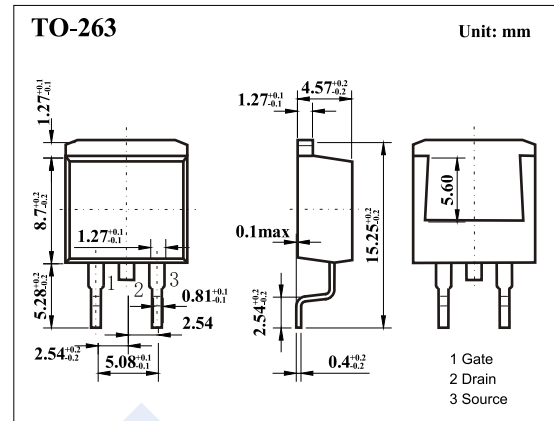
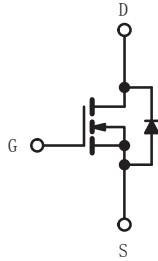


N-Channel MOSFET

IRF830S (KRF830S)

■ Features

- $V_{DS} (V) = 500V$
- $I_D = 4.5 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 1.5 \Omega (V_{GS} = 10V)$
- Fast Switching
- Repetitive Avalanche Rated



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	500	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	$T_c=25^\circ C$	4.5
		$T_c=100^\circ C$	2.9
Pulsed Drain Current	I_{DM}	18	A
Avalanche Current	I_{AR}	4.5	
Power Dissipation	P_D	$T_c=25^\circ C$	74
		$T_a=25^\circ C$	3.1
Single Pulse Avalanche Energy (Note1)	E_{AS}	280	mJ
Repetitive Avalanche Energy	E_{AR}	7.4	
Peak Diode Recovery dv/dt (Note 2)	dv/dt	3.5	V/ns
Thermal Resistance.Junction- to-Ambient	R_{thJA}	62	$^\circ C/W$
Thermal Resistance.Junction- to-Ambient (PCB Mount)		40	
Thermal Resistance.Junction- to-Case		1.7	
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 to 150	

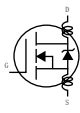

Note.1: $L = 24mH$, $I_{AS} = 4.5A$, $V_{DD} = 50V$, $R_G = 25 \Omega$, Starting $T_J = 25^\circ C$.

Note.2: $I_{SD} = 4.5A$, $di/dt = 75 A/\mu s$, $V_{DD} = V_{(BR)DSS}$, Starting $T_J = 25^\circ C$.

N-Channel MOSFET

IRF830S (KRF830S)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =250 μA, V _{GS} =0V	500			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =500V, V _{GS} =0V			25	μA
		V _{DS} =400V, V _{GS} =0V, T _J =125°C			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 =250 μA	2		4	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =2.7A (Note.1)			1.5	Ω
Forward Transconductance	g _{FS}	V _{DS} =50V, I _D =2.7A (Note.1)	2.5			S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz		610		pF
Output Capacitance	C _{oss}			160		
Reverse Transfer Capacitance	C _{rss}			68		
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =400V, I _D =3.1A			38	nC
Gate Source Charge	Q _{gs}				5	
Gate Drain Charge	Q _{gd}				22	
Internal Drain Inductance	L _D	Between lead, 6 mm (0.25") from package and center of die contact 		4.5		nH
Internal Source Inductance	L _S				7.5	
Turn-On DelayTime	t _{d(on)}	V _{DD} = 250 V, I _D = 3.1 A, R _g = 12Ω, R _D = 79Ω (Note.1)		8.2		ns
Turn-On Rise Time	t _r			16		
Turn-Off DelayTime	t _{d(off)}			42		
Turn-Off Fall Time	t _f			16		
Body Diode Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = 3.1A, dI/dt = 100A/μs			640	μs
Body Diode Reverse Recovery Charge	Q _{rr}				2	
Continuous Source-Drain Diode Current	I _S	MOSFET symbol showing the integral reverse p - n junction diode 			4.5	A
Pulsed Diode Forward Current	I _{SM}				18	
Diode Forward Voltage	V _{SD}	I _S =4.5A, V _{GS} =0V, T _J = 25°C			1.6	V

Note.1: Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%.

N-Channel MOSFET IRF830S (KRF830S)

■ Typical Characteristics

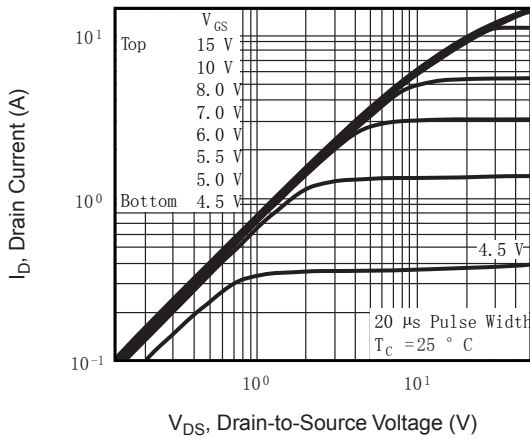


Fig. 1 - Typical Output Characteristics, $T_c = 25\text{ }^\circ\text{C}$

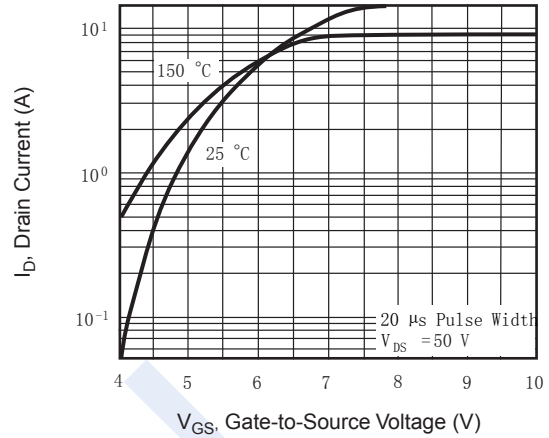


Fig. 3 - Typical Transfer Characteristics

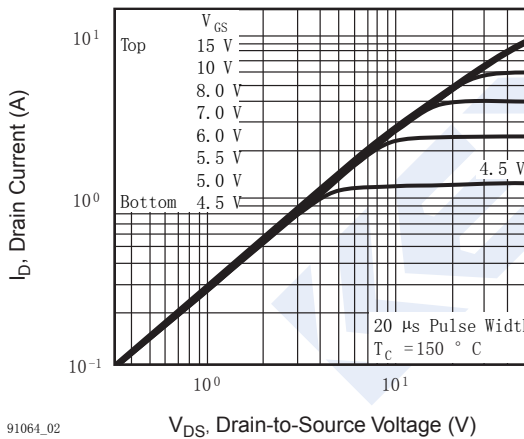


Fig. 2 - Typical Output Characteristics, $T_c = 150\text{ }^\circ\text{C}$

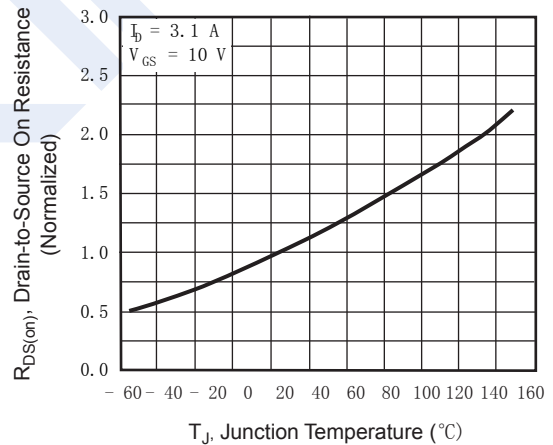


Fig. 4 - Normalized On-Resistance vs. Temperature

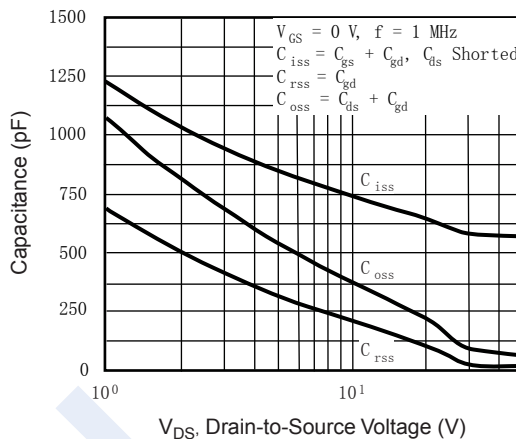


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

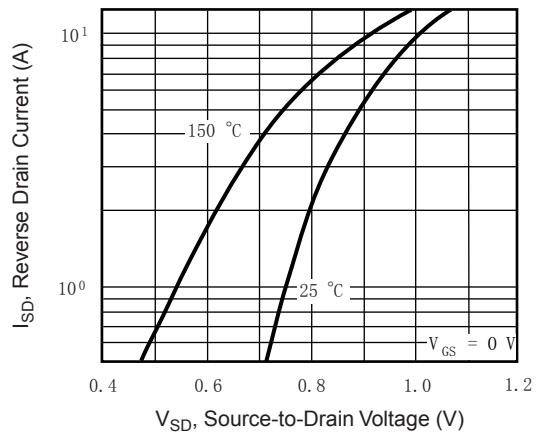


Fig. 7 - Typical Source-Drain Diode Forward Voltage

N-Channel MOSFET IRF830S (KRF830S)

■ Typical Characteristics

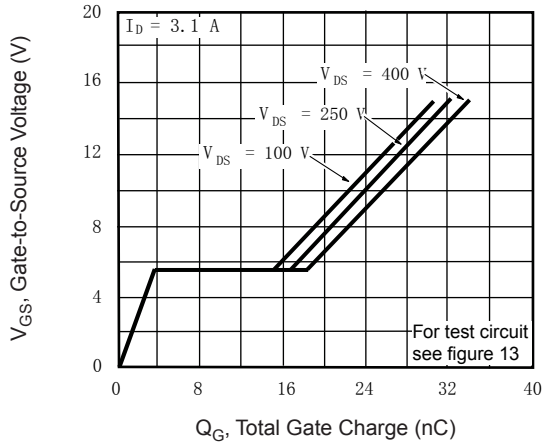


Fig. 6 - Typical Gate Charge vs. Gate-to-Source Voltage

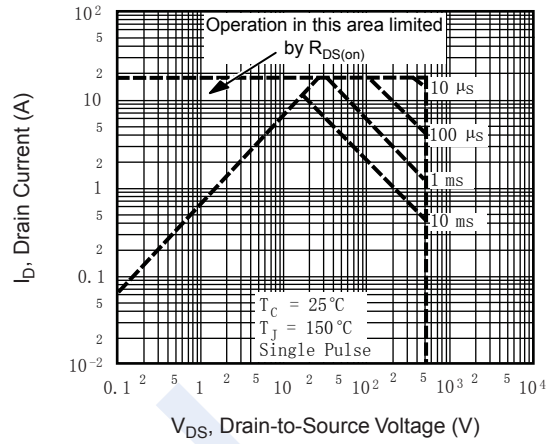


Fig. 8 - Maximum Safe Operating Area

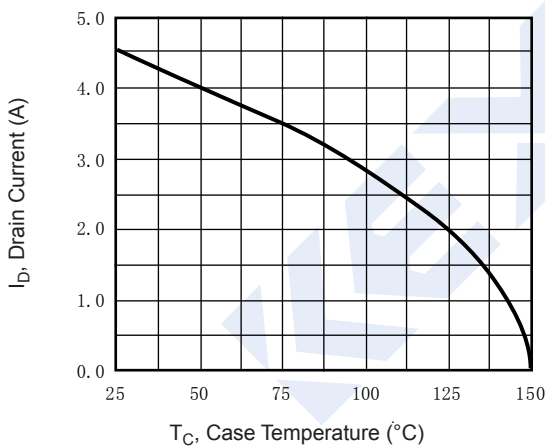


Fig. 9 - Maximum Drain Current vs. Case Temperature

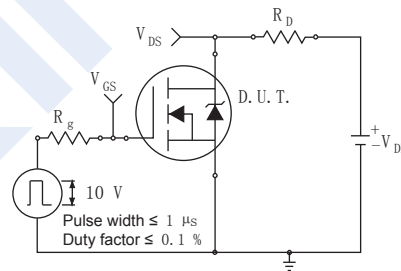


Fig. 10a - Switching Time Test Circuit

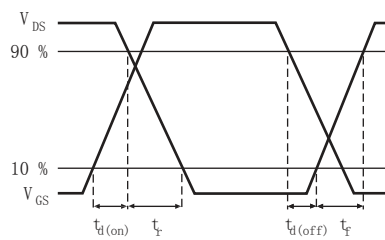


Fig. 10b - Switching Time Waveforms

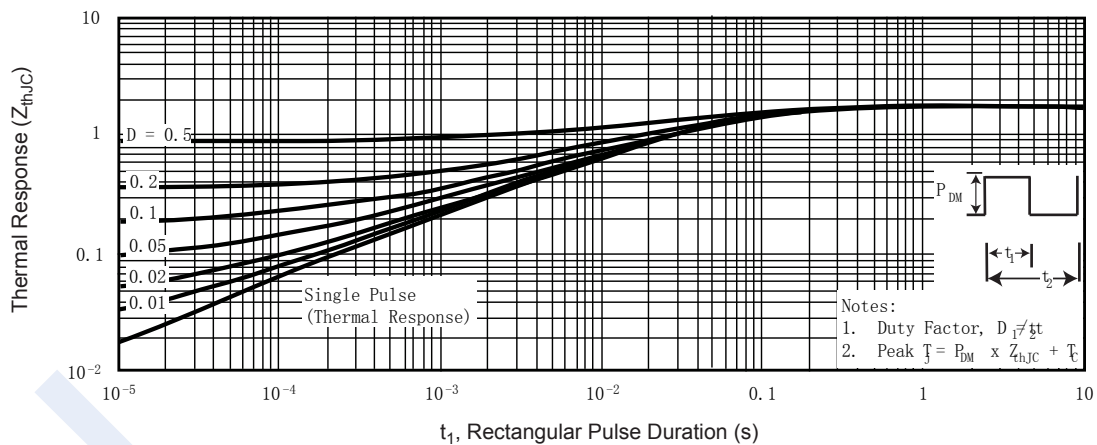


Fig. 11 - Maximum Effective Transient Thermal Impedance, Junction-to-Case

N-Channel MOSFET IRF830S (KRF830S)

■ Typical Characteristics

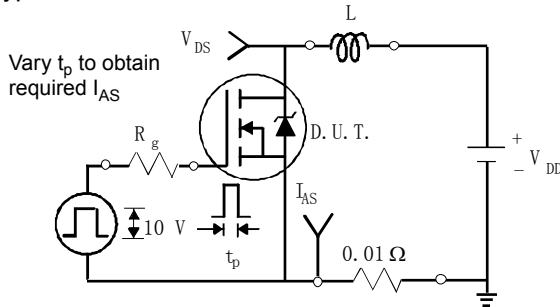


Fig. 12a - Unclamped Inductive Test Circuit

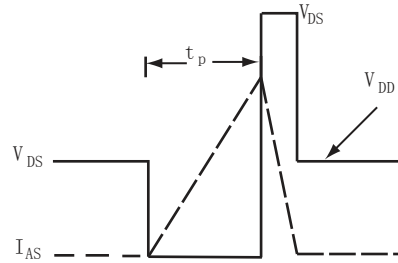


Fig. 12b - Unclamped Inductive Waveforms

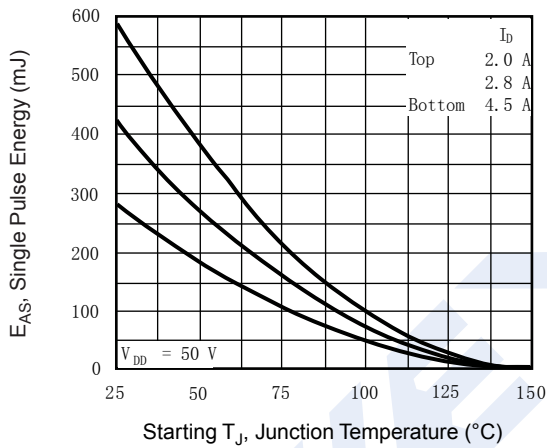


Fig. 12c - Maximum Avalanche Energy vs. Drain Current

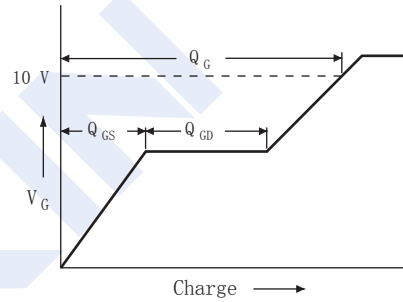


Fig. 13a - Basic Gate Charge Waveform

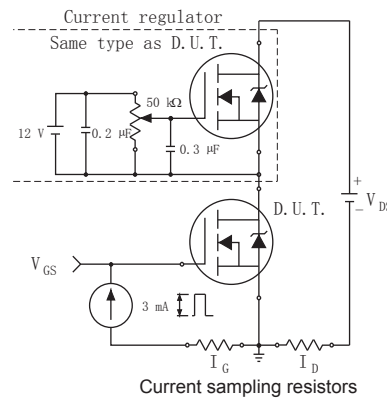


Fig. 13b - Gate Charge Test Circuit

N-Channel MOSFET IRF830S (KRF830S)

■ Typical Characteristics

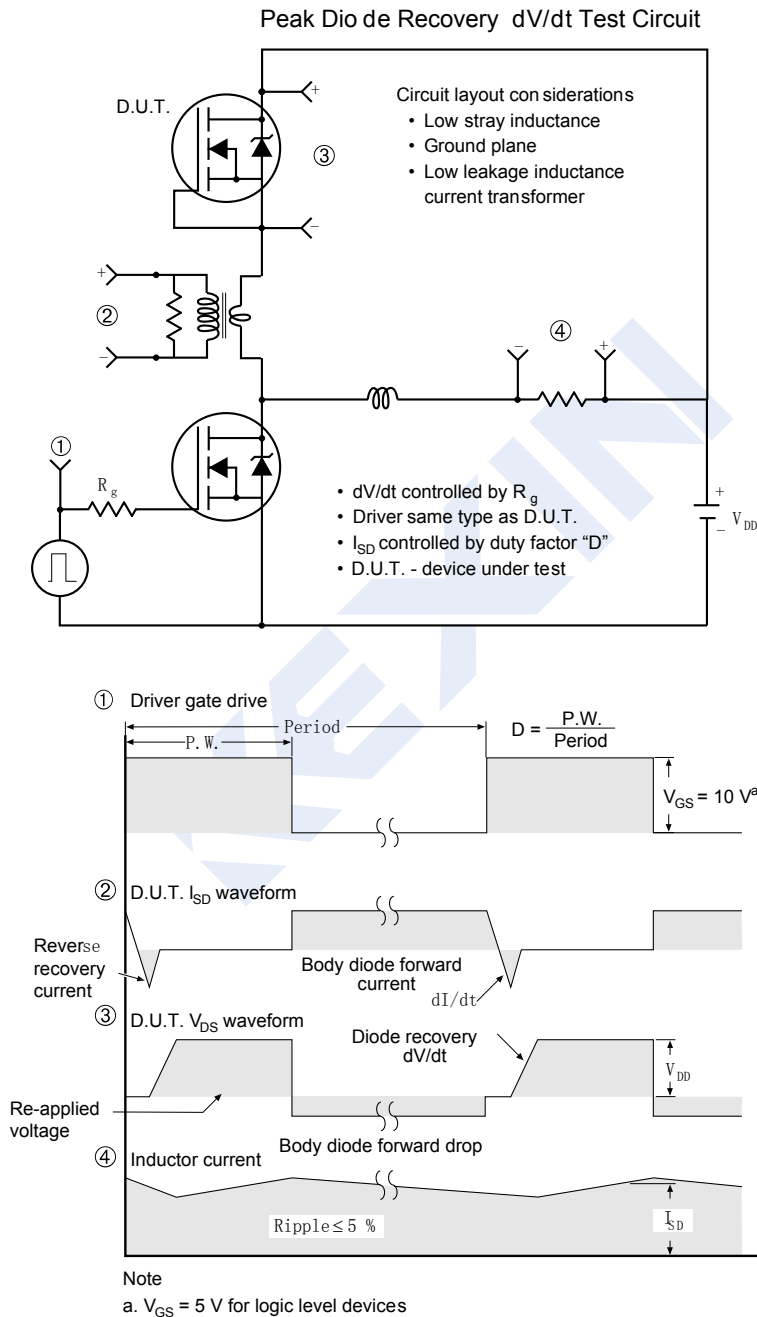


Fig. 14 - For N-Channel