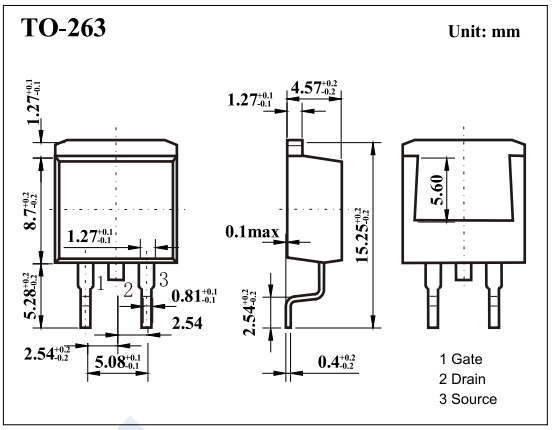
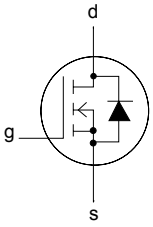
N-Channel MOSFET

IRF730S (KRF730S)



■ Features

- $V_{DS\ (V)}$ =400V
- I_D = 5.5 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 1Ω (V_{GS} = 10V)
- Fast switching
- Low thermal resistance



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	400	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	Tc = 25℃	I_D	5.5	A
	Tc = 100℃		3.5	
Pulsed Drain Current		I_{DM}	22	
Avalanche Current		I_{AR}	5.5	
Power Dissipation	Tc = 25℃	P_D	74	W
	Ta = 25℃		3.1	
Non-Repetitive Avalanche Energy (Note.1)		E_{AS}	290	mJ
Repetitive Avalanche Energy (Note.2)		E_{AR}	7.4	
Peak Diode Recovery dv/dt		dv/dt	4	V/ns
Thermal Resistance.Junction- to-Ambient		R_{thJA}	62	℃/W
Thermal Resistance.Junction- to-Ambient (PCB mount)			40	
Thermal Resistance Junction to Mounting Base		R_{thJB}	1.7	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

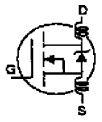
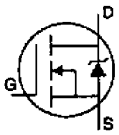
Note.1: V_{DD}= 50V, starting T_J =25°C, L=16mH, Rg =25Ω, I_{AS} = 5.5 A

Note.2: I_{SD}≤5.5 A, dI/dt≤ 90A/μs, VDD≤ $V_{(BR)DSS}$, T_J≤ 150 °C.

N-Channel MOSFET

IRF730S (KRF730S)

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	400			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=400V, V_{GS}=0V			25	uA
		V_{DS}=320V, 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=250uA (Note.1)	2		4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.3A (Note.1)			1	Ω
Forward Transconductance	g_{FS}	V_{DS}=50V, I_D=3.3A (Note.1)	2.9			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		700		pF
Output Capacitance	C_{oss}			170		
Reverse Transfer Capacitance	C_{rss}			64		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=320V, I_D=3.5A			38	nC
Gate Source Charge	Q_{gs}				5.7	
Gate Drain Charge	Q_{gd}				22	
Internal Drain Inductance	L_D	Between lead, 6 mm (0.25in.) from package and center of die contact 		4.5		nH
Internal Source Inductance	L_S			7.5		
Turn-On DelayTime	$t_{d(on)}$	V_{DS}=200V, I_D=3.5A,R_L=57Ω ,R_G=12Ω		10		ns
Turn-On Rise Time	t_r			15		
Turn-Off DelayTime	$t_{d(off)}$			38		
Turn-Off Fall Time	t_f			14		
Body Diode Reverse Recovery Time	t_{rr}	I_F = 3.5A; dIF/dt = 100 A/us,T_J=25℃			530	
Body Diode Reverse Recovery Charge	Q_{rr}				2.2	uC
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode. 			5.5	A
Pulsed Source Current (Body Diode)	I_{SM}				22	
Diode Forward Voltage	V_{SD}	I_S=5.5A,V_{GS}=0 , T_J=25℃			1.6	V

Note.1: Pulse width ≤ 300 μs; duty cycle ≤2 %.

N-Channel MOSFET

IRF730 (KRF730)

■ Typical Characterisitics

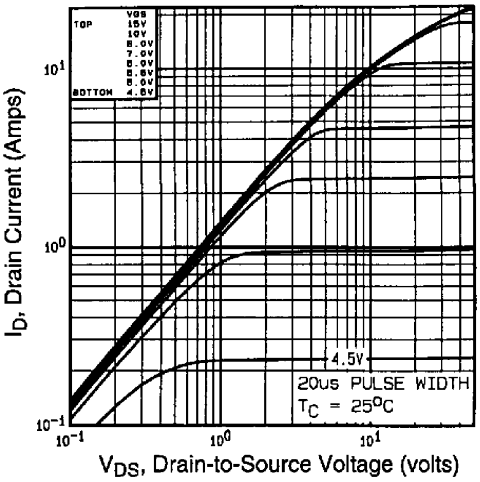


Fig 1. Typical Output Characteristics, T_C=25°C

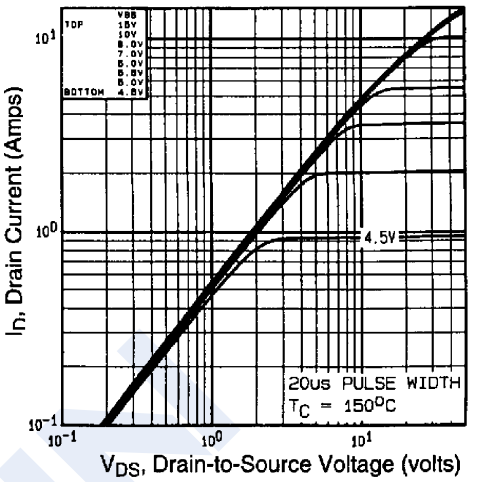


Fig 2. Typical Output Characteristics, T_C=150°C

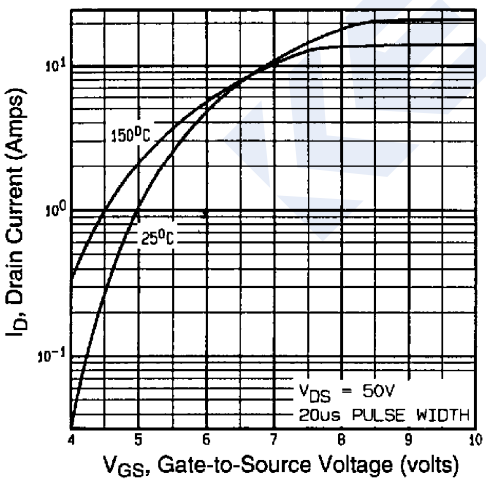


Fig 3. Typical Transfer Characteristics

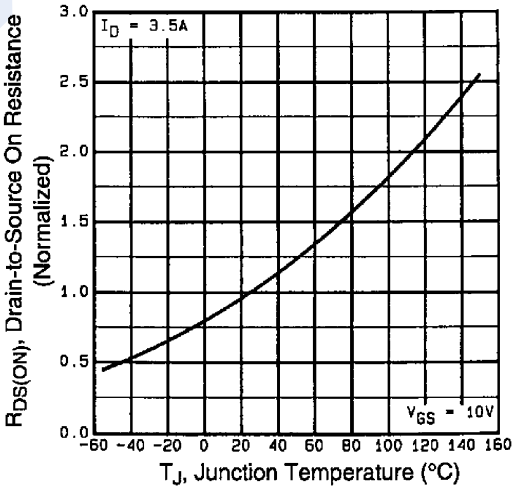


Fig 4. Normalized On-Resistance Vs. Temperature

N-Channel MOSFET

IRF730 (KRF730)

■ Typical Characterisitics

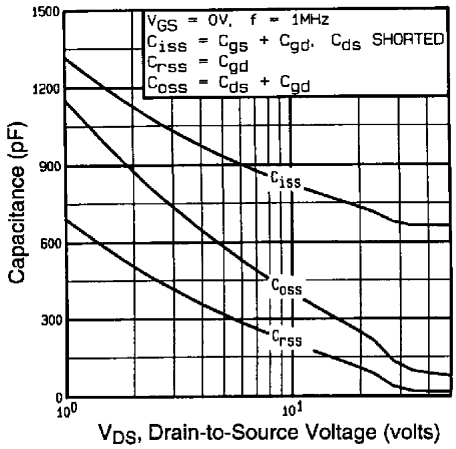


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

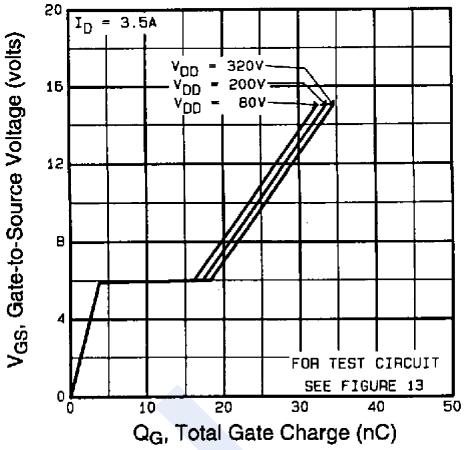


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

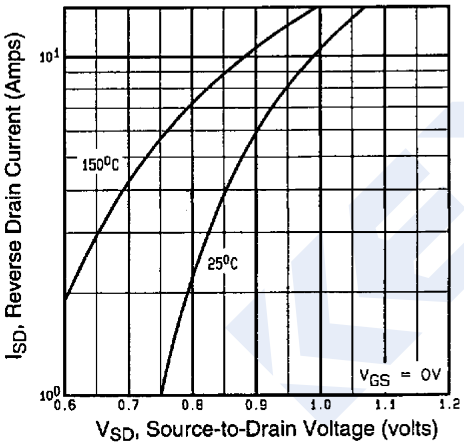


Fig 7. Typical Source-Drain Diode Forward Voltage

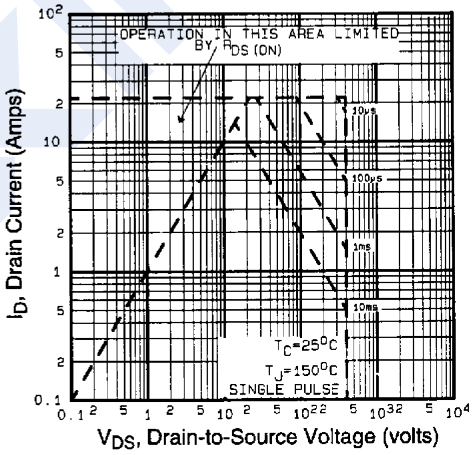


Fig 8. Maximum Safe Operating Area

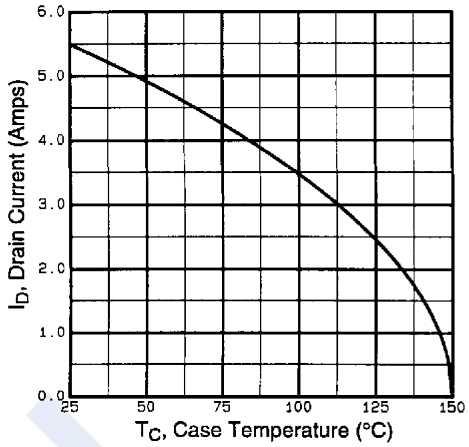


Fig 9. Maximum Drain Current Vs. Case Temperature

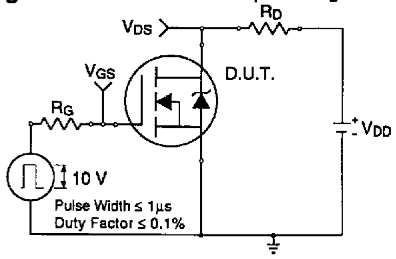


Fig 10a. Switching Time Test Circuit

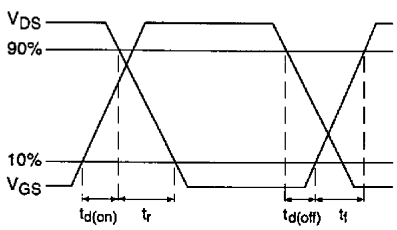


Fig 10b. Switching Time Waveforms

N-Channel MOSFET

IRF730 (KRF730)

■ Typical Characterisitics

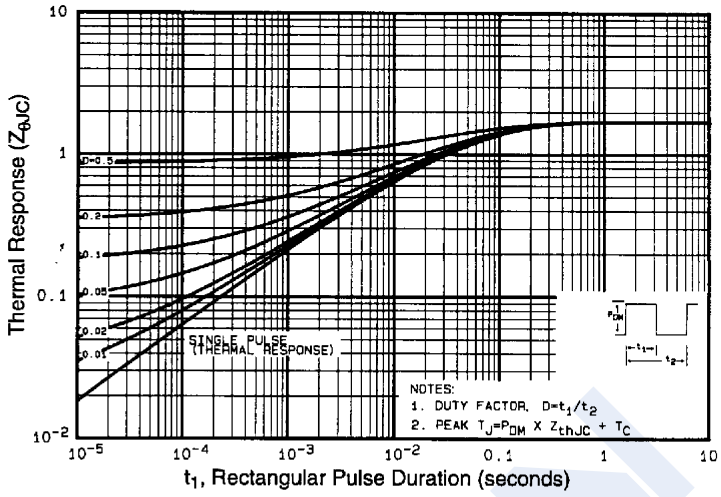


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

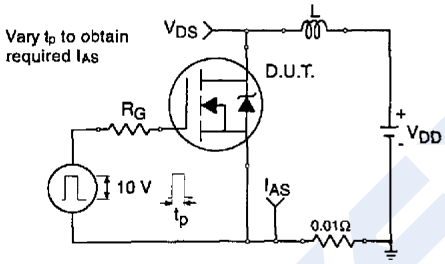


Fig 12a. Unclamped Inductive Test Circuit

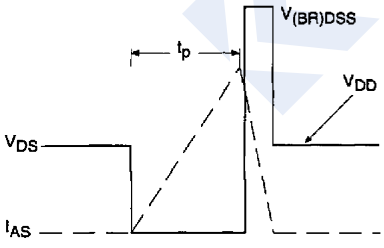


Fig 12b. Unclamped Inductive Waveforms

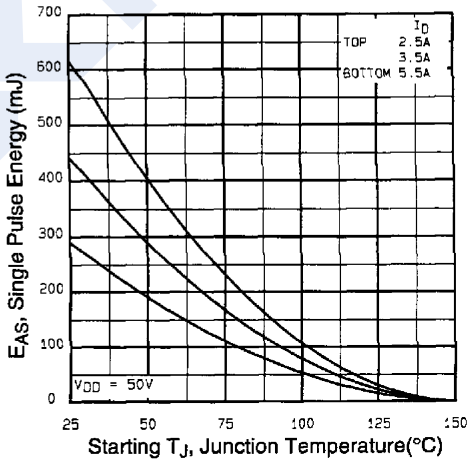


Fig 12c. Maximum Avalanche Energy Vs. Drain Current

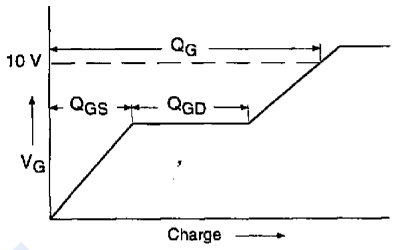


Fig 13a. Basic Gate Charge Waveform

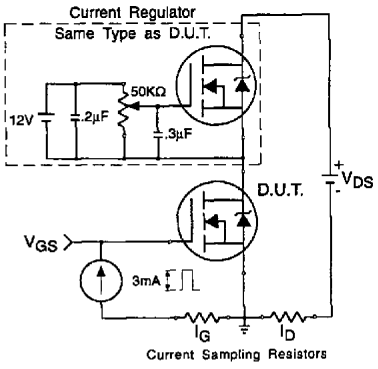


Fig 13b. Gate Charge Test Circuit