

Description

The IRLML6406 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

Dimensions SOT-23



General Features

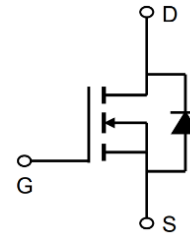
$V_{DS} = 20V$ $I_D = 6.8A$

$R_{DS(ON)} < 21m\Omega$ @ $V_{GS}=4.5V$

Application

- Lithium battery protection
- Wireless impact
- Mobile phone fast charging

Pin Configuration



Package Marking and Ordering Information

Device	Device Marking	Device Package	Reel Size	Tape width	Quantity
IRLML6406	AE9T	SOT-23	Ø180mm	8 mm	3000 units

Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ C$	Continuous Drain Current	6.8	A
$I_D@T_A=70^\circ C$	Continuous Drain Current	6.0	A
I_{DM}	Pulsed Drain Current ²	30	A
$P_D@T_A=25^\circ C$	Total Power Dissipation ³	1.5	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	83	°C/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BVDSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	20	22		V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	0.50	0.65	1.0	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =4.5V, I _D =4A		16	21	mΩ
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =2.5V, I _D =3A		20	30	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±10V, V _{DS} =0V			±100	nA
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHZ		780		pF
C _{oss}	Output Capacitance			140		
C _{rss}	Reverse Transfer Capacitance			80		
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =10V, I _D =6.8A		11		nC
Q _{gs}	Gate-Source Charge			2.3		
Q _{gd}	Gate-Drain Charge			2.9		
t _{D(on)}	Turn-on Delay Time	V _{GS} =4.5V, V _{DS} =10V, I _D =6.8A R _{GEN} =3Ω		9		ns
t _r	Turn-on Rise Time			30		
t _{D(off)}	Turn-off Delay Time			35		
t _f	Turn-off fall Time			10		
V _{SD}	Diode Forward Voltage	I _S =6.8A, V _{GS} =0V			1.2	V

Note :

- 1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width ≅ 300us , duty cycle ≅ 2%
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation

Typical Characteristics

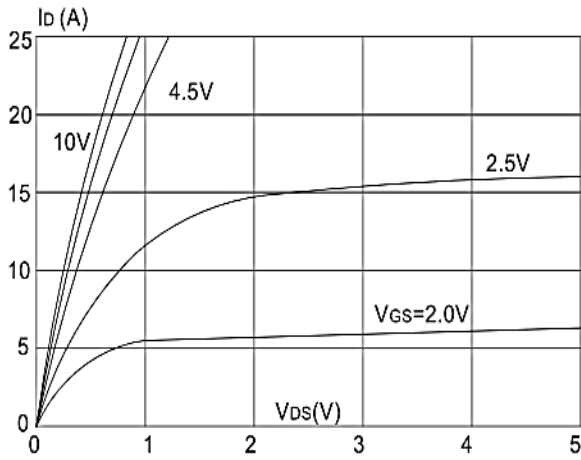


Figure 1: Output Characteristics

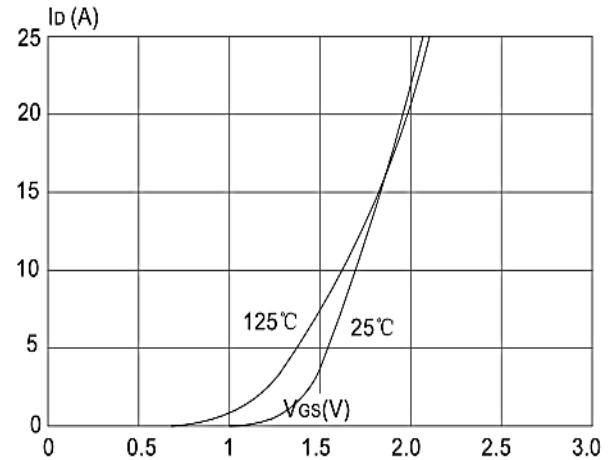


Figure 2: Typical Transfer Characteristics

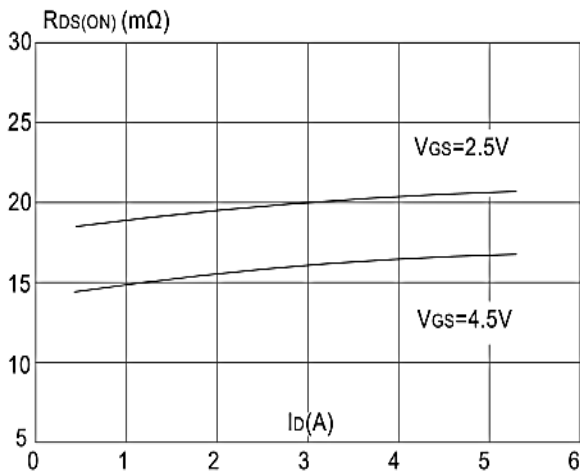


Figure 3: On-resistance vs. Drain Current

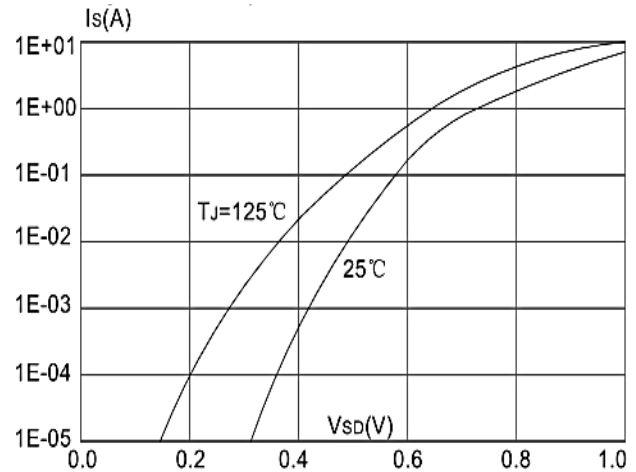


Figure 4: Body Diode Characteristics

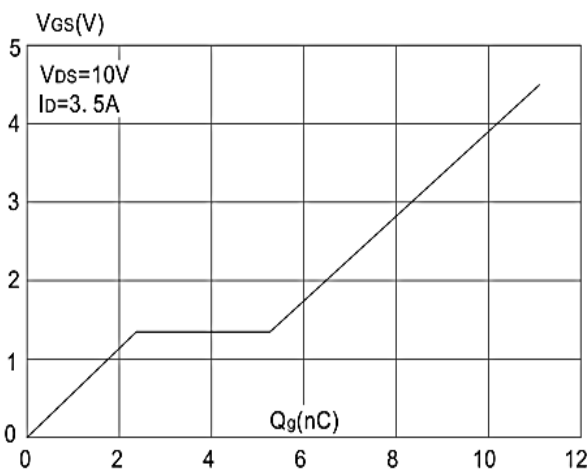


Figure 5: Gate Charge Characteristics

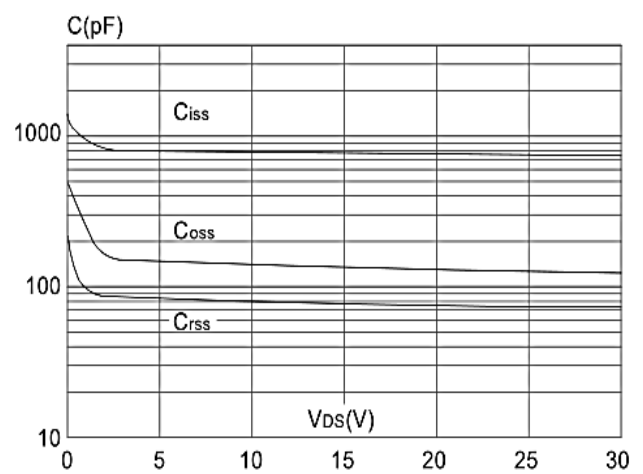


Figure 6: Capacitance Characteristics

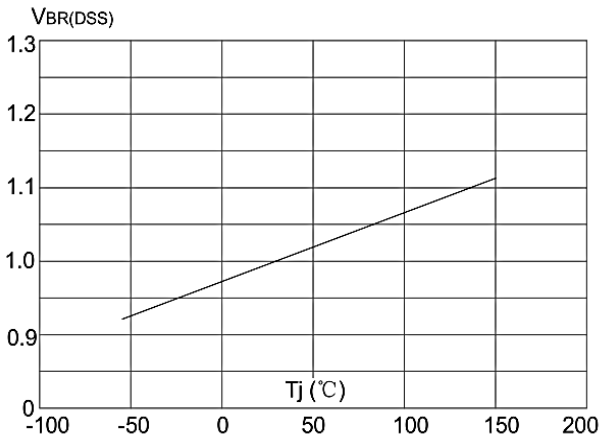


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

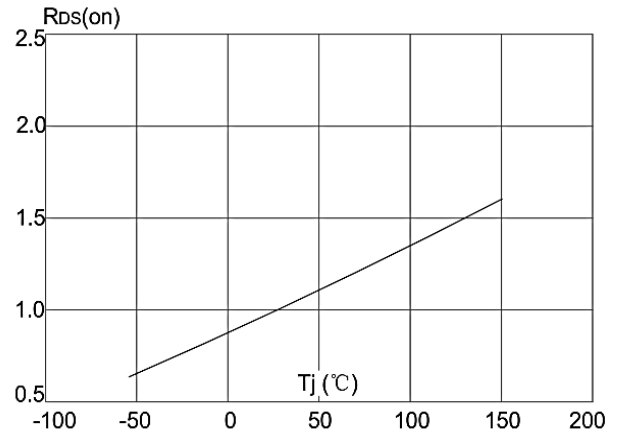


Figure 8: Normalized on Resistance vs. Junction Temperature

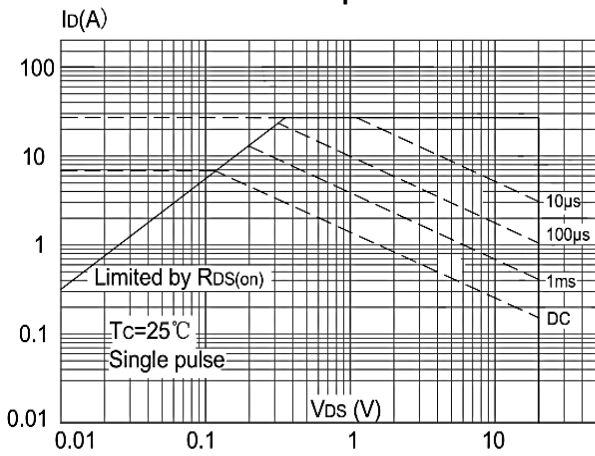


Figure 9: Maximum Safe Operating Area vs. Case Temperature

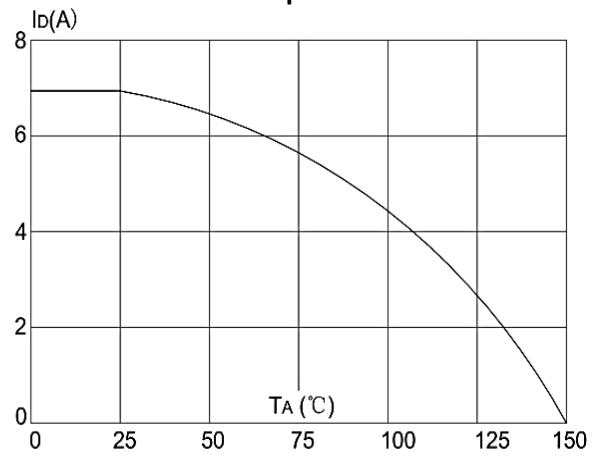


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

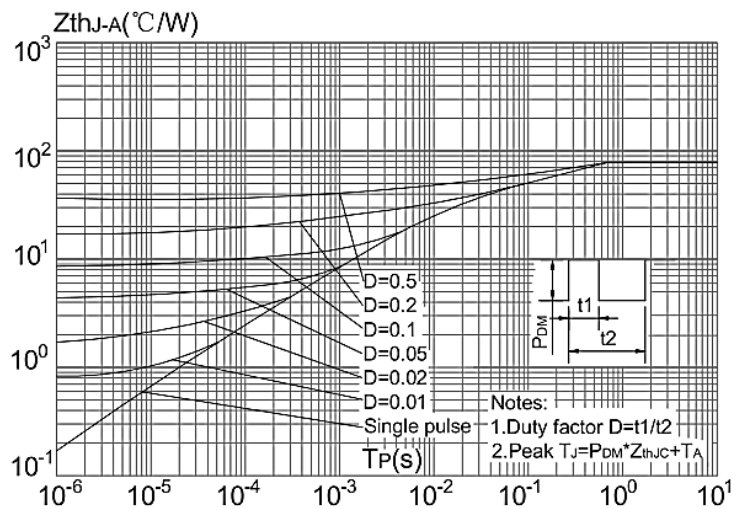


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [MOSFET](#) category:

Click to view products by [Leiditech](#) manufacturer:

Other Similar products are found below :

[MCH3443-TL-E](#) [MCH6422-TL-E](#) [FDPF9N50NZ](#) [NTNS3A92PZT5G](#) [IRFD120](#) [JANTX2N5237](#) [2N7000](#) [2SK2464-TL-E](#) [2SJ277-DL-E](#)
[2SK2267\(Q\)](#) [2SK2545\(Q,T\)](#) [405094E](#) [423220D](#) [MIC4420CM-TR](#) [VN1206L](#) [614234A](#) [715780A](#) [751625C](#) [IRS2092STRPBF-EL](#)
[IPS70R2K0CEAKMA1](#) [SQD23N06-31L-GE3](#) [BSF024N03LT3 G](#) [PSMN4R2-30MLD](#) [2SK2614\(TE16L1,Q\)](#) [DMN1017UCP3-7](#)
[EFC2J004NUZTDG](#) [P85W28HP2F-7071](#) [DMN1053UCP4-7](#) [SQJ469EP-T1-GE3](#) [NTE2384](#) [NTE6400A](#) [DMC2700UDMQ-7](#)
[DMN2080UCB4-7](#) [DMN61D9UWQ-13](#) [US6M2GTR](#) [DMN31D5UDJ-7](#) [SSM6P54TU,LF](#) [DMP22D4UFO-7B](#) [IPS60R3K4CEAKMA1](#)
[DMN1006UCA6-7](#) [DMN16M9UCA6-7](#) [STF5N65M6](#) [IRF40H233XTMA1](#) [IPSA70R950CEAKMA1](#) [IPSA70R2K0CEAKMA1](#) [STU5N65M6](#)
[C3M0021120D](#) [DMN6022SSD-13](#) [DMN13M9UCA6-7](#) [MCQ4828A-TP](#)