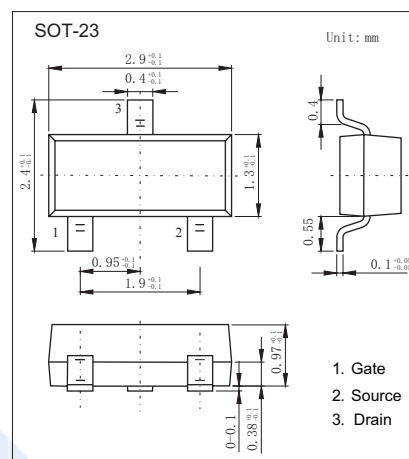
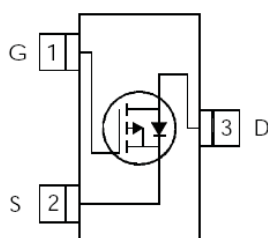


P-Channel MOSFET

IRLML5203 (KRLML5203)

■ Features

- $V_{DS} (V) \approx -30V$
- $R_{DS(ON)} \leq 98m\Omega$ @ $V_{GS} = -10V, I_D = -3.0A$
- $R_{DS(ON)} \leq 165m\Omega$ @ $V_{GS} = -4.5V, I_D = -2.6A$
- Ultra Low On-Resistance
- Low Gate Charge



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current, $V_{GS} @ -10V$	I_D	-3.0	A
		-2.4	
Pulsed Drain Current (Note 1)	I_{DM}	-24	
Power Dissipation	P_D	1.25	W
		0.8	
Linear Derating Factor	D_L	10	mW/ $^\circ C$
Thermal Resistance, Junction- to-Ambient (Note 2)	R_{thJA}	100	$^\circ C/W$
Junction Temperature	T_J	150	$^\circ C$
Junction Storage Temperature Range	T_{stg}	-55 to 150	

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

2. Surface mounted on FR-4 board, $t \leq 5\text{sec}$.

P-Channel MOSFET

IRLML5203 (KRLML5203)

■ Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DS}	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	-30			V
Breakdown Voltage Temp. Coefficient	$\Delta V_{(BR)DS}/\Delta T_J$	Reference to 25°C , $I_D = -1\text{mA}$		0.019		V/ $^\circ\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -24\text{V}$, $V_{GS} = 0\text{V}$			-1.0	μA
		$V_{DS} = -24\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 70^\circ\text{C}$			-5.0	
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	-1.0		-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10\text{V}$, $I_D = -3.0\text{A}$ (Note 3)			98	m Ω
		$V_{GS} = -4.5\text{V}$, $I_D = -2.6\text{A}$ (Note 3)			165	
Forward Transconductance	g_{FS}	$V_{DS} = -10\text{V}$, $I_D = -3.0\text{A}$	3.1			S
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = -25\text{V}$, $f = 1\text{MHz}$ (Note 3)		510		pF
Output Capacitance	C_{oss}			71		
Reverse Transfer Capacitance	C_{rss}			43		
Total Gate Charge	Q_g	$V_{GS} = -10\text{V}$, $V_{DS} = -24\text{V}$, $I_D = -3.0\text{A}$		9.5	14	nC
Gate Source Charge	Q_{gs}			2.3	3.5	
Gate Drain Charge	Q_{gd}			1.6	2.4	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = -10\text{V}$, $V_{DD} = -15\text{V}$, $I_D = -1.0\text{A}$, $R_G = 6.0\Omega$ (Note 3)		12		ns
Turn-On Rise Time	t_r			18		
Turn-Off Delay Time	$t_{d(off)}$			88		
Turn-Off Fall Time	t_f			52		
Body Diode Reverse Recovery Time	t_{rr}	$I_F = -1.3\text{A}$, $dI/dt = 100\text{A}/\mu\text{s}$ (Note 3)		17	26	nC
Body Diode Reverse Recovery Charge	Q_{rr}			12	18	
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode.			-1.3	A
Body-Diode Pulsed Source Current (Note 1)	I_{SM}				-24	
Diode Forward Voltage	V_{SD}	$I_S = -1.3\text{A}$, $V_{GS} = 0\text{V}$			-1.2	V

Note 3: Pulse width $\leq 400\mu\text{s}$; duty cycle $\leq 2\%$.

■ Marking

Marking	1H** or HJA03
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P-Channel MOSFET

IRLML5203 (KRLML5203)

■ Typical Characteristics

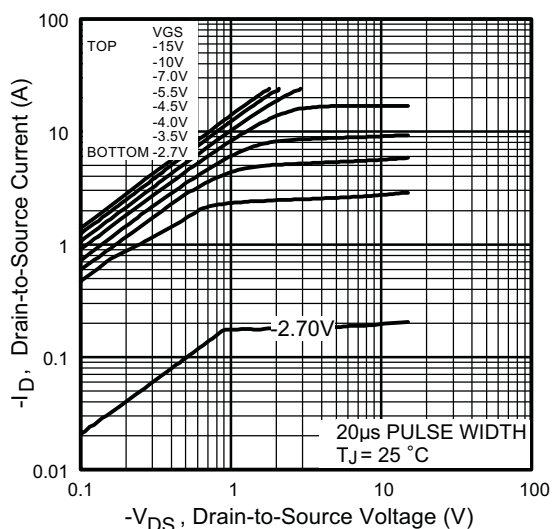


Fig 1. Typical Output Characteristics

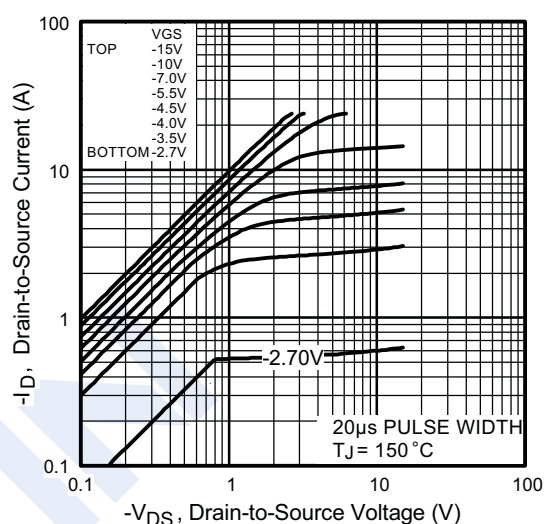


Fig 2. Typical Output Characteristics

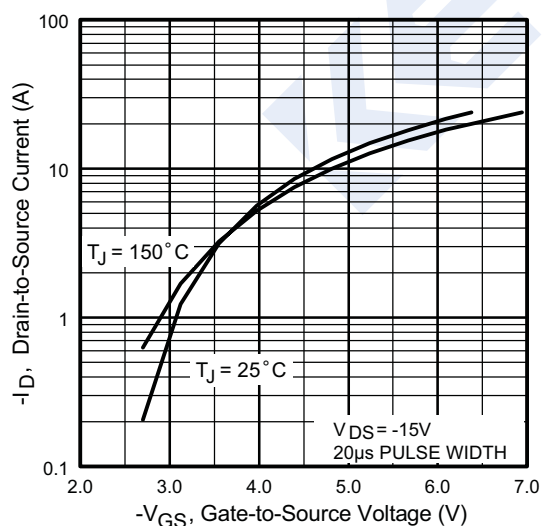


Fig 3. Typical Transfer Characteristics

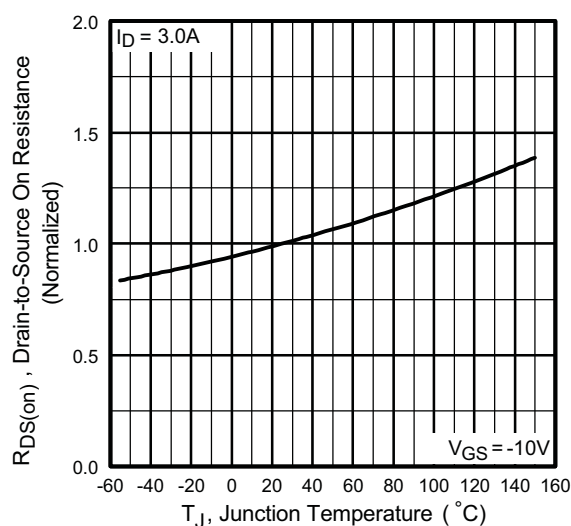


Fig 4. Normalized On-Resistance Vs. Temperature

P-Channel MOSFET

IRLML5203 (KRLML5203)

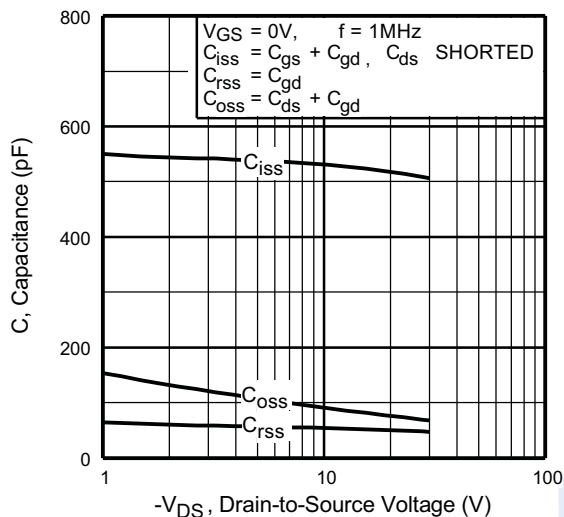


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

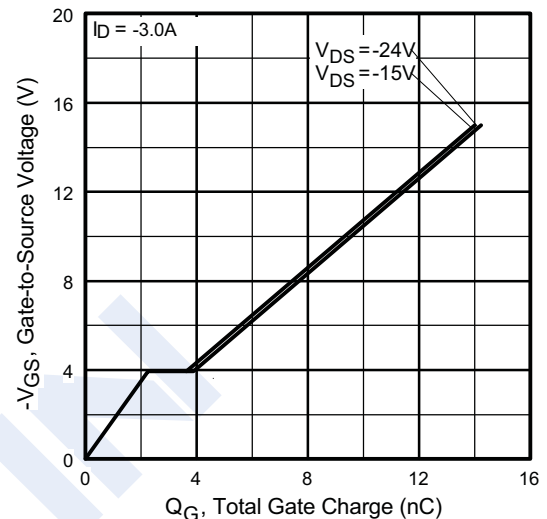


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

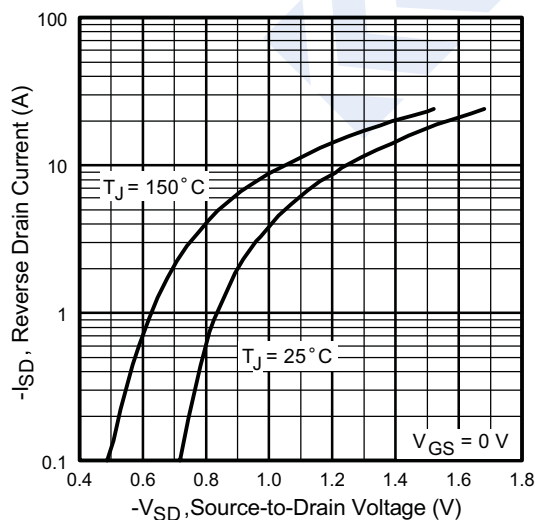


Fig 7. Typical Source-Drain Diode Forward Voltage

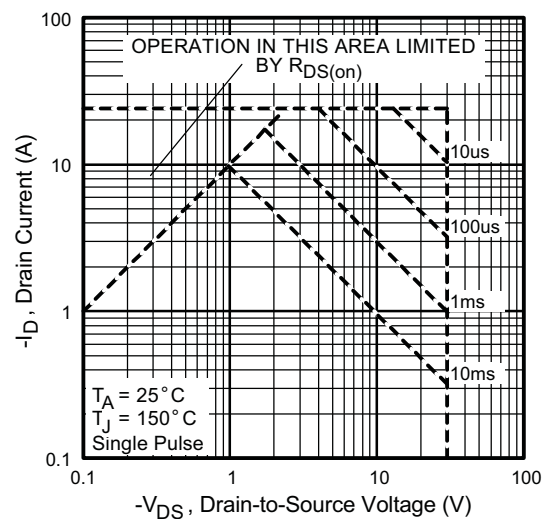


Fig 8. Maximum Safe Operating Area

P-Channel MOSFET

IRLML5203 (KRLML5203)

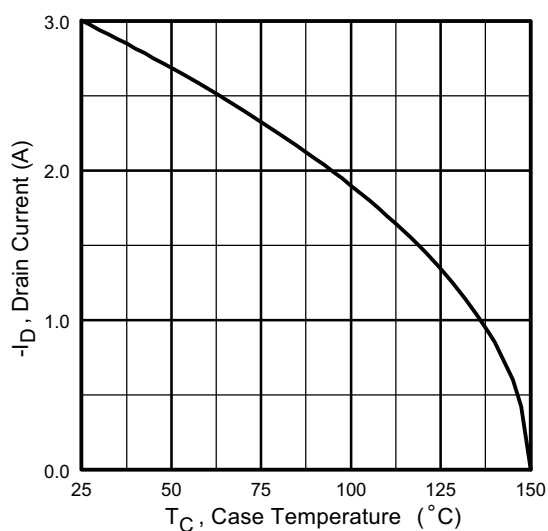


Fig 9. Maximum Drain Current Vs. Case Temperature

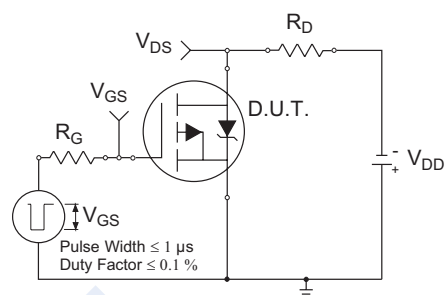


Fig 10a. Switching Time Test Circuit

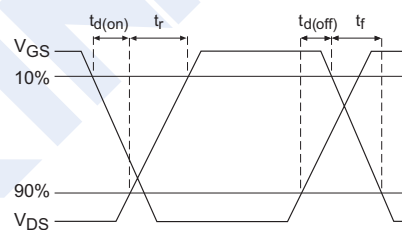


Fig 10b. Switching Time Waveforms

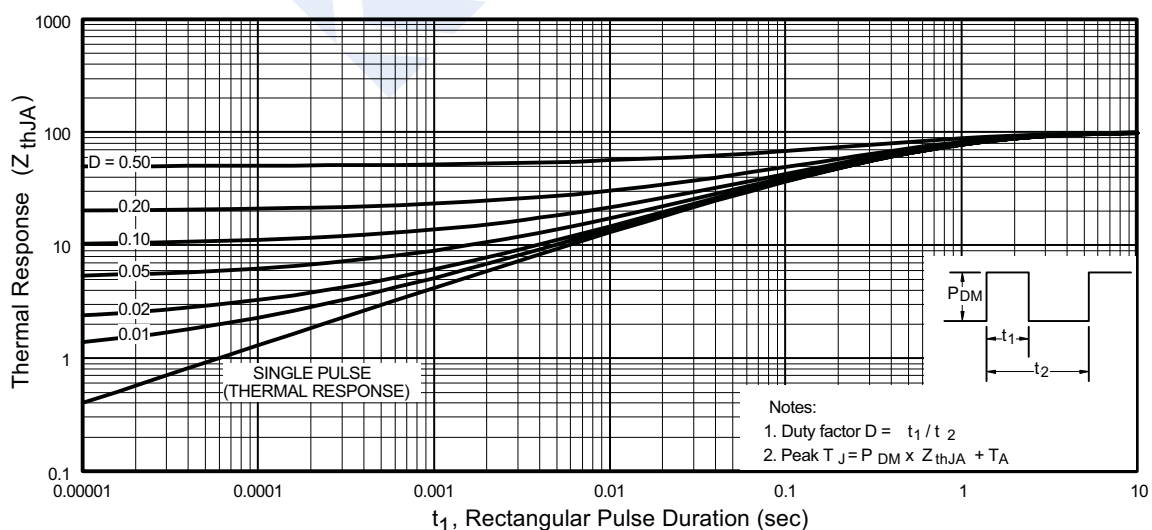


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

P-Channel MOSFET

IRLML5203 (KRLML5203)

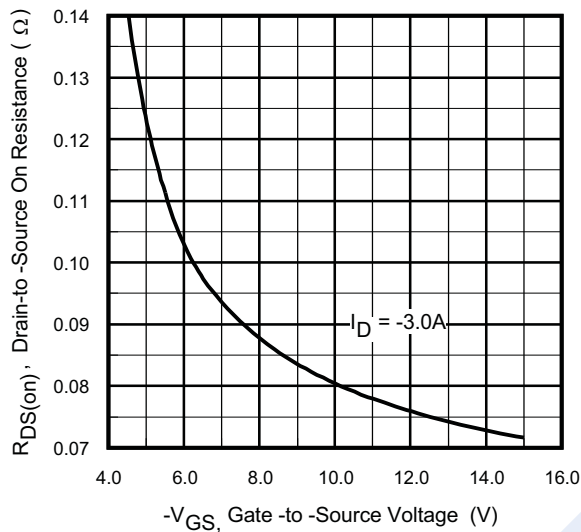


Fig 11. Typical On-Resistance Vs. Gate Voltage

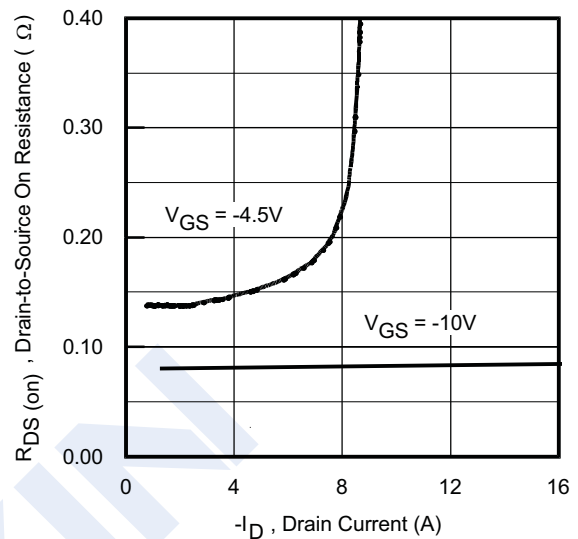


Fig 12. Typical On-Resistance Vs. Drain Current

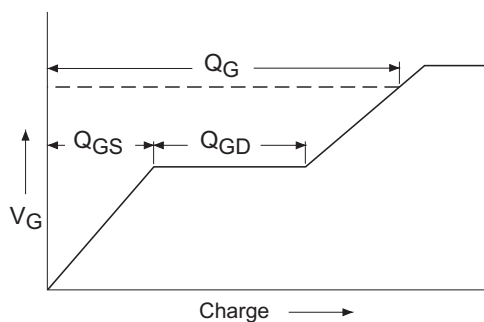


Fig 13a. Basic Gate Charge Waveform

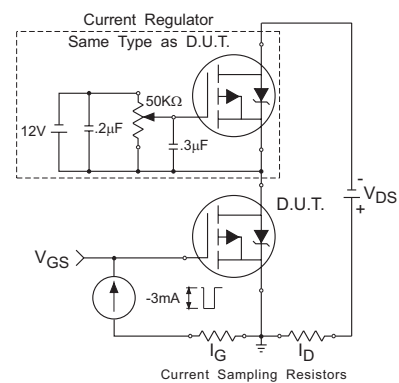


Fig 13b. Gate Charge Test Circuit

P-Channel MOSFET
IRLML5203 (KRLML5203)

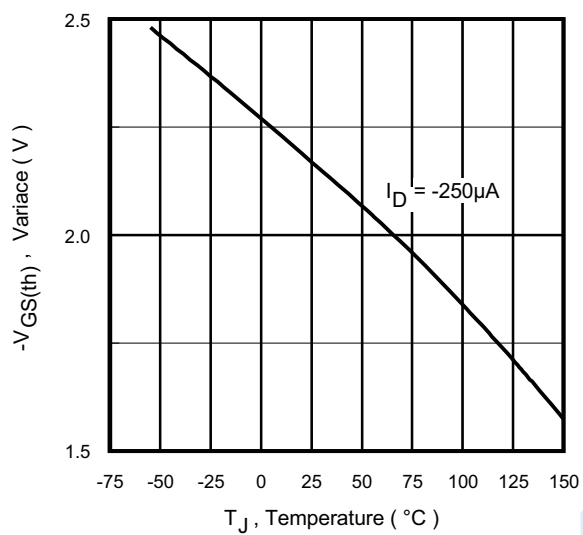


Fig 14. Threshold Voltage Vs. Temperature

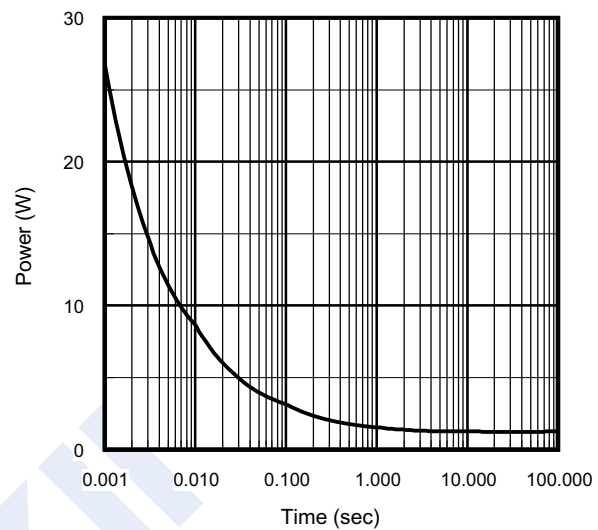


Fig 15. Typical Power Vs. Time