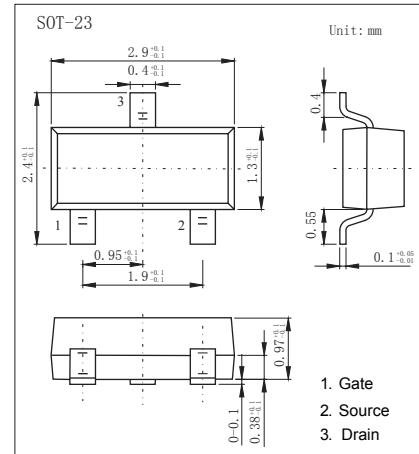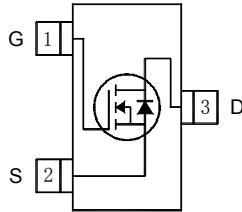# N-Channel MOSFET
IRLML2502

■ Features

● $V_{DS\,(V)}$ = 20V

● I_D = 4.2 A

● $R_{DS(ON)}$ < 45mΩ (V_{GS} = 4.5V)

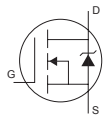● $R_{DS(ON)}$ < 80mΩ (V_{GS} = 2.5V)

● Fast Switching

SOT-23   Unit: mm

1. Gate
2. Source
3. Drain

G 1

S 2

3 D

■ Absolute Maximum Ratings Ta = 25℃

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

N-Channel MOSFET
IRLML2502

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250uA, V_{GS}=0V	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V, V_{GS}=0V			1	uA
		V_{DS}=16V, V_{GS}=0V, T_J=70℃			25	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	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_{DS}=10V, I_D=4A	5.8			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=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_{DS}=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=1A , R_L=6Ω ,R_{GEN}=10Ω		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/us ,T_J = 25℃			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℃			1.2	V

■ Marking

Marking	1G**

N-Channel MOSFET
IRLML2502

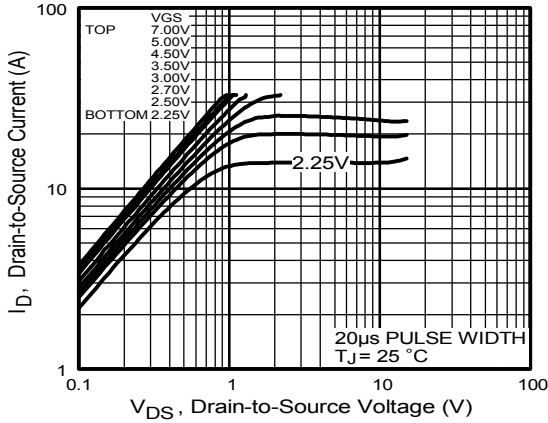■ Typical Characterisitics

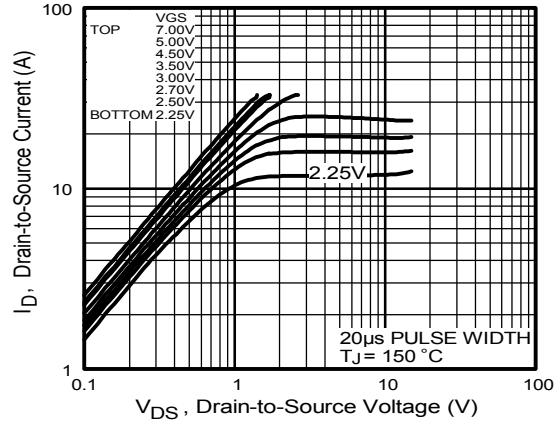**Fig 1.** Typical Output Characteristics

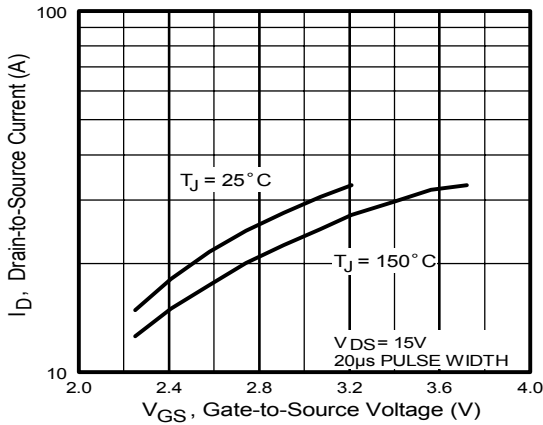**Fig 2.** Typical Output Characteristics

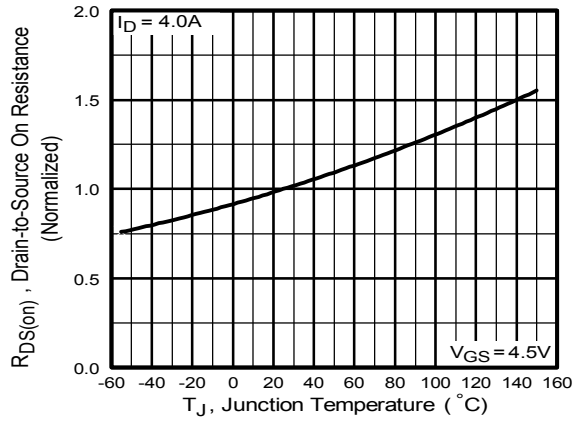
Fig 3. Typical Transfer Characteristics
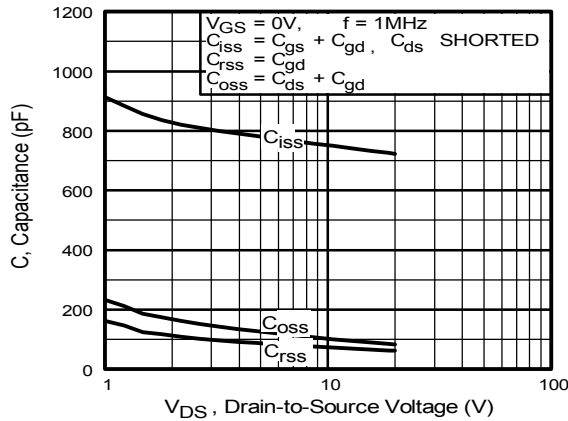

Fig 4. Normalized On-Resistance Vs. Temperature

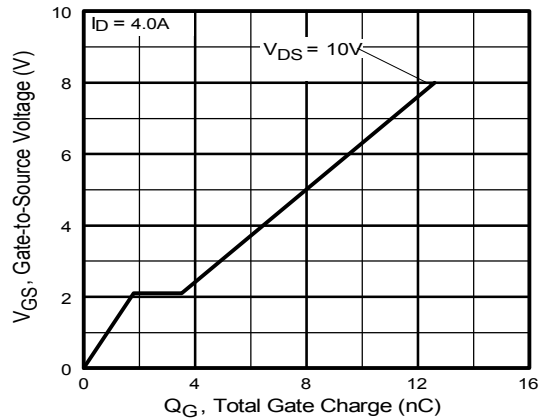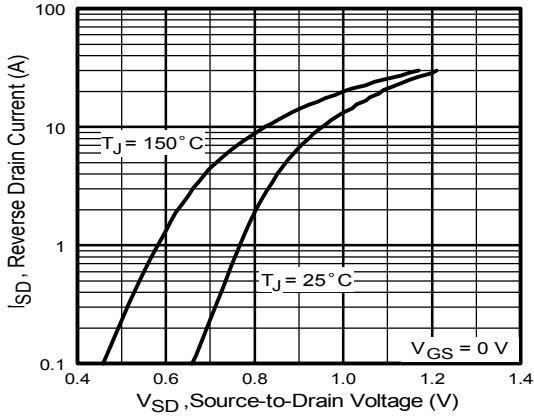**Fig 5.** Typical Capacitance Vs. Drain-to-Source Voltage
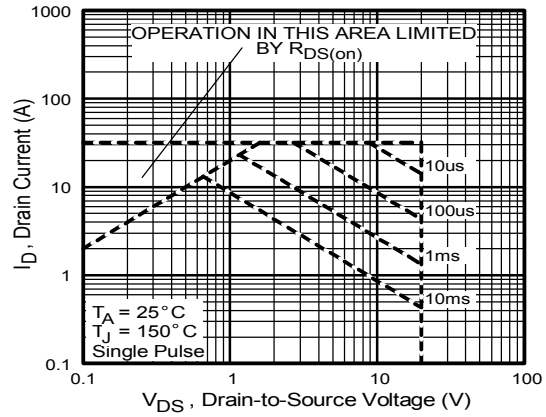

Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

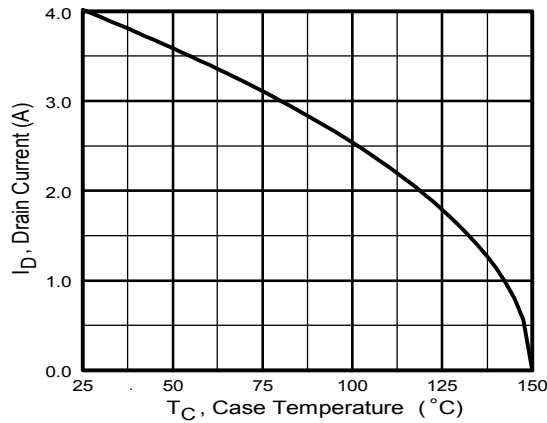## N-Channel MOSFET
IRLML2502

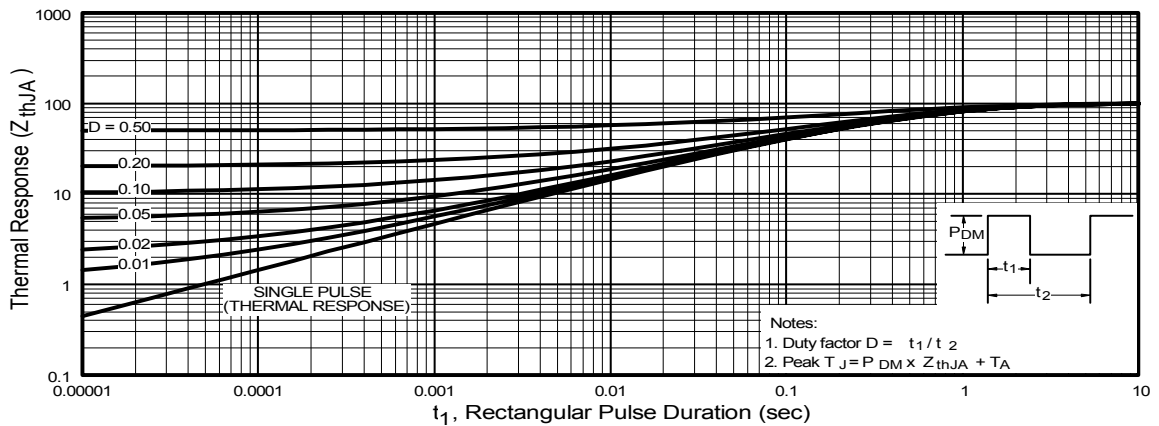■ Typical Characterisitics

Fig 7. Typical Source-Drain Diode Forward Voltage
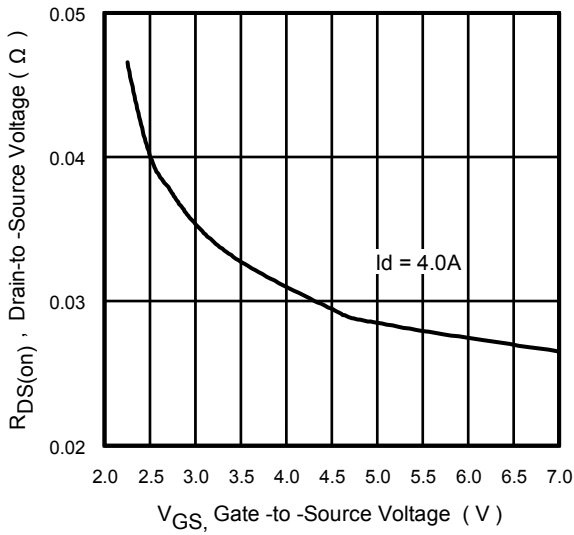

Fig 8. Maximum Safe Operating Area

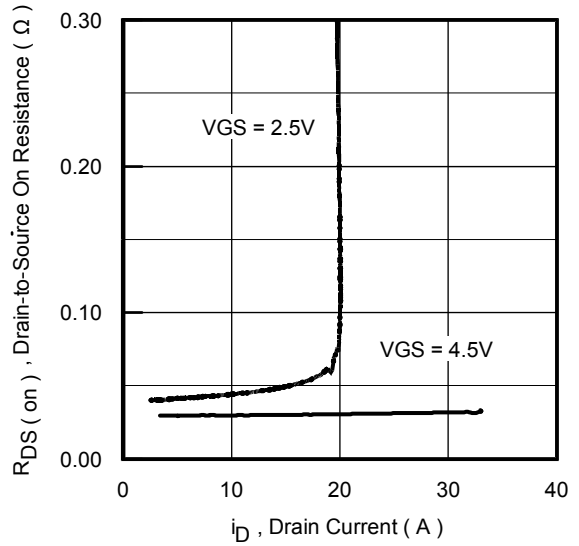**Fig 9.** Maximum Drain Current Vs. Case Temperature

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

N-Channel MOSFET

IRLML2502

■ Typical Characterisitics

Fig 11. On-Resistance Vs. Gate Voltage

Fig 12. On-Resistance Vs. Drain Current