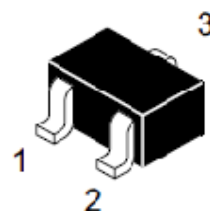


WPM1488

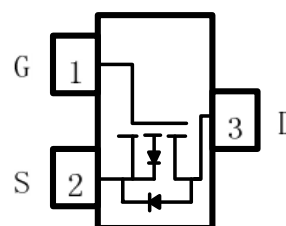
Single P-Channel, -12V, -1.4A, Power MOSFET

www.sh-willsemi.com

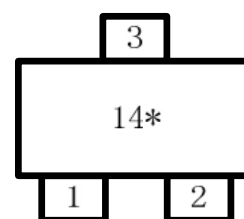
V_{DS} (V)	Typical $R_{DS(on)}$ (Ω)	I_D (A)
-12	0.080@ $V_{GS} = -4.5V$	-1.2
	0.086@ $V_{GS} = -3.6V$	-1.0
	0.105@ $V_{GS} = -2.5V$	-1.0



SOT-323



Pin configuration (Top view)



14 = Specific Device Code

* = Date Code

Marking

Order information

Device	Package	Shipping
WPM1488-3/TR	SOT-323	3000/Reel&Tape

Descriptions

The WPM1488 is P-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 WPM1488 is Pb-free.

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOT-323

Applications

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

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V _{DS}	-12		V
Gate-Source Voltage		V _{GS}	±8		
Continuous Drain Current ^{a d}	T _A =25°C	I _D	-1.5	-1.4	A
	T _A =70°C		-1.2	-1.1	
Maximum Power Dissipation ^{a d}	T _A =25°C	P _D	0.44	0.38	W
	T _A =70°C		0.28	0.25	
Continuous Drain Current ^{b d}	T _A =25°C	I _D	-1.4	-1.3	A
	T _A =70°C		-1.1	-1.1	
Maximum Power Dissipation ^{b d}	T _A =25°C	P _D	0.39	0.34	W
	T _A =70°C		0.25	0.22	
Pulsed Drain Current ^c		I _{DM}	-10		A
Operating Junction Temperature		T _J	-55 to 150		°C
Lead Temperature		T _L	260		°C
Storage Temperature Range		T _{stg}	-55 to 150		°C

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10\text{ s}$	$R_{\theta JA}$	284	335	$^{\circ}\text{C/W}$
	Steady State		321	385	
Junction-to-Ambient Thermal Resistance ^b	$t \leq 10\text{ s}$	$R_{\theta JA}$	315	338	
	Steady State		358	415	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	110	165	

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

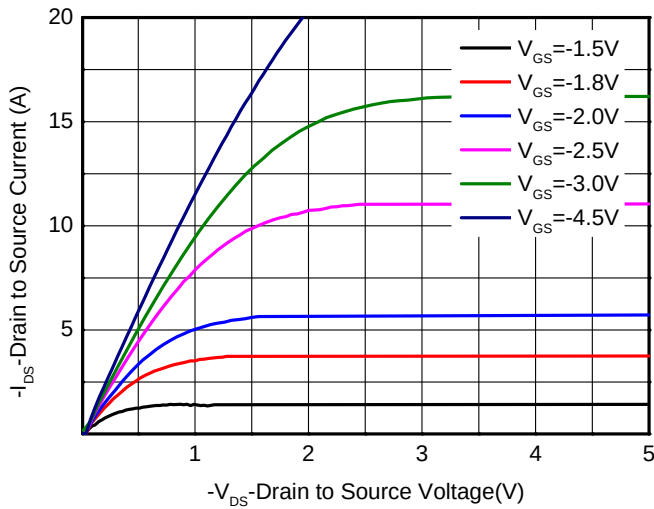
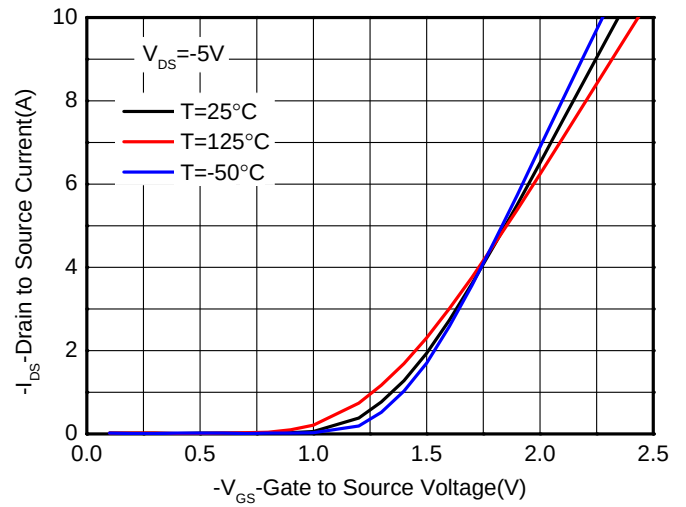
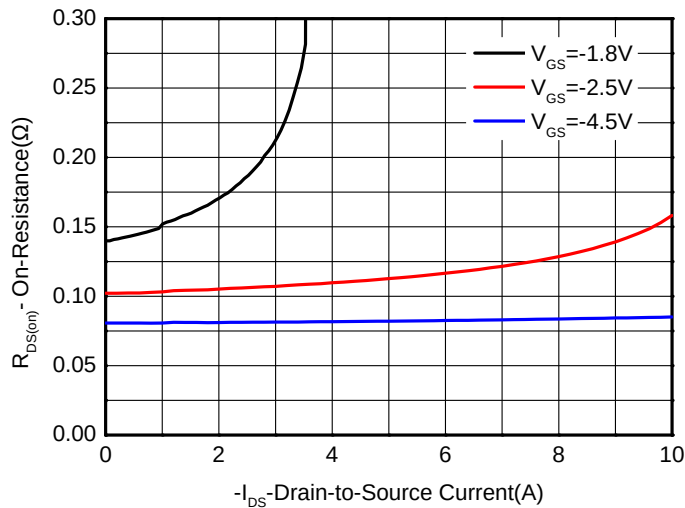
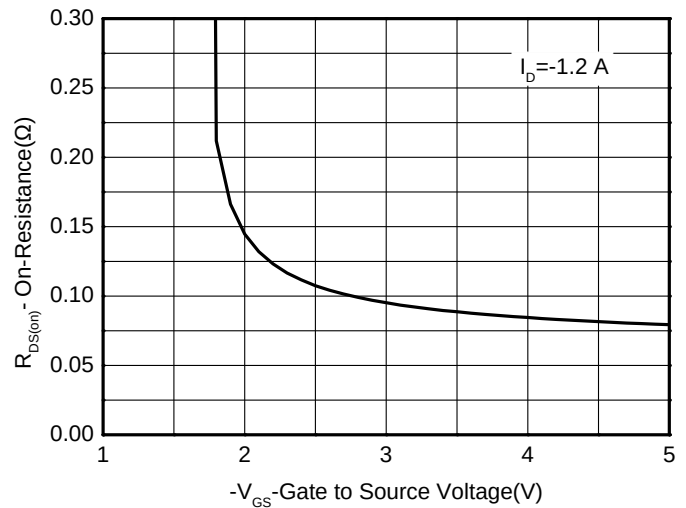
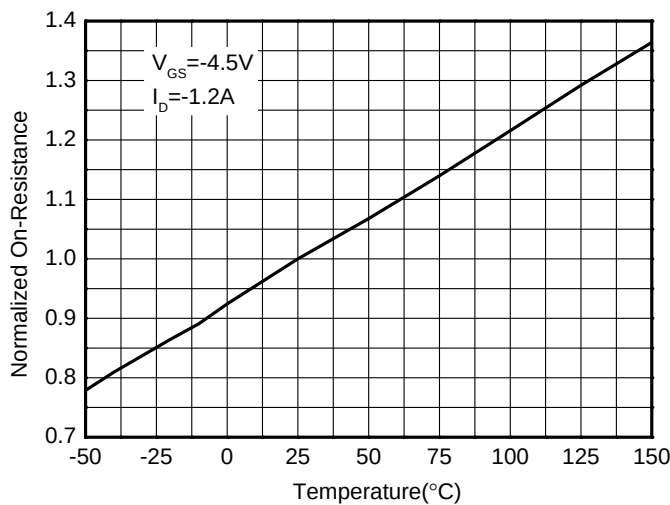
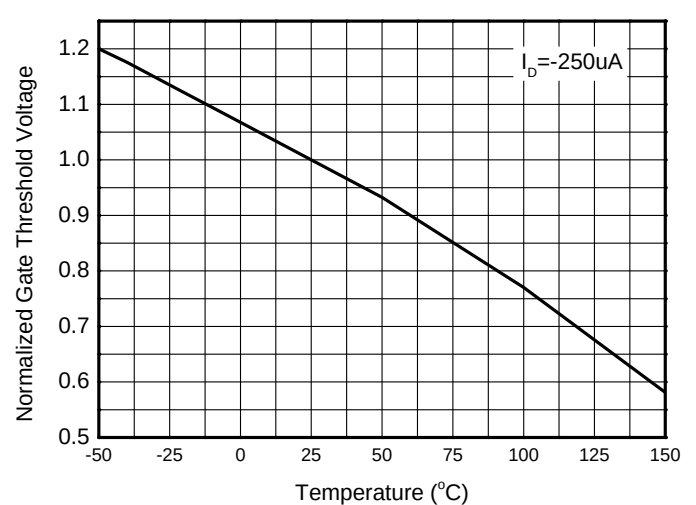
b Surface mounted on FR-4 board using minimum pad size, 1oz copper

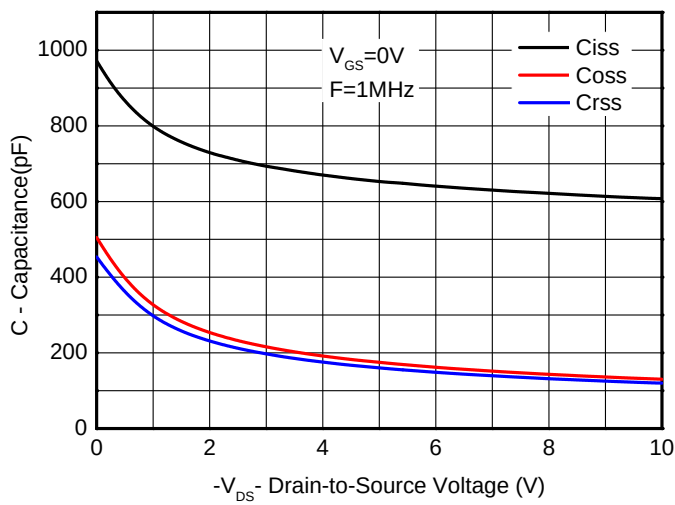
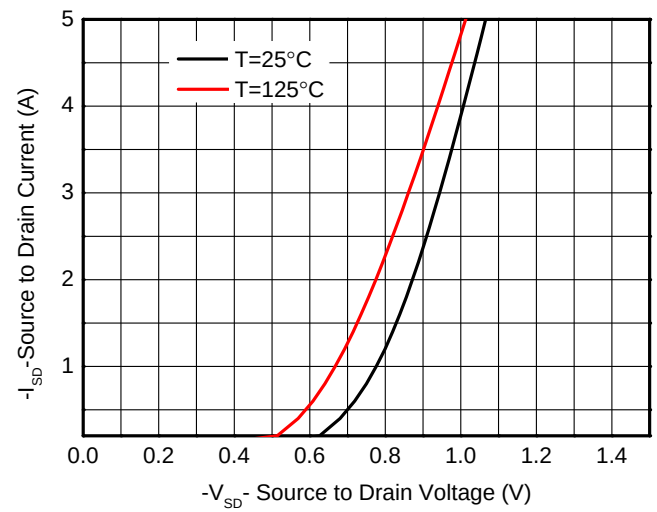
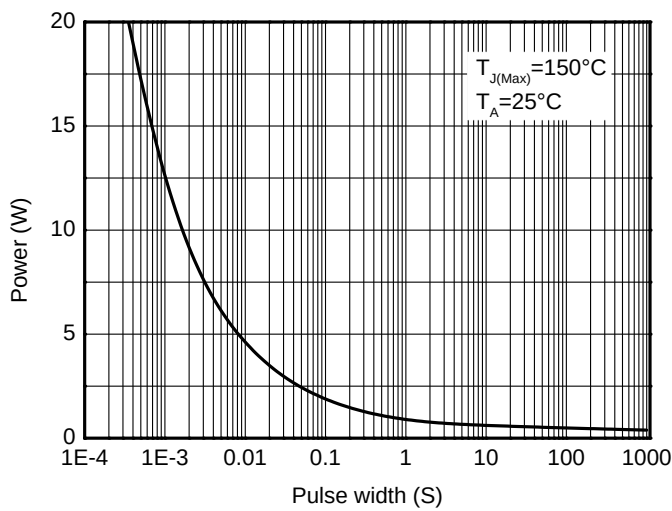
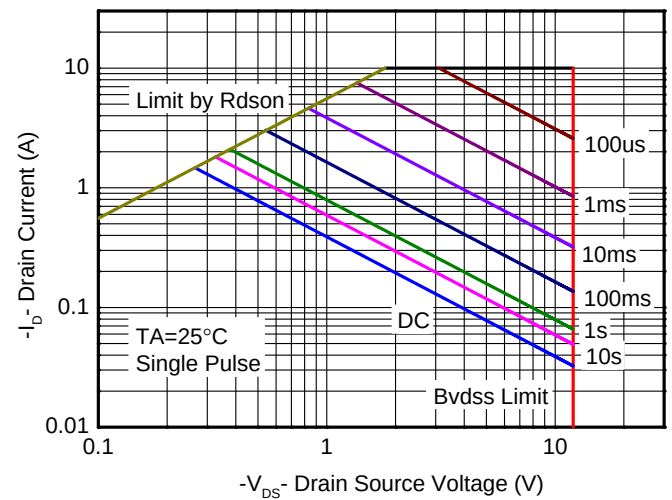
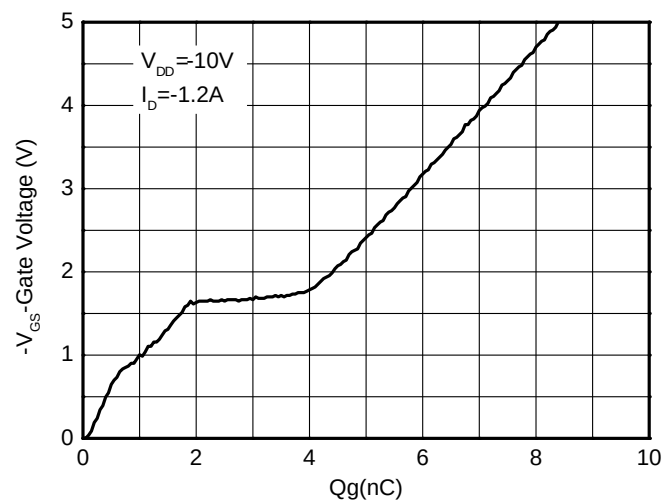
c Pulse width<380 μs , Duty Cycle<2%

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

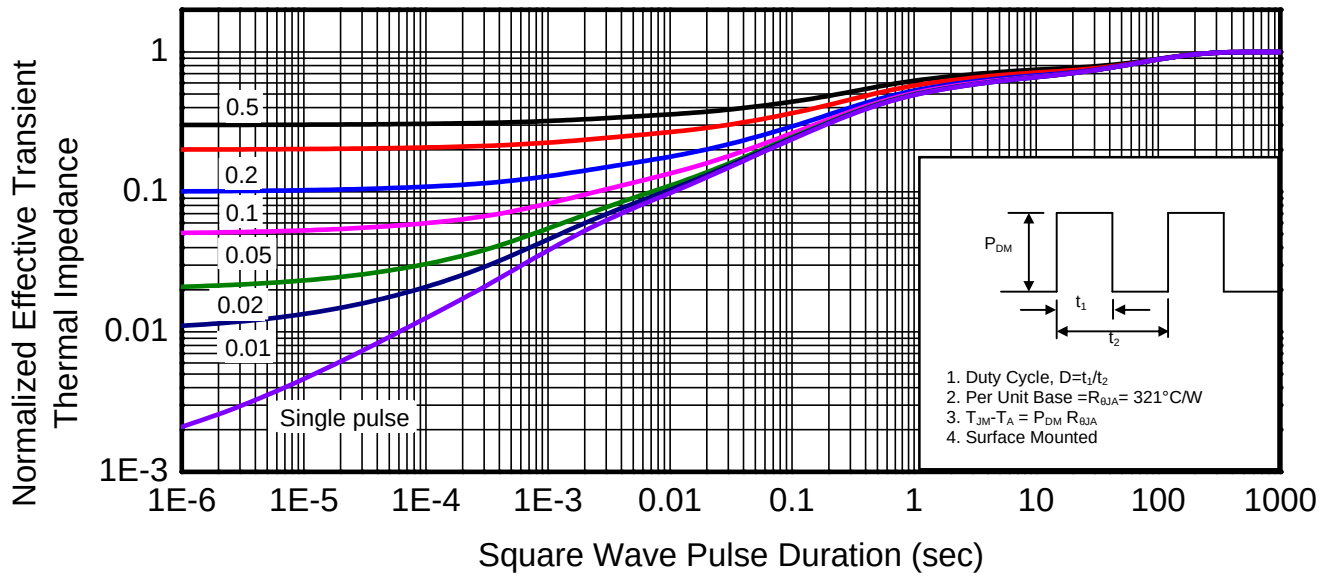
Electronics Characteristics (Ta=25°C, unless otherwise noted)

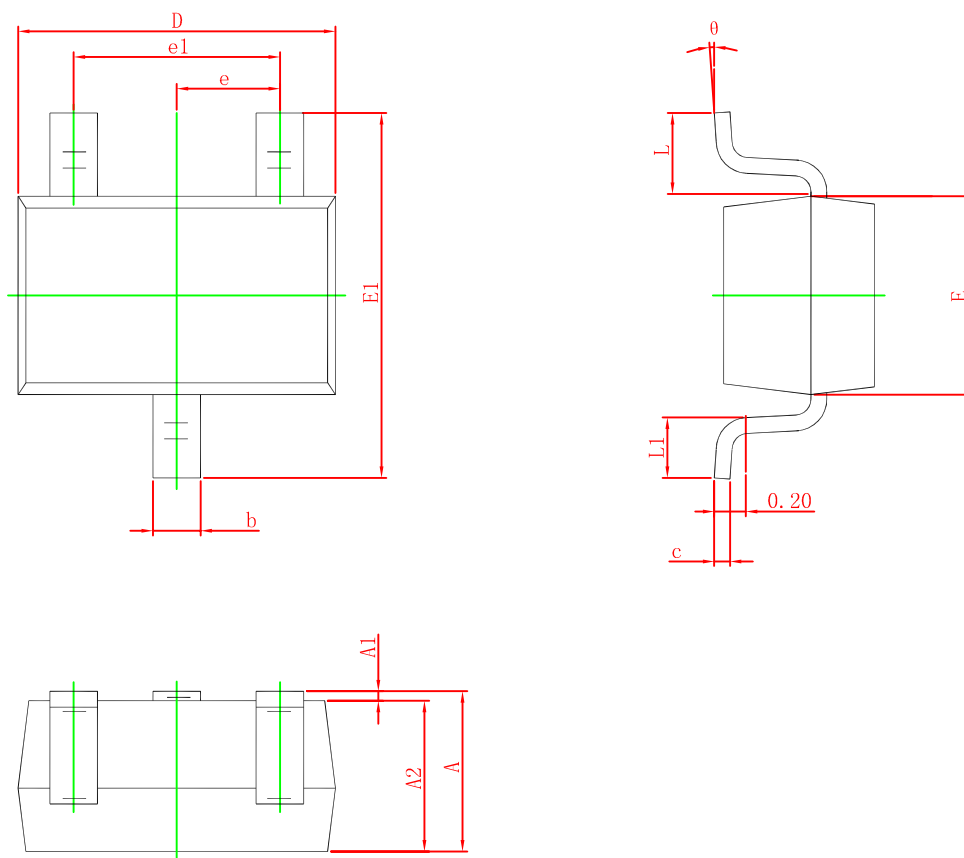
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = -250uA	-12			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -10V, V _{GS} = 0V			-1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±8V			±1	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = -250uA	-0.45	-0.65	-0.85	V
Drain-to-source On-resistance ^{b, c}	R _{DS(on)}	V _{GS} = -4.5V, I _D = -1.2A		80	120	mΩ
		V _{GS} = -3.6V, I _D = -1.0A		86	140	
		V _{GS} = -2.5V, I _D = -1.0A		105	160	
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-1.2A		9		S
CAPACITANCES, CHARGES						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0 MHz, V _{DD} = -10 V		607		pF
Output Capacitance	C _{OSS}			130		
Reverse Transfer Capacitance	C _{RSS}			120		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = -4.5 V, V _{DD} = -10 V, I _D = -1.2A		7.85		nC
Threshold Gate Charge	Q _{G(TH)}			0.85		
Gate-to-Source Charge	Q _{GS}			1.9		
Gate-to-Drain Charge	Q _{GD}			2.1		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(on)	V _{GS} = -4.5 V, V _{DD} = -10V, I _D =-1.2A, R _G =6 Ω		30		ns
Rise Time	tr			32		
Turn-Off Delay Time	td(off)			62		
Fall Time	tf			18		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = -1.0A		-0.8	-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
SOT-323


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°