

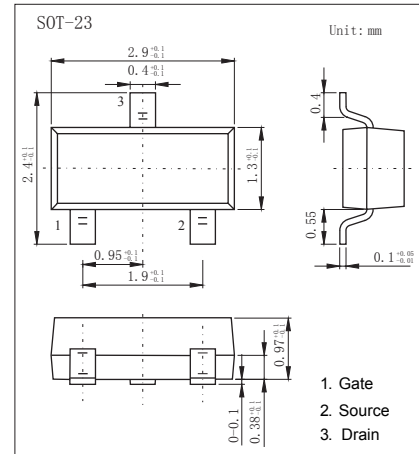
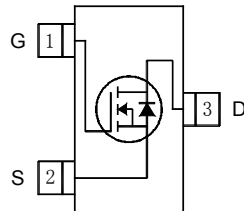


SOT-23 Plastic-Encapsulate MOSFETS

IRLML2502 N-Channel MOSFET

■ Features

- $V_{DS} (V) = 20V$
- $I_D = 4.2 A$
- $R_{DS(ON)} < 45m\ \Omega$ ($V_{GS} = 4.5V$)
- $R_{DS(ON)} < 80m\ \Omega$ ($V_{GS} = 2.5V$)
- Fast Switching

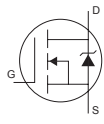


■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	
Continuous Drain Current	I_D	$T_a=25^\circ C$	4.2
		$T_a=70^\circ C$	3.4
Pulsed Drain Current	I_{DM}	33	A
Power Dissipation	P_D	$T_a=25^\circ C$	1.25
		$T_a=70^\circ C$	0.8
Linear Derating Factor		0.01	W/ $^\circ C$
Thermal Resistance.Junction- to-Ambient	R_{thJA}	100	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to 150	

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250μA, V _{GS} =0V	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _D =16V, V _{GS} =0V			1	μA
		V _D =16V, V _{GS} =0V, T _J =70°C			25	
Gate-Body Leakage Current	I _{GSS}	V _D =0V, V _{GS} =±12V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _D =V _{GS} , I _D =250 μ A	0.5		1	V
Static Drain-Source On-Resistance	R _{Ds(on)}	V _{GS} =4.5V, I _D =4.2A			45	mΩ
		V _{GS} =2.5V, I _D =3.6A			80	
Forward Transconductance	g _{FS}	V _D =10V, I _D =4A	5.8			S
Input Capacitance	C _{iss}	V _{GS} =0V, V _D =15V, f=1MHz		740		pF
Output Capacitance	C _{oss}			90		
Reverse Transfer Capacitance	C _{rss}			66		
Total Gate Charge	Q _g	V _{GS} =5V, V _D =10V, I _D =4A			12	nC
Gate Source Charge	Q _{gs}				2.7	
Gate Drain Charge	Q _{gd}				2.6	
Turn-On DelayTime	t _{d(on)}	V _{DD} =10V, I _D =1 A, R _L =6 Ω, R _{GEN} =10 Ω		7.5		ns
Turn-On Rise Time	t _r			10		
Turn-Off DelayTime	t _{d(off)}			54		
Turn-Off Fall Time	t _f			26		
Body Diode Reverse Recovery Time	t _{rr}	I _F = 1.3A, di/dt= 100A/μs, T _J = 25°C			24	nC
Body Diode Reverse Recovery Charge	Q _{rr}				13	
Continuous Source Current	I _S	MOSFET symbol showing the integral reverse p-n junction diode. 			1.3	A
Pulsed Source Current	I _{SM}				33	
Diode Forward Voltage	V _{SD}	I _S =1.3A, V _{GS} =0V, T _J = 25°C			1.2	V

■ Marking

Marking	1G**
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IRLML2502 N-Channel MOSFET

Typical Characteristics

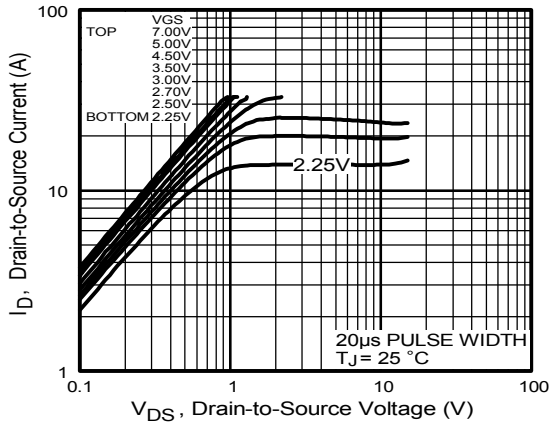


Fig 1. Typical Output Characteristics

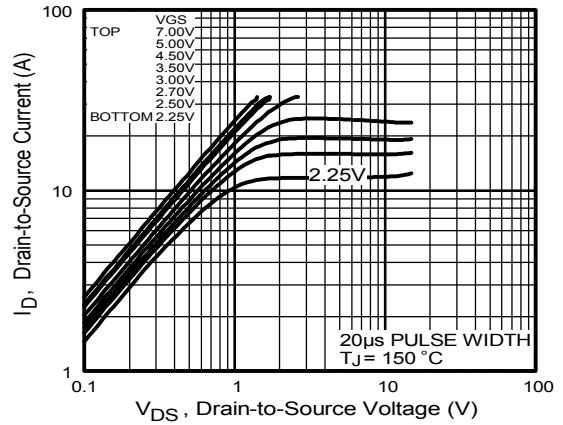


Fig 2. Typical Output Characteristics

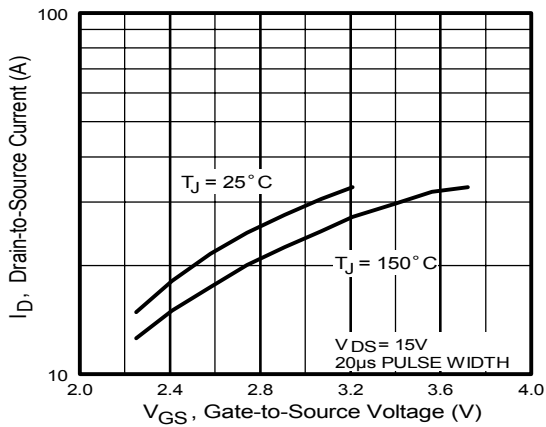


Fig 3. Typical Transfer Characteristics

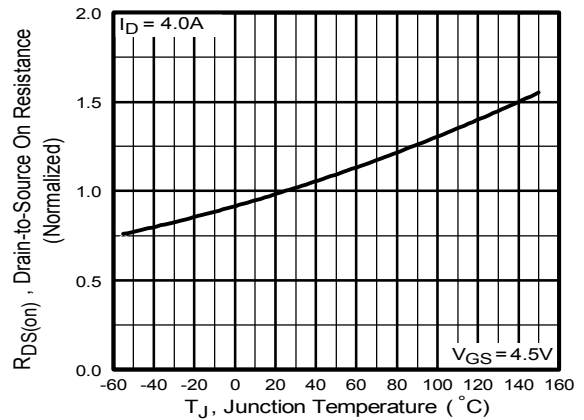


Fig 4. Normalized On-Resistance Vs. Temperature

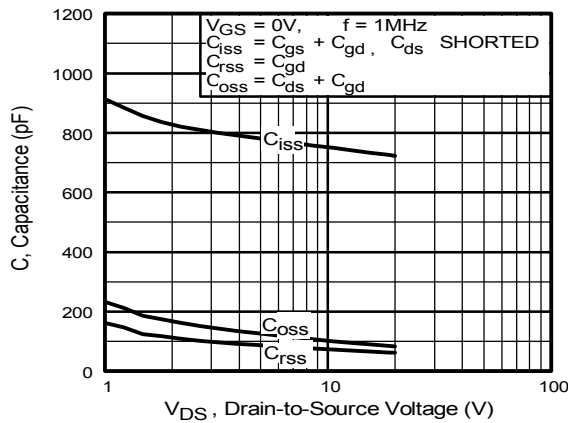


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

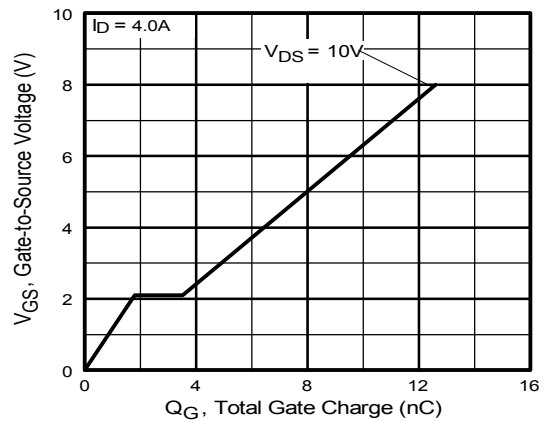


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

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Typical Characteristics

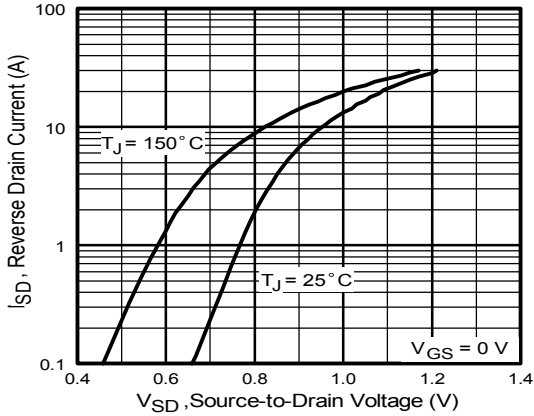


Fig 7. Typical Source-Drain Diode Forward Voltage

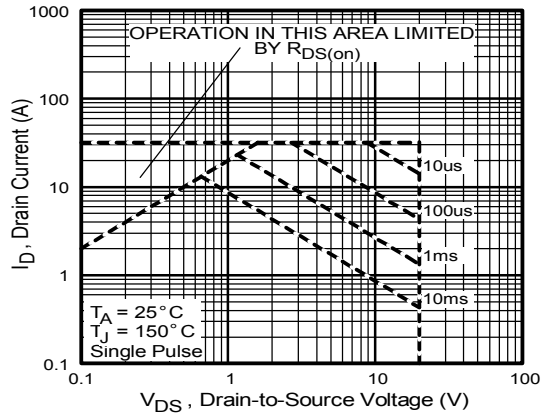


Fig 8. Maximum Safe Operating Area

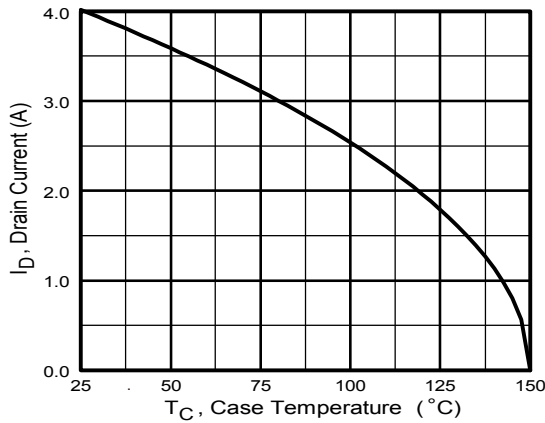


Fig 9. Maximum Drain Current Vs. Case Temperature

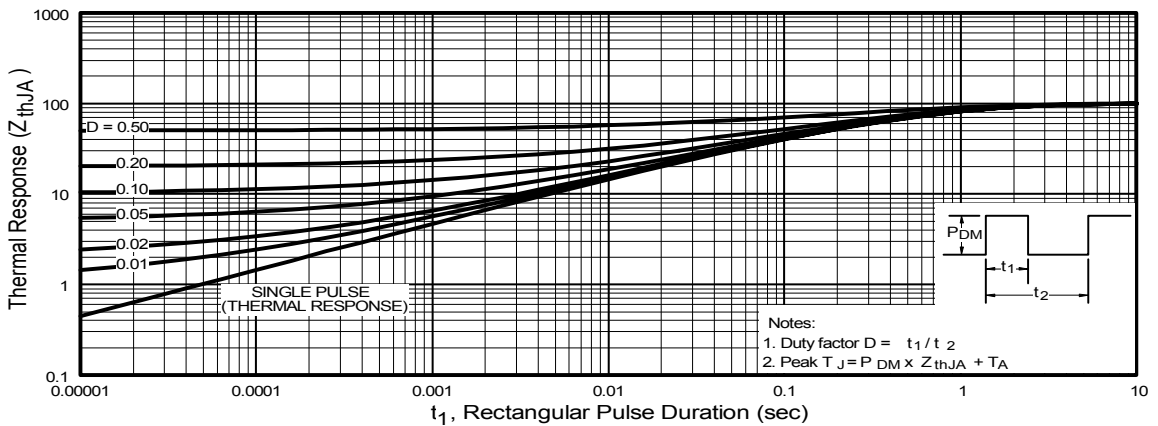


Fig 10. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient