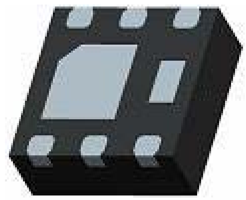
WPM1485

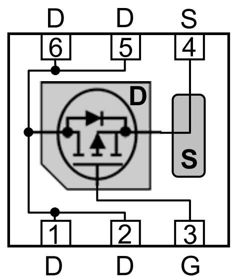
Single P-Channel, -12V, -7.4A, Power MOSFET

Http//:www.willsemi.com

V_{DS} (V)	Rds(on) (Ω)
-12	0.015@ V_{GS}= − 4.5V
	0.020@ V_{GS}= − 2.5V
	0.030@ V_{GS}= − 1.8V



DFN2×2-6L



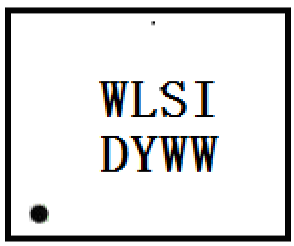
Pin configuration (Top view)

Descriptions

The WPM1485 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 WPM1485 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 DFN2×2-6L



WLSI = Willsemi
D = 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
WPM1485-6/TR	DFN2×2-6L	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	10 S	Steady State	Unit
Drain-Source Voltage		V_{DS}	-12		V
Gate-Source Voltage		V_{GS}	±8		V
Continuous Drain Current [a]	T_A=25°C	I_D	-7.4	-6.4	A
	T_A=70°C		-5.9	-5.1	
Maximum Power Dissipation [a]	T_A=25°C	P_D	1.8	1.3	W
	T_A=70°C		1.1	0.8	
Continuous Drain Current [b]	T_A=25°C	I_D	-5.7	-4.6	A
	T_A=70°C		-4.5	-3.6	
Maximum Power Dissipation [b]	T_A=25°C	P_D	1.0	0.6	W
	T_A=70°C		0.6	0.4	
Pulsed Drain Current [c]		I_{DM}	-30		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

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	55	69	°C/W
	Steady State		70	91	
Junction-to-Ambient Thermal Resistance [b]	t ≤ 10 s	$R_{\theta JA}$	88	115	
	Steady State		125	179	
Junction-to-Case Thermal Resistance	Steady State	$R_{\theta JC}$	34	44	

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

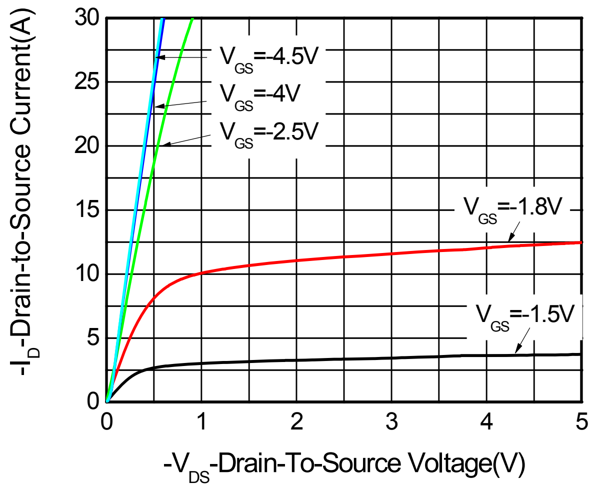
c Pulse width<380μs, Duty Cycle<2%

d Maximum junction temperature T_J=150°C.

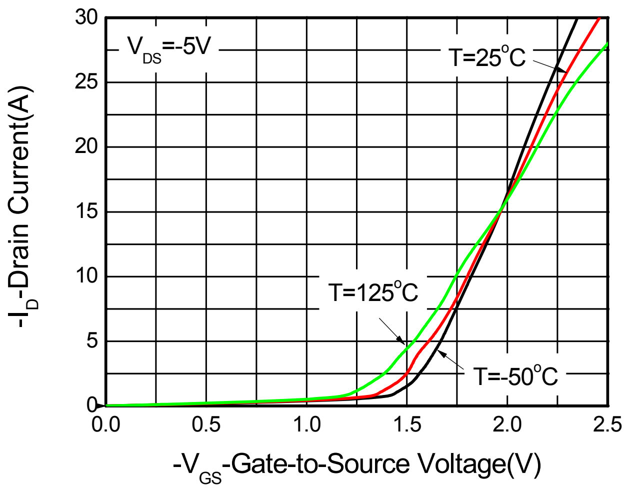
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = -250uA	-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			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = -250uA	-0.45	-0.60	-0.95	V
Drain-to-source On-resistance [b, c]	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -7.4A		15	19	mΩ
		V_{GS} = -2.5V, I_D = -6.5A		20	23	
		V_{GS} = -1.8V, I_D = -2.3A		30	45	
Forward Transconductance	g_{FS}	V_{DS} =-5.0V, I_D =-7.4A		21		S
CAPACITANCES, CHARGES						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz, V_{DS} = -10 V		2620		pF
Output Capacitance	C_{OSS}			570		
Reverse Transfer Capacitance	C_{RSS}			530		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = -4.5 V, V_{DS} = -6.0 V, I_D = -7.4A		30.75		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.90		
Gate-to-Source Charge	Q_{GS}			6.10		
Gate-to-Drain Charge	Q_{GD}			7.60		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = -4.5 V, V_{DD} = -6.0 V, I_D=-7.4A, R_G=6 Ω		22		ns
Rise Time	tr			40		
Turn-Off Delay Time	td(OFF)			90		
Fall Time	tf			65		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S =-8.0A		-0.88	-1.5	V

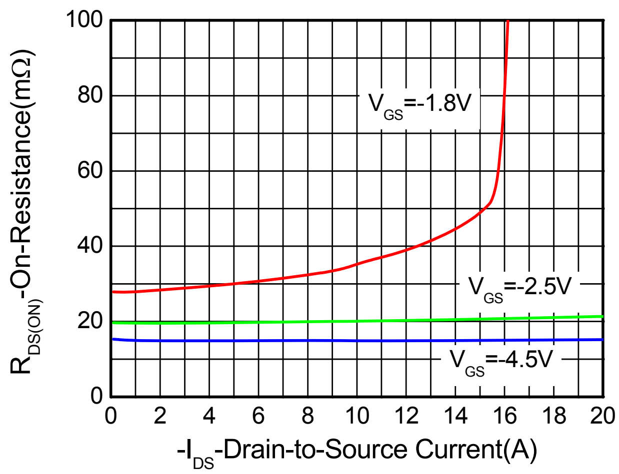
Typical Characteristics (Ta=25°C, unless otherwise noted)



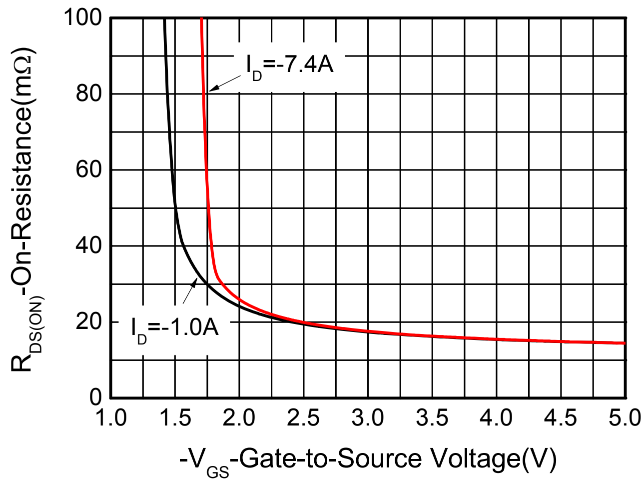
Output characteristics



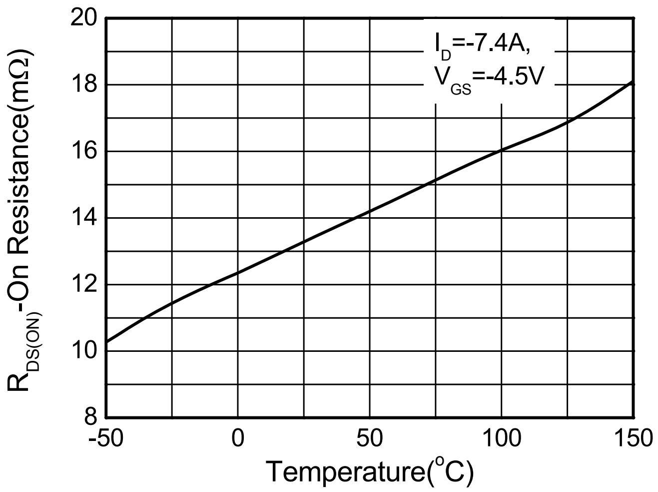
Transfer characteristics



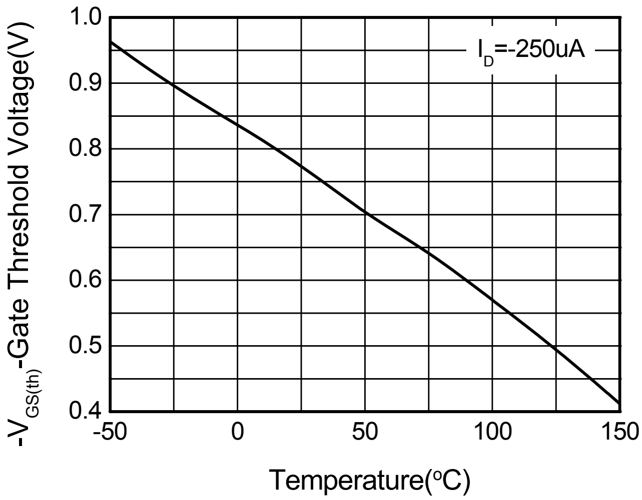
On-Resistance vs. Drain current



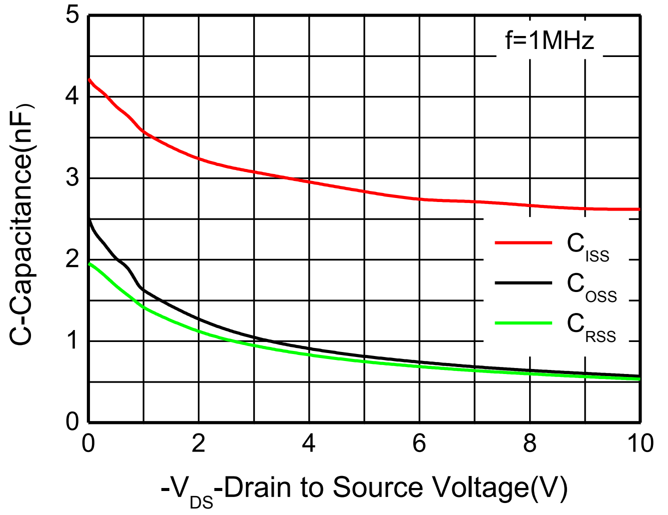
On-Resistance vs. Gate-to-Source voltage



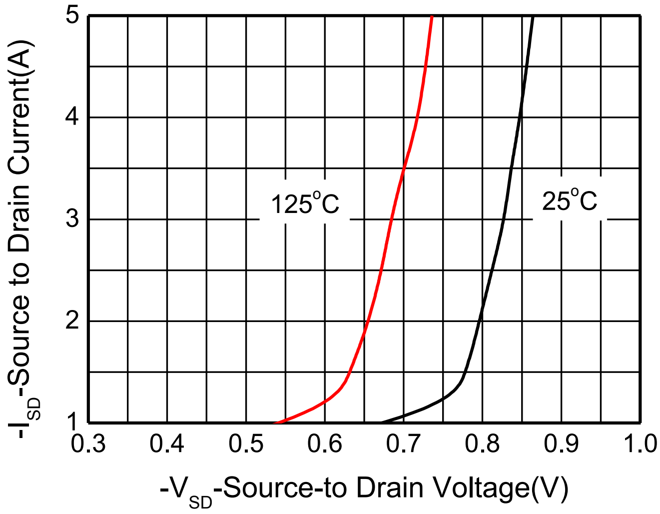
On-Resistance vs. Junction temperature



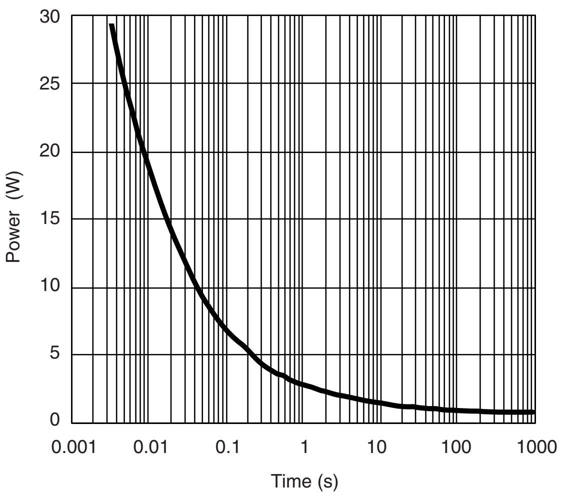
Threshold voltage vs. Temperature



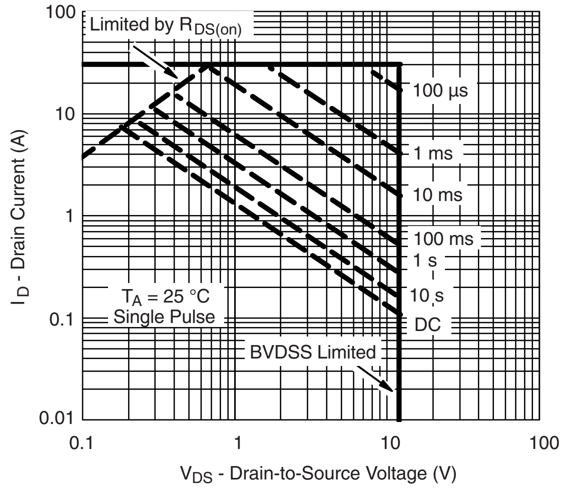
Capacitance



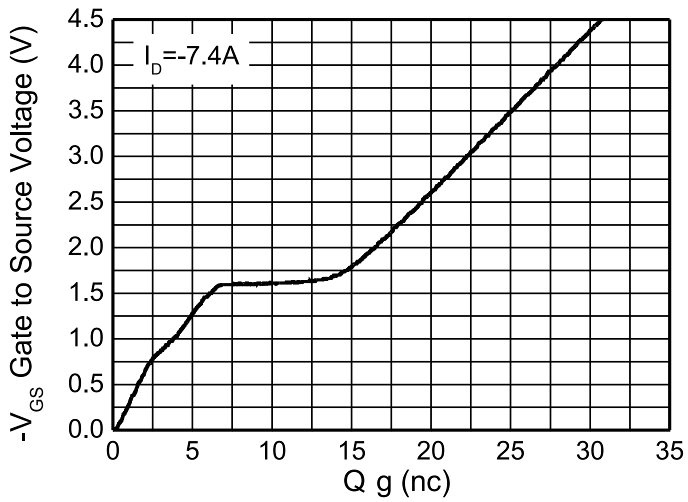
Body diode forward voltage



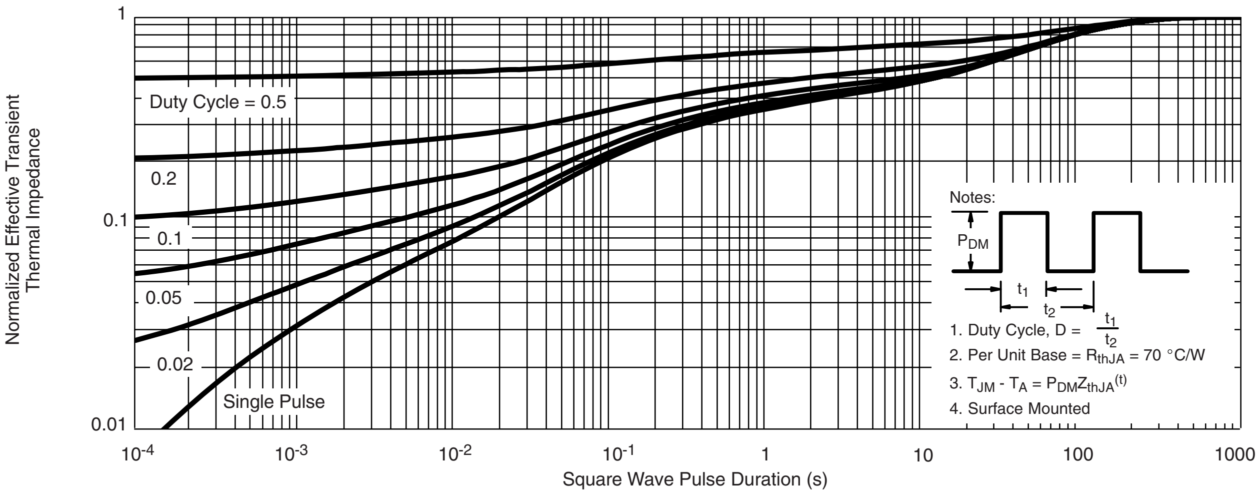
Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient



Gate Charge Characteristics



Normalized Thermal Transient Impedance, Junction-to-Ambient

Transient thermal response (Junction-to-Ambient)

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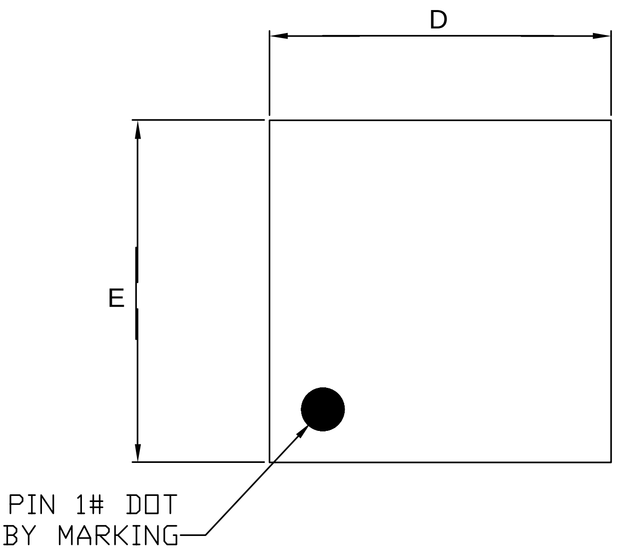
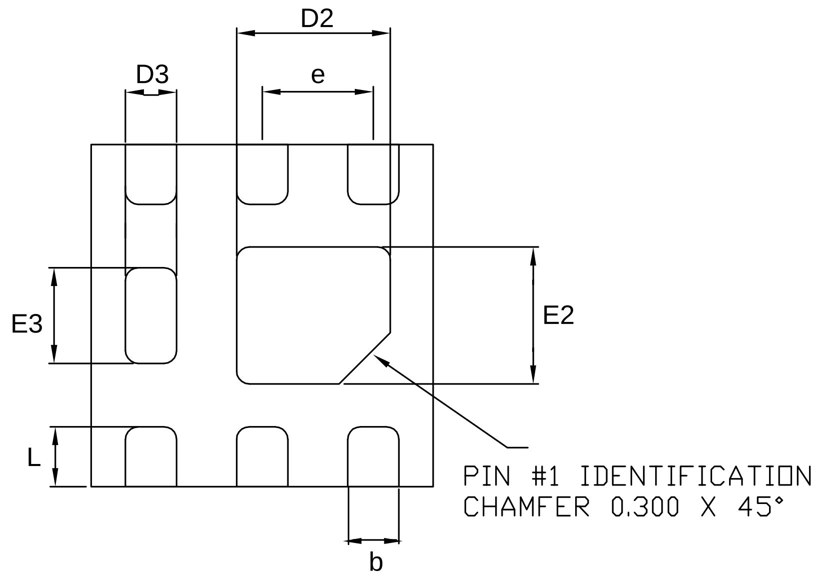
Package outline dimensions

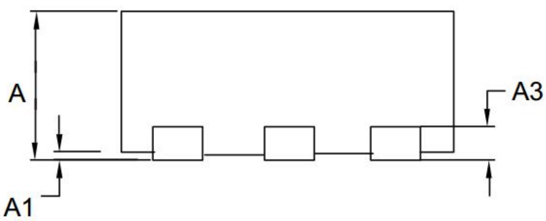
DFN2*2-6L



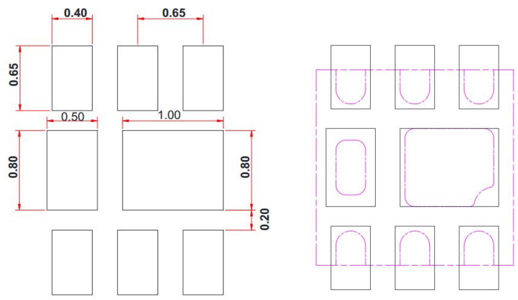
Top view



Bottom view



Side View



Recommend land pattern (Unit: mm)

Note: This land pattern is for your reference only. Actual pad layouts may vary depending on application.

Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	-	0.05
A3	0.203 Ref.		
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	0.85	0.90	0.95
E2	0.75	0.80	0.85
D3	0.25	0.30	0.35
E3	0.51	0.56	0.61
b	0.25	0.30	0.35
L	0.30	0.35	0.40
e	0.65 BSC.		