WNMD2182

Dual N-Channel, 20V, 9.5A, Power MOSFET

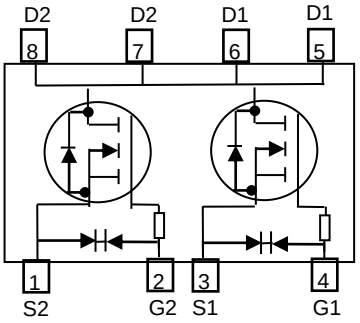
Http//:www.sh-willsemi.com

V_{DS} (V)	Rds(on) (mΩ)
20	12@ V_{GS}=4.5V
	14@ V_{GS}=3.1V
	17@ V_{GS}=2.5V
ESD HBM 2000V	

PDFN2.9×2.8-8L

Descriptions

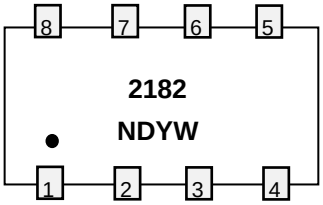
The WNMD2182 is Dual N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNMD2182 is Pb-free and 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 PDFN2.9×2.8-8L
- ESD Protected Class-2 （HBM 2000V）



2182 = Device Code
ND = Special Code
YW = Year & Week

Marking

Applications

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

Order information

Device	Package	Shipping
WNMD2182-8/TR	PDFN2.9×2.8-8L	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	9.5	7.1	A
	T_A=70°C		7.6	5.7	
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	9.3	6.6	A
	T_A=70°C		7.4	5.3	
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}	38		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%;.

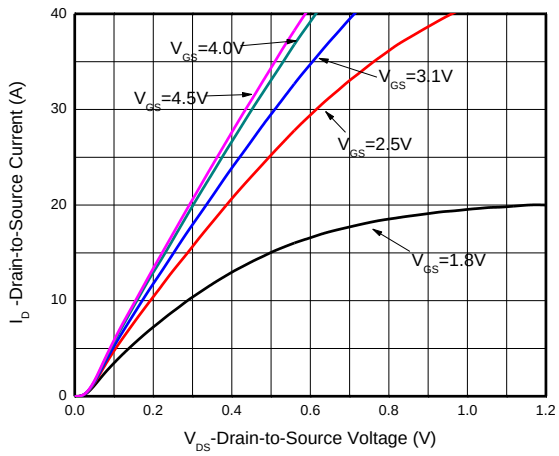
d Maximum junction temperature T_J=150°C;.

e Current rating is limited by wire-bonding.

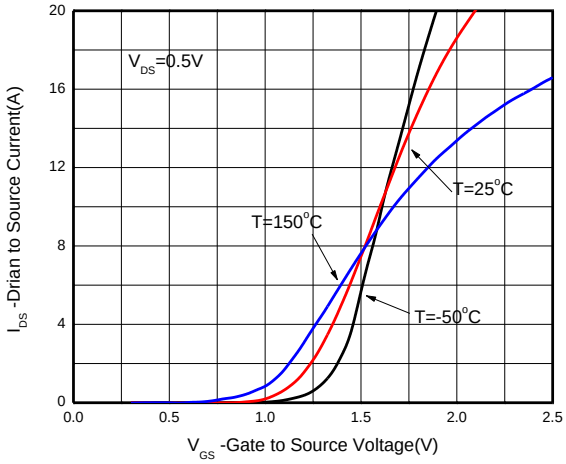
Electronics Characteristics (Ta=25°C, unless otherwise noted)

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	0.65	1.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 6.5A	8	12	17	mΩ
		V_{GS} = 3.1V, I_D = 5.5A	10	14	20	
		V_{GS} = 2.5V, I_D = 3.0A	12	17	30	
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		670		pF
Output Capacitance	C_{OSS}			130		
Reverse Transfer Capacitance	C_{RSS}			103		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DD} = 10 V, I_D = 7A		10		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.7		
Gate-to-Source Charge	Q_{GS}			1.5		
Gate-to-Drain Charge	Q_{GD}			3		
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		26		ns
Rise Time	tr			48.8		
Turn-Off Delay Time	td(OFF)			189.6		
Fall Time	tf			135		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1.0A		0.7	1.5	V

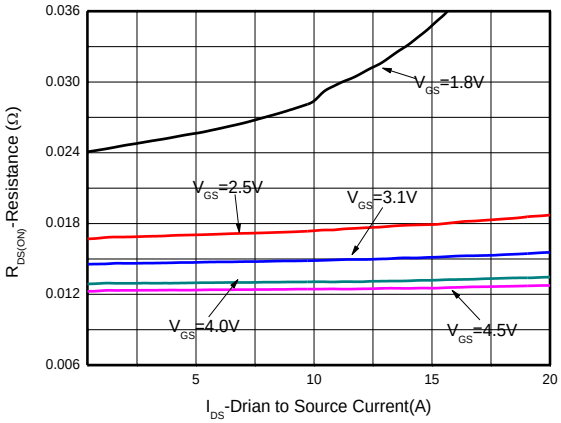
Typical Characteristics (Ta=25°C, unless otherwise noted)



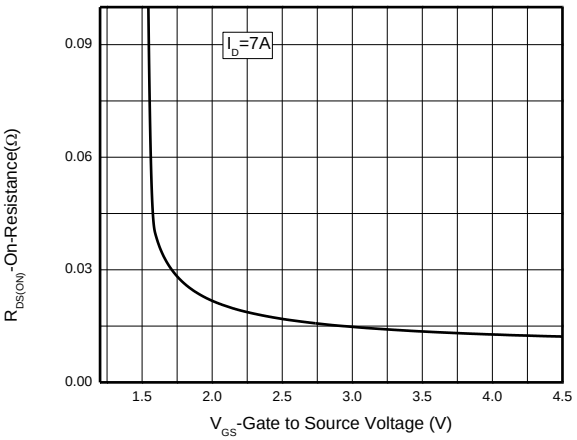
Output characteristics



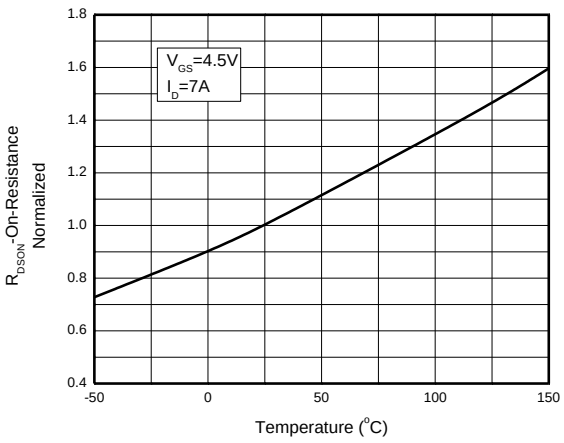
Transfer characteristics



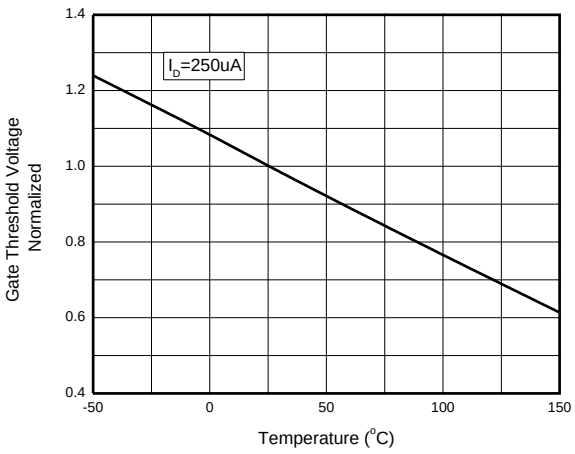
On-Resistance vs. Drain current



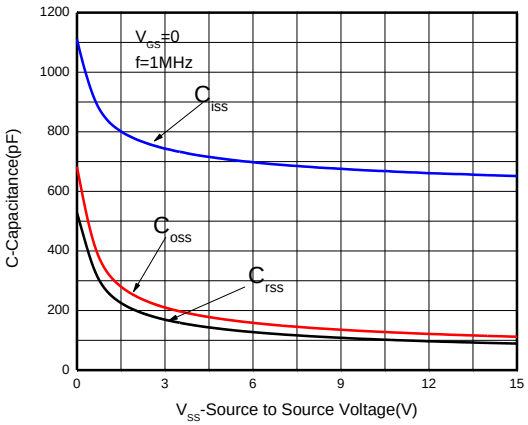
On-Resistance vs. Gate-to-Source voltage



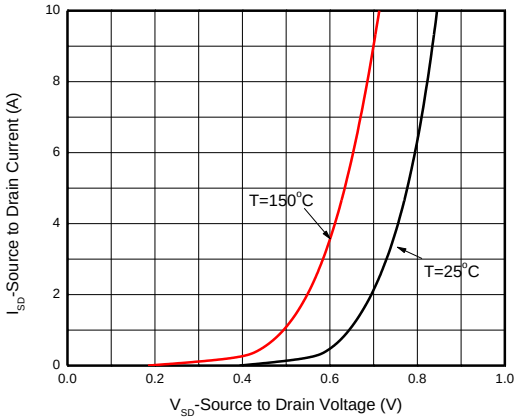
On-Resistance vs. Junction temperature



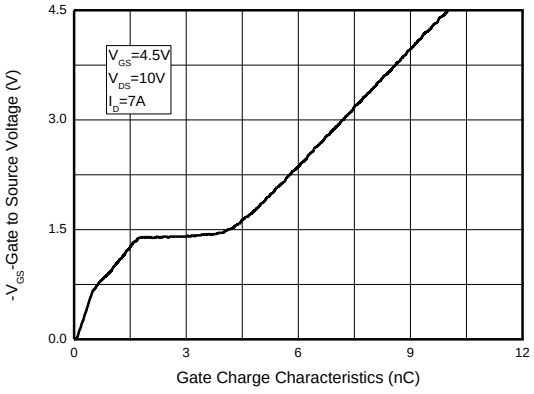
Threshold voltage vs. Temperature



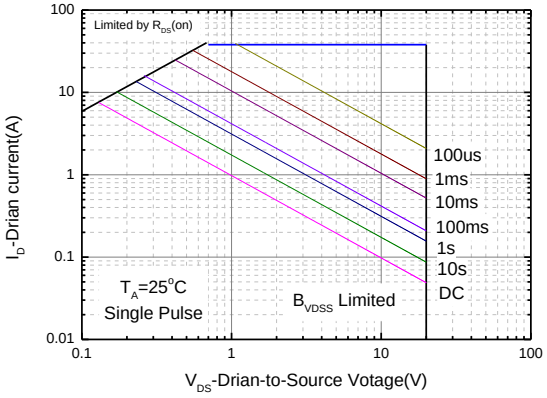
Capacitance



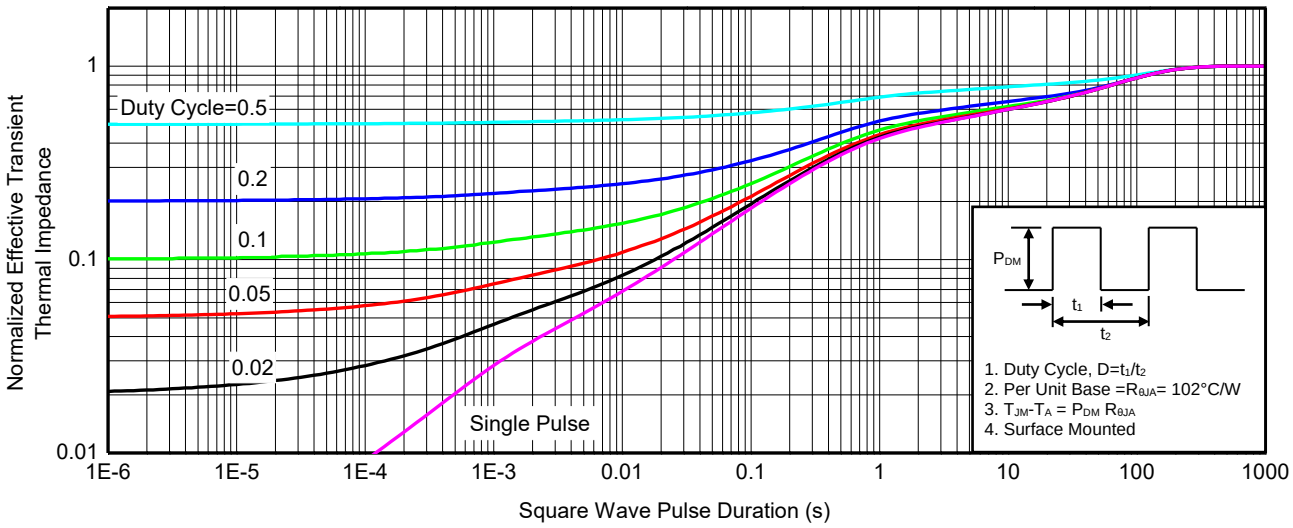
Body diode forward voltage



Gate Charge Characteristics



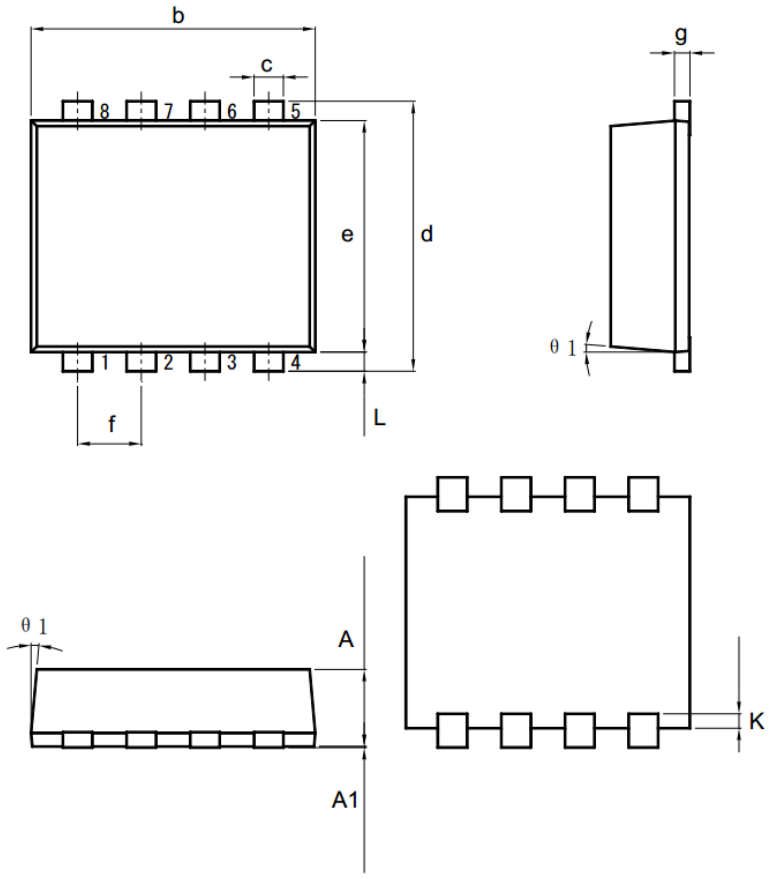
Safe operating power



Transient thermal response (Junction-to-Ambient)

Package outline dimensions

PDFN2.9*2.8-8L



Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.750	0.800	0.850
A1	0.000	—	0.020
b	2.800	2.900	3.000
c	0.250	0.300	0.400
d	2.700	2.800	2.900
e	2.300	2.400	2.500
f		0.650	
g	0.110	0.160	0.260
L		0.200	
K		0.150	
θ 1		5°	