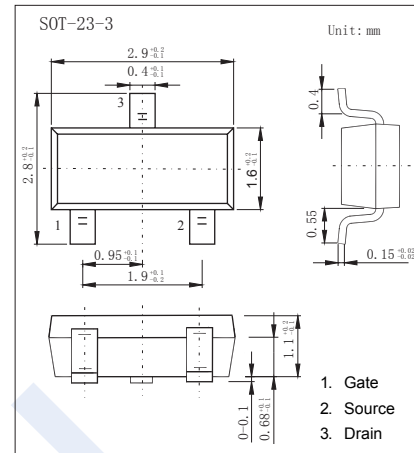
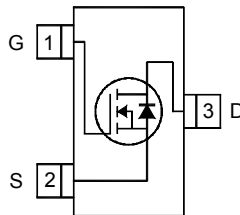


## N-Channel MOSFET

### IRLML0100 (KRLML0100)

#### ■ Features

- $V_{DS} (V) = 100V$
- $I_D = 1.6A (V_{GS} = 10V)$
- $R_{DS(ON)} < 220m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 235m\Omega (V_{GS} = 4.5V)$



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

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	100	V	
Gate-Source Voltage	$V_{GS}$	$\pm 16$		
Continuous Drain Current @ $V_{GS}=10V$	$I_D$	$T_A=25^\circ C$	1.6	A
		$T_A=70^\circ C$	1.3	
Pulsed Drain Current	$I_{DM}$	7		
Power Dissipation	$P_D$	$T_A=25^\circ C$	1.3	W
		$T_A=70^\circ C$	0.8	
Thermal Resistance.Junction- to-Ambient (Note.1)	$R_{thJA}$		100	$^\circ C/W$
			99	
Linear Derating Factor		0.01	$W/^\circ C$	
Junction Temperature	$T_J$	150	$^\circ C$	
Storage Temperature Range	$T_{stg}$	-55 to 150		

Note.1: Surface mounted on 1 in square Cu board

## N-Channel MOSFET

### IRLML0100 (KRLML0100)

■ 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> =250 μ A, V <sub>GS</sub> =0V	100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			20	μ A
		V <sub>DS</sub> =100V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C			250	
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±16V			±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	1		2.5	V
Static Drain-Source On-Resistance (Note.1)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =1.3A		190	235	mΩ
		V <sub>GS</sub> =10V, I <sub>D</sub> =1.6A		178	220	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =1.6A	5.7			S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz		290		pF
Output Capacitance	C <sub>oss</sub>			27		
Reverse Transfer Capacitance	C <sub>rss</sub>			13		
Gate Resistance	R <sub>g</sub>			1.3		Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =50V, I <sub>D</sub> =1.6A		2.5		nC
Gate Source Charge	Q <sub>gs</sub>			0.5		
Gate Drain Charge	Q <sub>gd</sub>			1.2		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =50V, I <sub>D</sub> =1A, R <sub>GEN</sub> =6.8 Ω		2.2		ns
Turn-On Rise Time	t <sub>r</sub>			2.1		
Turn-Off DelayTime	t <sub>d(off)</sub>			9		
Turn-Off Fall Time	t <sub>f</sub>			3.6		
Body Diode Reverse Recovery Time	t <sub>rr</sub>	V <sub>R</sub> =50V, I <sub>F</sub> = 1.1A, di/dt= 100A/ μ s , T <sub>J</sub> = 25°C (Note.1)		20	30	nC
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			13	20	
Maximum Body-Diode Continuous Current	I <sub>S</sub>				1.1	A
Pulsed Source Current	I <sub>SM</sub>	(Note.2)			7	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1.1A, V <sub>GS</sub> =0V, T <sub>J</sub> = 25°C (Note.1)			1.3	V

Note.1: Pulse width ≤ 400μs; duty cycle ≤ 2%.

Note.2: Repetitive rating; pulse width limited by max. junction temperature.

■ Marking

Marking	1K**
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## N-Channel MOSFET

### IRLML0100 (KRLML0100)

■ Typical Characteristics

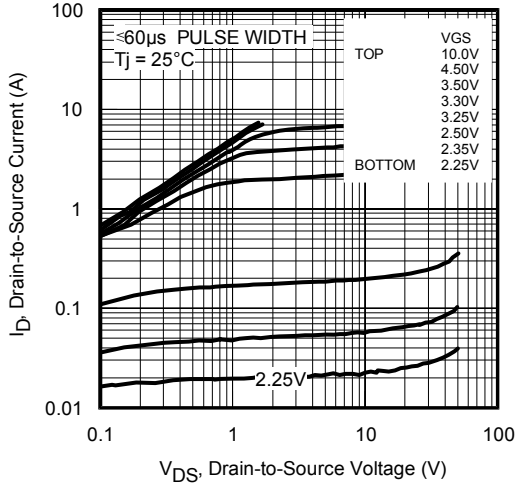


Fig 1. Typical Output Characteristics

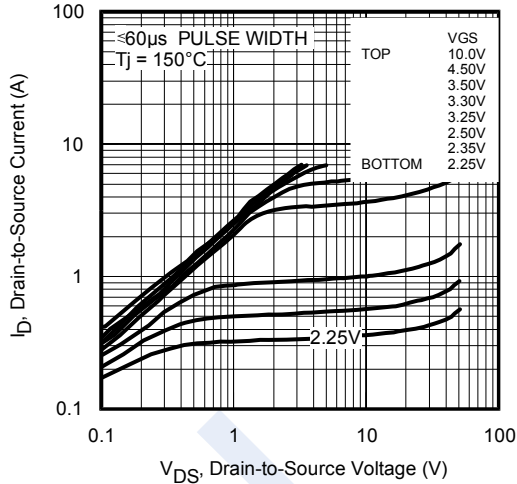


Fig 2. Typical Output Characteristics

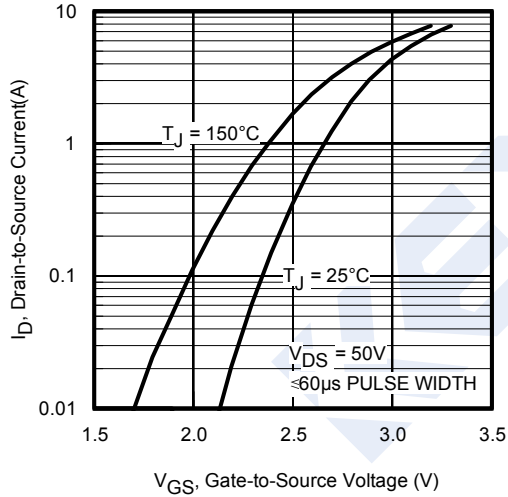


Fig 3. Typical Transfer Characteristics

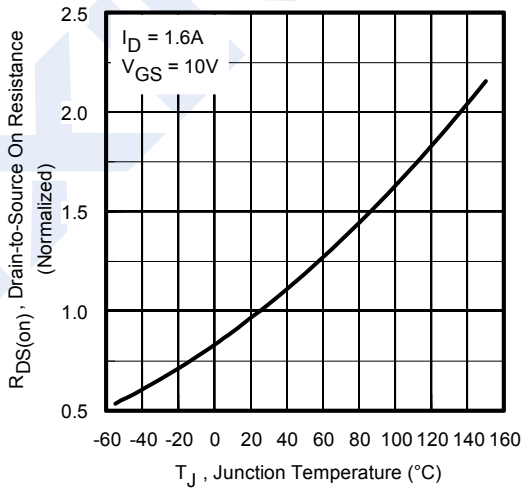


Fig 4. Normalized On-Resistance Vs. Temperature

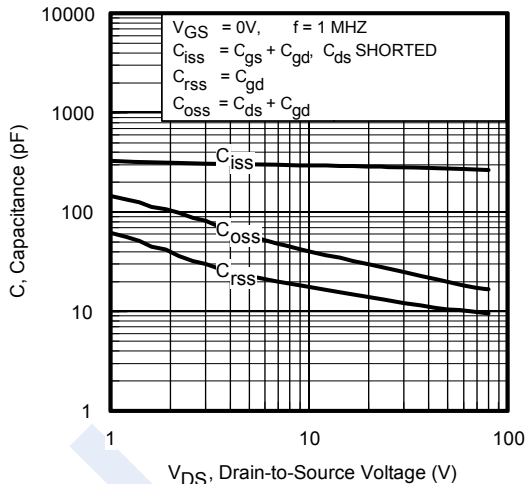


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

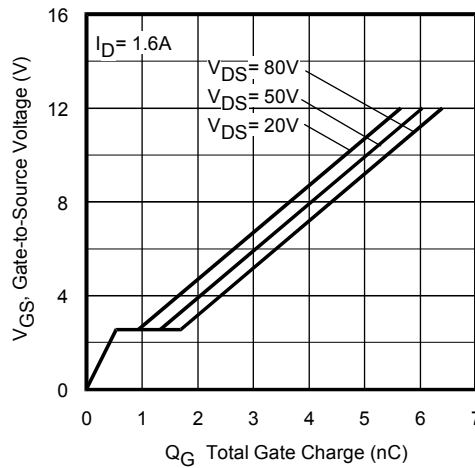


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

## N-Channel MOSFET IRLML0100 (KRLML0100)

■ Typical Characteristics

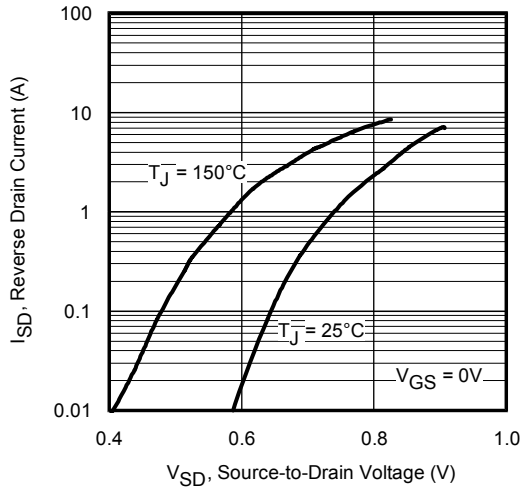


Fig 7. Typical Source-Drain Diode Forward Voltage

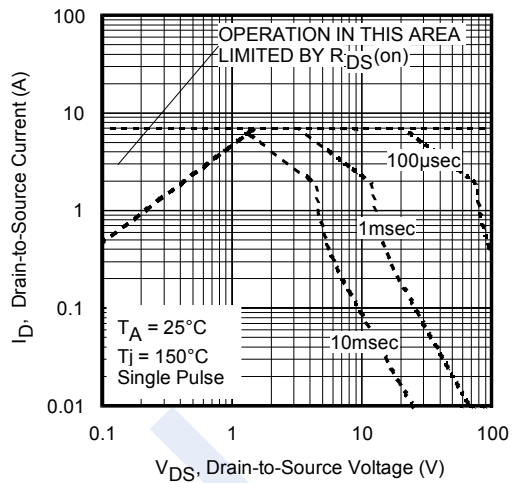


Fig 8. Maximum Safe Operating Area

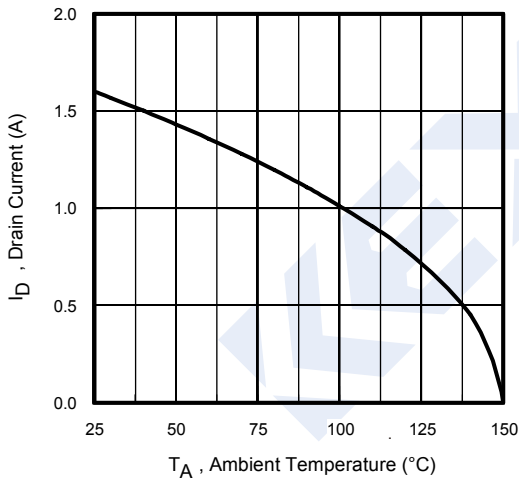


Fig 9. Maximum Drain Current Vs. Ambient Temperature

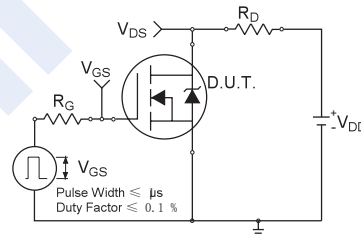


Fig 10a. Switching Time Test Circuit

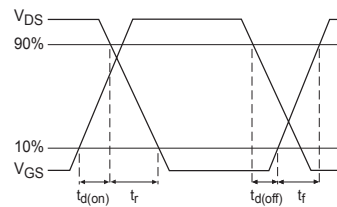


Fig 10b. Switching Time Waveforms

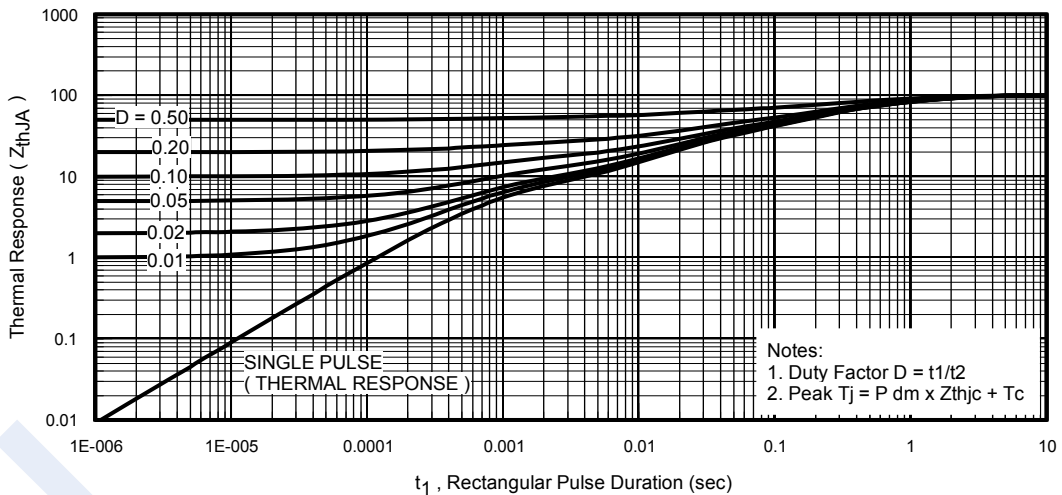
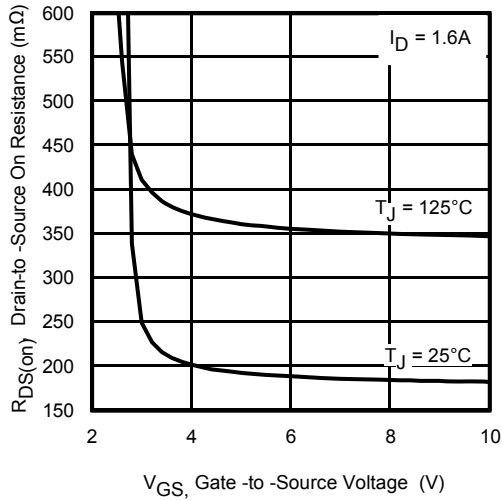


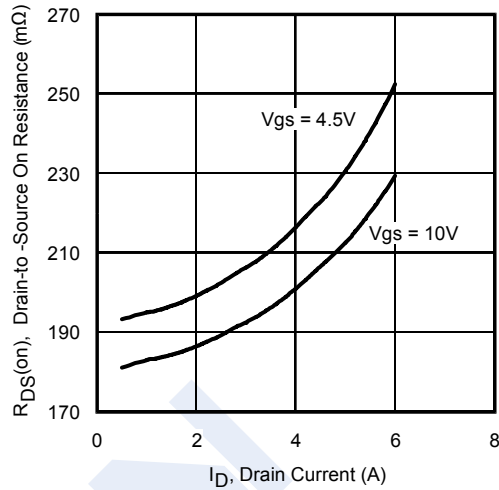
Fig 11. Typical Effective Transient Thermal Impedance, Junction-to-Ambient

## N-Channel MOSFET IRLML0100 (KRLML0100)

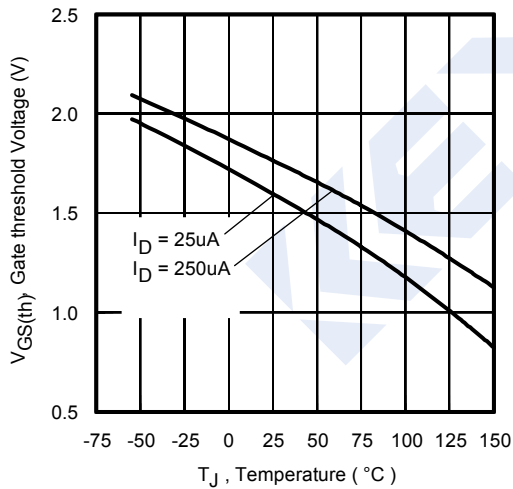
■ Typical Characteristics



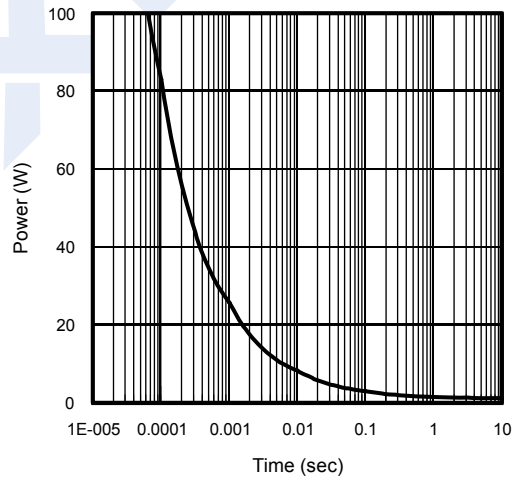
**Fig 12.** Typical On-Resistance Vs. Gate Voltage



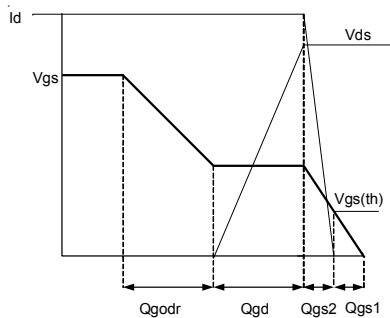
**Fig 13.** Typical On-Resistance Vs. Drain Current



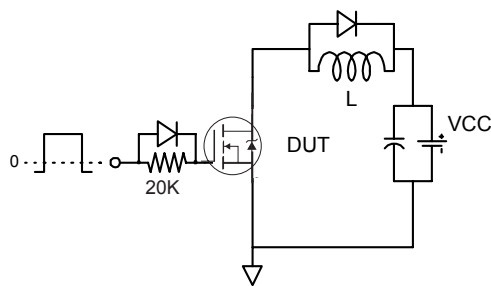
**Fig 14.** Typical Threshold Voltage Vs. Junction Temperature



**Fig 15.** Typical Power Vs. Time



**Fig 16a.** Basic Gate Charge Waveform



**Fig 16b.** Gate Charge Test Circuit