WNMD3014

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

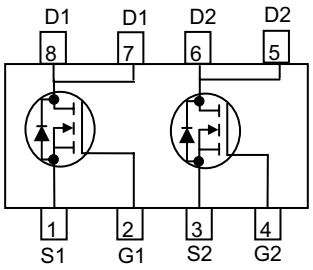
V_{DS} (V)	Rds(on) (Ω)
30	0.023@ V_{GS}=10V
	0.033@ V_{GS}=4.5V

Http//:www.willsemi.com

SOP-8L

Descriptions

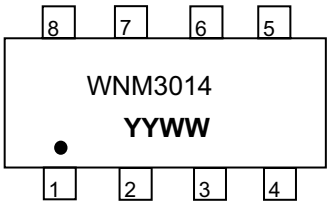
The WNMD3014 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNMD3014 is Pb-free and Halogen-free.



Pin configuration (Top view)

Features

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



WNM3014 = Device Code
YY = Year
WW = Week

Marking

Applications

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

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°C	I_D	6.8	5.2	A
	T_A=70°C		5.4	4.2	
Maximum Power Dissipation [a]	T_A=25°C	P_D	1.9	1.1	W
	T_A=70°C		1.2	0.7	
Continuous Drain Current [b]	T_A=25°C	I_D	5.7	4.6	A
	T_A=70°C		4.5	3.7	
Maximum Power Dissipation [b]	T_A=25°C	P_D	1.3	0.9	W
	T_A=70°C		0.8	0.5	
Pulsed Drain Current [c]		I_{DM}	20		A
Operating Junction Temperature		T_J	150		°C
Lead Temperature		T_L	260		°C
Storage Temperature Range		T_{stg}	-55 to 150		°C

Thermal resistance ratings

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

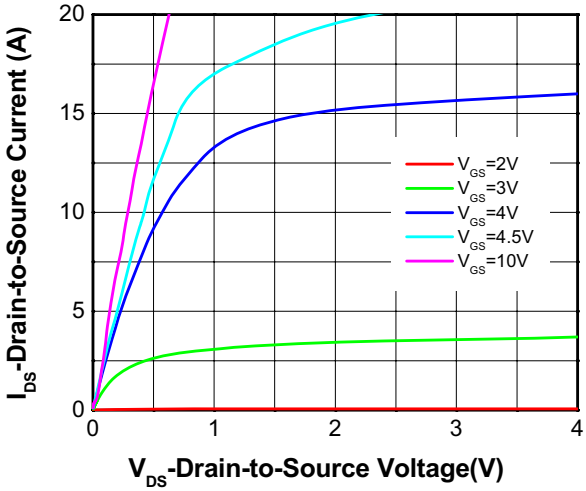
c Pulse width<380μs, Duty Cycle<2%

d Maximum junction temperature T_J=150°C.

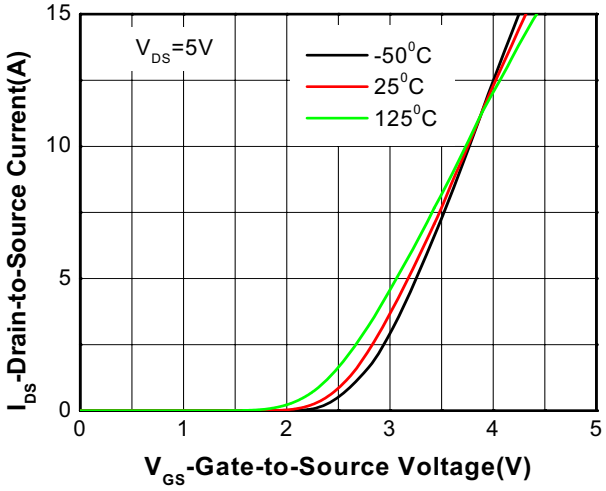
Electronics Characteristics (Ta=25°C, unless otherwise noted)

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

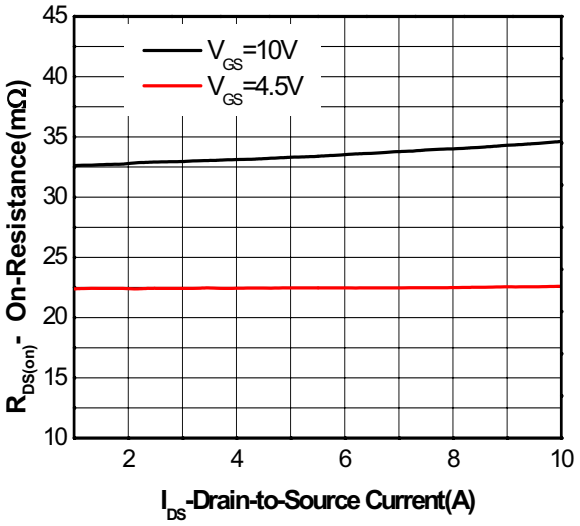
Typical Characteristics (Ta=25°C, unless otherwise noted)



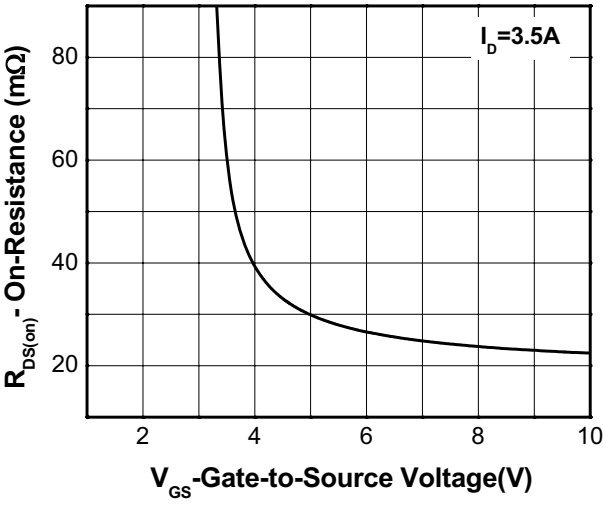
Output characteristics



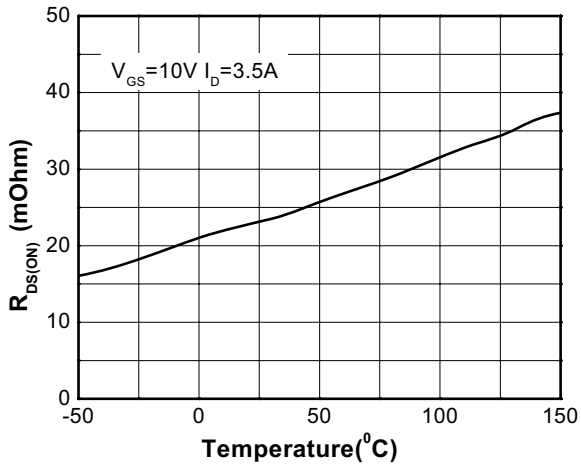
Transfer characteristics



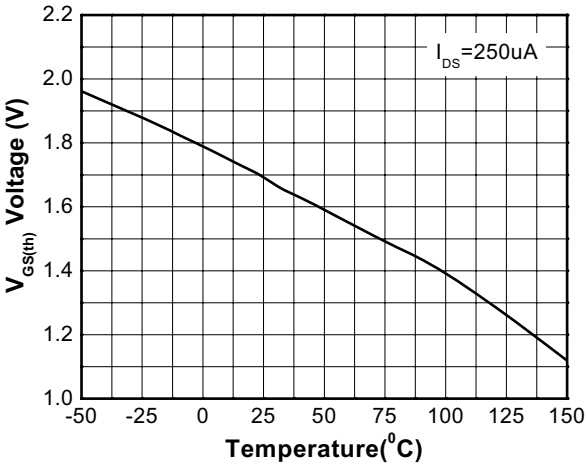
On-Resistance vs. Drain current



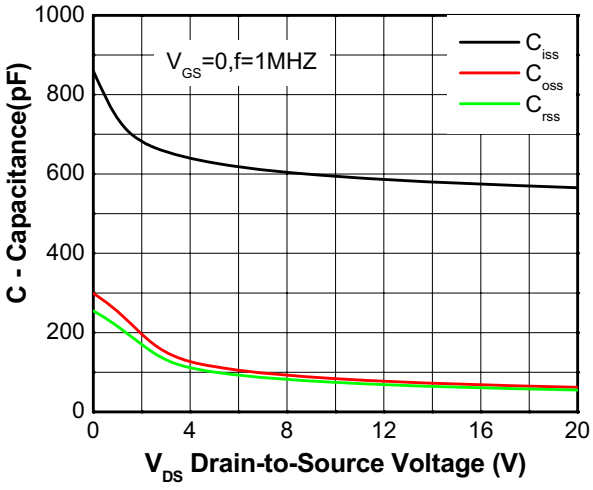
On-Resistance vs. Gate-to-Source voltage



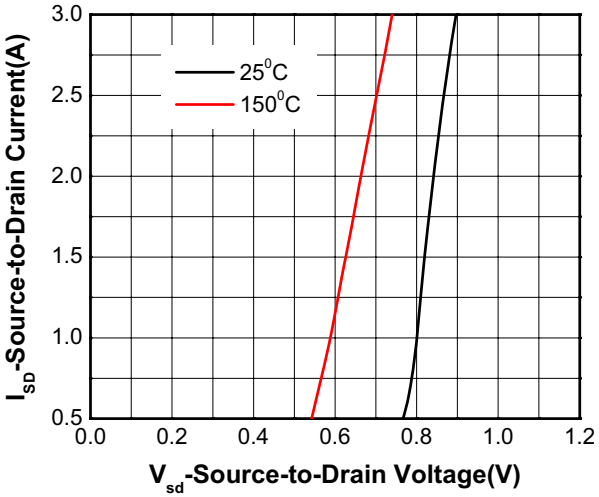
On-Resistance vs. Junction temperature



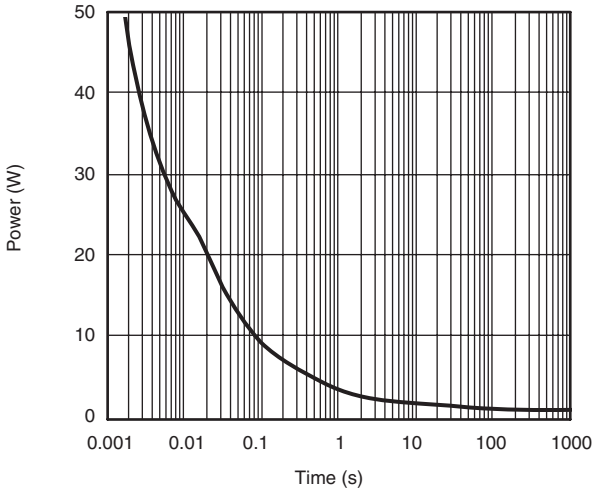
Threshold voltage vs. Temperature



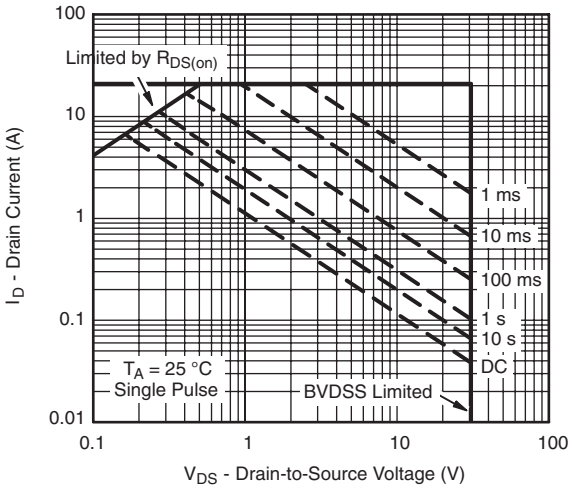
Capacitance



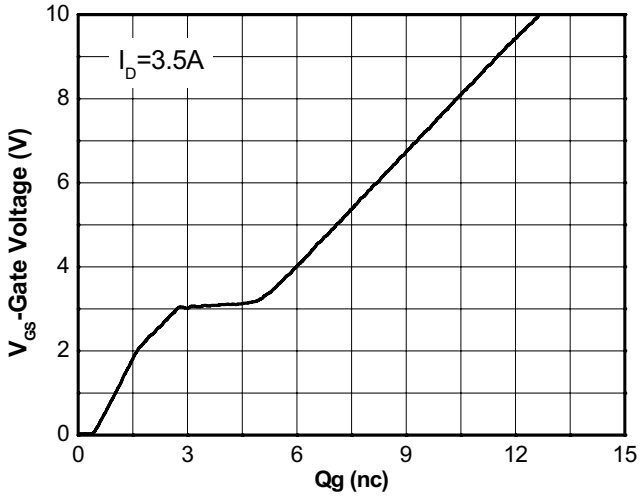
Body diode forward voltage



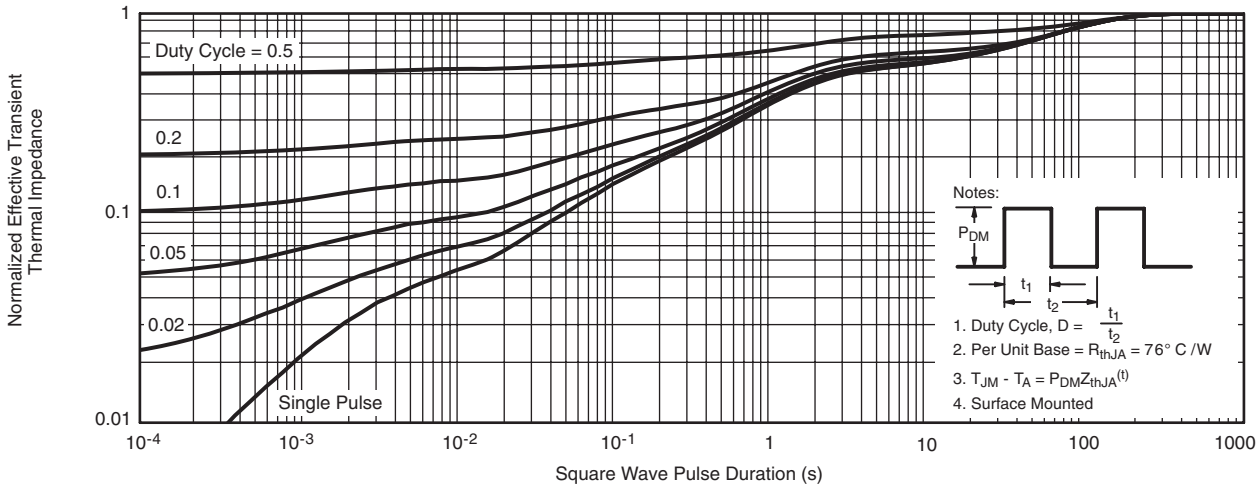
Single pulse power



Safe operating power



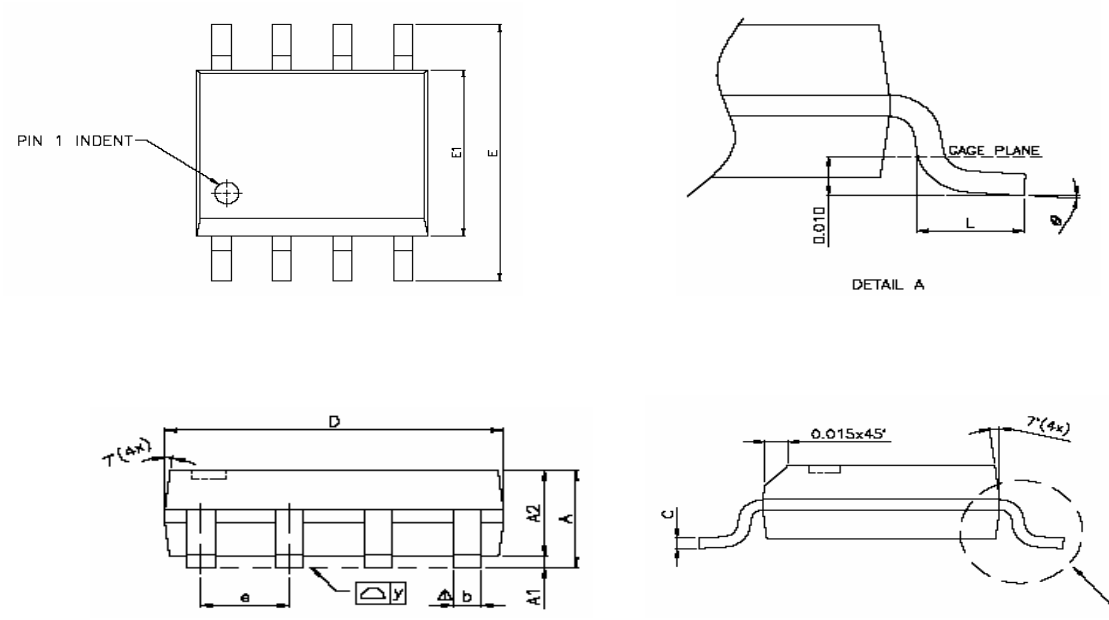
Gate Charge Characteristics



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°