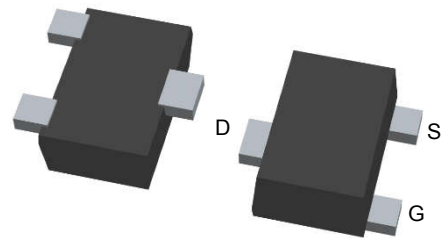


WNM2030A

Single N-Channel, 20V, 900mA, Power MOSFET

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

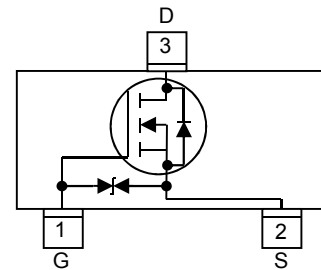
V_{DS} (V)	Max $R_{DS(on)}$ (m Ω)
20	550 @ $V_{GS}=4.5V$
	710 @ $V_{GS}=3.1V$
	900 @ $V_{GS}=2.5V$
	1400 @ $V_{GS}=1.8V$
ESD Rating: 2000V HBM	



SOT-723

Description

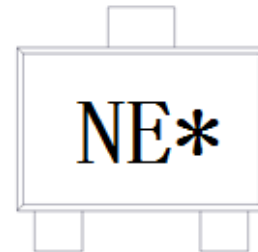
The WNM2030A is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM2030A is Pb-free.



Pin configuration (Top view)

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Small package SOT-723



NE = Device Code
* = Month

Marking

Applications

- DC/DC converters
- Power supply converters circuit
- Load/Power Switching for portable device

Order information

Device	Package	Shipping
WNM2030A-3/TR	SOT-723	8000/Tape&Reel

Absolute Maximum ratings

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	900
		$T_A=70^\circ\text{C}$	730
Pulsed Drain Current ^c	I_{DM}	3000	mA
Power Dissipation ^a	P_D	$T_A=25^\circ\text{C}$	690
		$T_A=70^\circ\text{C}$	440
Operating Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal resistance ratings

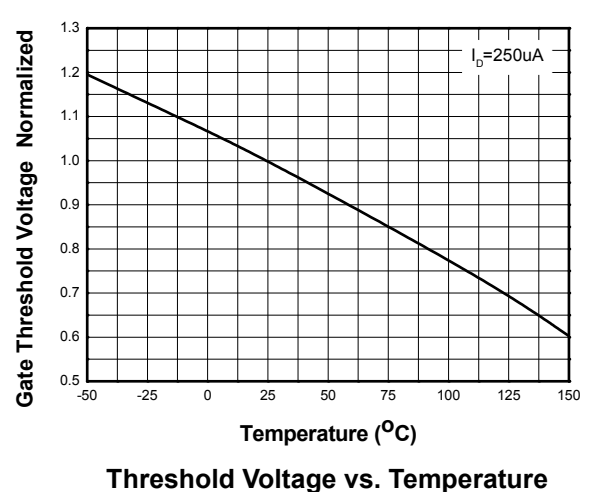
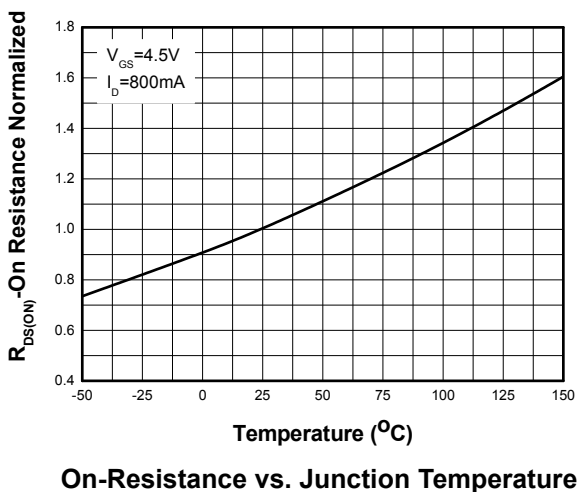
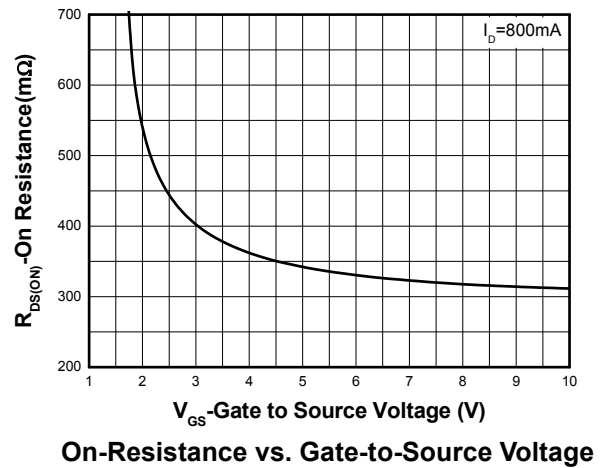
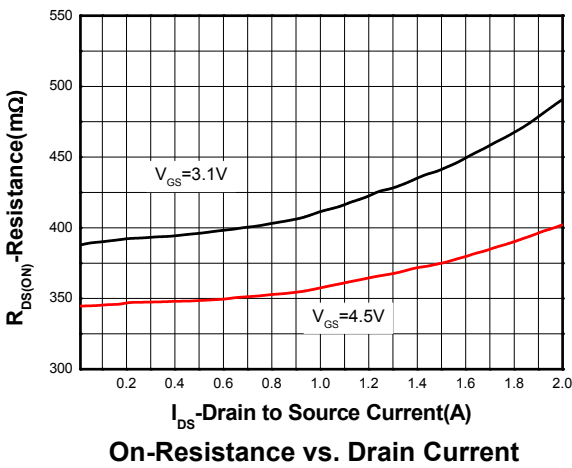
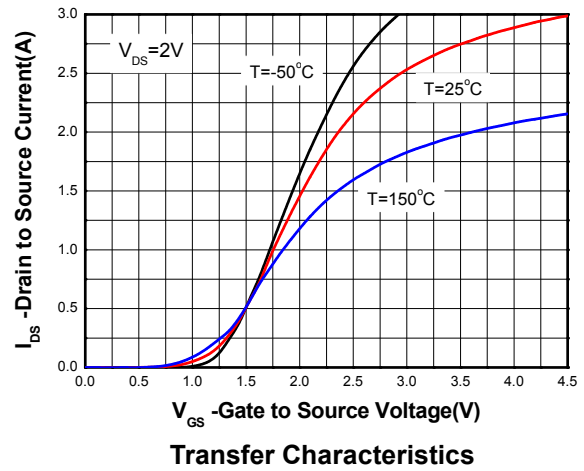
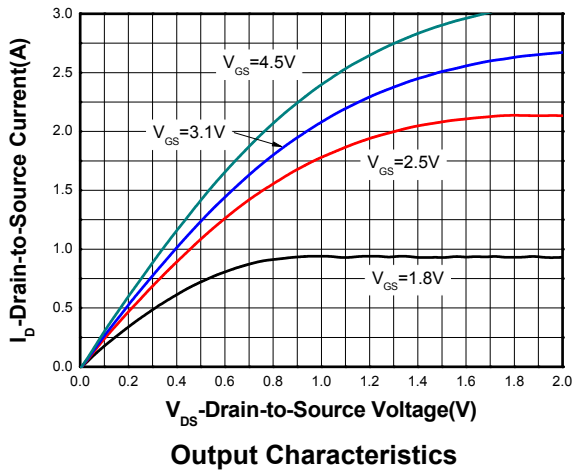
Single Operation				
Parameter		Symbol	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$	147	$^\circ\text{C/W}$
	Steady State		181	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	240	
	Steady State		323	

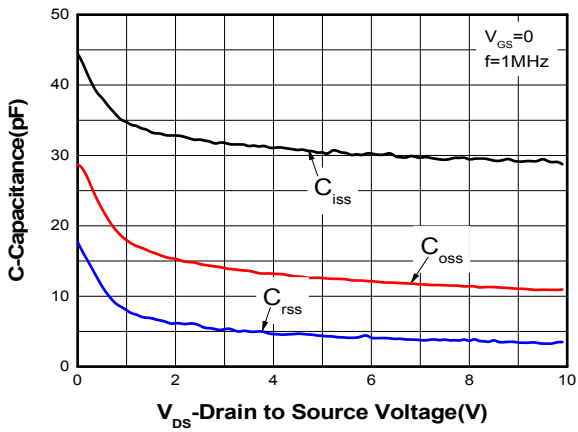
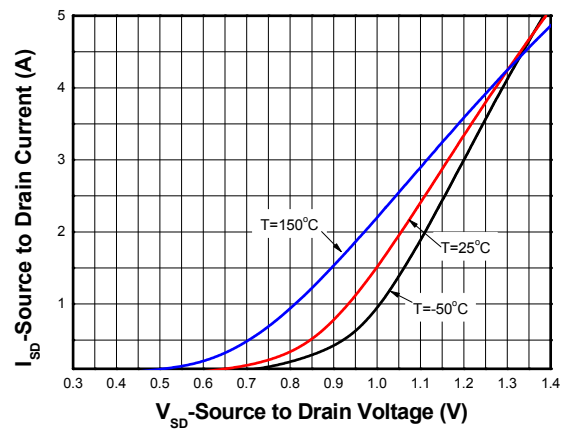
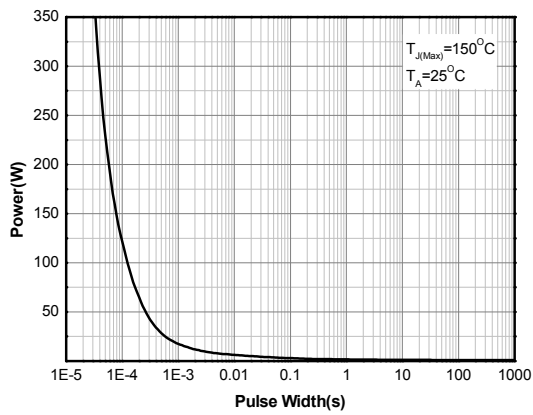
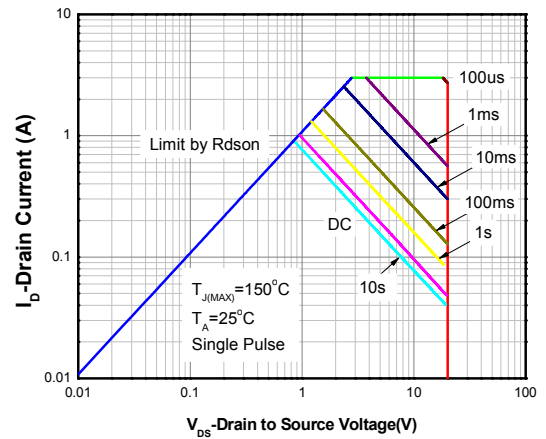
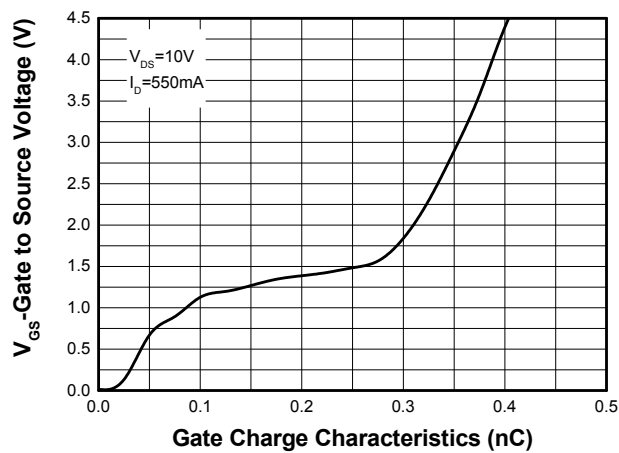
Note:

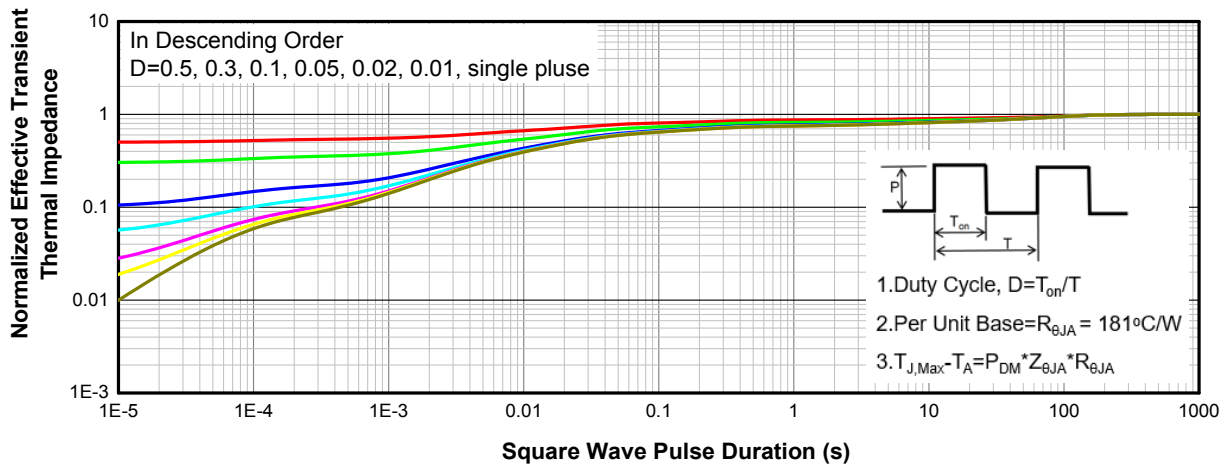
- a FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) partially covered with copper (645mm² area)
- b FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) minimum pad covered with copper
- c Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial $T_J = 25^\circ\text{C}$, the maximum allowed junction temperature of 150°C .
- d The static characteristics are obtained using ~380us pulses, duty cycle ~1%.

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

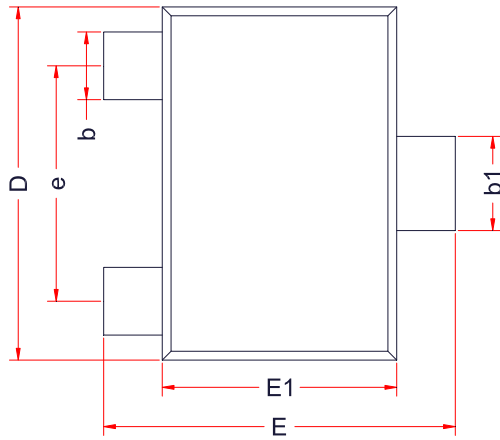
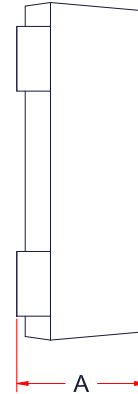
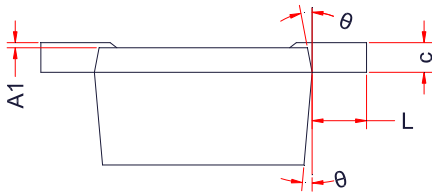
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 16\text{ V}, V_{GS} = 0\text{ V}$			1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 10\text{ V}$			± 10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	0.4	0.7	1.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS} = 4.5\text{ V}, I_D = 800\text{ mA}$		360	550	m Ω
		$V_{GS} = 3.1\text{ V}, I_D = 600\text{ mA}$		400	710	
		$V_{GS} = 2.5\text{ V}, I_D = 300\text{ mA}$		440	900	
		$V_{GS} = 1.8\text{ V}, I_D = 200\text{ mA}$		560	1400	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V}, f = 1.0\text{ MHz},$ $V_{DS} = 10\text{ V}$		29		pF
Output Capacitance	C_{OSS}			11		
Reverse Transfer Capacitance	C_{RSS}			4		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $I_D = 550\text{ mA}$		0.42		nC
Gate-to-Source Charge	Q_{GS}			0.1		
Gate-to-Drain Charge	Q_{GD}			0.16		
Gate Resistance	R_g	$F = 1\text{ MHz}$		6		Ω
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $I_D = 550\text{ mA}, R_G = 6\Omega$		5.9		ns
Rise Time	t_r			4.8		
Turn-Off Delay Time	$t_d(OFF)$			15.5		
Fall Time	t_f			3.9		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 800\text{ mA}$		0.9	1.2	V

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


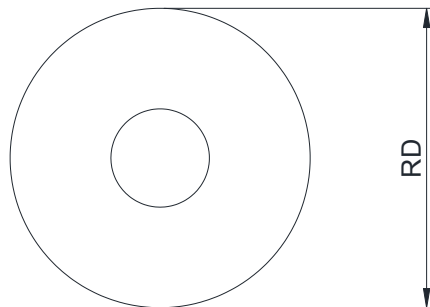
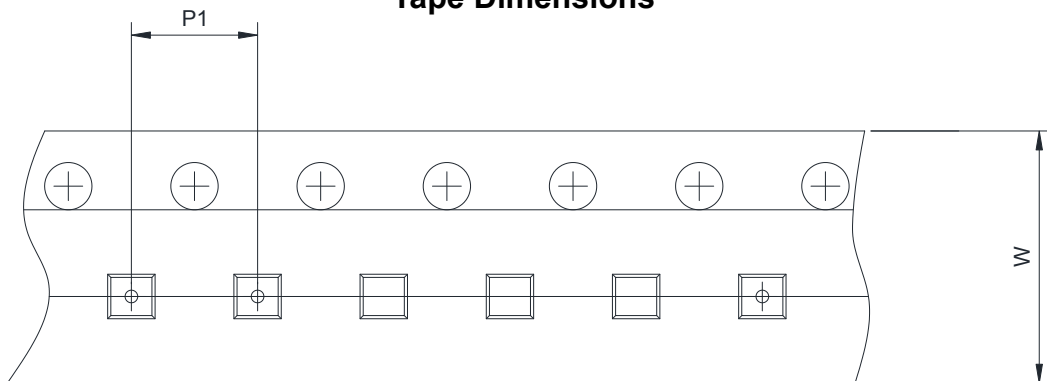
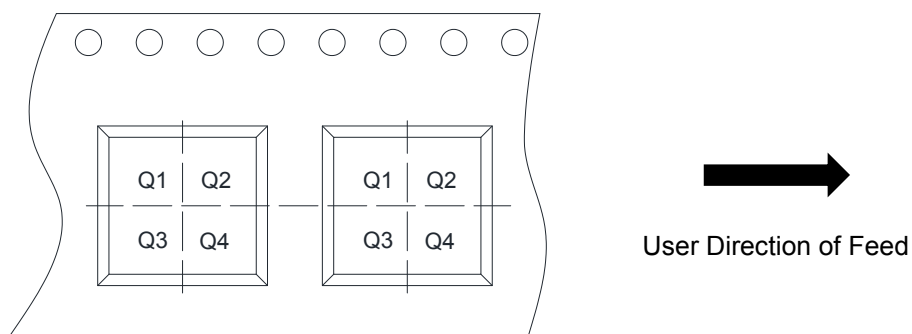

Capacitance

Body Diode Forward Voltage

Single Pulse power

Safe Operating Power

Gate Charge Characteristics



Transient Thermal Response (Junction-to-Ambient)

PACKAGE OUTLINE DIMENSIONS
SOT-723

TOP VIEW

SIDE VIEW

SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.43	0.47	0.50
A1	0.00	-	0.05
c	0.08	0.12	0.15
b1	0.27	0.32	0.37
b	0.17	0.22	0.27
L	0.20Ref		
D	1.15	1.20	1.25
E	1.15	1.20	1.25
E1	0.75	0.80	0.85
e	0.80 BSC		
θ	7°Ref		

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 checked="" type="checkbox"/> 2mm	<input 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