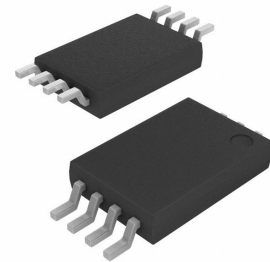
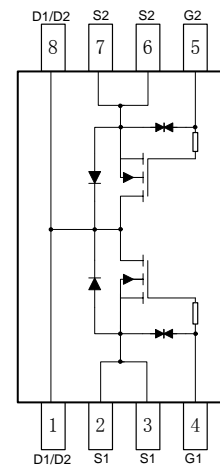


WNMD2158
Dual N-Channel, 20V, 7.0A, Power MOSFET
www.sh-willsemi.com

V_{DS} (V)	$R_{ds(on)}$ (Ω)
20	0.0148@ $V_{GS}=4.5V$
	0.017@ $V_{GS}=3.1V$
	0.019@ $V_{GS}=2.5V$
ESD Rating: 2000V HBM	


TSSOP-8L

Pin configuration (Top view)


2158 = Device Code

YY =Year

WW =Week

Marking
Order information
Descriptions

The WNMD2158 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 WNMD2158 is Pb-free.

Features

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

Applications

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

Device	Package	Shipping
WNMD2158-8/TR	TSSOP-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	$T_A=25^\circ\text{C}$	I_D	7.0	5.9	A
	$T_A=70^\circ\text{C}$		5.6	4.7	
Maximum Power Dissipation ^a	$T_A=25^\circ\text{C}$	P_D	1.4	1.0	W
	$T_A=70^\circ\text{C}$		0.9	0.6	
Continuous Drain Current ^b	$T_A=25^\circ\text{C}$	I_D	6.3	5.6	A
	$T_A=70^\circ\text{C}$		5.0	4.5	
Maximum Power Dissipation ^b	$T_A=25^\circ\text{C}$	P_D	1.1	0.9	W
	$T_A=70^\circ\text{C}$		0.7	0.5	
Pulsed Drain Current ^c		I_{DM}	30		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	$t \leq 10 \text{ s}$	$R_{\theta JA}$	66	87	$^\circ\text{C/W}$
	Steady State		90	120	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	84	108	
	Steady State		110	135	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	54	71	
Dual Operation					
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10 \text{ s}$	$R_{\theta JA}$	70	92	
	Steady State		95	125	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10 \text{ s}$	$R_{\theta JA}$	90	115	
	Steady State		115	135	
Junction-to-Case Thermal Resistance		$R_{\theta JC}$	56	72	

a Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

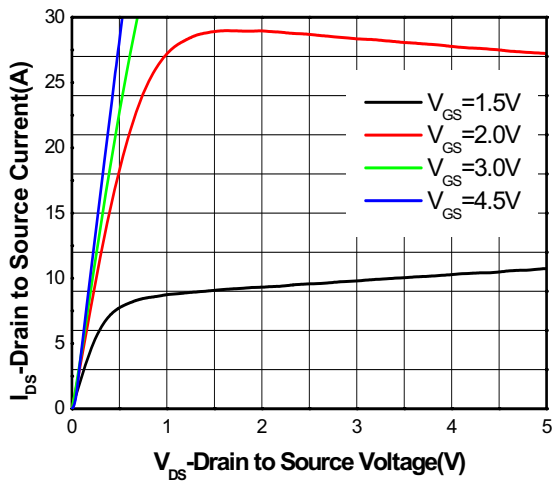
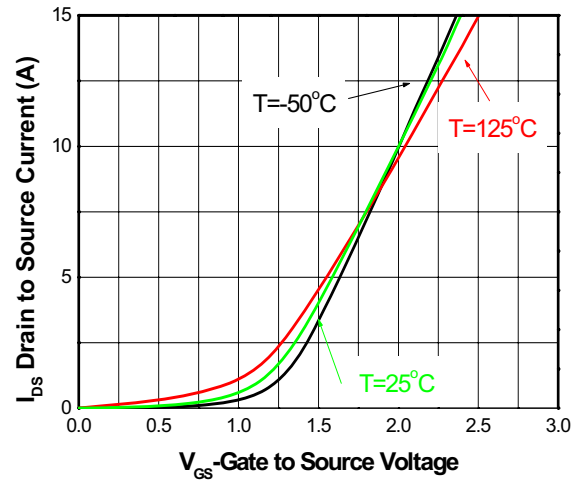
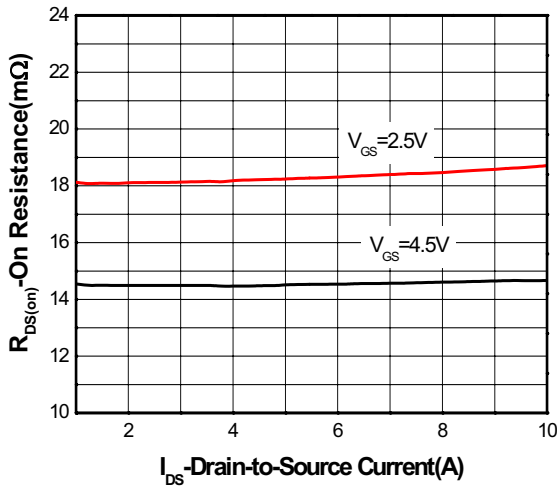
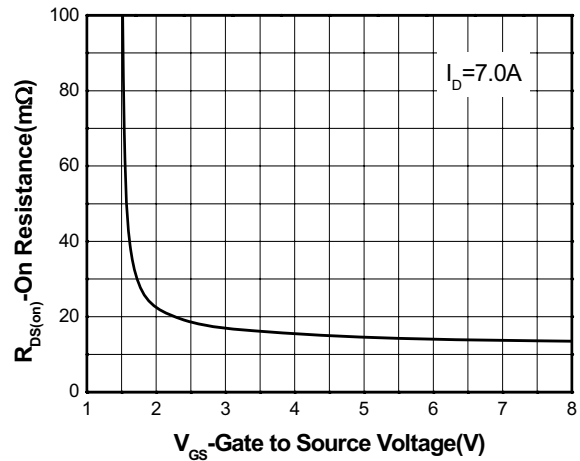
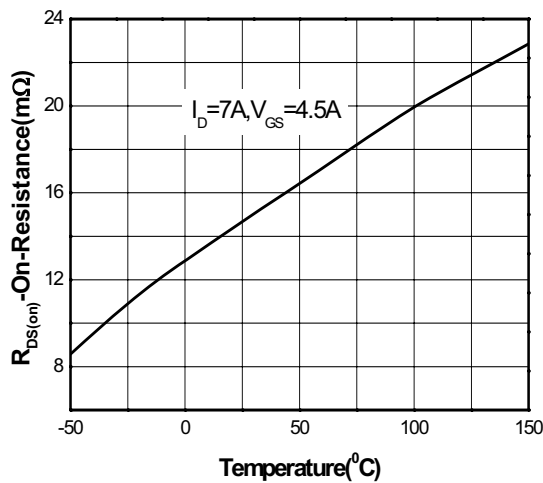
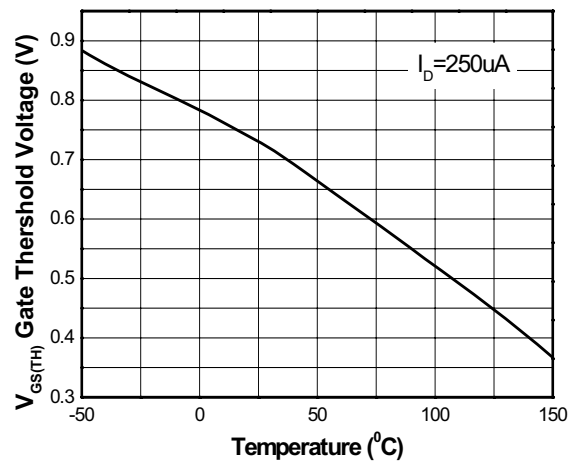
b Surface mounted on FR4 board using minimum pad size, 1oz copper

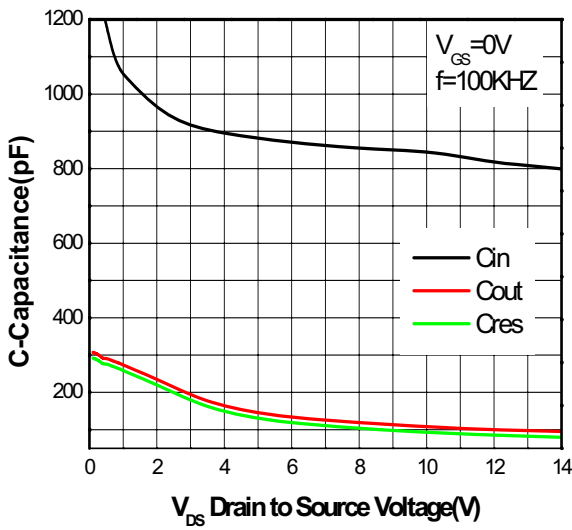
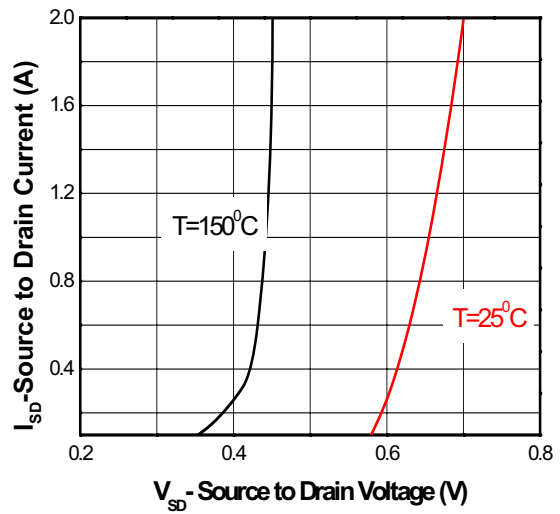
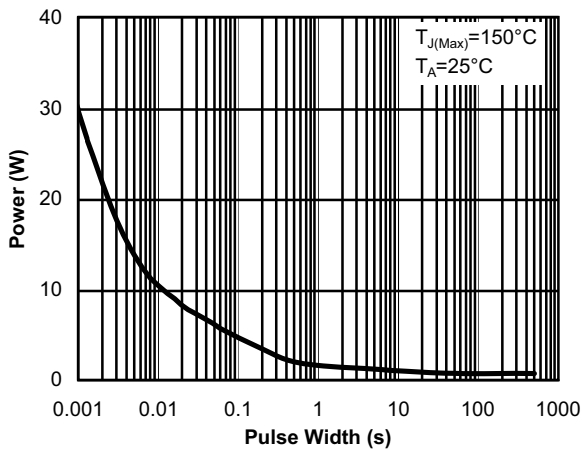
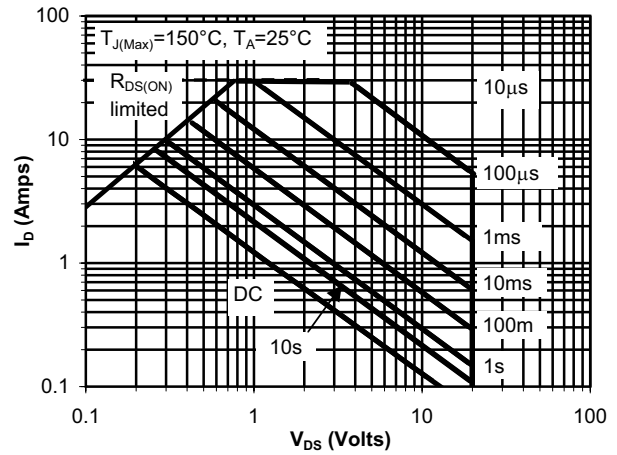
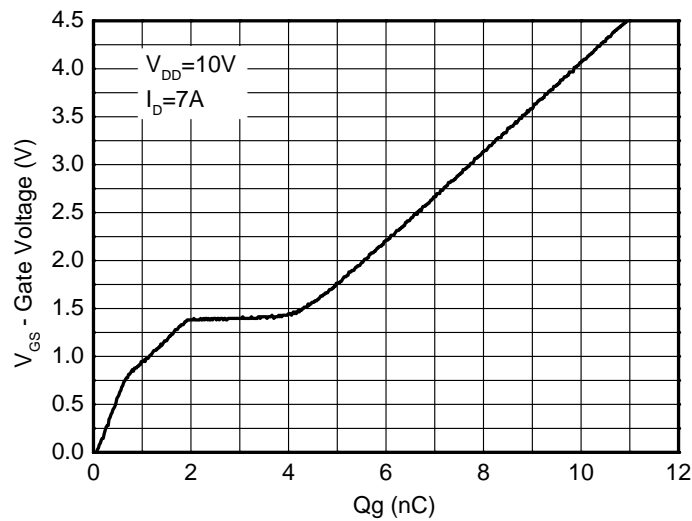
c Repetitive rating, pulse width limited by junction temperature, $t_p=10\mu\text{s}$, Duty Cycle=1%

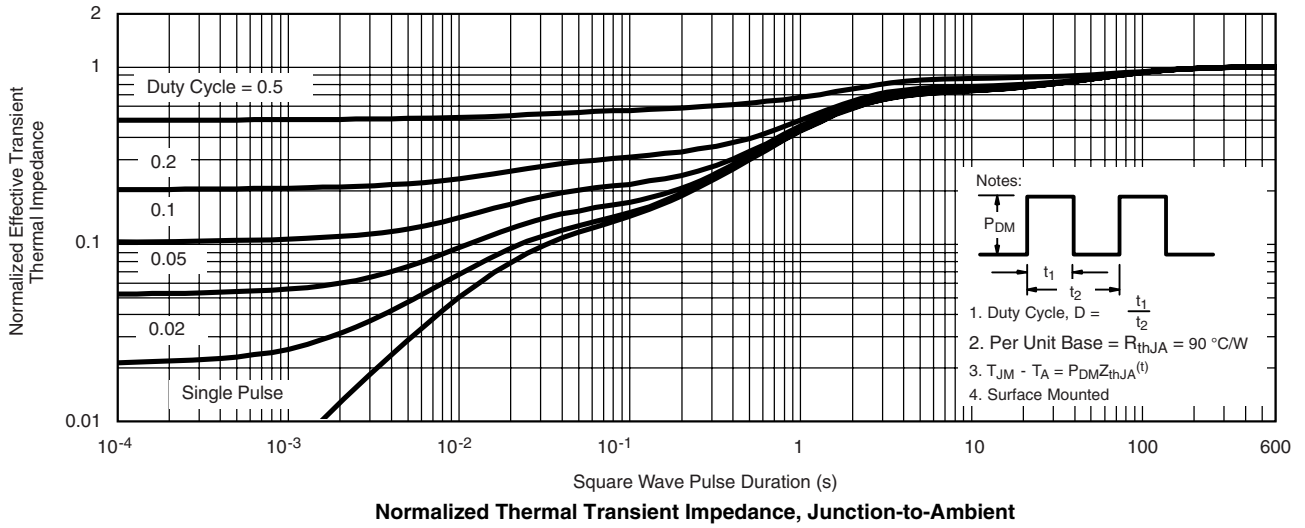
d Repetitive rating, pulse width limited by junction temperature $T_J=150^\circ\text{C}$.

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}	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	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}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 10\text{ V}$			± 5	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	0.45	0.70	1.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS} = 4.5\text{ V}, I_D = 7.0\text{ A}$	11	14.8	19	m Ω
		$V_{GS} = 3.1\text{ V}, I_D = 6.5\text{ A}$	12	17	21	
		$V_{GS} = 2.5\text{ V}, I_D = 5.5\text{ A}$	14	19	24	
Forward Transconductance	g_{FS}	$V_{DS} = 5\text{ V}, I_D = 7.0\text{ A}$		16.6		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V}, f = 100\text{ kHz},$ $V_{DS} = 10\text{ V}$		800		pF
Output Capacitance	C_{OSS}			108		
Reverse Transfer Capacitance	C_{RSS}			93		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $I_D = 7.0\text{ A}$		10.9		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.62		
Gate-to-Source Charge	Q_{GS}			1.92		
Gate-to-Drain Charge	Q_{GD}			2.0		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $R_L = 2.0\ \Omega, R_G = 6\ \Omega$		410		ns
Rise Time	T_r			1200		
Turn-Off Delay Time	$t_d(OFF)$			6100		
Fall Time	T_f			3500		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 1.0\text{ A}$		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

Safe operating power

Gate Charge Characteristics



Package outline dimensions
TSSOP-8L
