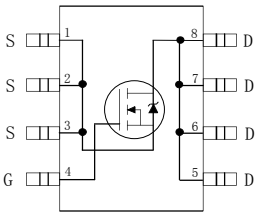
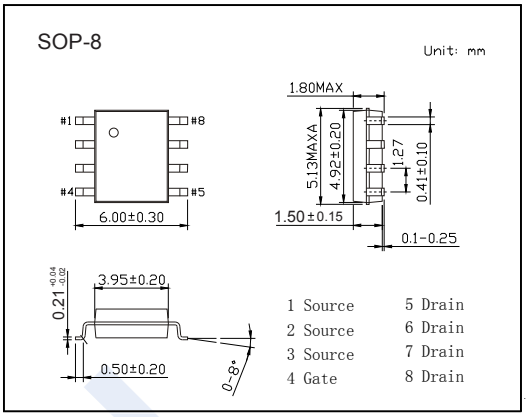
N-Channel MOSFET

IRF7855 (KRF7855)

■ Features

- $V_{DS\ (V)}$ = 60V
- I_D = 12 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 9.4mΩ (V_{GS} = 10V)





■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	TA=25℃	I_D	12	A
	TA=70℃		8.7	
Pulsed Drain Current		I_{DM}	97	
Power Dissipation	TA=25℃	P_D	2.5	W
Linear Derating Factor			0.02	W/℃
Avalanche Current		I_{AS}	7.2	A
Single Pulse Avalanche Energy		E_{AS}	540	mJ
Peak Diode Recovery dv/dt		dv/dt	9.9	V/ns
Thermal Resistance.Junction- to-Ambient		R_{thJA}	50	℃/W
Thermal Resistance.Junction- to-Case		R_{thJC}	20	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

N-Channel MOSFET

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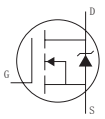
■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			20	μA
		V_{DS}=60V, V_{GS}=0V, T_J=125℃			250	
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=100μA	3		4.9	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=12A		7.4	9.4	mΩ
Forward Transconductance	g_{FS}	V_{DS}=25V, I_D=7.2A	14			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		1560		pF
Output Capacitance	C_{oss}			440		
Reverse Transfer Capacitance	C_{rss}			120		
Output Capacitance	C_{oss}	V_{GS} = 0V, V_{DS} = 1V, f = 1.0MHz		1910		
Output Capacitance	C_{oss}	V_{GS} = 0V, V_{DS} = 48V, f = 1.0MHz		320		
Effective Output Capacitance	$C_{oss\ eff}$	V_{GS} = 0V, V_{DS} = 0 to 48V		520		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=30V, I_D=7.2A		26	39	nC
Gate Source Charge	Q_{gs}			6.8		
Gate Drain Charge	Q_{gd}			9.6		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=30V, I_D=7.2A,R_G=6.2Ω		8.7		ns
Turn-On Rise Time	t_r			13		
Turn-Off DelayTime	$t_{d(off)}$			16		
Turn-Off Fall Time	t_f			12		
Body Diode Reverse Recovery Time	t_{rr}	I_S= 7.2A, V_{GS}=0, dI/dt= 100A/μs,T_J = 25℃		33	50	
Body Diode Reverse Recovery Charge	Q_{rr}	I_F= 7.2A, V_{DD}=25V, dI/dt= 100A/μs,T_J = 25℃		38	57	nC
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode. 			2.3	A
Pulsed Source Current	I_{SM}				97	
Diode Forward Voltage	V_{SD}	I_S= 7.2A, V_{GS}=0, T_J = 25℃		0.71	1.3	V

N-Channel MOSFET

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■ Typical Characterisitics

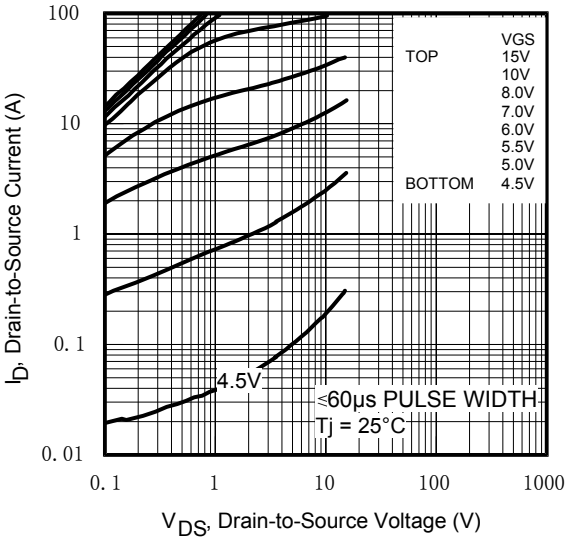

Fig 1. Typical Output Characteristics

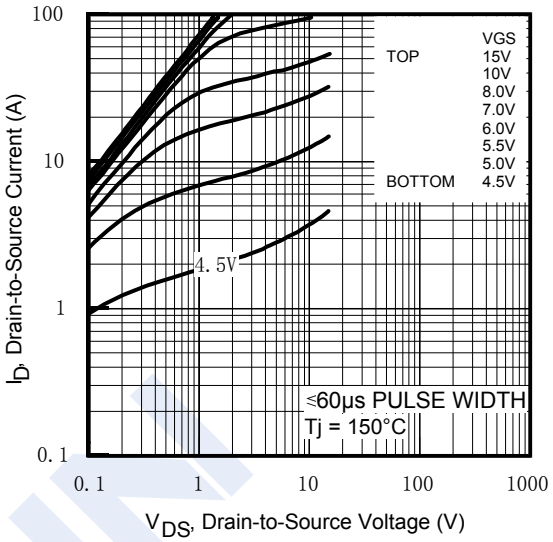

Fig 2. Typical Output Characteristics

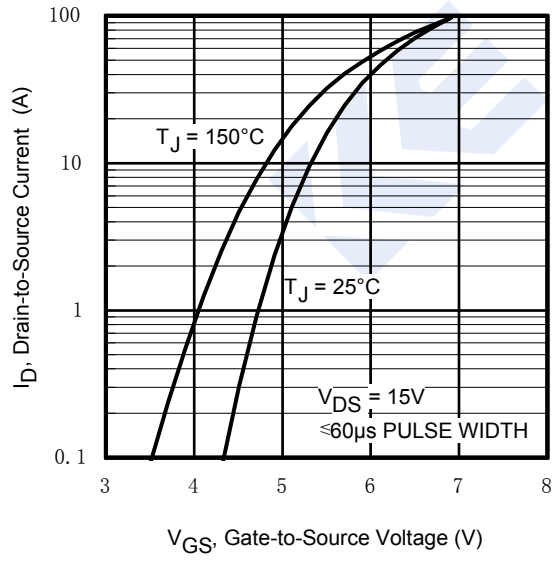

Fig 3. Typical Transfer Characteristics

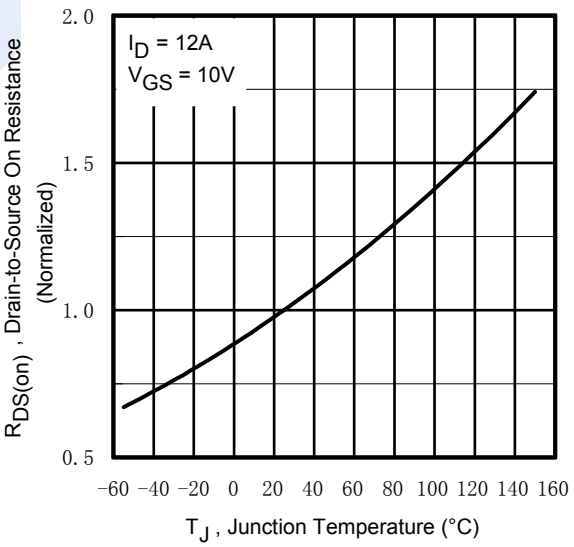

Fig 4. Normalized On-Resistance vs. Temperature

N-Channel MOSFET

IRF7855 (KRF7855)

■ Typical Characterisitics

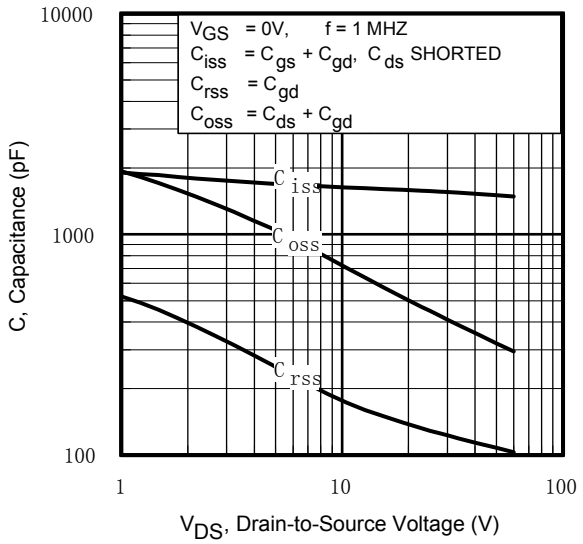

Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

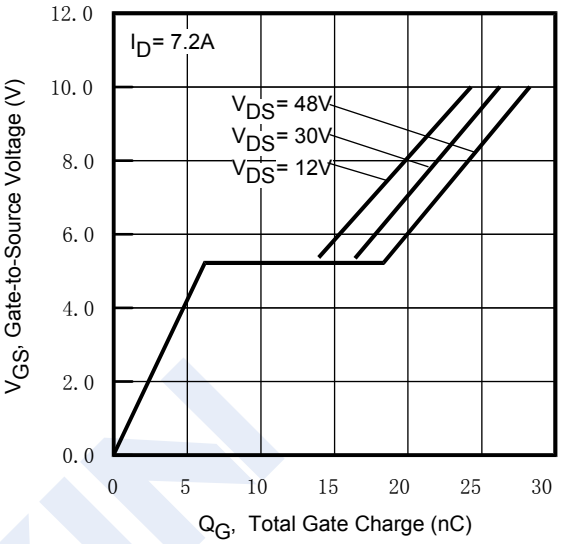

Fig 6. Typical Gate Charge vs. Gate-to-Source Voltage

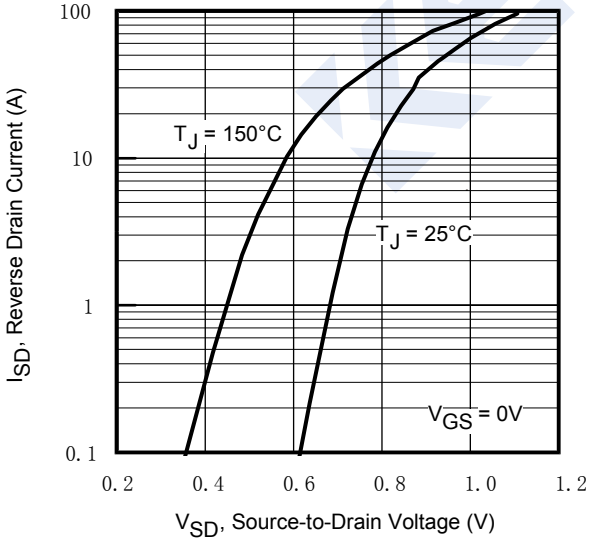

Fig 7. Typical Source-Drain Diode Forward Voltage

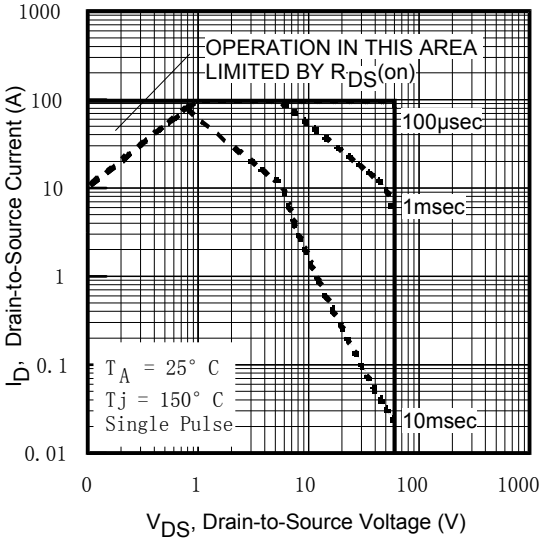

Fig 8. Maximum Safe Operating Area

N-Channel MOSFET

IRF7855 (KRF7855)

■ Typical Characterisitics

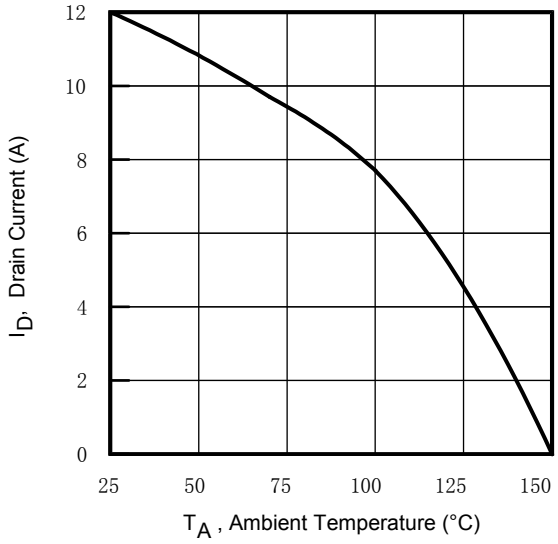

Fig 9. Maximum Drain Current vs. Ambient Temperature

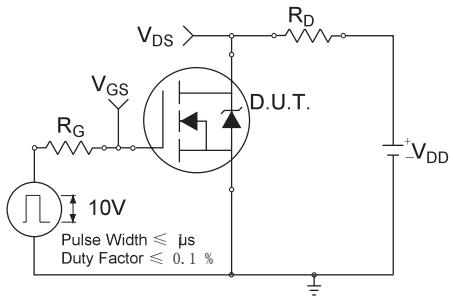

Fig 10a. Switching Time Test Circuit

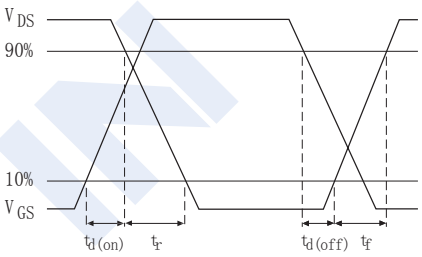

Fig 10b. Switching Time Waveforms

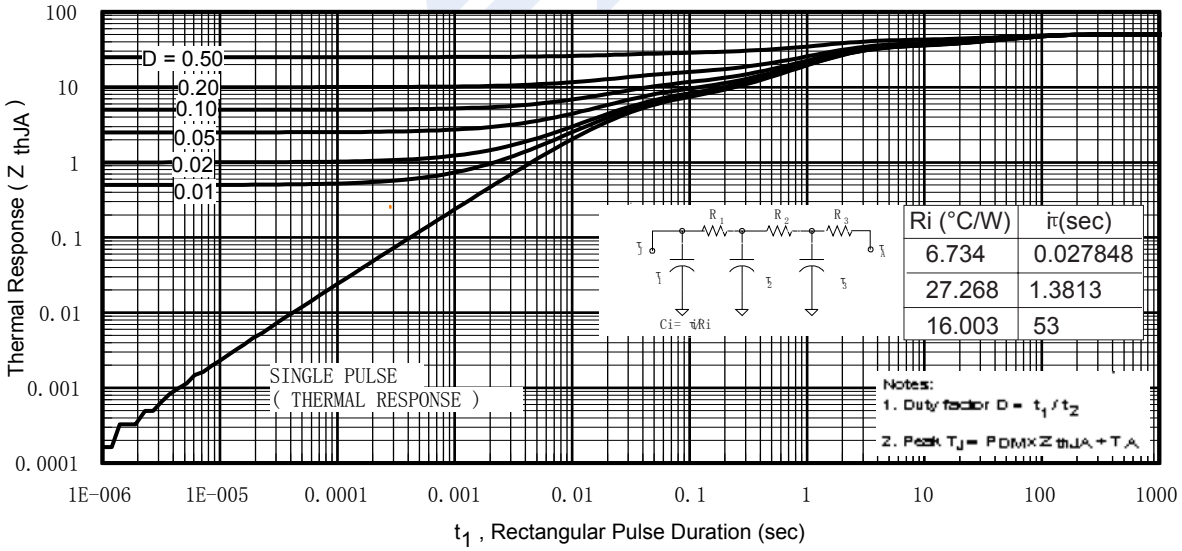

Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

N-Channel MOSFET

IRF7855 (KRF7855)

■ Typical Characterisitics

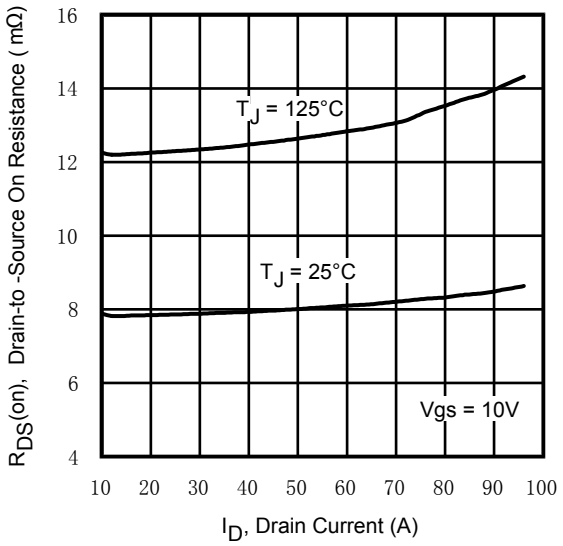

Fig 12. On-Resistance vs. Drain Current

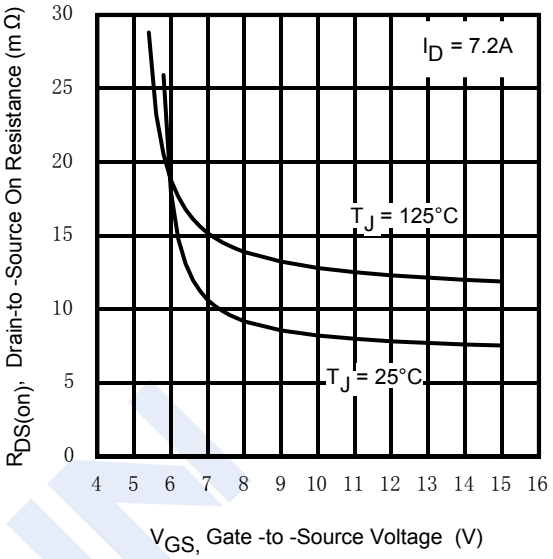

Fig 13. On-Resistance vs. Gate Voltage

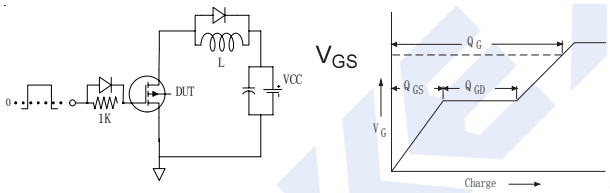

Fig 14a&b. Basic Gate Charge Test Circuit and Waveform

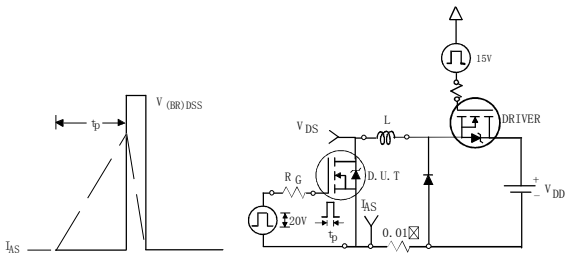

Fig 15a&b. Unclamped Inductive Test circuit and Waveforms

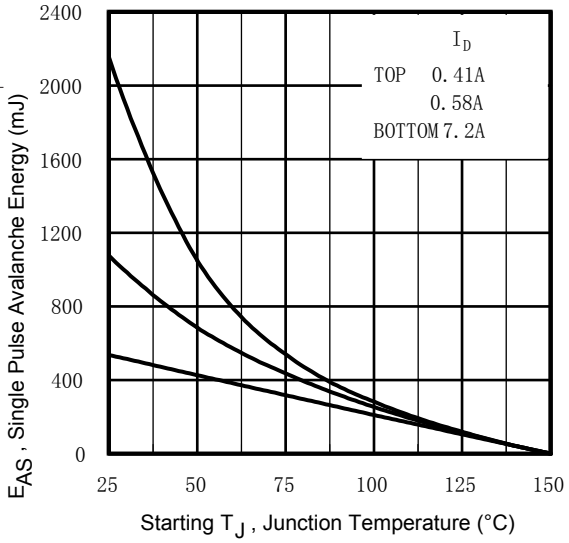

Fig 15c. Maximum Avalanche Energy vs. Drain Current