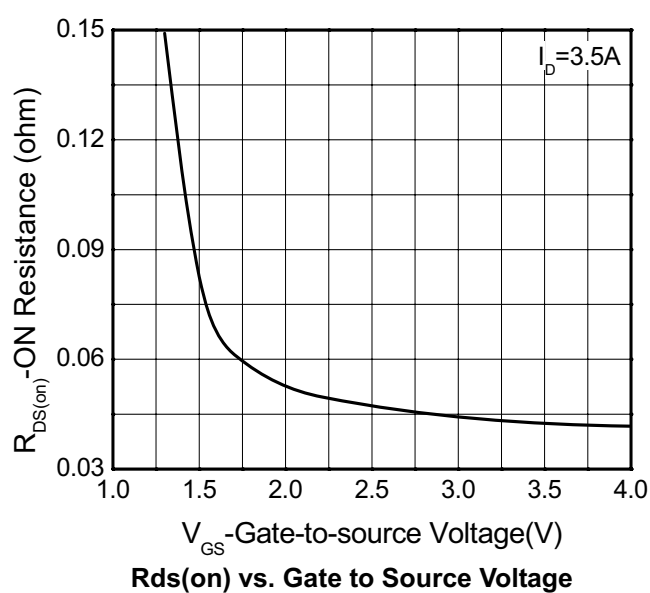
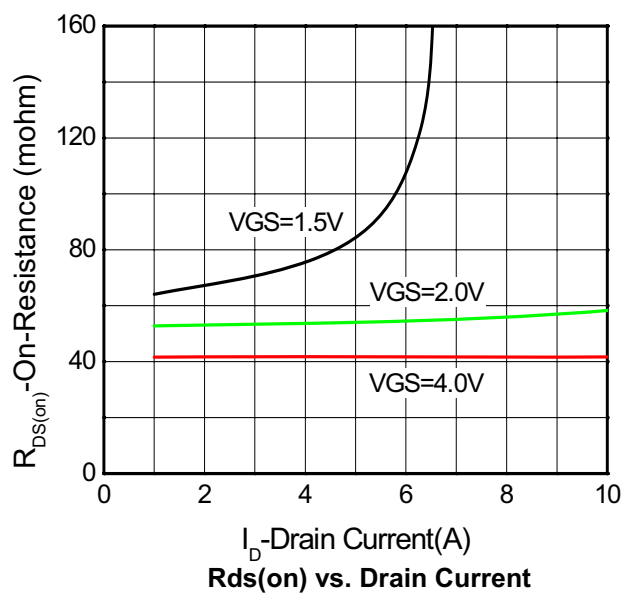
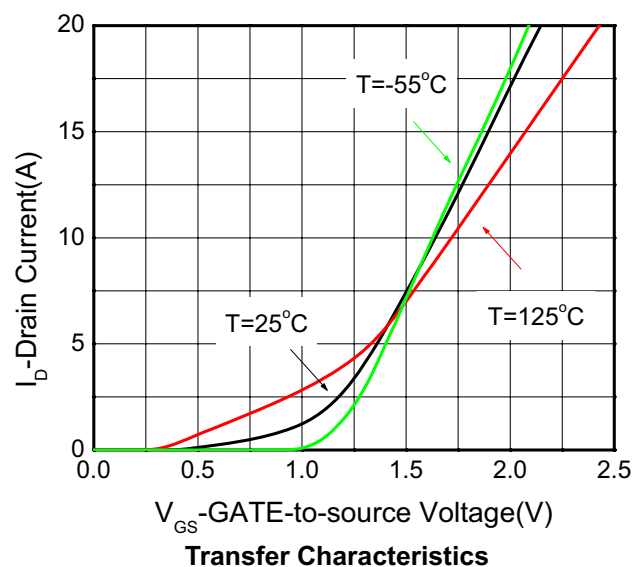
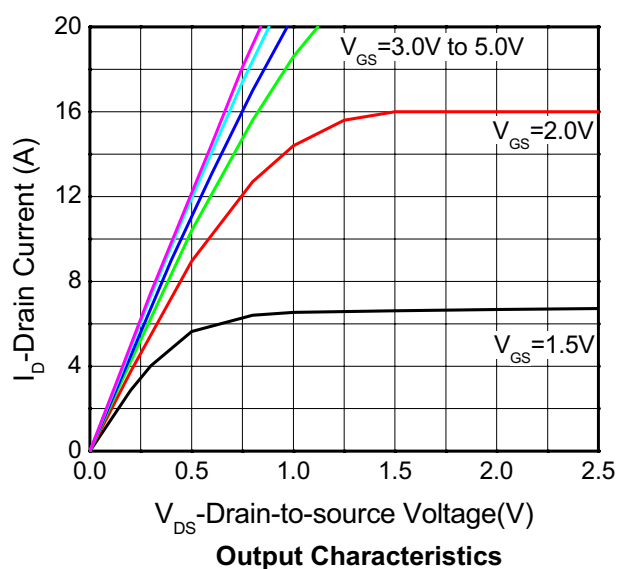
d Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150\text{ }^{\circ}\text{C}$.

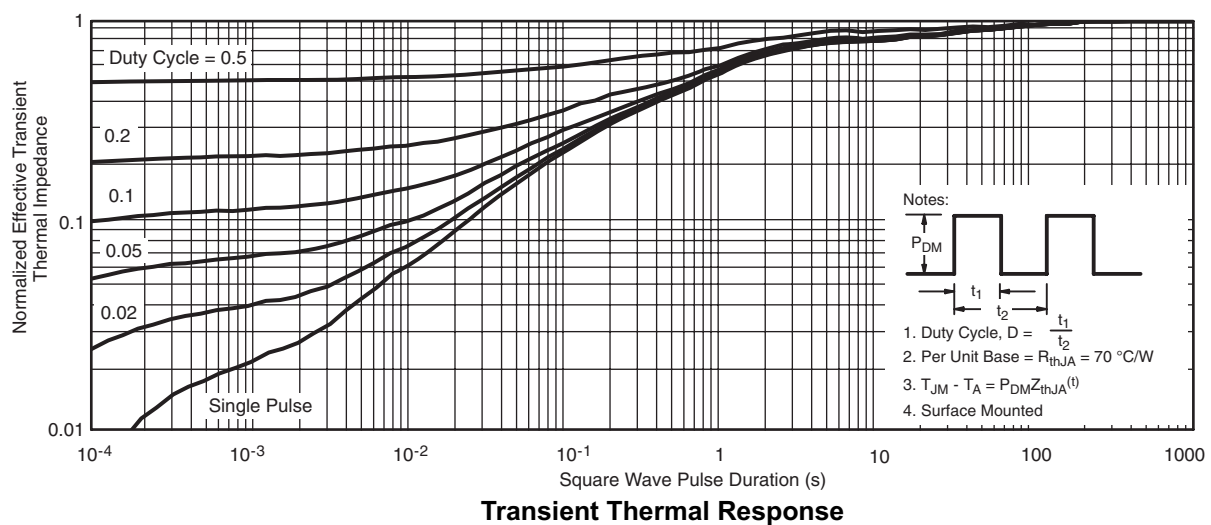
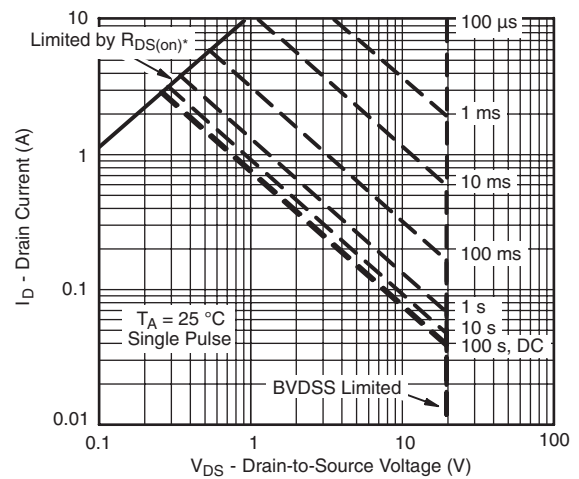
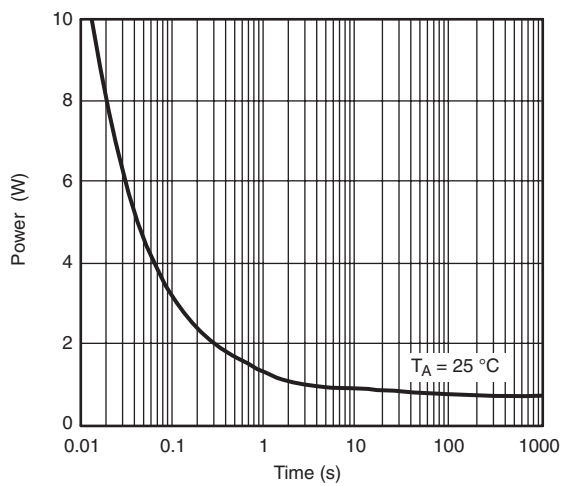
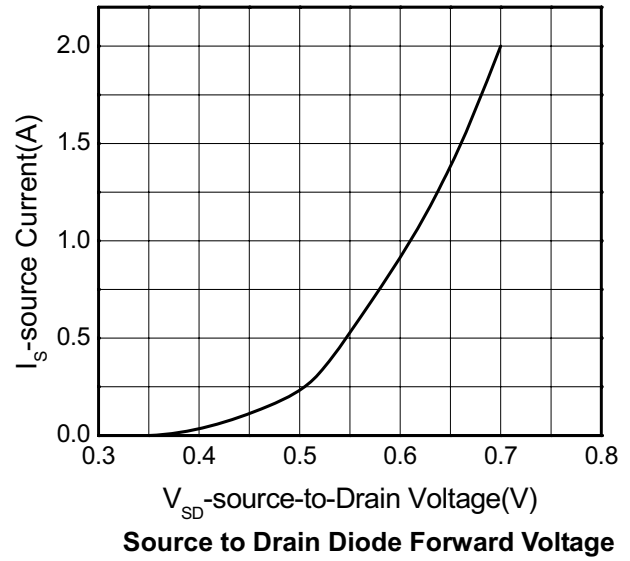
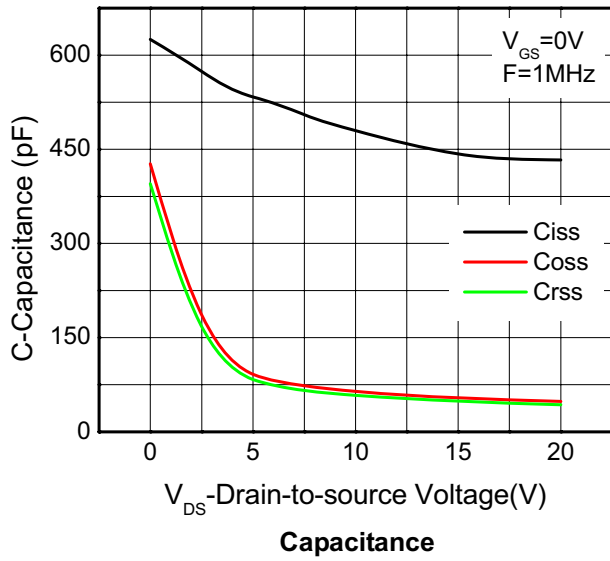
Electronics Characteristics

(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} = 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} = ±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	47	mΩ
		V _{GS} = 2.5V, I _D = 3.1A		47	55	
		V _{GS} = 1.8V, I _D = 1.0A		55	66	
Forward Transconductance	g _{FS}	V _{DS} = 5 V, I _D = 3.1A		8.5		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 = 3.1 A		8.5		nC
Threshold Gate Charge	Q _{G(TH)}			0.45		
Gate-to-Source Charge	Q _{GS}			0.65		
Gate-to-Drain Charge	Q _{GD}			3.1		
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		12		ns
Rise Time	tr			20.8		
Turn-Off Delay Time	td(OFF)			38.8		
Fall Time	tf			10.8		
DRAIN-SOURCE DIODE CHARACTERISTICS						
Forward Recovery Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1.0A		0.62	1.5	V

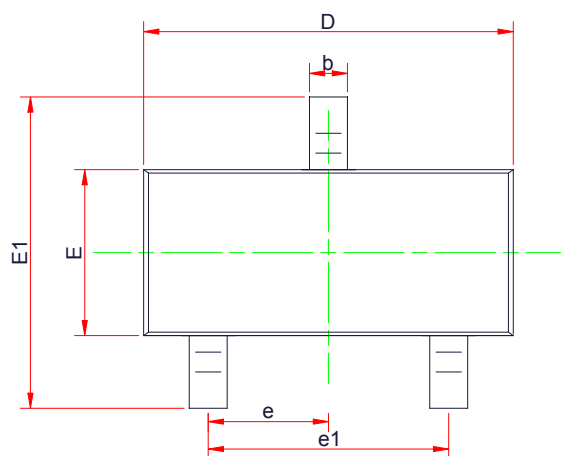
Typical Performance Graph



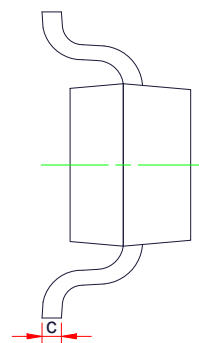


Package Outline Dimension

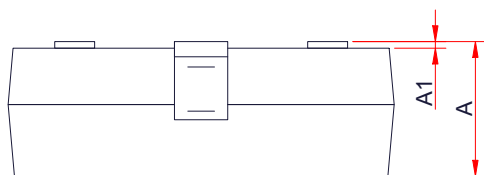
SOT-23



TOP VIEW



SIDE VIEW

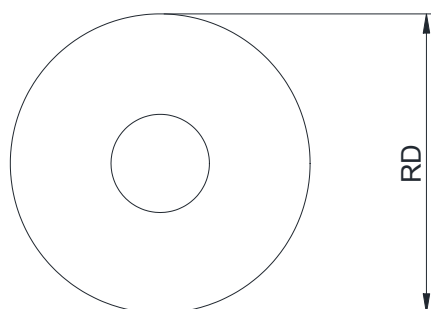


SIDE VIEW

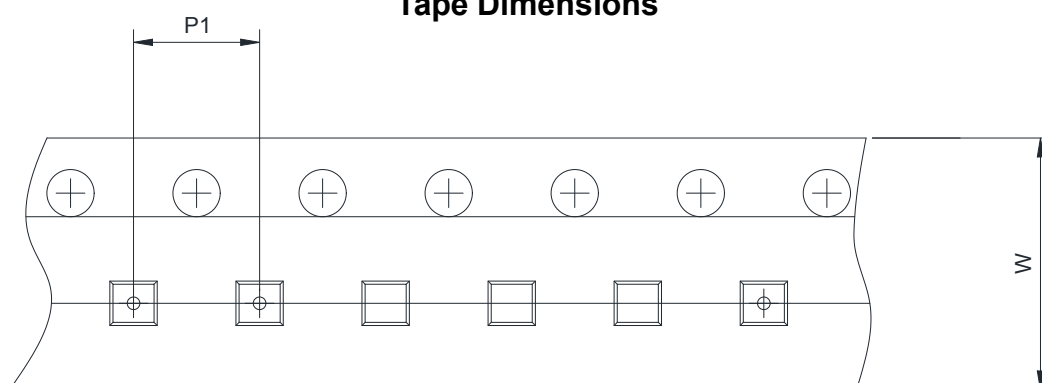
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.89	1.10	1.30
A1	0.00	-	0.10
b	0.30	0.43	0.55
c	0.05	-	0.20
D	2.70	2.90	3.10
E	1.15	1.33	1.50
E1	2.10	2.40	2.70
e	0.95 Typ.		
e1	1.70	1.90	2.10

TAPE AND REEL INFORMATION

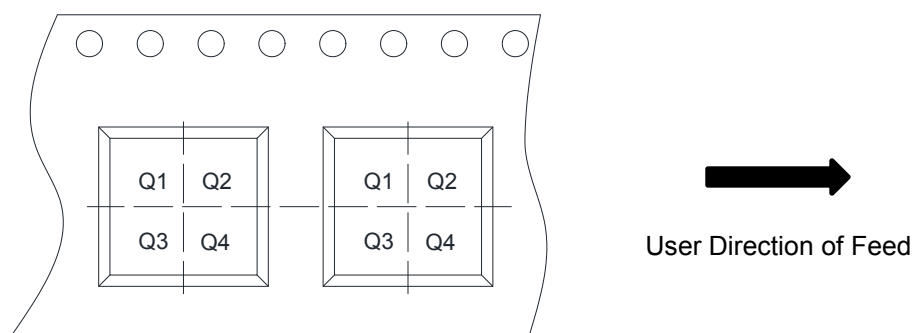
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimension	☒ 7inch	☐ 13inch
W	Overall width of the carrier tape	☒ 8mm	☐ 12mm ☐ 16mm
P1	Pitch between successive cavity centers	☐ 2mm	☒ 4mm ☐ 8mm
Pin1	Pin1 Quadrant	☐ Q1	☐ Q2 ☒ Q3 ☐ Q4