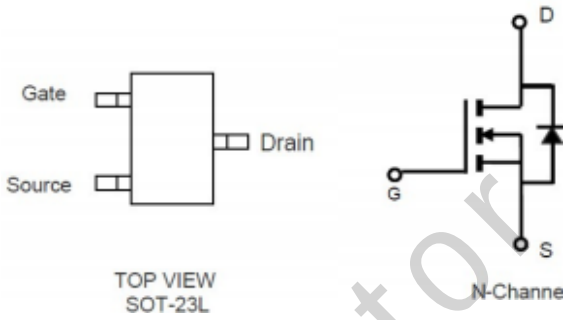
■ FEATURE

- ***30V/6.0A, $R_{DS(ON)}$=18mΩ (typ.)@V_{GS}=10V***
- ***30V/4.8A, $R_{DS(ON)}$=25mΩ (typ.)@V_{GS}=4.5V***
- Super high design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- Full RoHS compliance
- SOT23-3L package design



■ DESCRIPTION

The IRLML6346TRPBF is the N-Channel logic enhancement mode power field effect transistor is produced using high cell density advanced trench technology..

This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application, and low in-line power loss are needed in a very small outline surface mount package.

■ APPLICATIONS

- Power Management
- Portable Equipment
- DC/DC Converter
- Load Switch
- DSC

■ ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current (T_C=25℃)	V_{GS}=10V	6.0	A
	Continuous Drain Current (T_C=70℃)		5.0	
I_{DM}	Pulsed Drain Current		20	A
I_S	Continuous Source Current (Diode Conduction)		1.5	A
P_D	Power Dissipation	T_A=25℃	1.5	W
		T_A=70℃	0.9	
T_J	Operation Junction Temperature		150	℃
T_{STG}	Storage Temperature Range		-55~+150	℃
$R_{\theta JA}$	Thermal Resistance Junction to Ambient		90	℃/W

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied

■ *ELECTRICAL CHARACTERISTICS(T_A=25℃ Unless otherwise noted)*

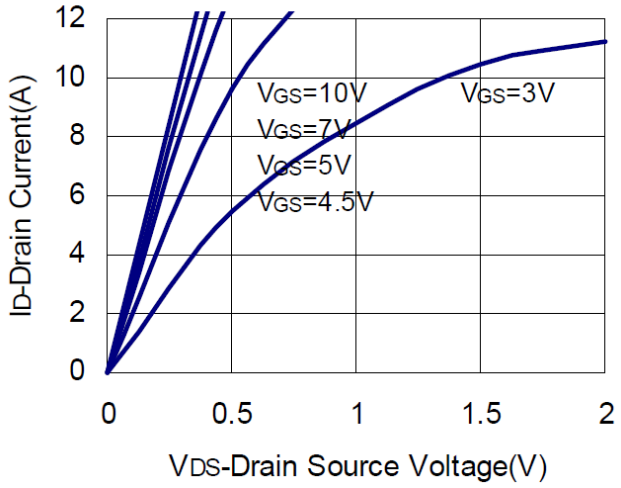
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	1		2	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0			1	uA
		V_{DS}=24V, V_{GS}=0 T_J=55℃			5	
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=6.0A		18	30	mΩ
		V_{GS}=4.5V, I_D=4.8A		25	40	
Source-Drain Diode						
V_{SD}	Diode Forward Voltage	I_S=1.0A, V_{GS}=0V		0.7	1.0	V
Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS}=20V		6		nC
Q_{gs}	Gate-Source Charge	V_{GS}=4.5V		1.1		
Q_{gd}	Gate-Drain Charge	I_D=6.0A		2.5		
C_{iss}	Input Capacitance	V_{DS}=15V		414		pF
C_{oss}	Output Capacitance	V_{GS}=0V		60		
C_{rss}	Reverse Transfer Capacitance	f=1MHz		49		
$T_{d(on)}$	Turn-On Time	V_{DS}=15V		7.5		nS
T_r		I_D=5A		45		
$T_{d(off)}$	Turn-Off Time	V_{GEN}=10V		10		
T_f		R_G=3.3Ω		4		

Note: 1. Pulse test: pulse width<=300uS, duty cycle<=2%

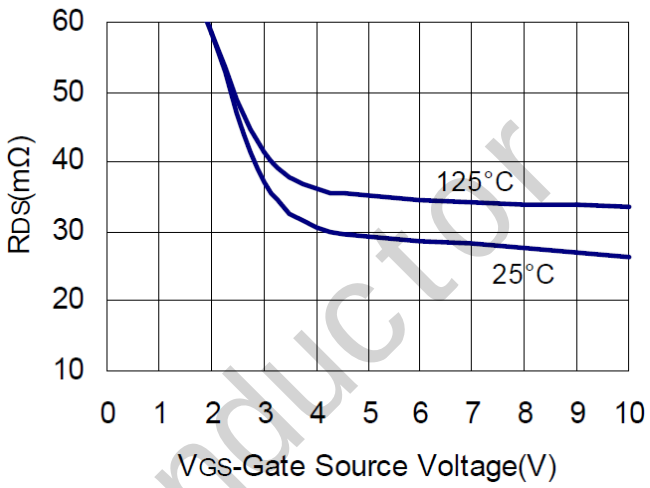
2.Static parameters are based on package level with recommended wire bonding

■ *TYPICAL CHARACTERISTICS (25℃ Unless Note)*

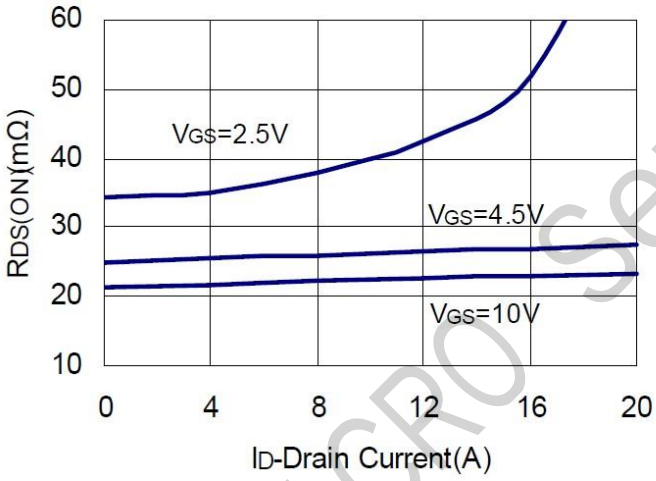
Output Characteristics



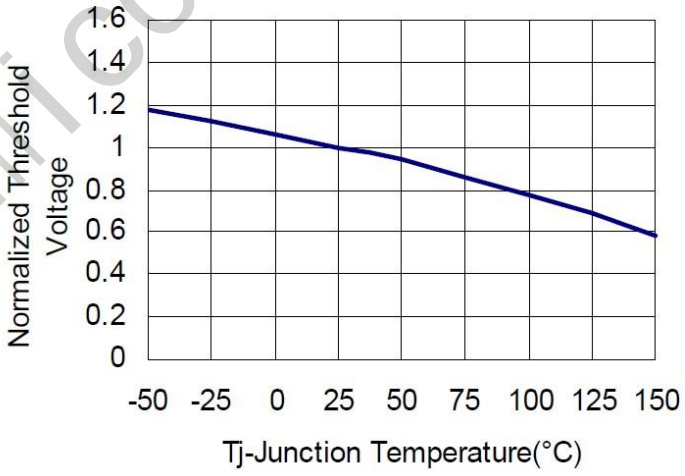
Drain-Source On Resistance



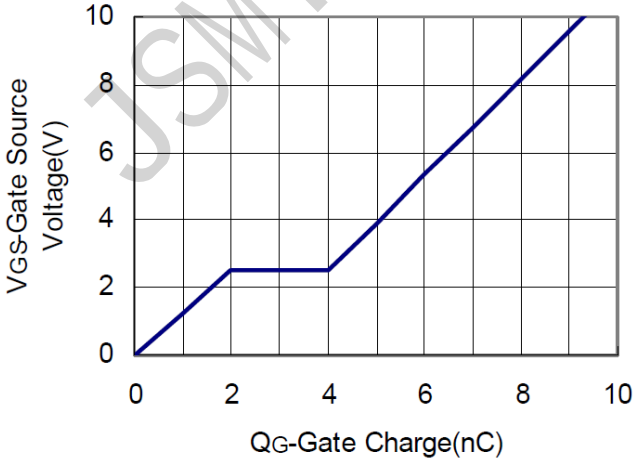
Drain Source On Resistance



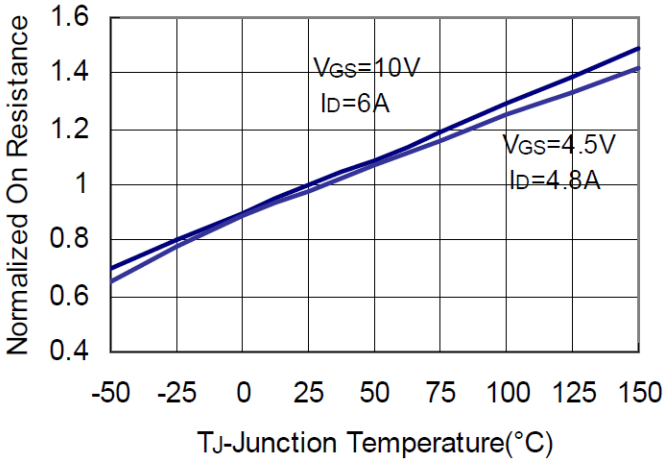
Gate Threshold Voltage



Gate Charge

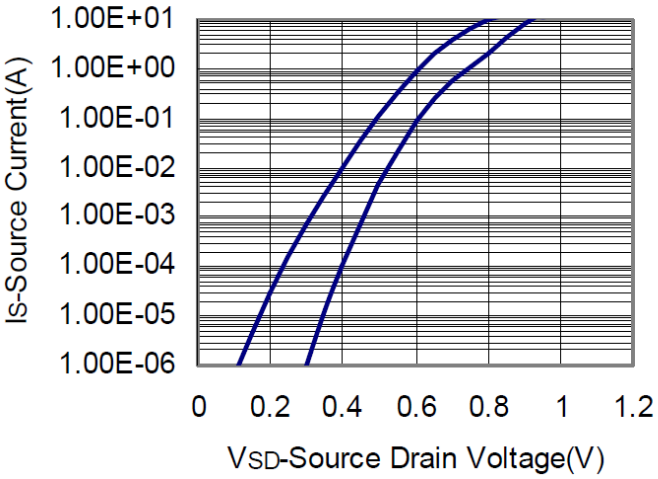


Drain Source On Resistance

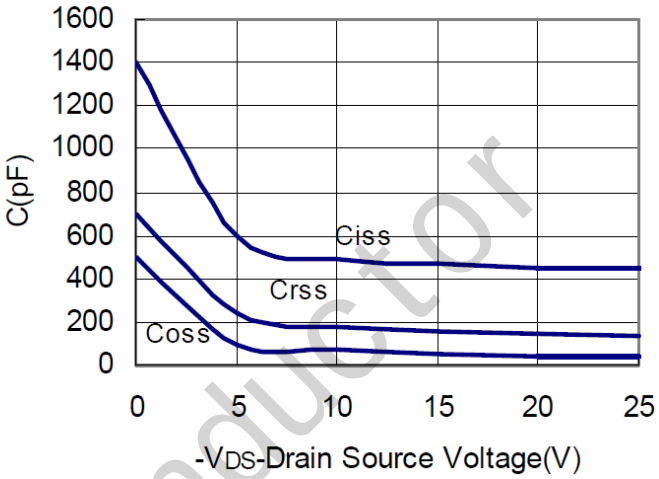


■ *TYPICAL CHARACTERISTICS (continuous)*

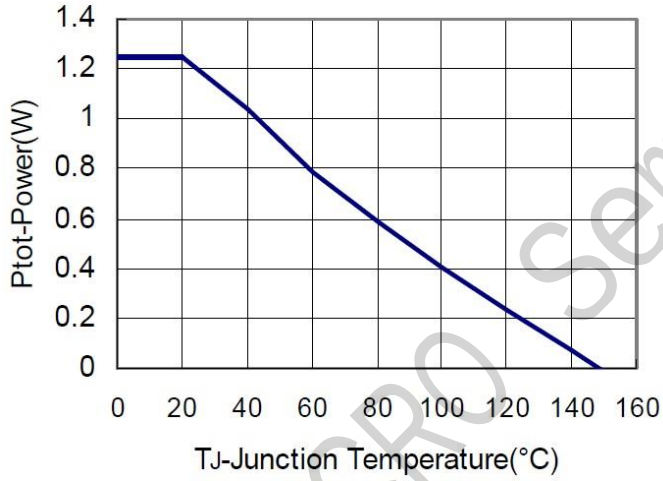
Source Drain Diode Forward



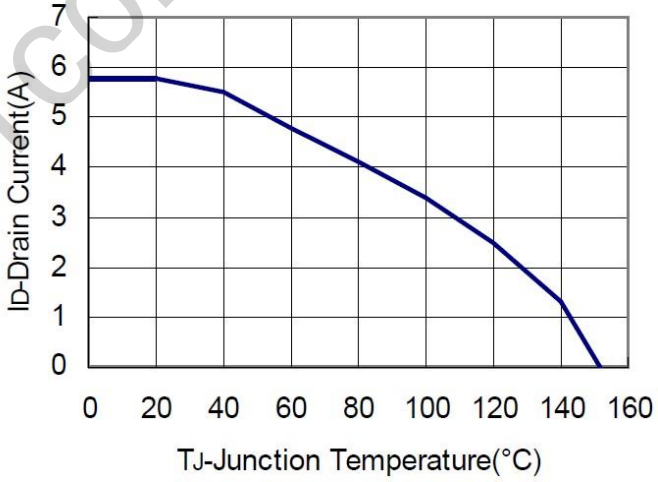
Capacitance



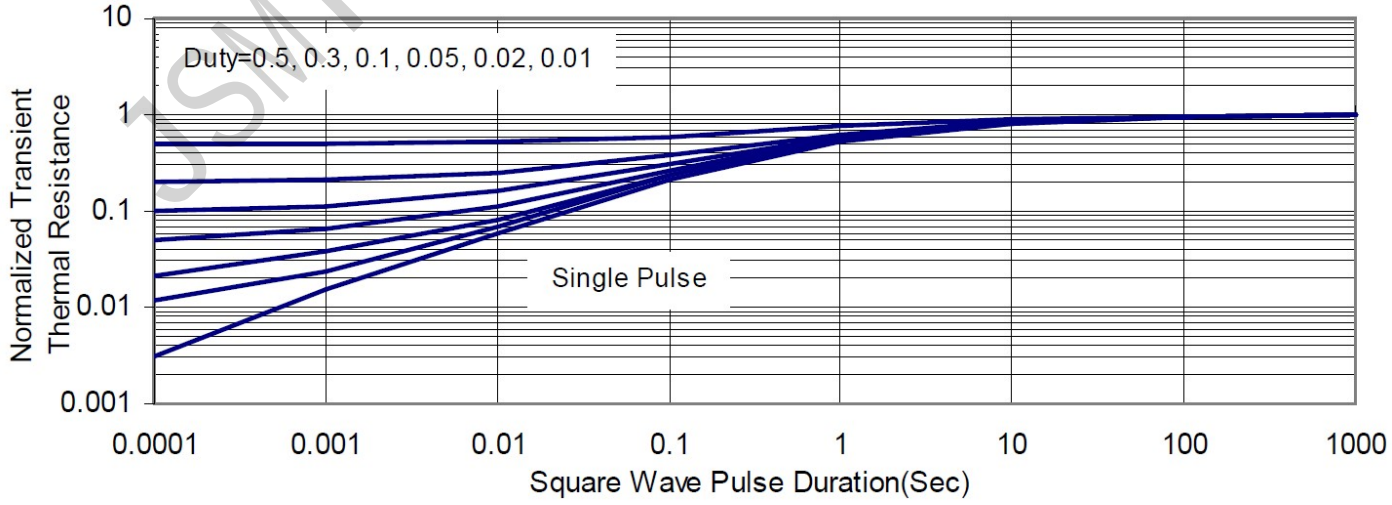
Power Dissipation



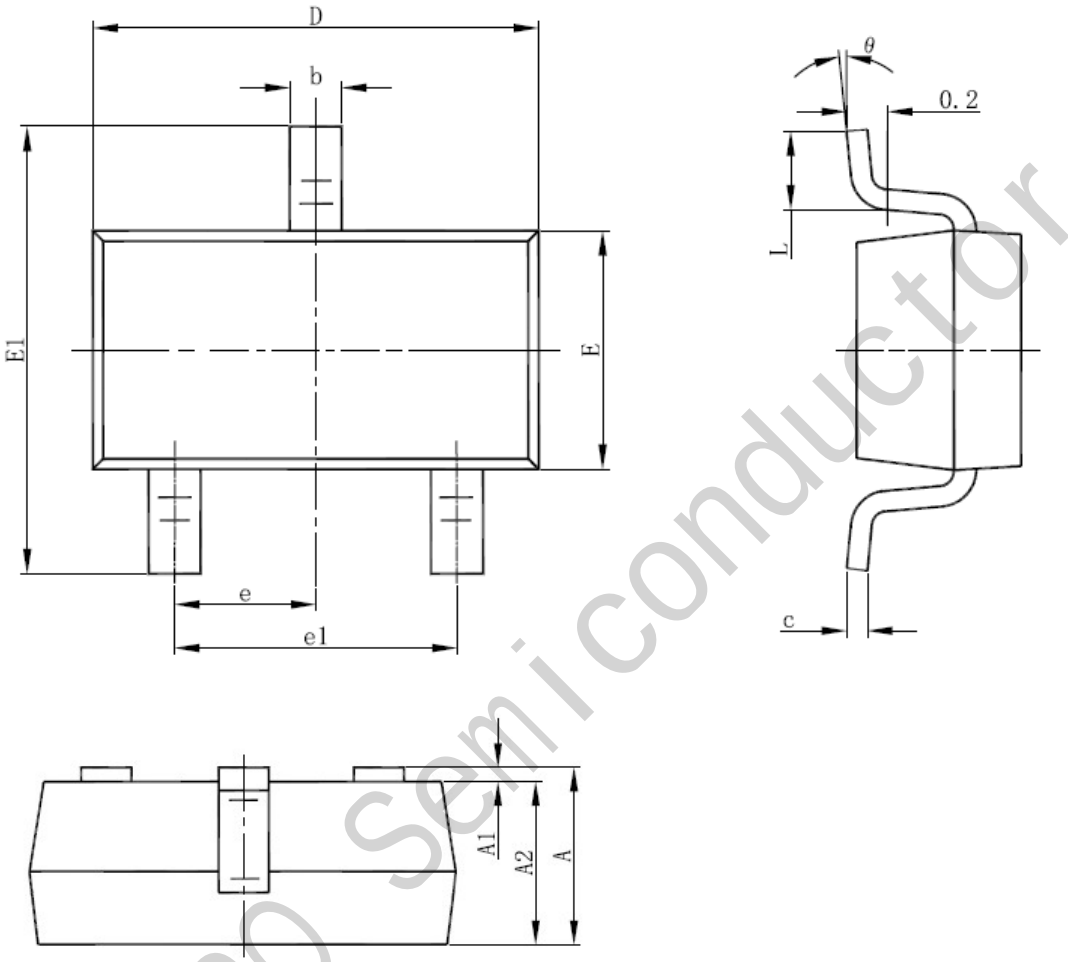
Drain Current



Thermal Transient Impedance



■ *SOT23-3L PACKAGE OUTLINE DIMENSIONS*



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°