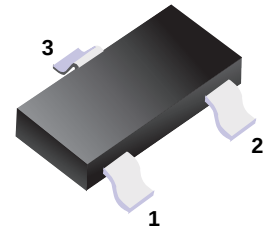


IRLML6402

P-Channel Enhancement MOSFET

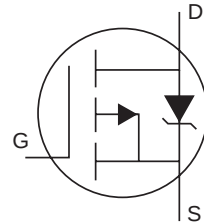


1. Gate
2. Source
3. Drain

Features

- Ultra low on-resistance.
- P-Channel MOSFET.
- SOT-23 Footprint.
- Low profile(<1.1mm).
- Available in tape and reel.
- Fast switching.

Simplified outline(SOT-23)



Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current $V_{GS}=4.5V$ @ $T_A=25^\circ\text{C}$	I_D	-3.7	A
Continuous Drain Current $V_{GS}=4.5V$ @ $T_A=70^\circ\text{C}$		-2.2	
Pulsed Drain Current a	I_{DM}	-30	
Power Dissipation @ $T_A=25^\circ\text{C}$	P_D	1.3	W
Power Dissipation @ $T_A=70^\circ\text{C}$		0.8	
Single Pulse Avalanche Energy b	E_{AS}	11	mJ
Thermal Resistance.Junction- to-Ambient	R_{thJA}	100	$^\circ\text{C}/\text{W}$
Linera Derating Factor		0.01	$\text{W}/^\circ\text{C}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Junction and Storage Temperature Range	T_{stg}	-55 to 150	

Notes:

a.Repetitive Rating :Pulse width limited by maximum junction temperature

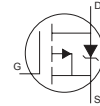
b.Starting $T_J=25^\circ\text{C}$, $L=1.65\text{mH}$, $R_G=25\Omega$, $I_{AS}=-3.7\text{A}$

■ Electrical Characteristics Ta = 25°C

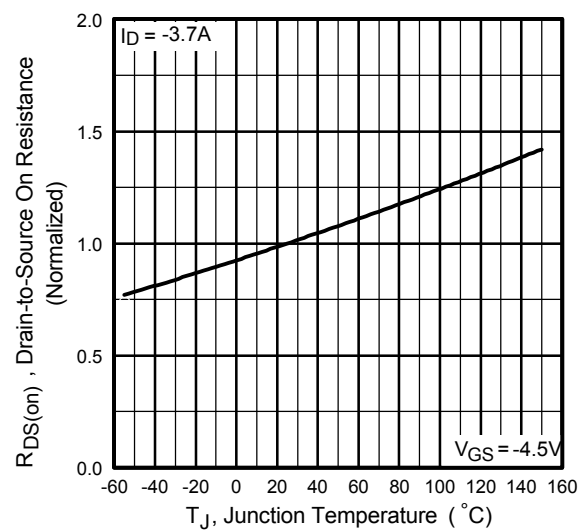
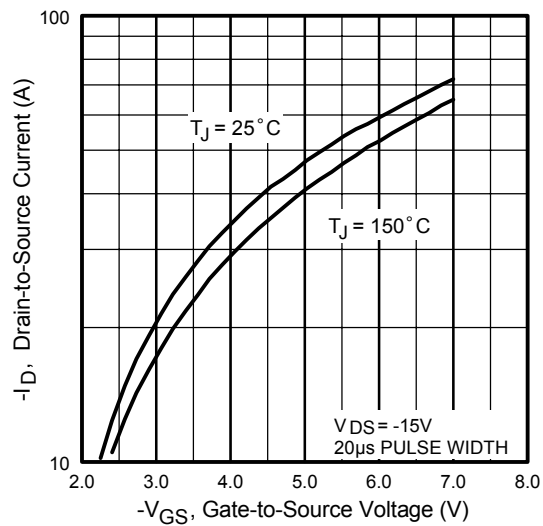
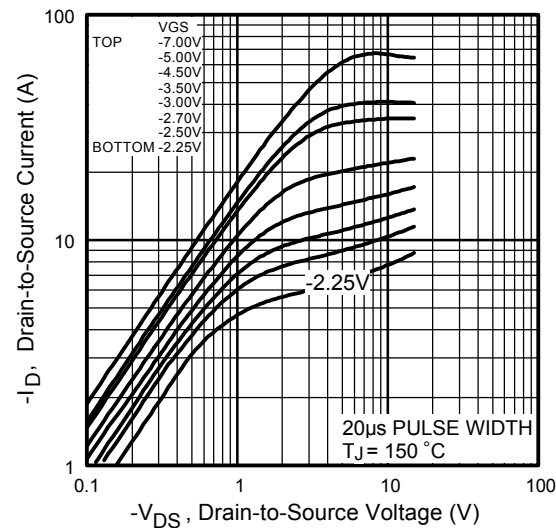
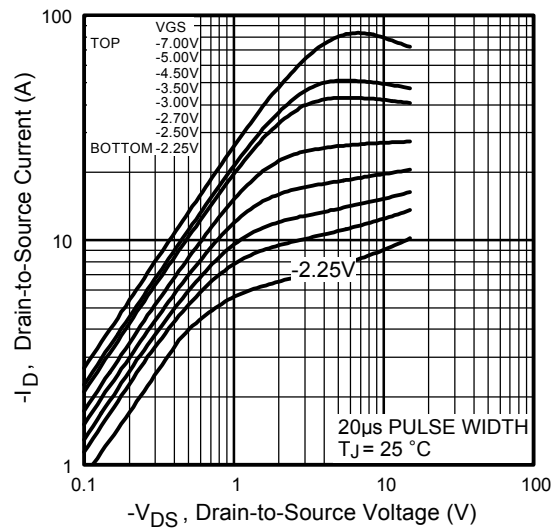
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-source Breakdown voltage	V _{DSS}	I _D = -250 μA, V _{GS} = 0V	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20 V, V _{GS} = 0V			-1.0	μA
		V _{DS} = -20 V, V _{GS} = 0V, T _J = 70°C			-25	
Gate-source leadage	I _{GSS}	V _{GS} = ±12V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-0.40	-0.55	-0.95	V
Static drain-source on- resistance	R _{DS(on)}	I _D = -3.7A, V _{GS} = -4.5V		0.050	0.065	Ω
		I _D = -3.1A, V _{GS} = -2.5V		0.080	0.135	
Forward Transconductance	g _{fs}	V _{DS} = -10 V, I _D = -3.7 A	6.0			S
Input capacitance	C _{iss}	V _{DS} = -10 V,		633		pF
Output capacitance	C _{oss}	V _{GS} = 0 V,		145		
Reverse transfer capacitance	C _{rss}	f = 1MHz		110		
Total Gate Charge	Q _g	V _{DS} = -10V, V _{GS} = -5.0 V, I _D = -3.7 A		8.0	12	nC
Gate-Source Charge	Q _{gs}			1.2	1.8	
Gate-Drain Charge	Q _{gd}			2.8	4.2	
Turn-on delay time	t _{d(on)}	I _D = -3.7 A,		350		ns
Rise time	t _r	V _{DD} = -10 V,		48		
Turn-off delay time	t _{d(off)}	R _D = 2.7 Ω		588		
Fall time	t _f	R _G = 89 Ω		381		
Reverse recovery time	t _{rr}	T _J = 25°C, I _F = -1.0 A,		29	43	ns
Reverse recovery charge	Q _{rr}	di / dt = -100 A / μs *2		11	17	nC
Continuous source current	I _S	MOSFET symbol I showing the integral reverse p-n junction diode			-1.3	A
Pulsed source current *1	I _{SM}				-22	
Diode forward voltage	V _{SD}	T _J = 25°C, V _{GS} = 0 V, I _S = -1.0 A *2			-1.2	V

*1 Repetitive rating;pulse width limited by max.junction temperature.

* 2 Pulse width ≤ 400 μs, Duty cycle ≤ 2%



■ Typical Characteristics



■ Typical Characteristics

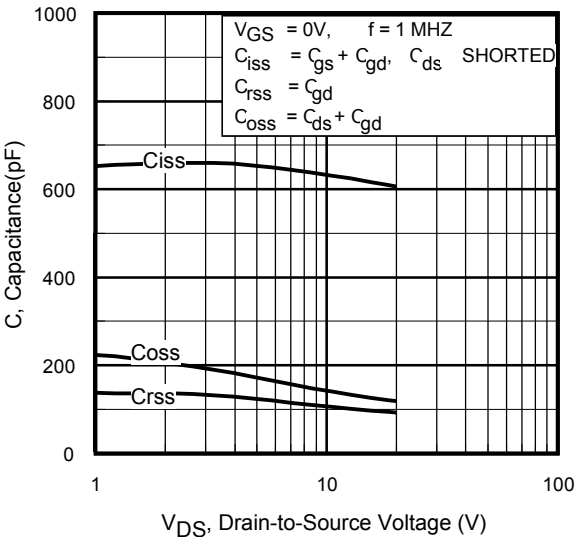


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

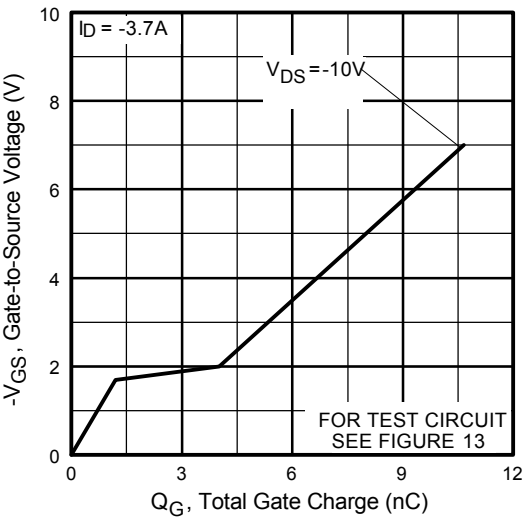


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

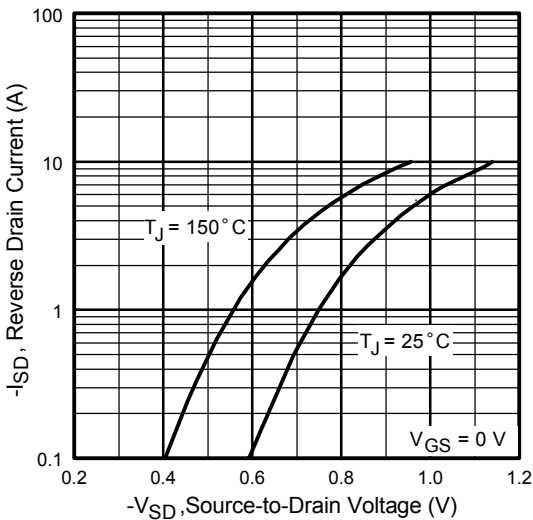


Fig 7. Typical Source-Drain Diode Forward Voltage

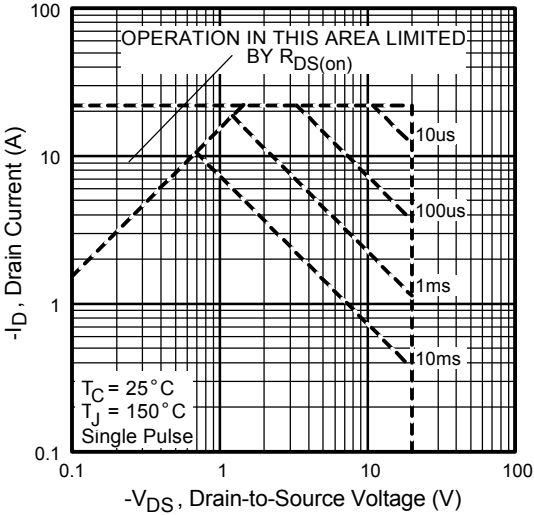


Fig 8. Maximum Safe Operating Area

■ Typical Characteristics

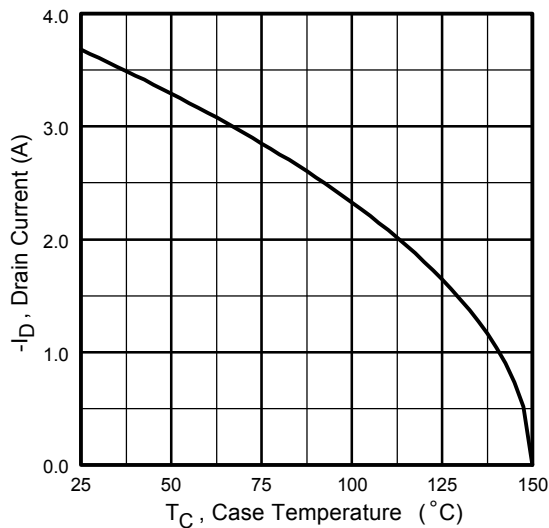


Fig 9. Maximum Drain Current Vs. Case Temperature

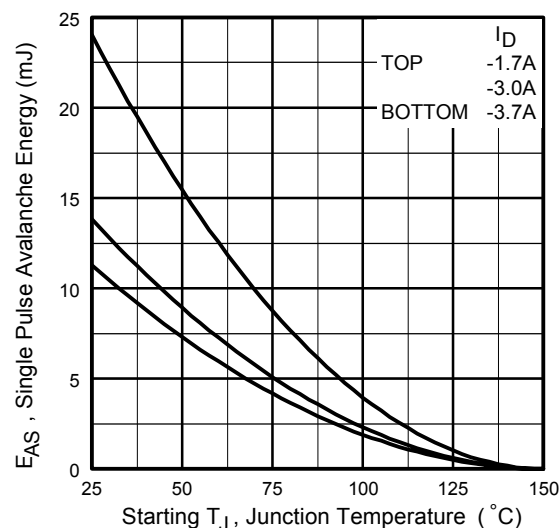


Fig 10. Maximum Avalanche Energy Vs. Drain Current

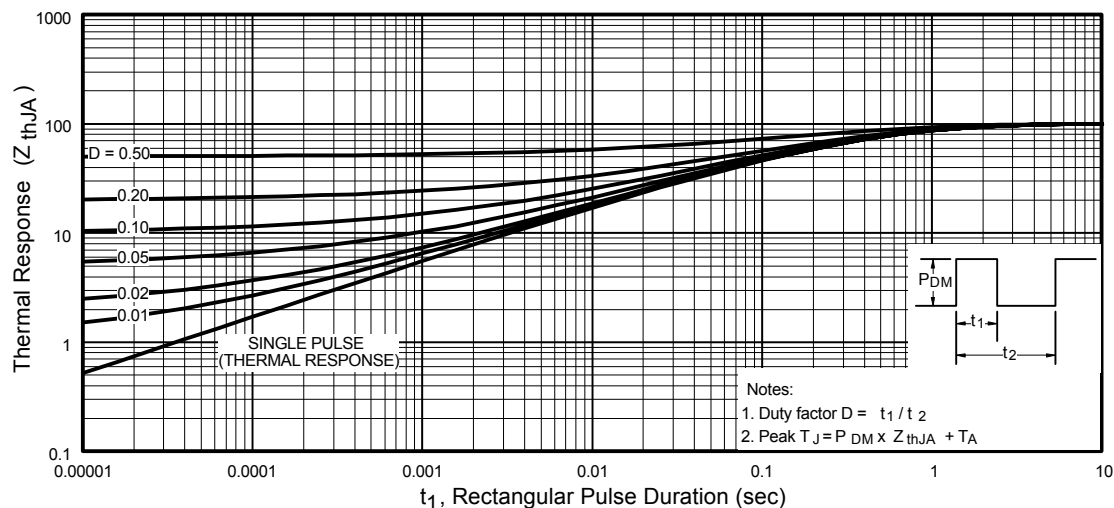


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

■ Typical Characteristics

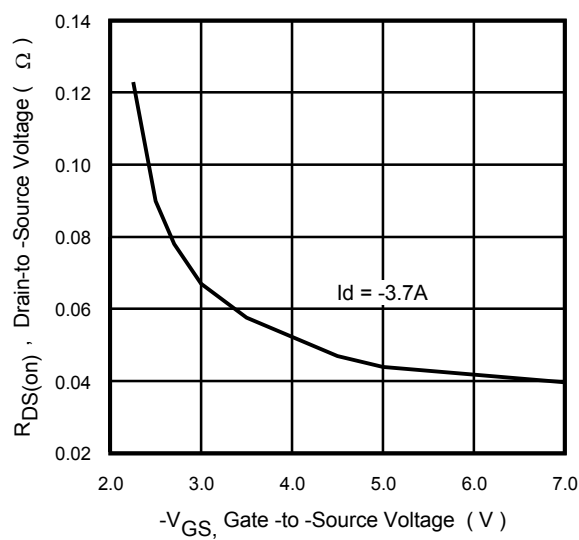


Fig 12. Typical On-Resistance Vs. Gate Voltage

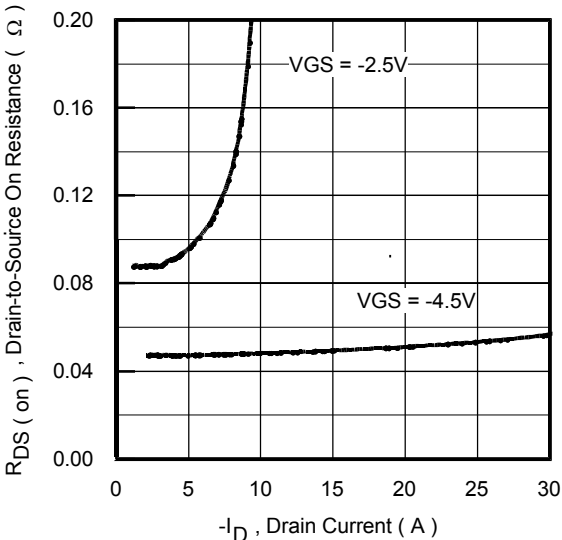
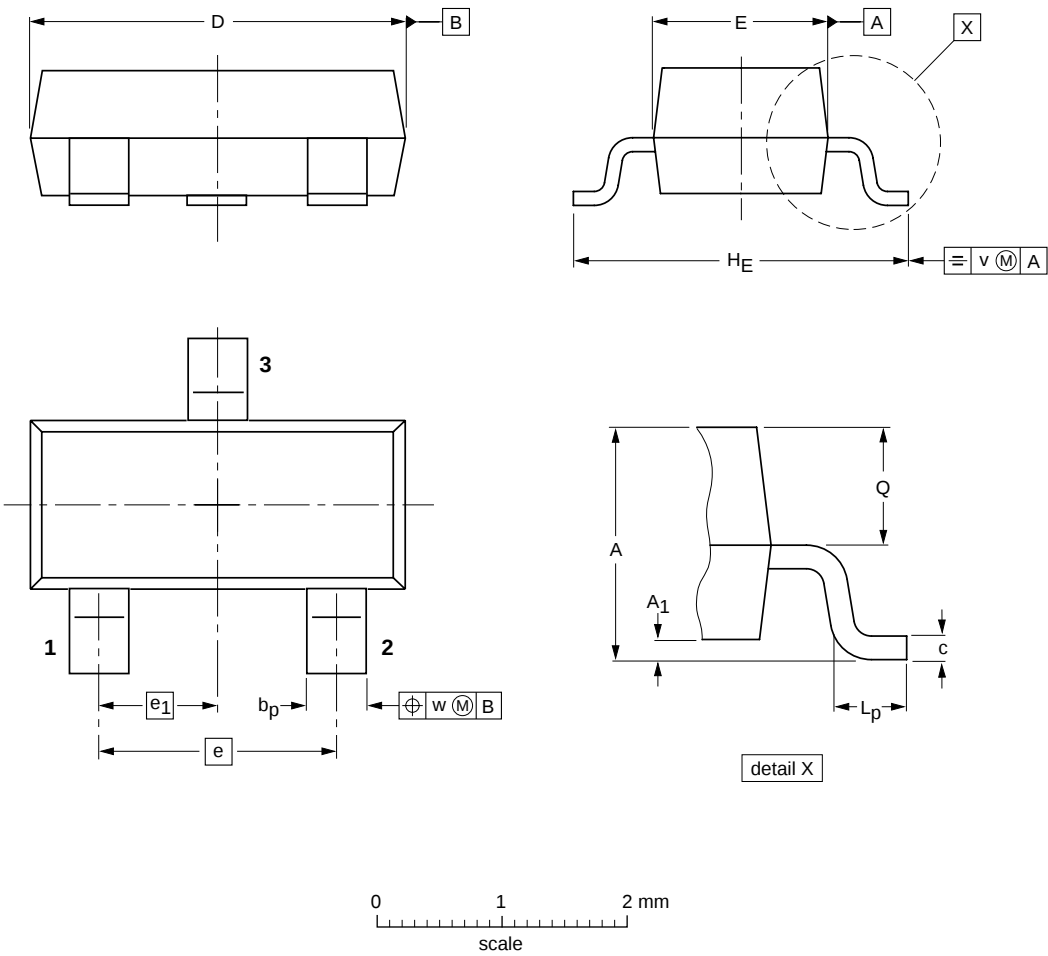


Fig 13. Typical On-Resistance Vs. Drain Current

■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1