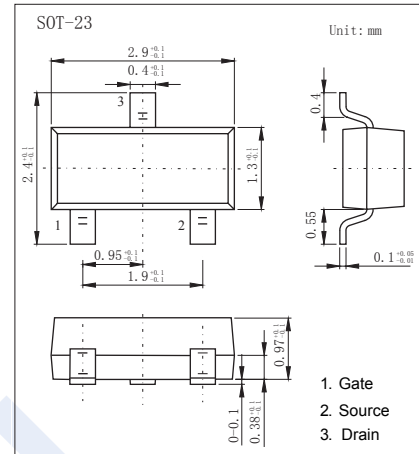
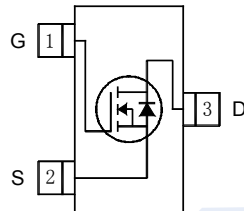


## N-Channel MOSFET

### IRLML2502 (KRLML2502)

#### ■ 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



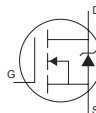
#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	20	V	
Gate-Source Voltage	$V_{GS}$	$\pm 12$		
Continuous Drain Current	$I_D$	$T_a=25^\circ C$	4.2	A
		$T_a=70^\circ C$	3.4	
Pulsed Drain Current	$I_{DM}$	33		
Power Dissipation	$P_D$	$T_a=25^\circ C$	1.25	W
		$T_a=70^\circ C$	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		

## N-Channel MOSFET

### IRLML2502 (KRLML2502)

#### ■ Electrical Characteristics Ta = 25°C

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

#### ■ Marking

Marking	1G**
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## N-Channel MOSFET IRLML2502 (KRLML2502)

■ Typical Characteristics

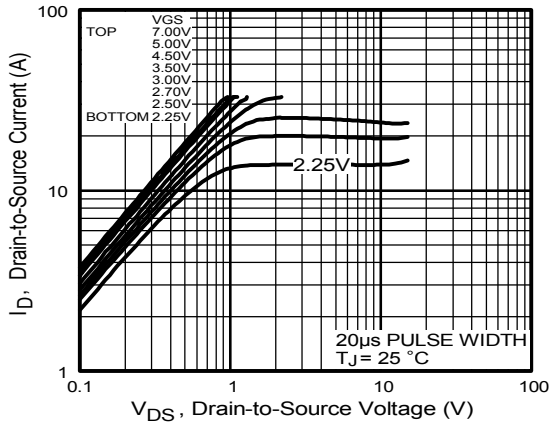


Fig 1. Typical Output Characteristics

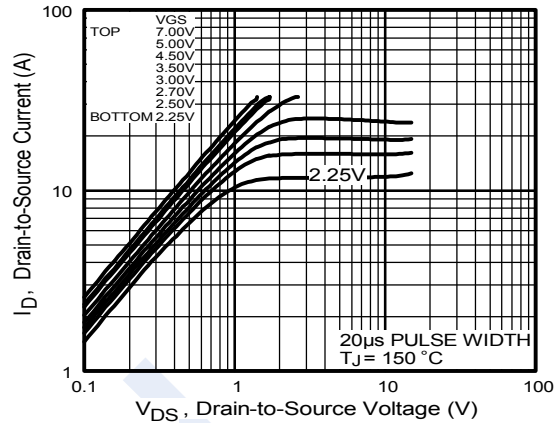


Fig 2. Typical Output Characteristics

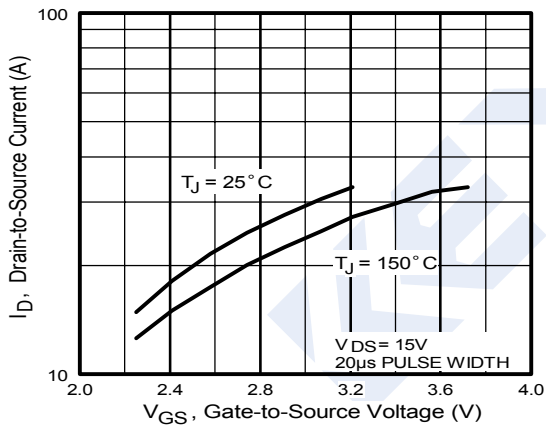


Fig 3. Typical Transfer Characteristics

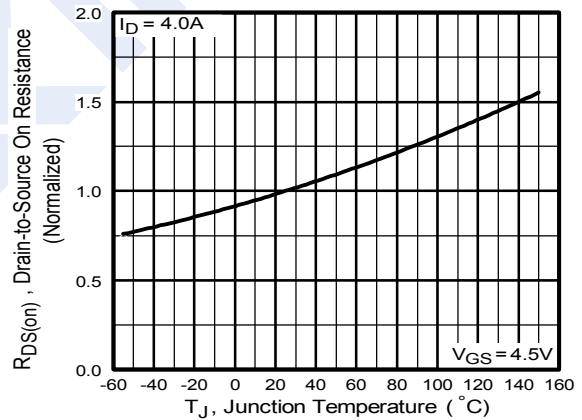


Fig 4. Normalized On-Resistance Vs. Temperature

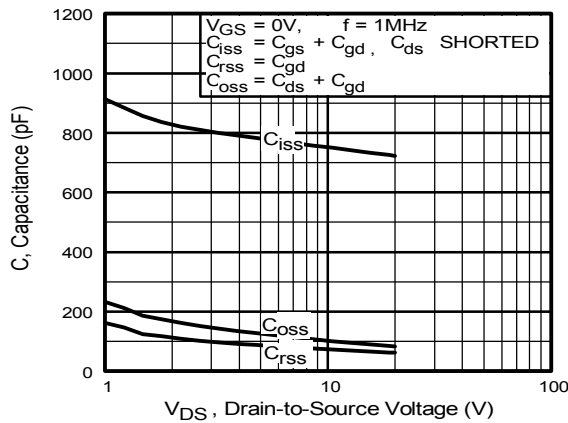


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

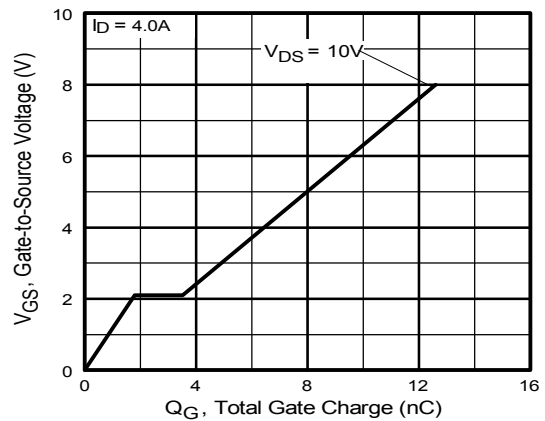
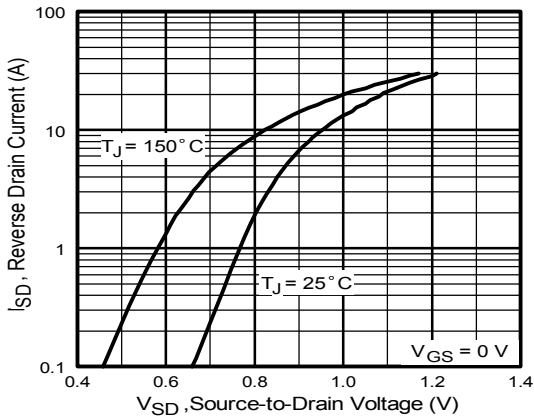


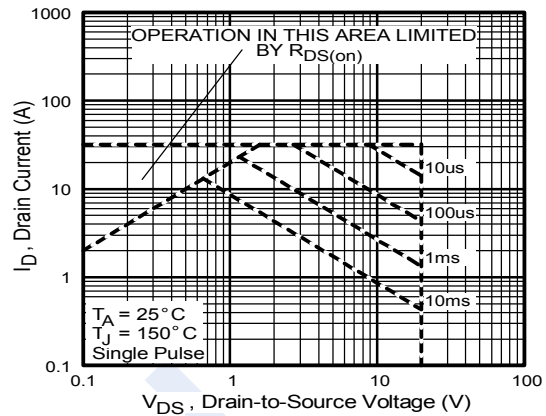
Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

## N-Channel MOSFET IRLML2502 (KRLML2502)

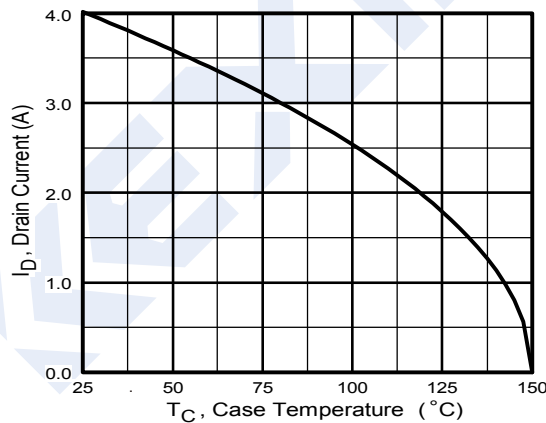
■ Typical Characteristics



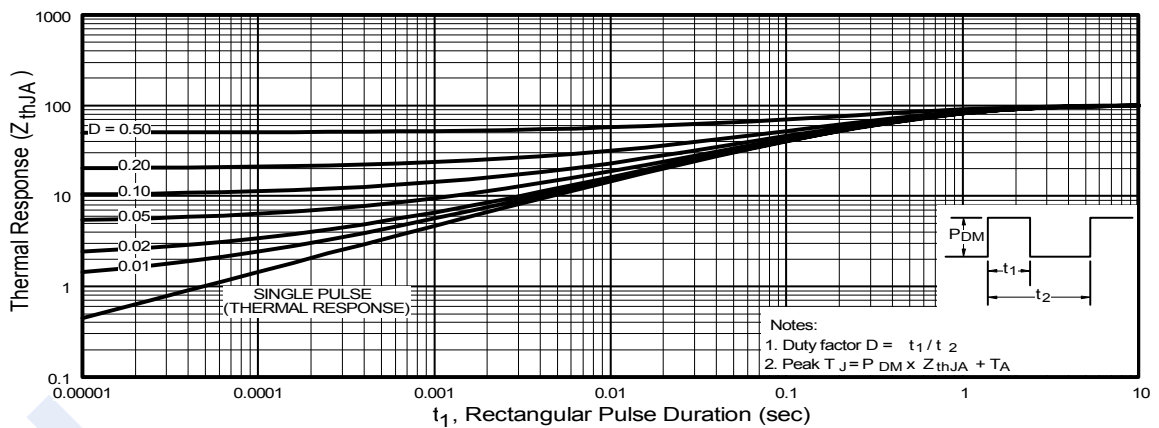
**Fig 7.** Typical Source-Drain Diode Forward Voltage



**Fig 8.** Maximum Safe Operating Area



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



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

## N-Channel MOSFET

### IRLML2502 (KRLML2502)

#### ■ Typical Characteristics

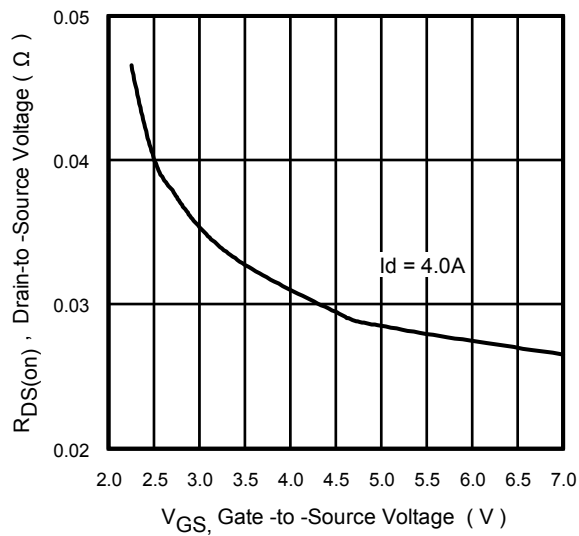


Fig 11. On-Resistance Vs. Gate Voltage

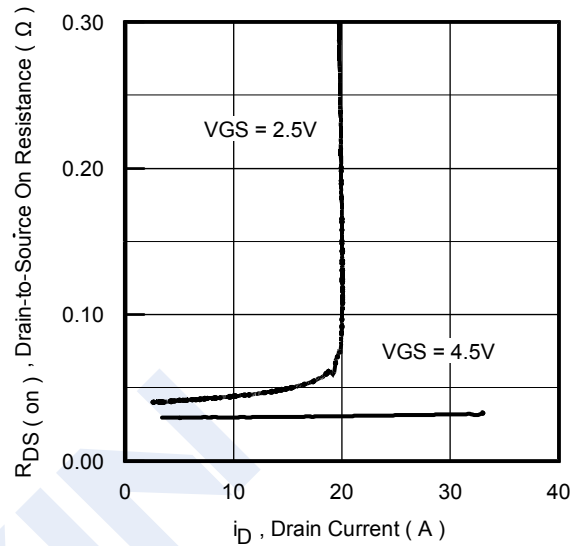


Fig 12. On-Resistance Vs. Drain Current