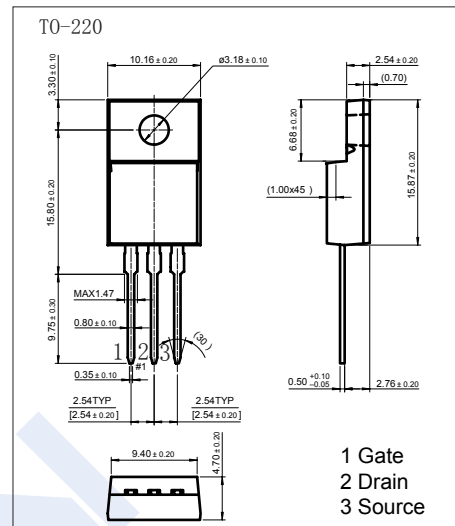
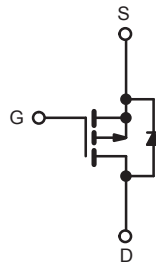


P-Channel MOSFET

IRF9540 (KRF9540)

■ Features

- $V_{DS}(V) = -100V$
- $I_D = -19A$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 200m\Omega$ ($V_{GS} = -10V$)
- Fast Switching
- Ease of Paralleling



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_c = 25^\circ C$	I_D	-19	A
	$T_c = 100^\circ C$		-13	
Pulsed Drain Current		I_{DM}	-72	
Repetitive Avalanche Current		I_{AR}	-19	
Repetitive Avalanche Energy		E_{AR}	15	mJ
Single Pulse Avalanche Energy	(Note.1)	E_{AS}	640	
Peak Diode Recovery dV/dt	(Note.2)	dV/dt	-5.5	V/ns
Power Dissipation	$T_c = 25^\circ C$	P_D	150	W
Linear Derating Factor			1	W/ $^\circ C$
Thermal Resistance.Junction- to-Ambient		R_{thJA}	62	$^\circ C/W$
Thermal Resistance.Junction- to-Case		R_{thJC}	1	
Junction Temperature		T_J	175	$^\circ C$
Junction Storage Temperature Range		T_{stg}	-55 to 175	

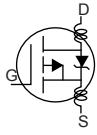
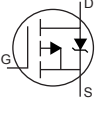
Note.1 : $V_{DD} = -25V$, starting $T_J = 25^\circ C$, $L = 2.7mH$, $R_G = 25\Omega$, $I_{AS} = -19A$

Note.2 $I_{SD} \leq -19A$, $dI/dt \leq 200A/\mu s$, $V_{DD} \leq V_{DS}$, $T_J \leq 175^\circ C$.

P-Channel MOSFET

IRF9540 (KRF9540)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =-250μA, V _{GS} =0V	-100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V			-100	μA
		V _{DS} =-80V, V _{GS} =0V, T _J =150°C			-500	
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 =-11A			200	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-50V, I _D =-11A	6.2			S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-25V, f=1MHz		1400		pF
Output Capacitance	C _{oss}			590		
Reverse Transfer Capacitance	C _{rss}			140		
Total Gate Charge	Q _g	V _{GS} =-10V, V _{DS} =-80V, I _D =-19A			61	nC
Gate Source Charge	Q _{gs}				14	
Gate Drain Charge	Q _{gd}				29	
Turn-On DelayTime	t _{d(on)}	V _{DD} =-50V, I _D =-19A, R _g =9.1Ω, R _D =2.4Ω,		16		ns
Turn-On Rise Time	t _r			73		
Turn-Off DelayTime	t _{d(off)}			34		
Turn-Off Fall Time	t _f			57		
Body Diode Reverse Recovery Time	t _{rr}	I _F =-19A, dI/dt=100A/μs, T _J =25°C			260	nC
Body Diode Reverse Recovery Charge	Q _{rr}				700	
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		
Continuous Source-Drain Diode Current	I _S	MOSFET symbol showing the integral reverse p - n junction diode 			-19	A
Pulsed Diode Forward Current	I _{SM}				-72	
Diode Forward Voltage	V _{SD}	I _S =-19A, V _{GS} =0V, T _J =25°C			-5	V

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

P-Channel MOSFET

IRF9540 (KRF9540)

■ Typical Characteristics

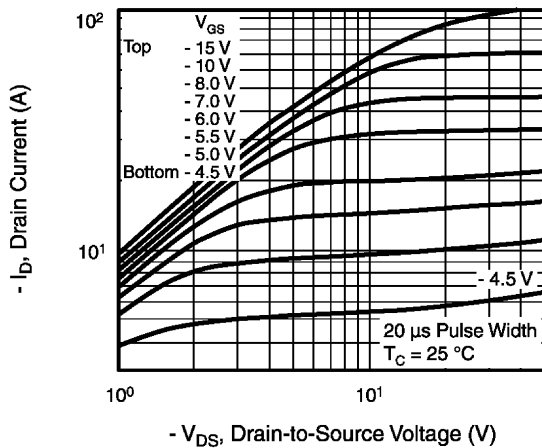
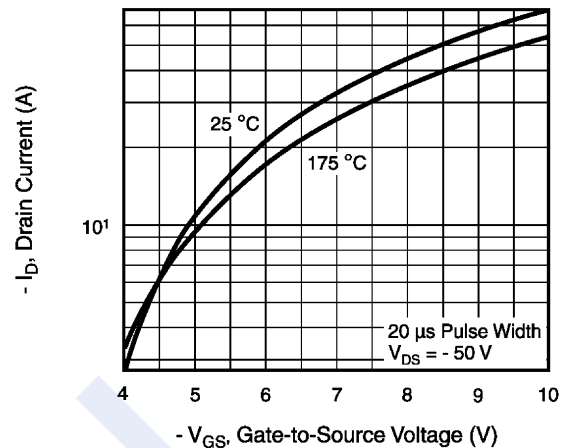
Fig. 1 - Typical Output Characteristics, $T_C = 25^\circ\text{C}$ 

Fig. 3 - Typical Transfer Characteristics

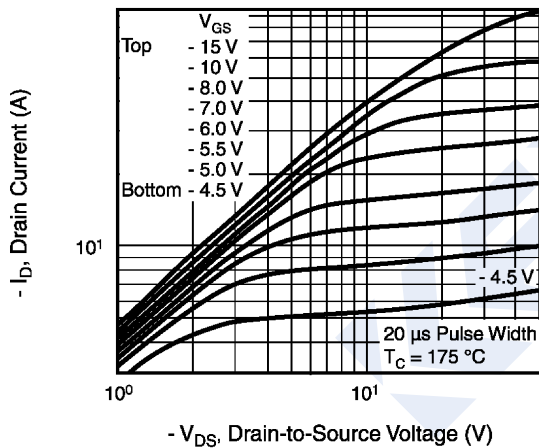
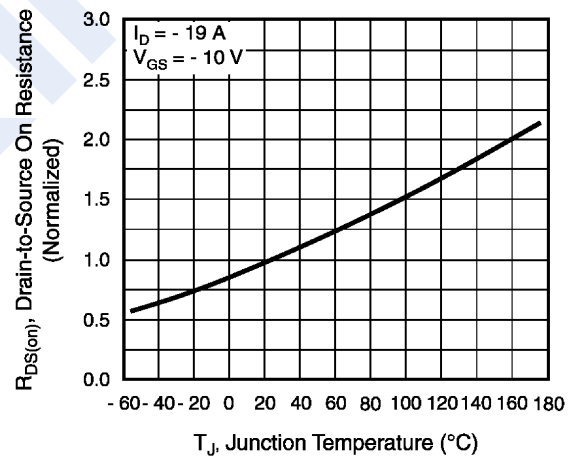
Fig. 2 - Typical Output Characteristics, $T_C = 175^\circ\text{C}$ 

Fig. 4 - Normalized On-Resistance vs. Temperature

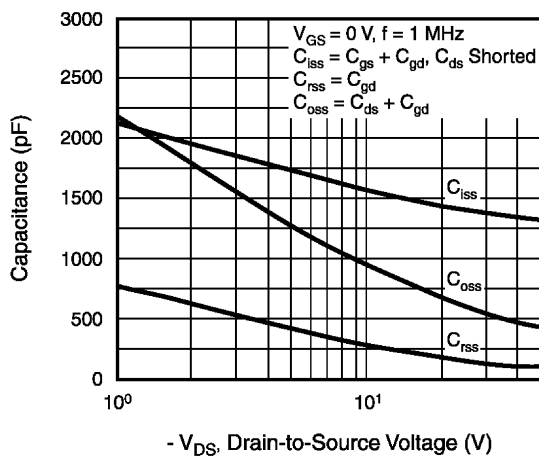


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

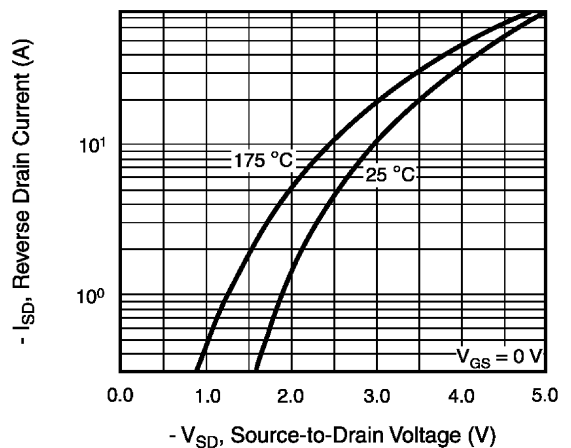


Fig. 7 - Typical Source-Drain Diode Forward Voltage

P-Channel MOSFET

IRF9540 (KRF9540)

■ Typical Characteristics

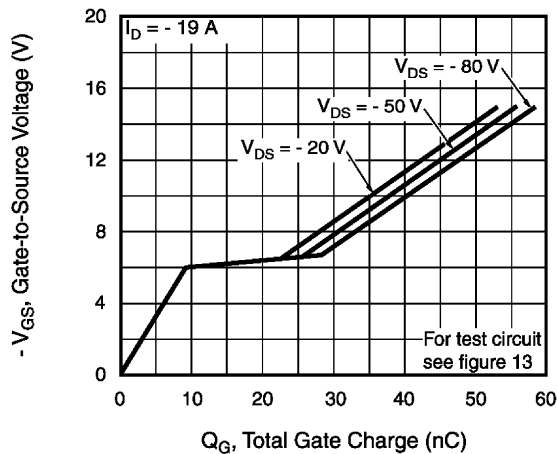


Fig. 6 - Typical Gate Charge vs. Gate-to-Source Voltage

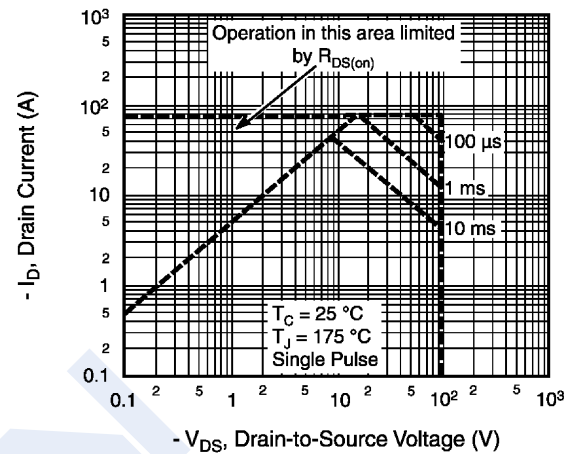


Fig. 8 - Maximum Safe Operating Area

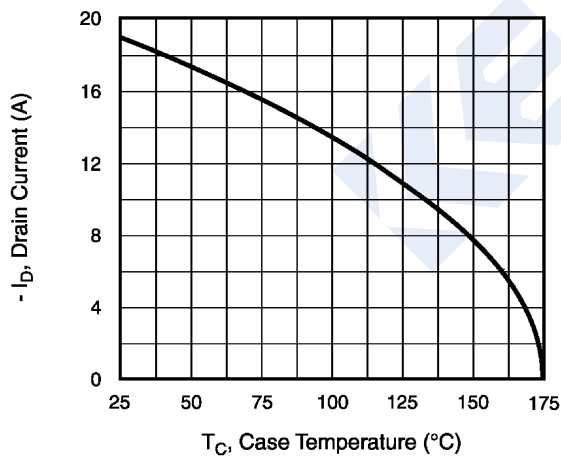


Fig. 9 - Maximum Drain Current vs. Case Temperature

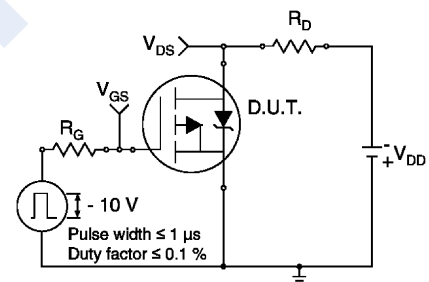


Fig. 10a - Switching Time Test Circuit

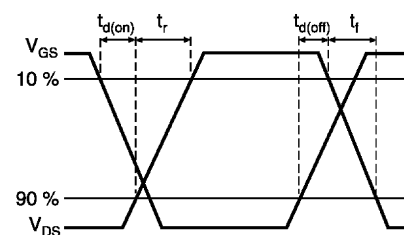


Fig. 10b - Switching Time Waveforms

P-Channel MOSFET

IRF9540 (KRF9540)

■ Typical Characteristics

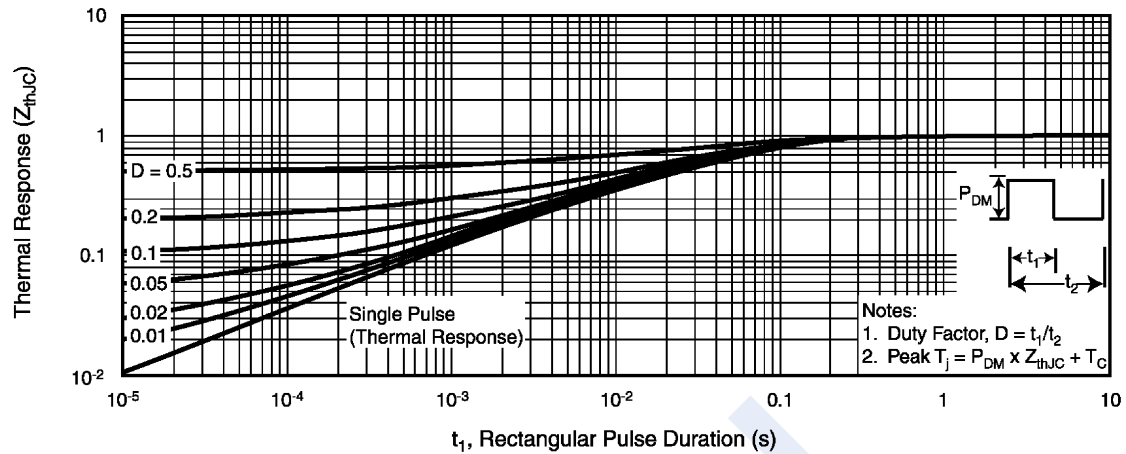


Fig. 11 - Maximum Effective Transient Thermal Impedance, Junction-to-Case

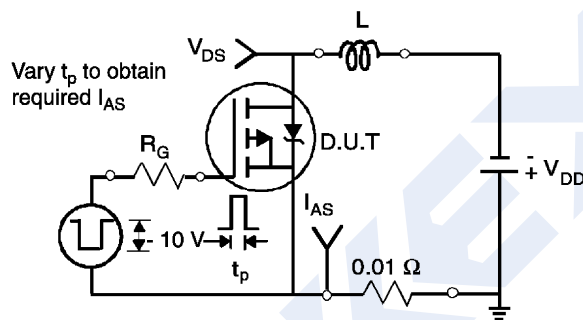


Fig. 12a - Unclamped Inductive Test Circuit

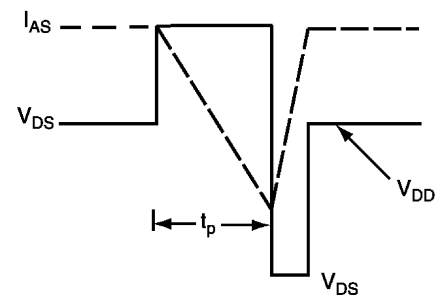


Fig. 12b - Unclamped Inductive Waveforms

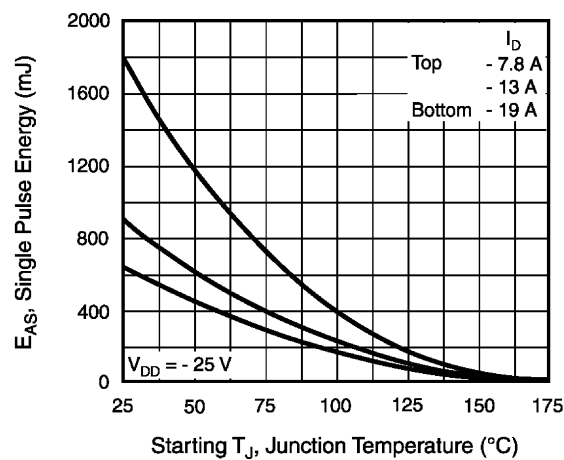


Fig. 12c - Maximum Avalanche Energy vs. Drain Current

P-Channel MOSFET

IRF9540 (KRF9540)

■ Typical Characteristics

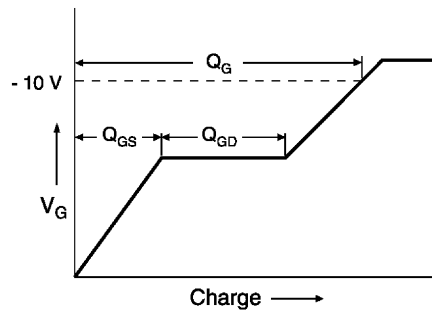


Fig. 13a - Basic Gate Charge Waveform

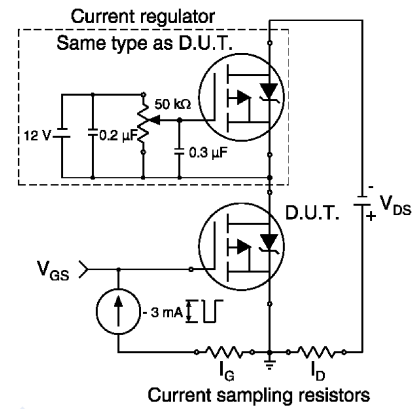


Fig. 13b - Gate Charge Test Circuit

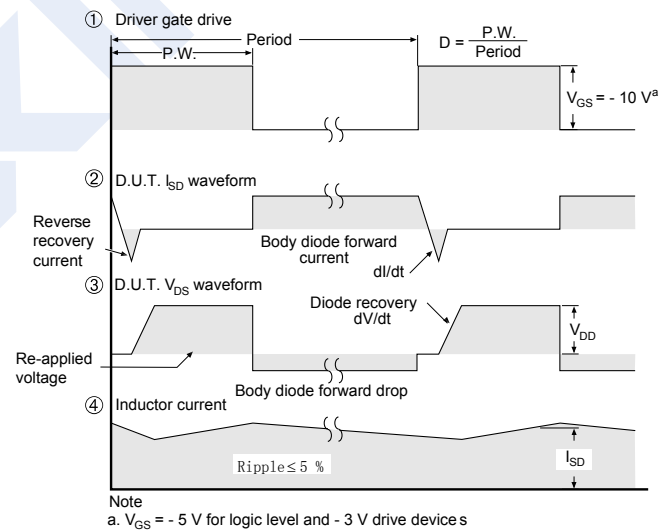
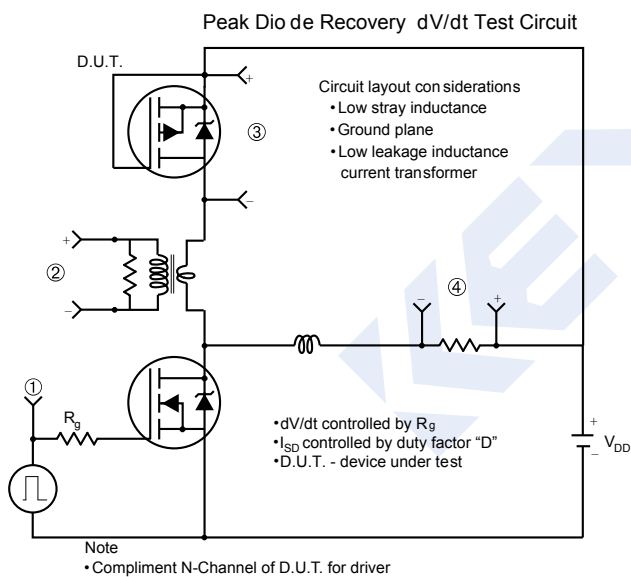


Fig. 14 - For P-Channel