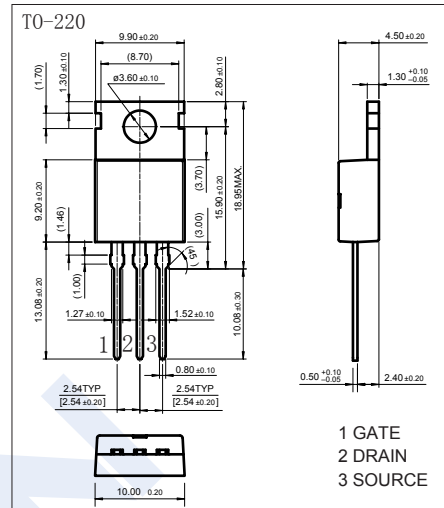
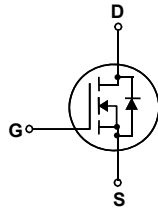


N-Channel Enhancement MOSFET

KX6N70

■ Features

- V_{DS} (V) = 700V
- I_D = 6.0A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 1.8 Ω (V_{GS} = 10V)
- Low gate charge (typical 16nC)

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	700	V
Gate-Source Voltage		V_{GS}	± 30	
Continuous Drain Current	$T_c=25^\circ\text{C}$	I_D	6.0	A
	$T_c=100^\circ\text{C}$		3.6	
Pulsed Drain Current (Note.1)		I_{DM}	24	
Avalanche Current (Note.1)		I_{AR}	6.0	
Repetitive Avalanche Energy (Note.1)		E_{AR}	14.7	mJ
Single Pulsed Avalanche Energy (Note.2)		E_{AS}	150	
Power Dissipation	$T_c=25^\circ\text{C}$	P_D	147	W
	Derate above 25°C		1.18	W/ $^\circ\text{C}$
Peak Diode Recovery dv/dt (Note.3)		dv/dt	4.5	V/ns
Thermal Resistance.Junction- to-Ambient		R_{thJA}	62.5	$^\circ\text{C}/\text{W}$
Thermal Resistance.Junction- to-Case		R_{thJC}	0.85	
Thermal Resistance.Case-to-Sink Typ		R_{thJS}	0.5	
Maximum lead Temperature for soldering purpose, 1/8 from case for 5 seconds		T_L	300	$^\circ\text{C}$
Junction Temperature		T_J	150	
Storage Temperature Range		T_{stg}	-55 to 150	

Note.1: Repetitive Rating :Pulse width limited by maximum junction temperature

Note.2: $L=8\text{mH}$, $I_{AS}=6.0\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$

Note.3: $I_{SD} \leq 6.0\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$

N-Channel Enhancement MOSFET

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■ 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	700			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =700V, V _{GS} =0V			1	μA
		V _{DS} =560V, V _{GS} =0V, T _c =125°C			10	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±30V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250 μA	2.0		4.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =3.0A		1.8	2.3	Ω
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1MHz		650		pF
Output Capacitance	C _{oss}			95		
Reverse Transfer Capacitance	C _{rss}			10		
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =560V, I _D =6.0A (Note.1)		16		nC
Gate Source Charge	Q _{gs}			4.5		
Gate Drain Charge	Q _{gd}			5.0		
Turn-On DelayTime	t _{d(on)}	I _D =6.0A, V _{DS} =350V, R _{GEN} =25 Ω (Note.1)		30		ns
Turn-On Rise Time	t _r			40		
Turn-Off DelayTime	t _{d(off)}			80		
Turn-Off Fall Time	t _f			40		
Body Diode Reverse Recovery Time	t _{rr}	I _S =6.0A, di/dt=100A/μs, V _{GS} =0V (Note.1)		280		uC
Body Diode Reverse Recovery Charge	Q _{rr}			2.0		
Maximum Body-Diode Continuous Current	I _S	Maximum Continuous Drain-Source Diode Forward Current			6.0	A
Maximum Pulsed Drain-Source Current	I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current			24	
Diode Forward Voltage	V _{SD}	I _S =6.0A, V _{GS} =0			1.4	V

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

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Typical Characteristics

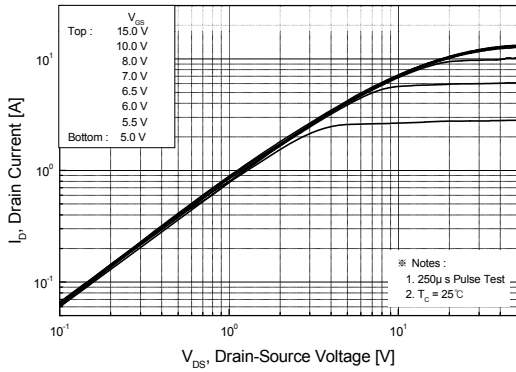


Figure 1. On-Region Characteristics

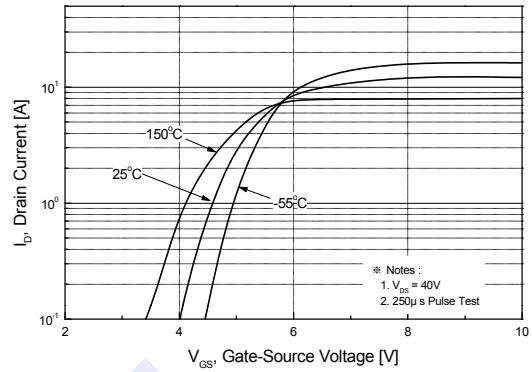


Figure 2. Transfer Characteristics

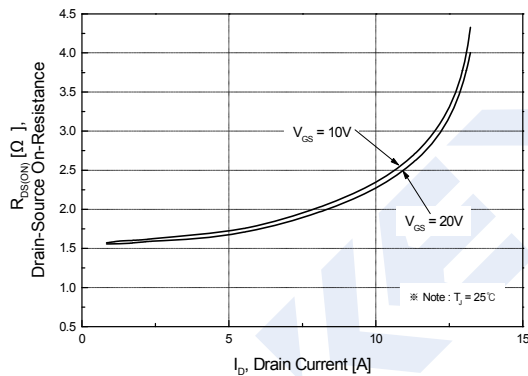


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

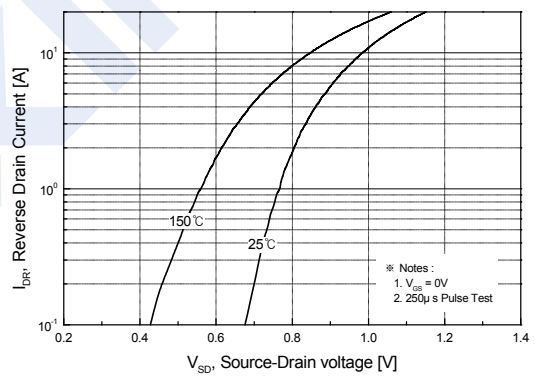


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

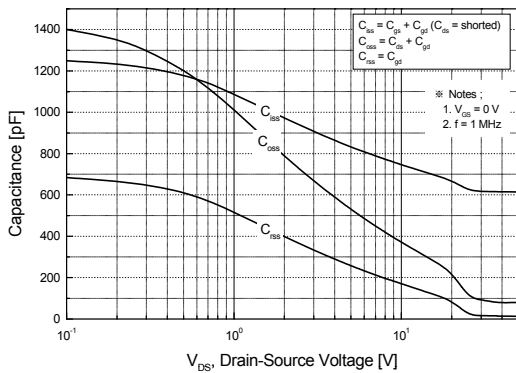


Figure 5. Capacitance Characteristics

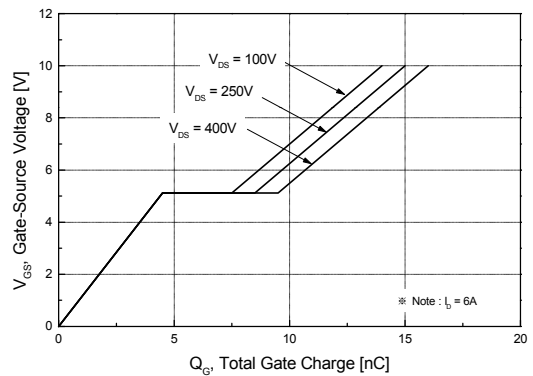


Figure 6. Gate Charge Characteristics

N-Channel Enhancement MOSFET

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■ Typical Characteristics

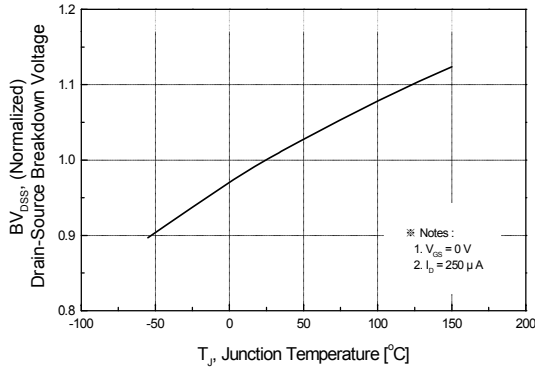


Figure 7. Breakdown Voltage Variation vs Temperature

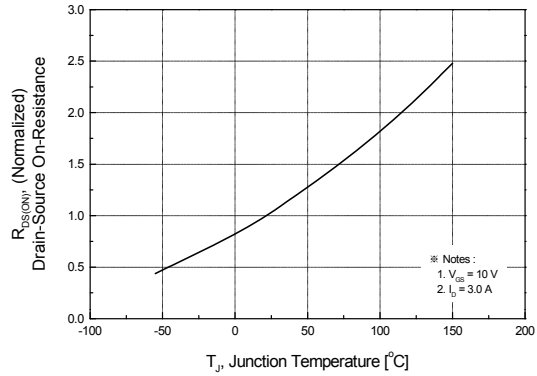


Figure 8. On-Resistance Variation vs Temperature

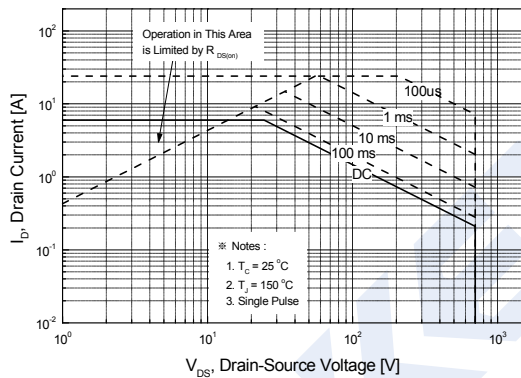


Figure 9. Maximum Safe Operating Area for KX6N70

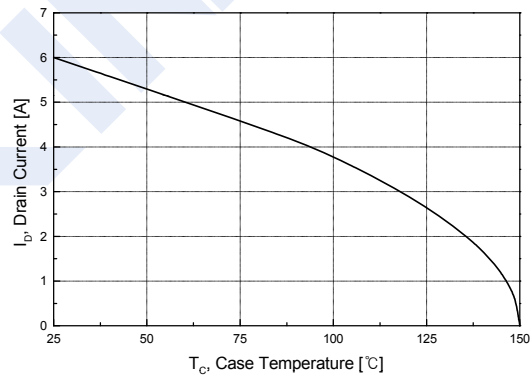


Figure 10. Maximum Drain Current vs Case Temperature

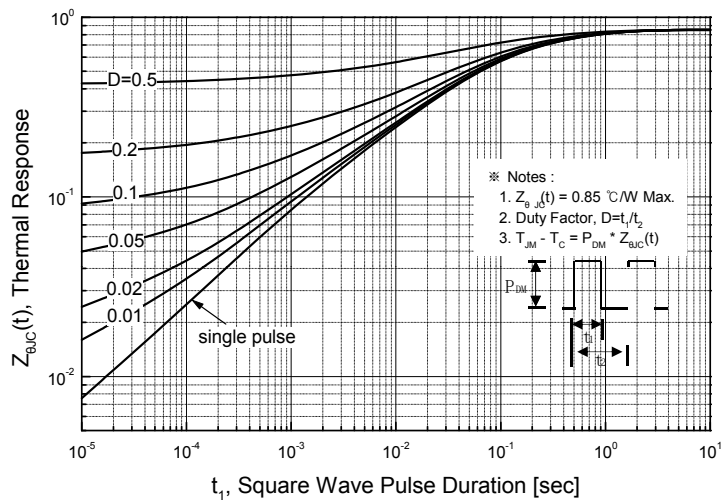


Figure 11. Transient Thermal Response Curve for KX6N70