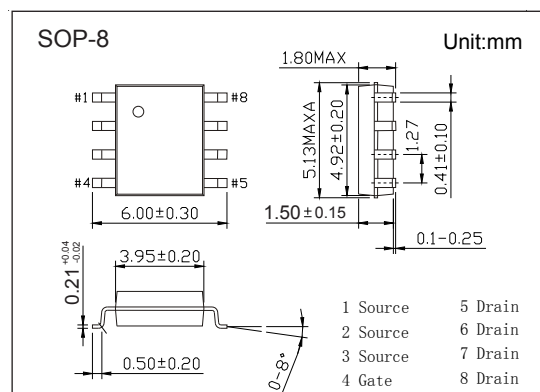
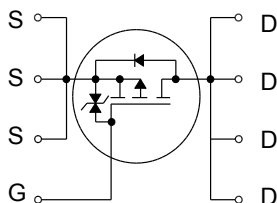


P-Channel MOSFET

RRH040P03 (KRH040P03)

■ Features

- $V_{DS} (V) = -30V$
- $I_D = -4 A$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 75m\Omega$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 115m\Omega$ ($V_{GS} = -4.5V$)
- $R_{DS(ON)} < 125m\Omega$ ($V_{GS} = -4V$)



■ 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	I_D	± 4	A
Pulsed Drain Current (Note.1)	I_{DM}	± 16	
Power Dissipation (Note.2) (Note.3)	P_D	2 0.65	W
Avalanche energy, Single Pulse (Note.4)	E_{AS}	0.1	
Thermal Resistance..Junction- to-Ambient (Note.2) (Note.3)	R_{thJA}	62.5 192	$^\circ C/W$
Junction Temperature	T_J	150	
Junction Storage Temperature Range	T_{stg}	-55 to 150	$^\circ C$

Note.1: $P_w \leq 10 \mu s$, Duty cycle $\leq 1\%$

Note.2: Mounted on a ceramic board (30×30×0.8mm)

Note.3 Mounted on a FR4 (20×20×0.8mm)

Note.4: $L \approx 10mH$, $V_{DD} = -15V$, $R_g = 25\Omega$, starting $T_J = 25^\circ C$

P-Channel MOSFET

RRH040P03 (KRH040P03)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =-1mA, V _{GS} =0V	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _D =-30V, V _{GS} =0V			-1	μA
Gate-Body leakage current	I _{GSS}	V _B =0V, V _{GS} =±20V			±10	μA
Gate Threshold Voltage	V _{GS(th)}	V _D =-10V, I _D =-1mA	-1		-2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-4A			75	mΩ
		V _{GS} =-10V, I _D =-4A T _J =125°C			110	
		V _{GS} =-4.5V, I _D =-2A			115	
		V _{GS} =-4V, I _D =-2A			125	
Forward Transconductance	g _{FS}	V _D =-10V, I _D =-4A	3	6		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _D =-15V, f=1MHz		480		pF
Output Capacitance	C _{oss}			70		
Reverse Transfer Capacitance	C _{rss}			70		
Gate resistance	R _g	V _{GS} =0V, V _D =0V, f=1MHz		25		Ω
Total Gate Charge (5V)	Q _g	V _{GS} =-5V, V _D =-15V, I _D =-4A		5.2		nC
Total Gate Charge (10V)		V _{GS} =-10V, V _D =-15V, I _D =-4A		9.6		
Gate Source Charge	Q _{gs}	V _{GS} =-5V, V _D =-15V, I _D =-4A		1.6		
Gate Drain Charge	Q _{gd}			1.6		
Turn-On DelayTime	t _{d(on)}	V _{GS} =-10V, V _D =-15V, I _D =-2A, R _L =7.5Ω, R _{GEN} =10Ω		7		ns
Turn-On Rise Time	t _r			18		
Turn-Off DelayTime	t _{d(off)}			50		
Turn-Off Fall Time	t _f			37		
Body Diode Reverse Recovery Time	t _{rr}	I _F =-4A, dI/dt=100A/μs		20	40	nC
Body Diode Reverse Recovery Charge	Q _{rr}			10	20	
Maximum Body-Diode Continuous Current	I _S				-1.6	A
Diode Forward Voltage	V _{SD}	I _S =-4A, V _{GS} =0V			-1.2	V

■ Marking

Marking	40P03 KC****
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P-Channel MOSFET

RRH040P03 (KRH040P03)

■ Typical Characteristics

Fig.1 Power Dissipation Derating Curve

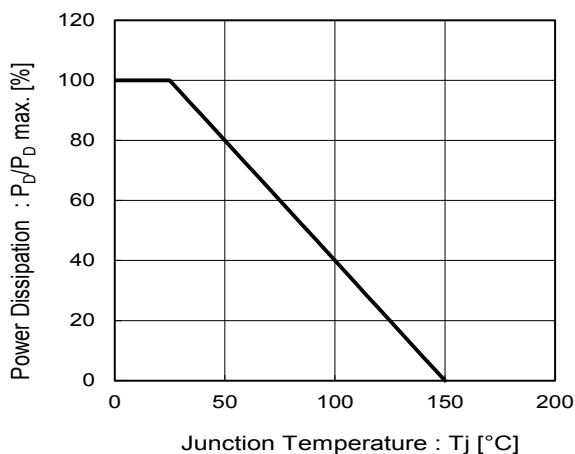


Fig.2 Maximum Safe Operating Area

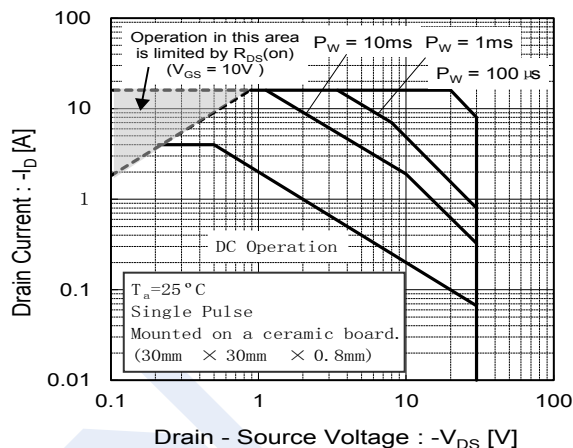


Fig.3 Normalized Transient Thermal Resistance vs. Pulse Width

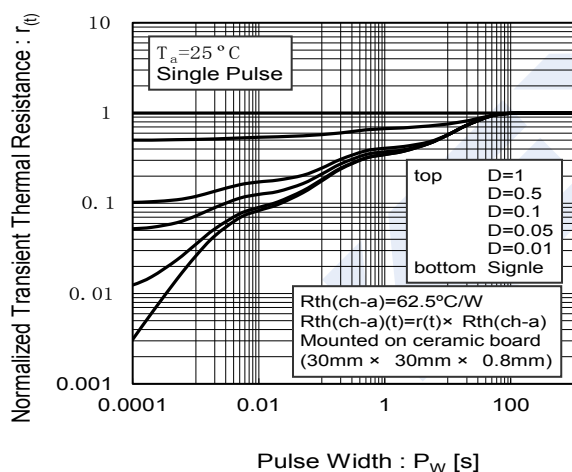


Fig.4 Avalanche Current vs. Power dissipation

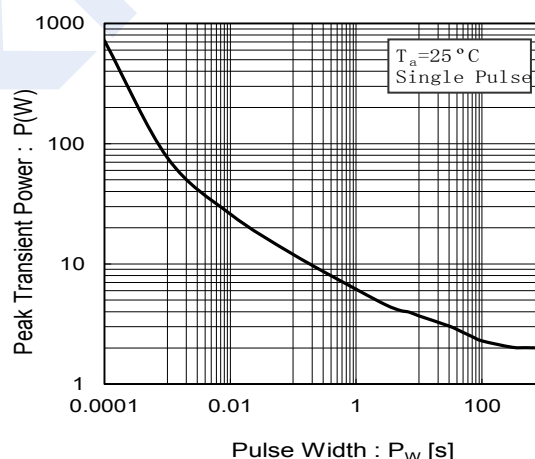


Fig.5 Avalanche Current vs Inductive Load

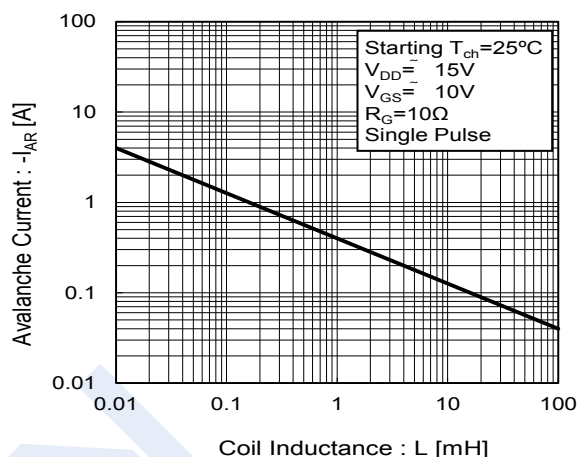
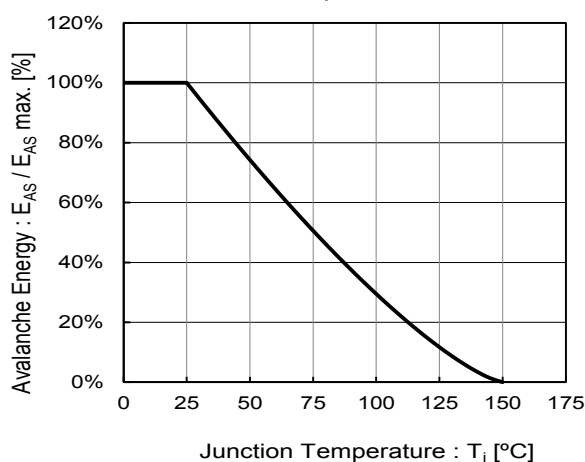


Fig.6 Avalanche Energy Derating Curve vs Junction Temperature



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■ Typical Characteristics

Fig.7 Typical Output Characteristics(I)

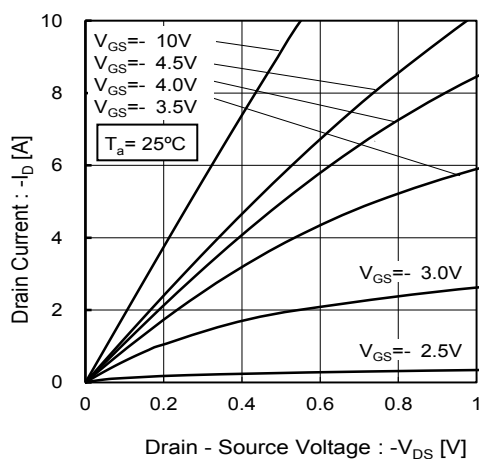


Fig.8 Typical Output Characteristics(II)

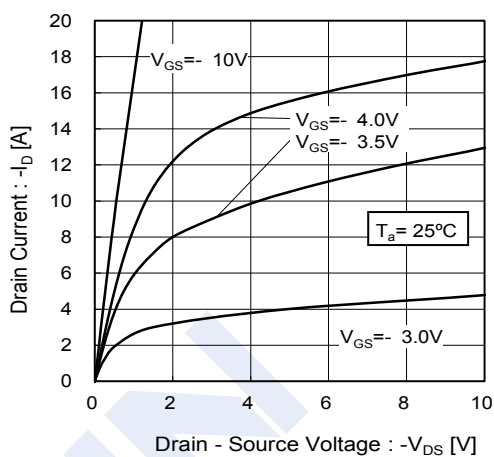


Fig.9 Breakdown Voltage vs. Junction Temperature

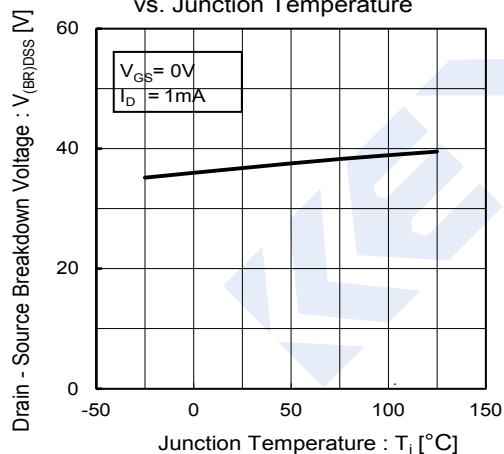


Fig.10 Typical Transfer Characteristics

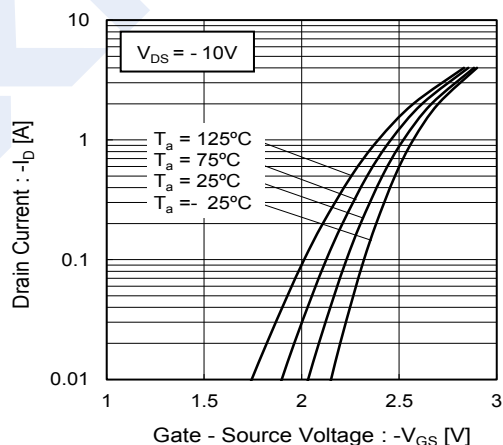


Fig.11 Gate Threshold Voltage vs. Junction Temperature

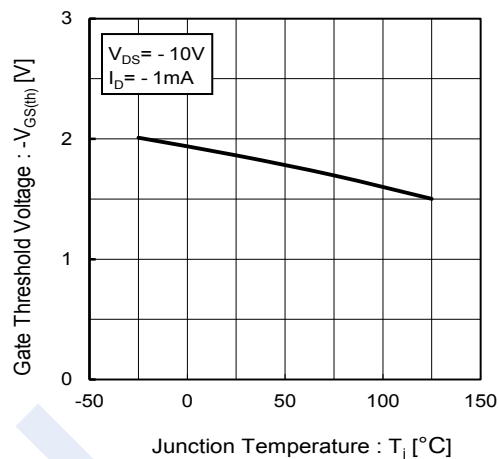
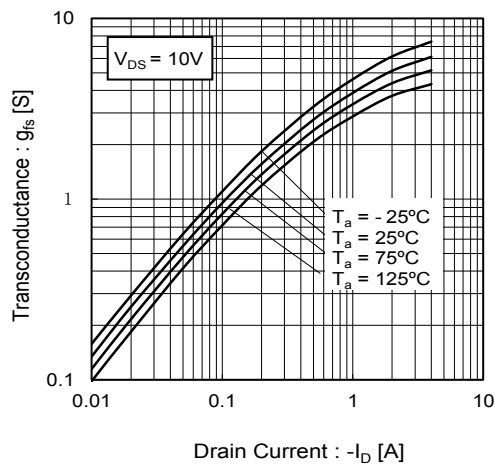


Fig.12 Transconductance vs. Drain Current



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■ Typical Characteristics

Fig.13 Drain Current Derating Curve

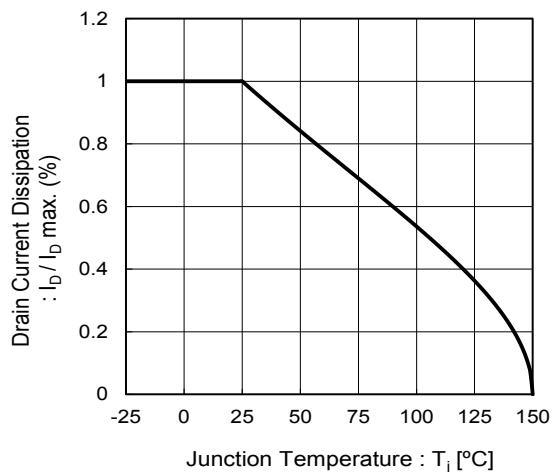


Fig.14 Static Drain - Source On - State Resistance vs. Gate Source Voltage

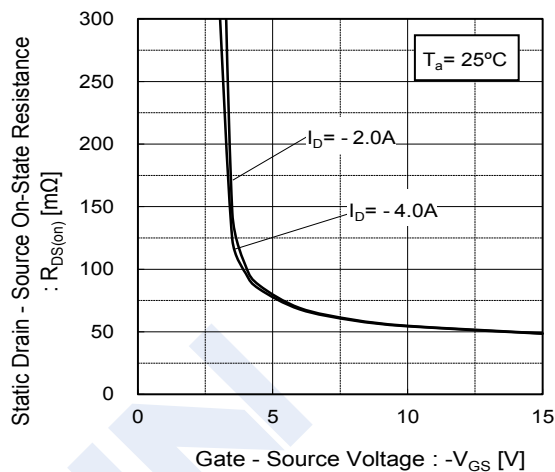


Fig.15 Static Drain - Source On - State Resistance vs. Drain Current(I)

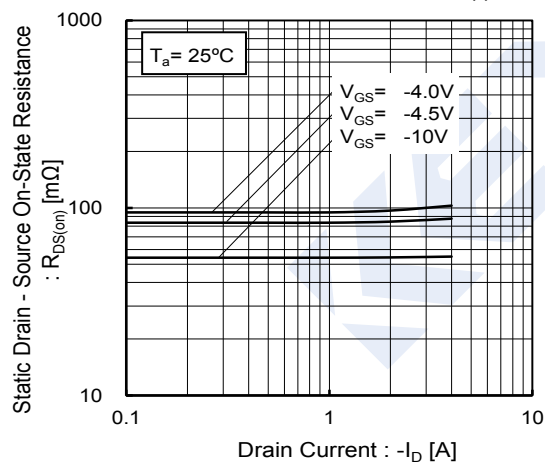


Fig.16 Static Drain - Source On - State Resistance vs. Junction Temperature

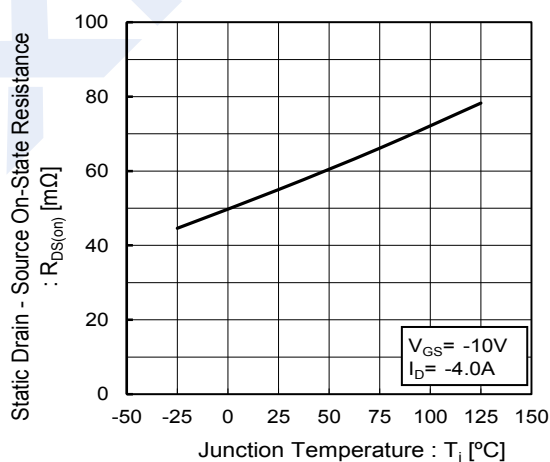


Fig.17 Static Drain - Source On - State Resistance vs. Drain Current(II)

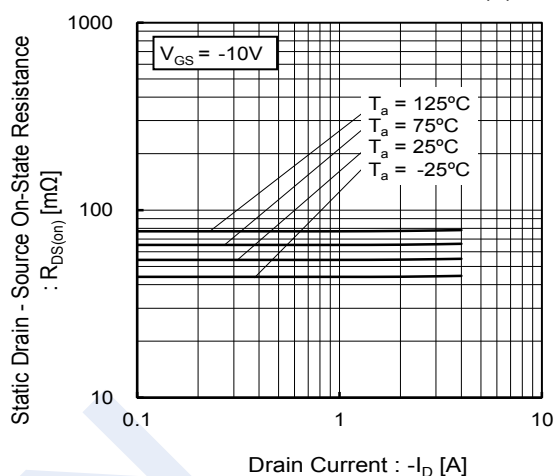
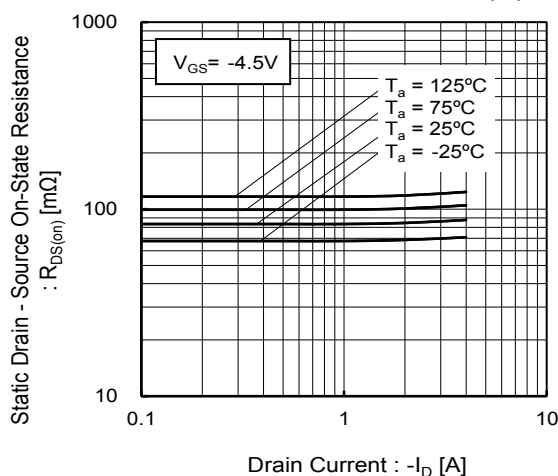


Fig.18 Static Drain - Source On - State Resistance vs. Drain Current(III)



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■ Typical Characteristics

Fig.19 Static Drain - Source On - State Resistance vs. Drain Current(IV)

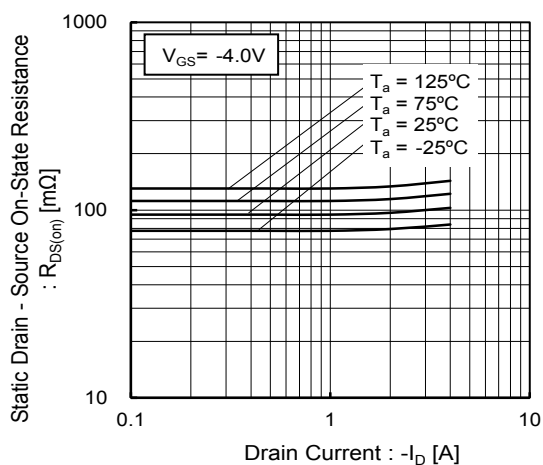


Fig.20 Typical Capacitance vs. Drain - Source Voltage

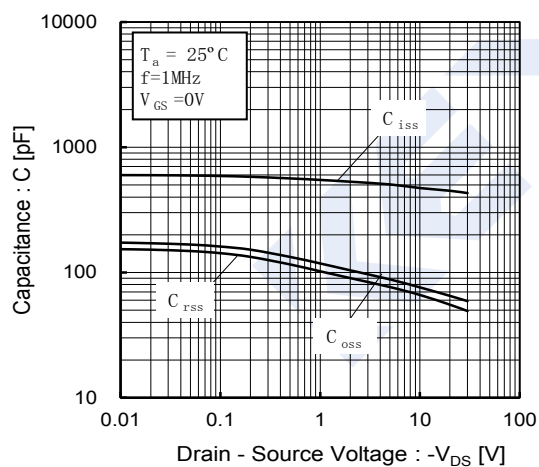


Fig.21 Switching Characteristics

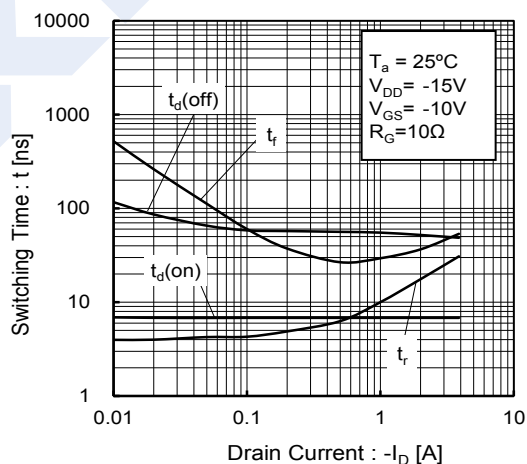


Fig.22 Dynamic Input Characteristics

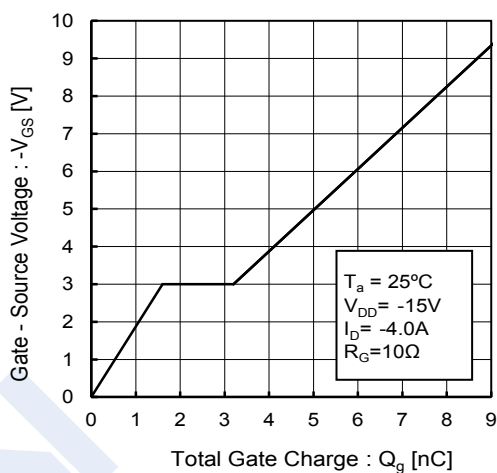


Fig.23 Source Current vs. Source Drain Voltage

