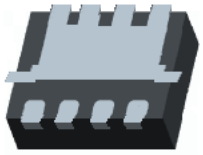
WNMD2162A

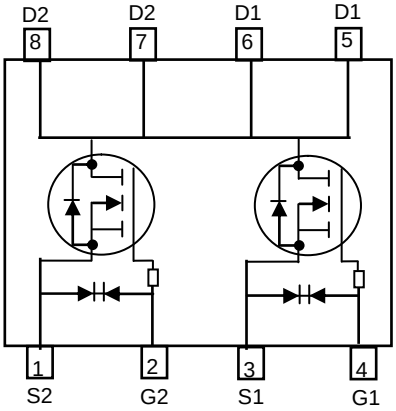
Dual N-Channel, 20V, 4.8A, Power MOSFET

Http://www.sh-willsemi.com

V_{DS} (V)	Rds(on) (Ω)
20	0.014@ V_{GS}=4.5V
	0.015@ V_{GS}=3.1V
	0.016@ V_{GS}=2.5V
ESD Protected	



PDFN2.9×2.8-8L



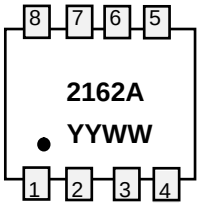
Pin configuration (Top view)

Descriptions

The WNMD2162A is Dual 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 WNMD2162A 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 PDFN2.9×2.8-8L



2162A = 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
WNMD2162A-8/TR	PDFN 2.9×2.8-8L	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±10		
Continuous Drain Current [a.e]	T_A=25°C	I_D	4.8	4.5	A
	T_A=70°C		4.8	3.6	
Maximum Power Dissipation [a.]	T_A=25°C	P_D	1.7	0.9	W
	T_A=70°C		1.1	0.6	
Continuous Drain Current [b.e]	T_A=25°C	I_D	4.8	4.1	A
	T_A=70°C		4.7	3.3	
Maximum Power Dissipation [b]	T_A=25°C	P_D	1.6	0.8	W
	T_A=70°C		1.0	0.5	
Pulsed Drain Current [c]		I_{DM}	40		A
Operating Junction Temperature		T_J	-55~+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	$R_{\theta JA}$	61	72	°C/W
	Steady State		102	128	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	65	75	
	Steady State		120	148	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	54	63	

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%;.

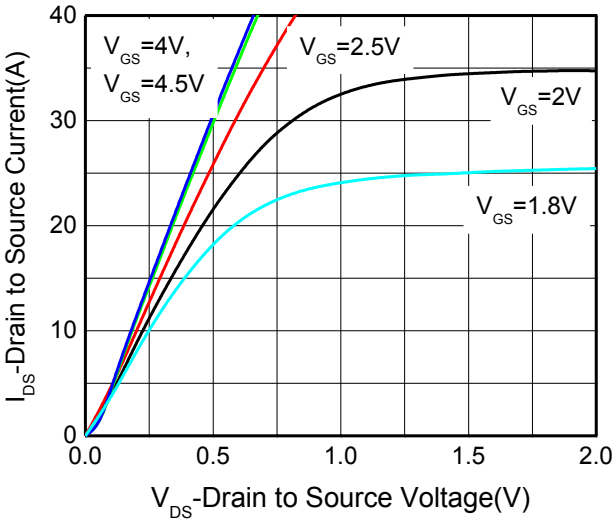
d Maximum junction temperature T_J=150°C;.

e Current rating is limited by wire-bonding.

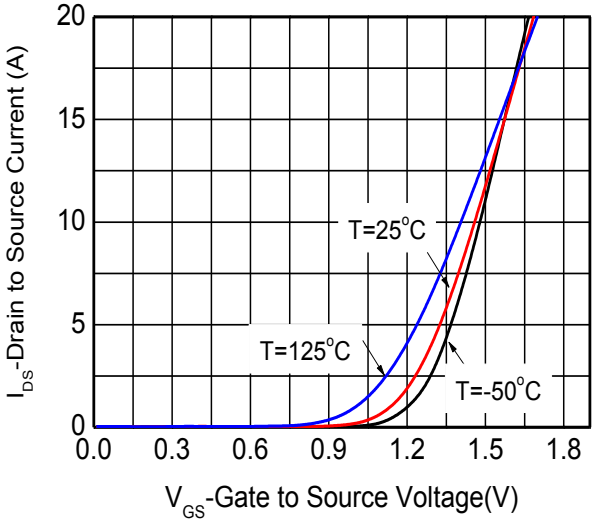
Electronics Characteristics (Ta=25°C, unless otherwise noted)

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} = ±10V			±5	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250uA	0.4	0.7	1.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 4.8A	10	14	22	mΩ
		V_{GS} = 3.1V, I_D = 4.0A	11	15	28	
		V_{GS} = 2.5V, I_D = 3.0A	12	16	32	
Forward Transconductance	g_{FS}	V_{DS} = 5.0 V, I_D = 4.8A		17		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz, V_{DS} = 10 V		1371		pF
Output Capacitance	C_{OSS}			185		
Reverse Transfer Capacitance	C_{RSS}			172		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DD} = 10 V, I_D = 4.8 A		18.9		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.3		
Gate-to-Source Charge	Q_{GS}			2.8		
Gate-to-Drain Charge	Q_{GD}			6.4		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 4.5 V, V_{DD} = 6 V, I_D=4.8A, R_G=6 Ω		29		ns
Rise Time	tr			35		
Turn-Off Delay Time	td(OFF)			260		
Fall Time	tf			125		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1.0A		0.65	1.5	V

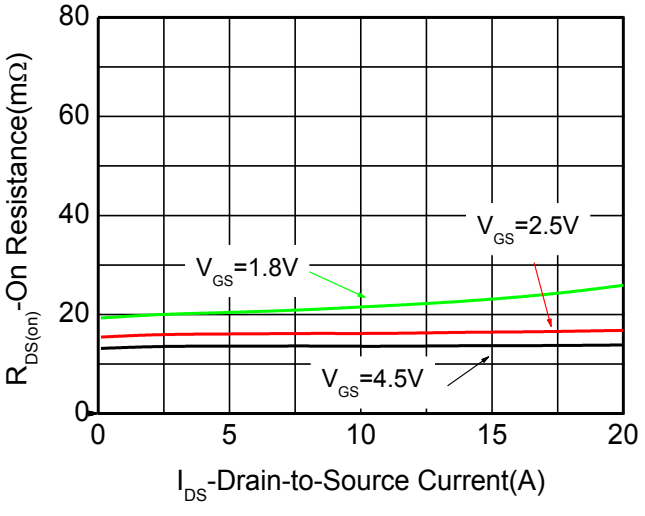
Typical Characteristics (Ta=25°C, unless otherwise noted)



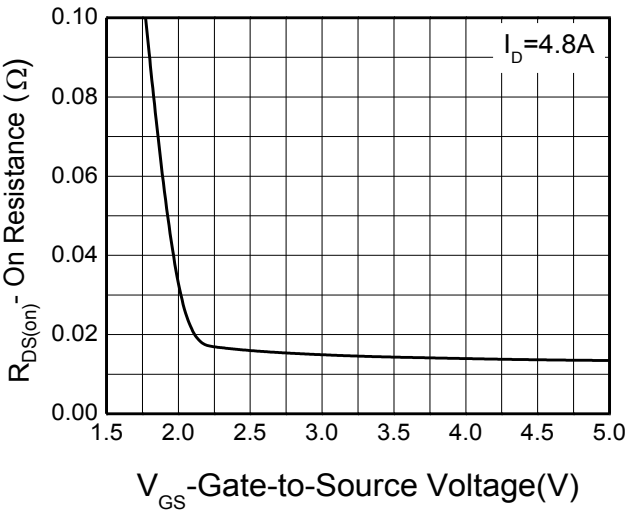
Output characteristics



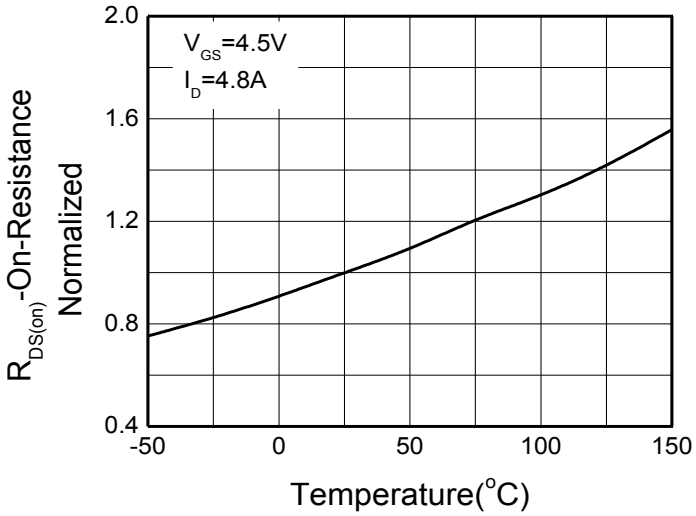
Transfer characteristics



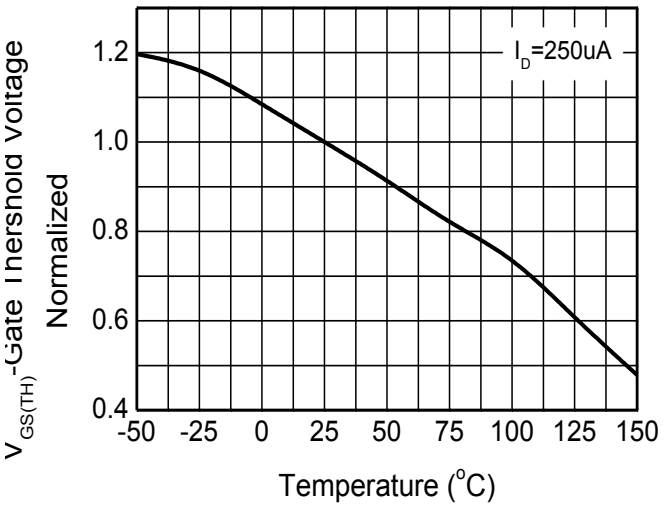
On-Resistance vs. Drain current



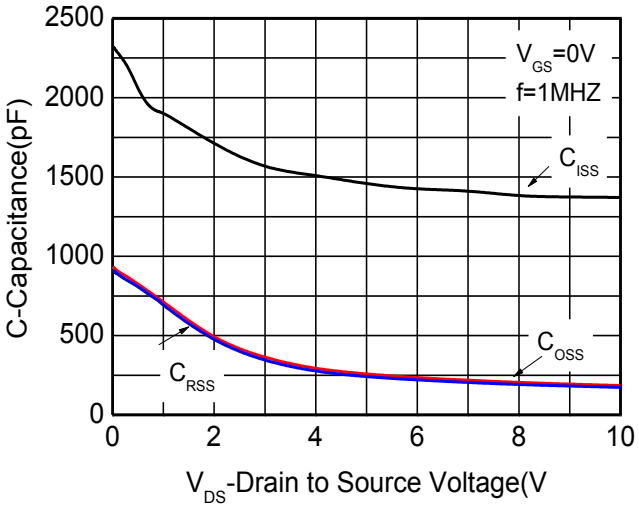
On-Resistance vs. Gate-to-Source voltage



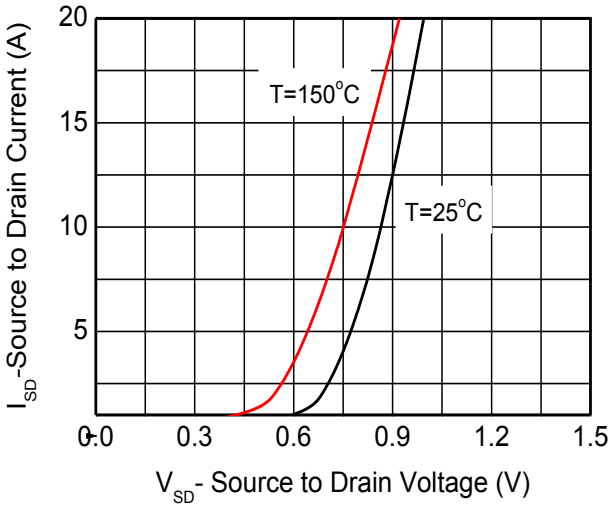
On-Resistance vs. Junction temperature



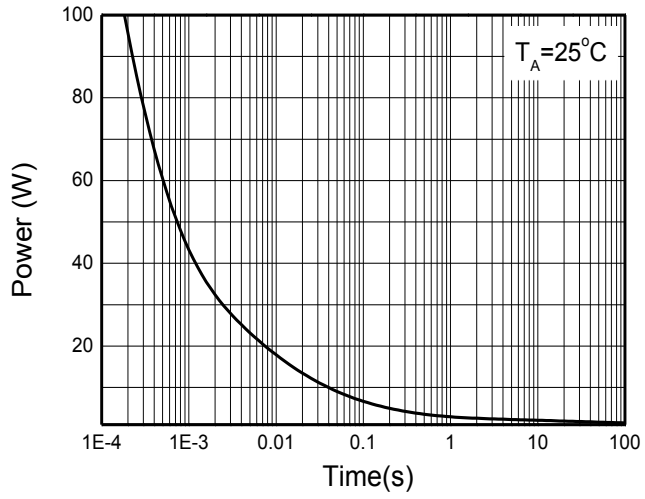
Threshold voltage vs. Temperature



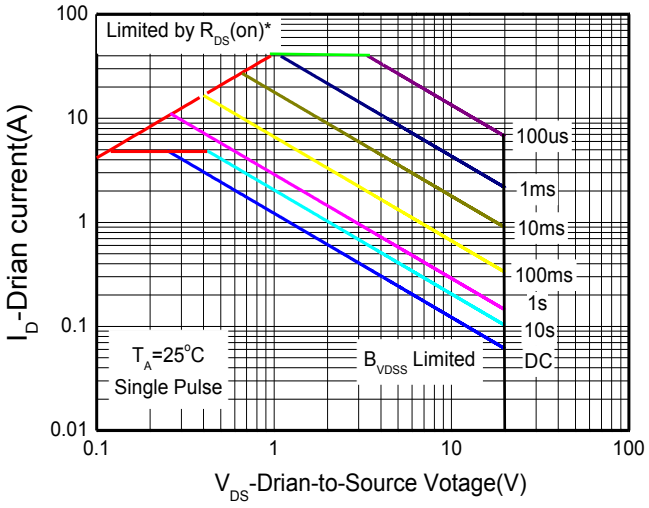
Capacitance



Body diode forward voltage

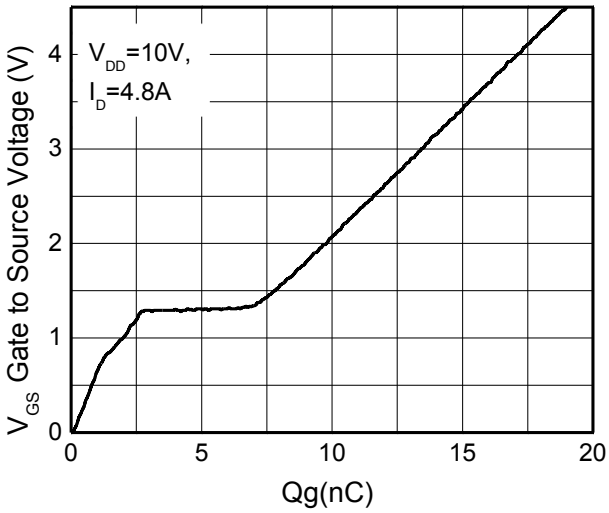


Single pulse power

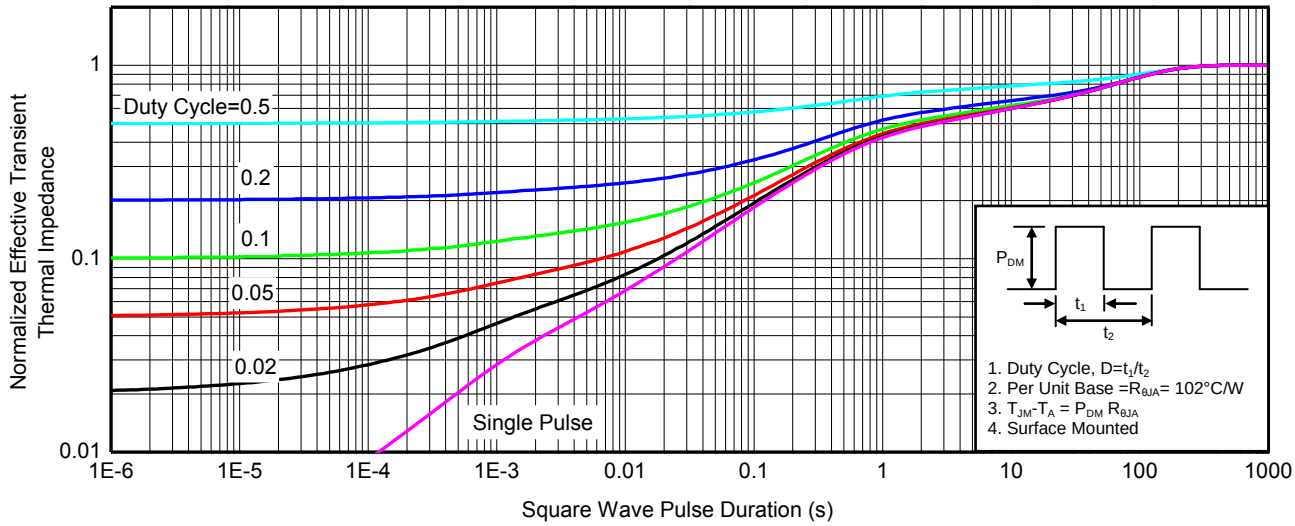


* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe operating power



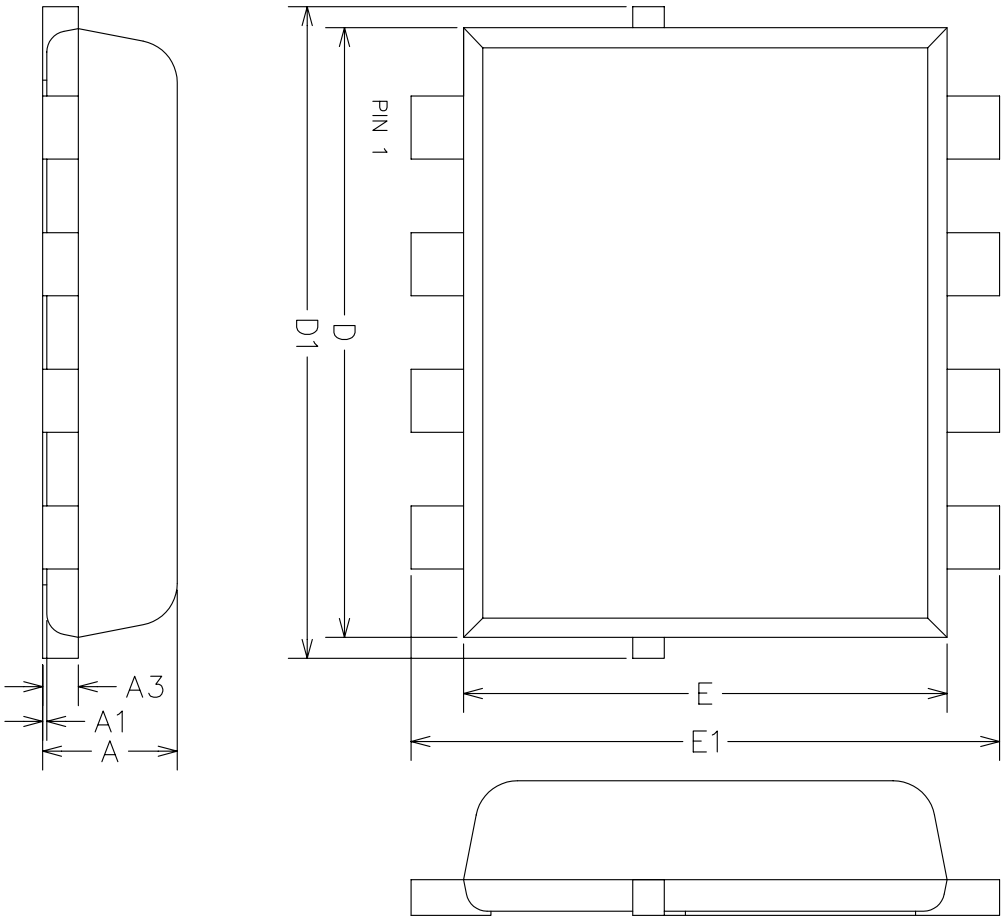
Gate Charge Characteristics



Transient thermal response (Junction-to-Ambient)

Package outline dimensions (ALL DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS)

PDFN2.9×2.8-8L



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.600	0.640	0.680
A1	0.000	0.020	0.050
A3		0.15REF	
b	0.200	0.300	0.400
D	2.800	2.900	3.000
E	2.200	2.300	2.400
D1	-	-	3.200
E1	2.600	2.800	3.000
D2	2.300	2.400	2.500
E2	1.150	1.250	1.350
e	0.550	0.650	0.750
K	0.500	-	-
L	0.280	0.380	0.480