

WNMD3014
Dual N-Channel, 30V, 6.8A, Power MOSFET

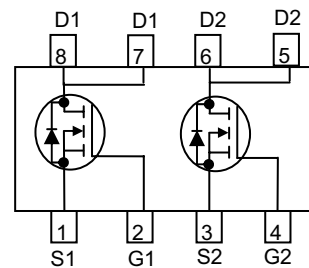
V_{DS} (V)	$R_{ds(on)}$ (Ω)
30	0.023@ $V_{GS}=10V$
	0.033@ $V_{GS}=4.5V$

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SOP-8L

Descriptions

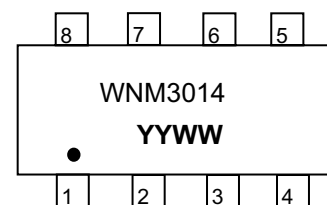
The WNMD3014 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNMD3014 is Pb-free and Halogen-free.


Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOP-8L

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Pin configuration (Top view)


WNM3014 = Device Code

YY = Year

WW = Week

Marking
Order information

Device	Package	Shipping
WNMD3014-8/TR	SOP-8L	2500/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	30		V
Gate-Source Voltage		V_{GS}	± 20		
Continuous Drain Current ^a	$T_A=25^\circ\text{C}$	I_D	6.8	5.2	A
	$T_A=70^\circ\text{C}$		5.4	4.2	
Maximum Power Dissipation ^a	$T_A=25^\circ\text{C}$	P_D	1.9	1.1	W
	$T_A=70^\circ\text{C}$		1.2	0.7	
Continuous Drain Current ^b	$T_A=25^\circ\text{C}$	I_D	5.7	4.6	A
	$T_A=70^\circ\text{C}$		4.5	3.7	
Maximum Power Dissipation ^b	$T_A=25^\circ\text{C}$	P_D	1.3	0.9	W
	$T_A=70^\circ\text{C}$		0.8	0.5	
Pulsed Drain Current ^c		I_{DM}	20		A
Operating Junction Temperature		T_J	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

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10\text{ s}$	$R_{\theta JA}$	50	64	$^\circ\text{C/W}$
	Steady State		76	106	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10\text{ s}$	$R_{\theta JA}$	69	91	
	Steady State		105	135	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	35	45	
Dual Operation					
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10\text{ s}$	$R_{\theta JA}$	54	68	
	Steady State		83	115	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10\text{ s}$	$R_{\theta JA}$	74	96	
	Steady State		113	145	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	38	50	

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

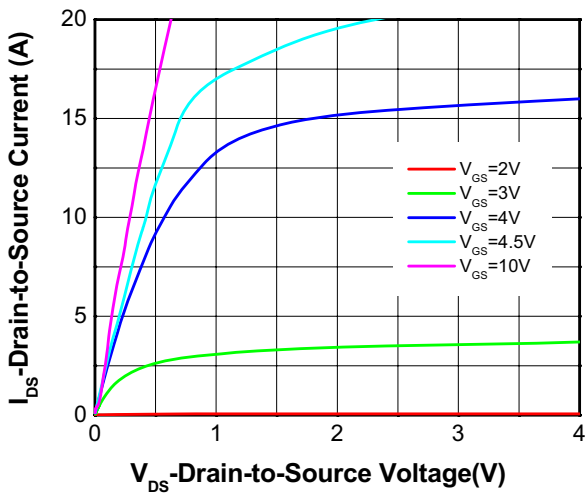
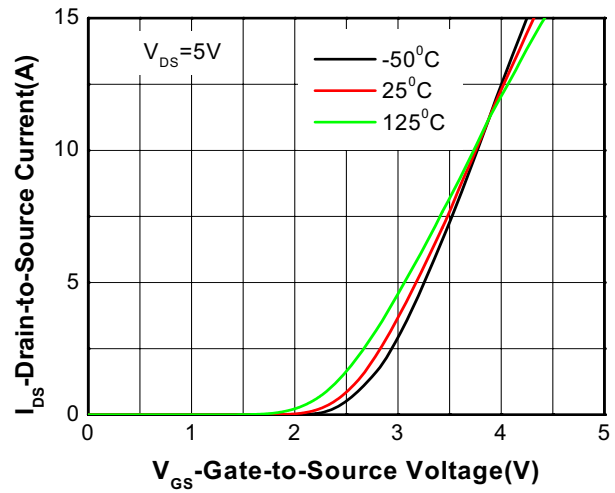
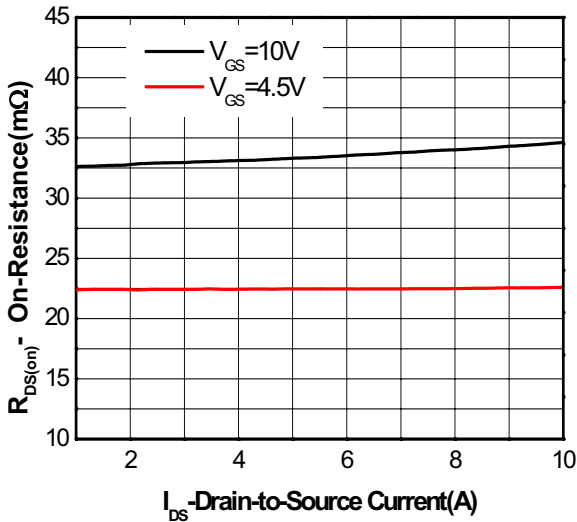
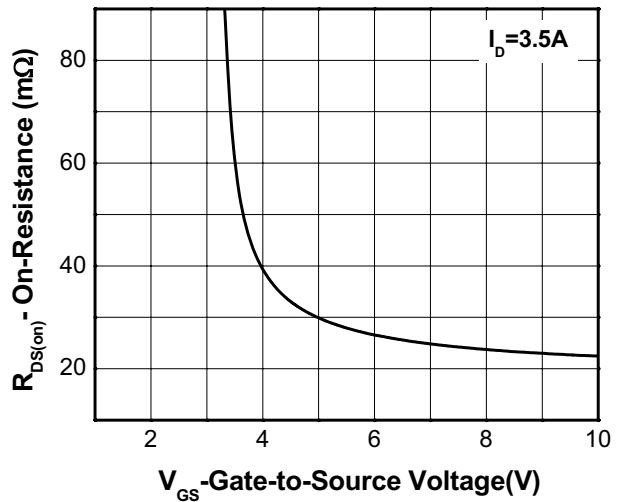
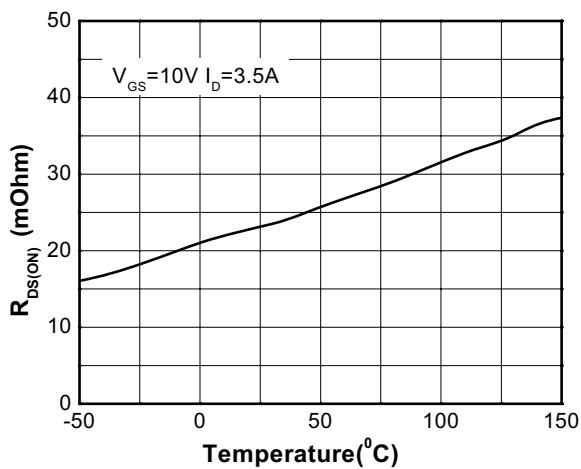
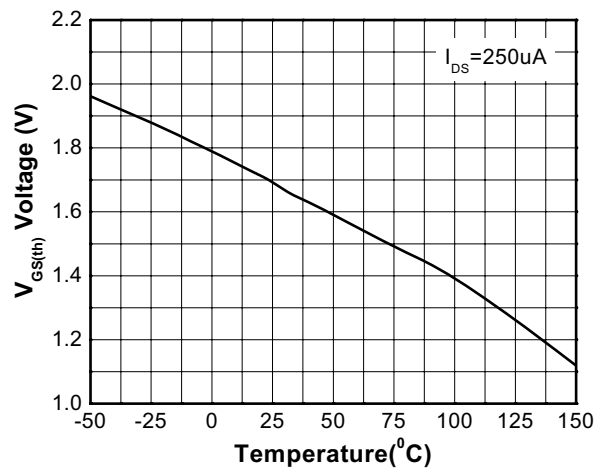
b Surface mounted on FR-4 board using minimum pad size, 1oz copper

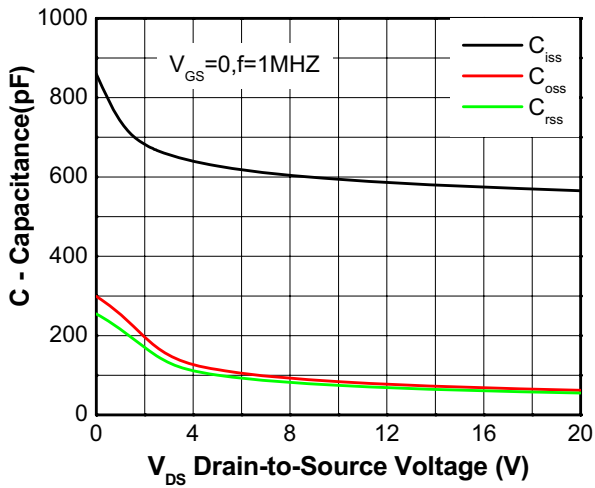
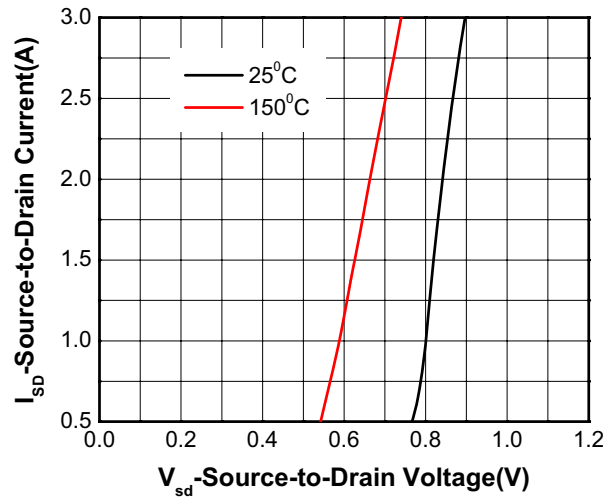
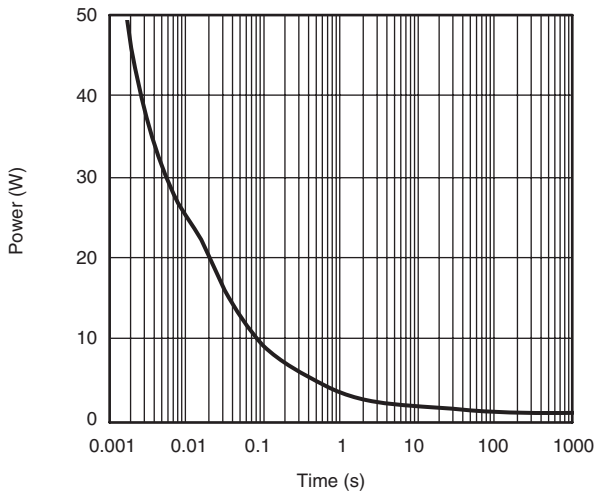
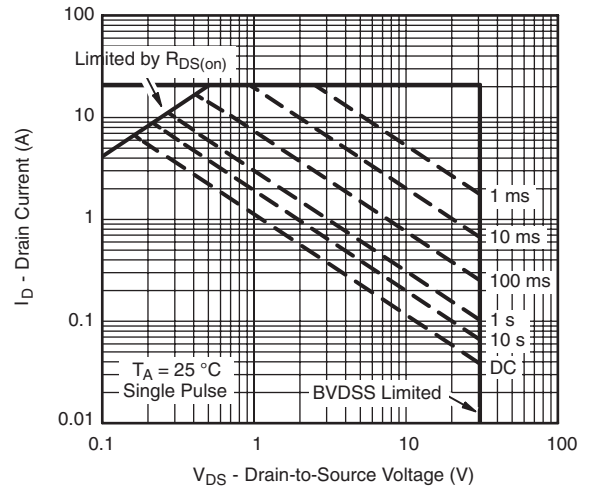
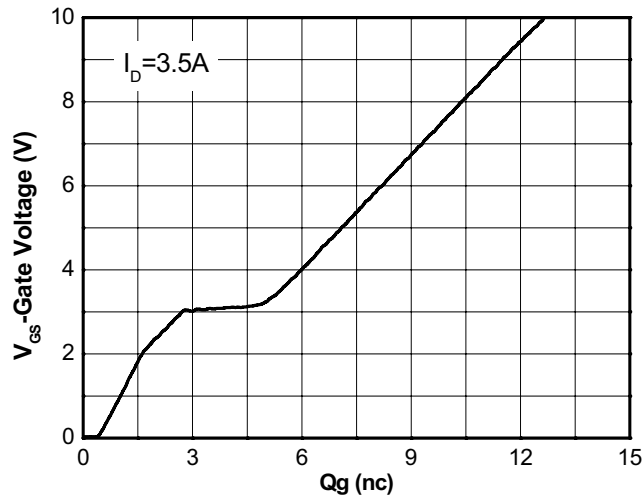
c Pulse width $<380\mu\text{s}$, Duty Cycle $<2\%$

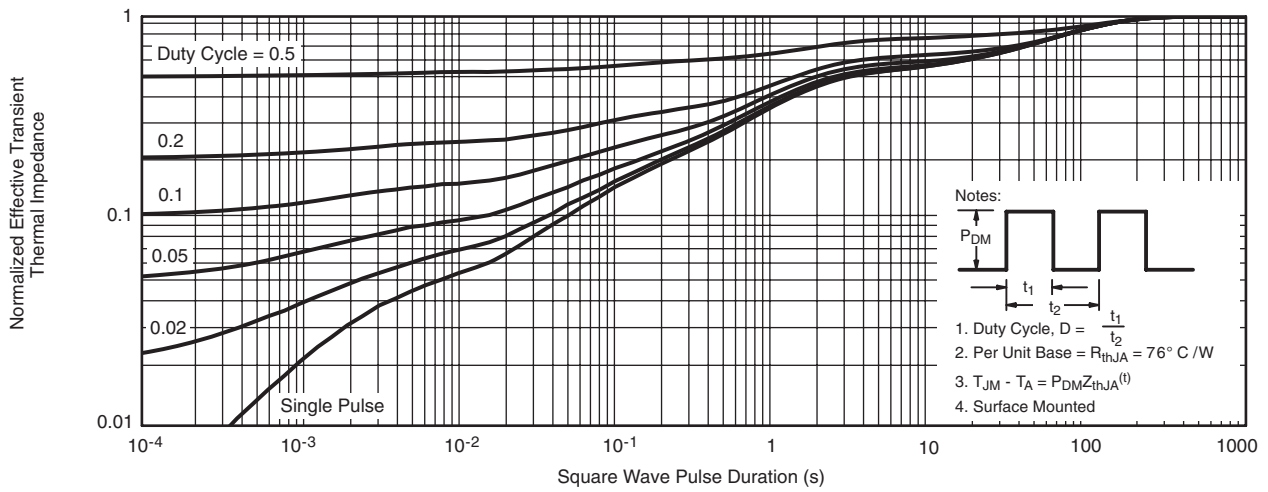
d Maximum junction temperature $T_J=150^\circ\text{C}$.

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} = 0 V, I _D = 250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.0	1.77	2.2	V
Drain-to-source On-resistance ^{b, c}	R _{DS(on)}	V _{GS} = 10V, I _D = 3.5A		23	29	mΩ
		V _{GS} = 4.5V, I _D = 2.0A		33	41	
Forward Transconductance	g _{FS}	V _{DS} = 4.5V, I _D = 2.8A		5.8		S
CAPACITANCES, CHARGES						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0 MHz, V _{DS} = 15 V		580		pF
Output Capacitance	C _{OSS}			145		
Reverse Transfer Capacitance	C _{RSS}			118		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10 V, V _{DS} = 15 V, I _D = 3.5A		12.5		nC
Threshold Gate Charge	Q _{G(TH)}			1.4		
Gate-to-Source Charge	Q _{GS}			1.75		
Gate-to-Drain Charge	Q _{GD}			3.0		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10V, V _{DD} = 15 V, I _D = 2.0A, R _{GEN} = 6.0Ω		12.8		ns
Rise Time	tr			5.0		
Turn-Off Delay Time	td(OFF)			35.2		
Fall Time	tf			4.0		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 2.0A		0.95	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

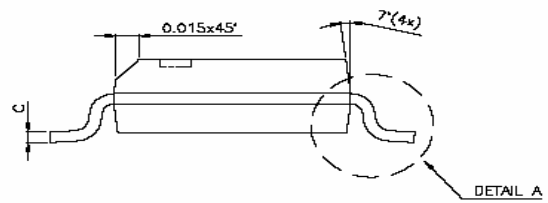
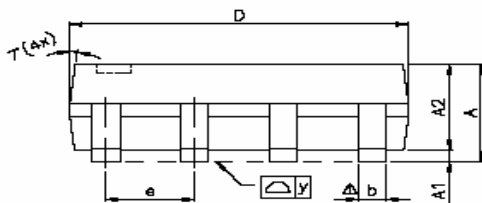
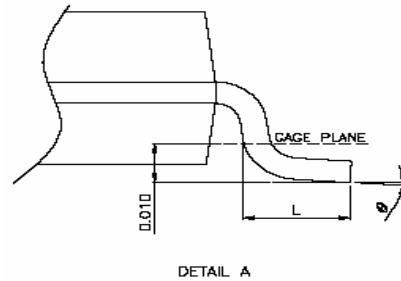
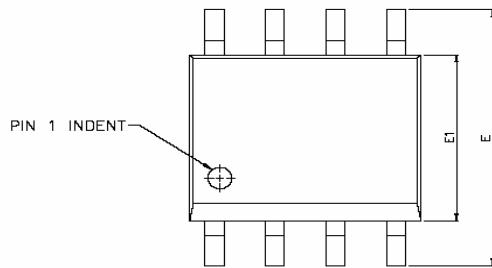

Capacitance

Body diode forward voltage

Single pulse power

Safe operating power

Gate Charge Characteristics



Transient thermal response (Junction-to-Ambient)

Package outline dimensions

SOP-8L



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	1.47	1.60	1.73
A1	0.10		0.25
A2		1.45	
b	0.33	0.41	0.51
C	0.19	0.20	0.25
D	4.80	4.85	4.95
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e		1.27	
L	0.38	0.71	1.27
y			0.076
θ	0°		8°