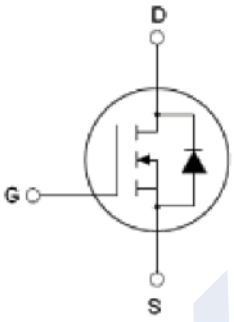
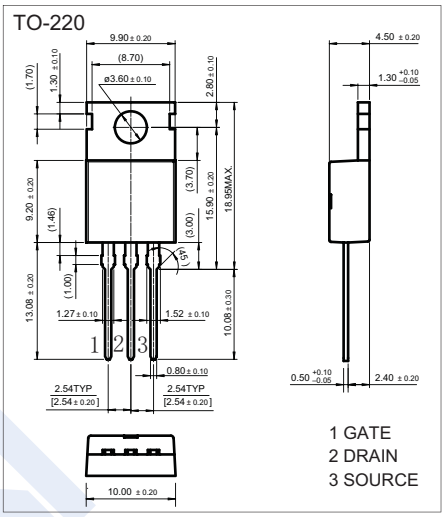
N-Channel MOSFET

KX4N60

■ Features

- V_{DSS} = 600V
- I_D = 4.0 A
- R_{dson} < 2.5Ω(Vgs=10V)
- Low gate charge
- Low C_{rss} (typical 14pF)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS product





■ Absolute Maximum Ratings (T_C = 25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	±30	
Continuous Drain Current	T_C = 25℃	I_D	4	A
	T_C = 100℃		2.5	
Pulsed Drain Current (Note 1)		I_{DM}	16	
Avalanche Current (Note 1)		I_{AR}	4	
Single Pulse Avalanche Energy (Note 2)		E_{AS}	240	mJ
Repetitive Avalanche energy, t_{AR} limited by T_{jmax} (Note 1)		E_{AR}	10	
Peak Diode Recovery dv/dt (Note 3)		dv/dt	5.5	V/ns
Power Dissipation (T_C = 25℃)		P_D	100	W
Derate above 25°C			0.8	W/℃
Thermal Resistance, Junction- to-Case		R_{thJC}	1.25	℃/W
Thermal Resistance, Junction- to-Ambient		R_{thJA}	62.5	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Note 1: Pulse width limited by maximum junction temperature

Note 2: L=25mH, I_{AS}=4.0A, V_{DD}=50V, R_G=25 Ω,Starting T_J=25℃

Note 3: I_{SD} ≤4.0A,di/dt ≤200A/μs,V_{DD}≤BV_{DSS}, Starting T_J=25℃

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■ Electrical Characteristics (T_A = 25℃, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	600			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=600V, V_{GS}=0V, Tc=25℃			10	μA
		V_{DS}=480V, V_{GS}=0V, Tc=125℃			100	
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=250μA	2		4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=2A			2.5	Ω
Forward Transconductance	g_{FS}	V_{DS}=40V,I_D=2A (Note 4)		4.7		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		710	920	pF
Output Capacitance	C_{oss}			65	85	
Reverse Transfer Capacitance	C_{rss}			14	19	
Total Gate Charge	Q_g	V_{DS}=480V, I_D=4A, VGS=10V (Note 4,5)		27	30	nC
Gate Source Charge	Q_{gs}			3.6		
Gate Drain Charge	Q_{gd}			13.1		
Turn-On DelayTime	$t_{d(on)}$	V_{DS}=300V,I_D=4A, R_G=25Ω (Note 4,5)		20	50	ns
Turn-On Rise Time	t_r			55	120	
Turn-Off DelayTime	$t_{d(off)}$			70	150	
Turn-Off Fall Time	t_f			55	120	
Body-Diode Continuous Current	I_S				4	A
Body-Diode Pulsed Current	I_{SM}				16	
Diode Forward Voltage (Note 1)	V_{SD}	I_{SD}=4A,V_{GS}=0V			1.4	V
Reverse Recovery Time (Note 1)	trr	V_{GS}=0V, I_S=4.0A dIF/dt=100A/μs (note 4)		330		nS
Reverse Recovery Charge (Note 1)	Qrr			2.67		nC

Note 4: Pulse Test: Pulse Width ≤300μs,Duty Cycle≤2%

Note 5: Essentially independent of operating temperature.

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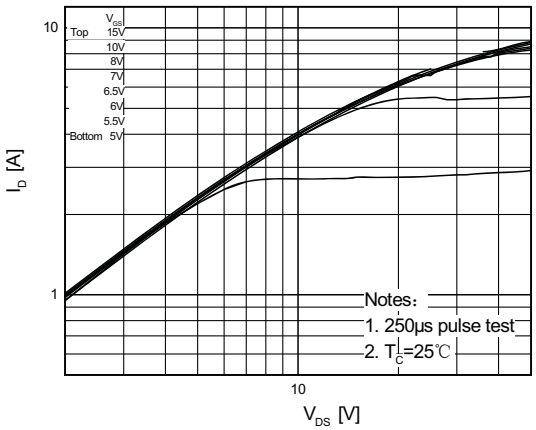
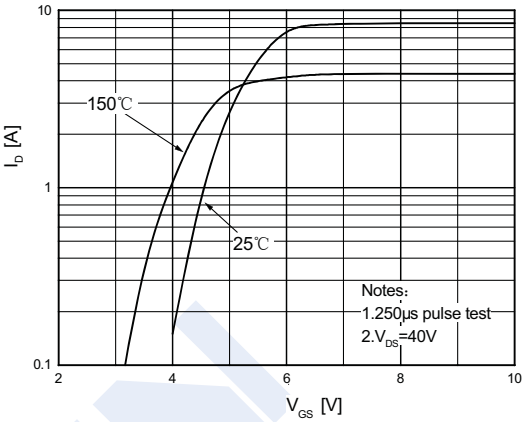
■ Electrical Characteristics (curves)

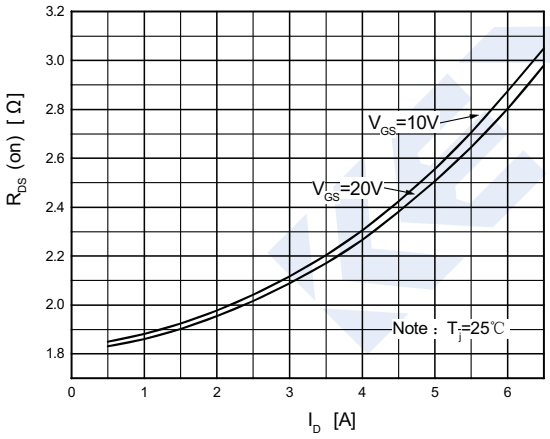
On-Region Characteristics



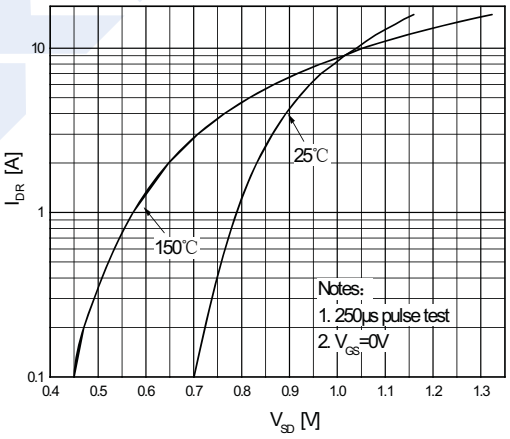
Transfer Characteristics



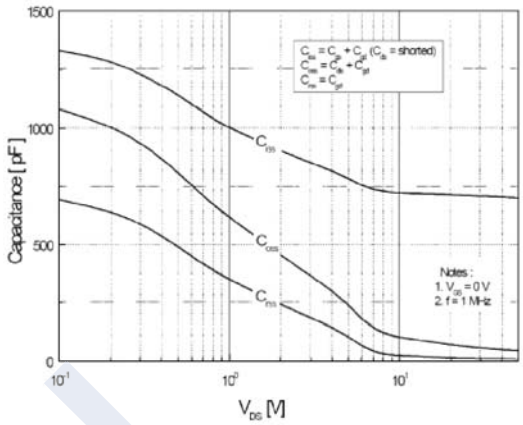
On-Resistance Variation vs. Drain Current and Gate Voltage



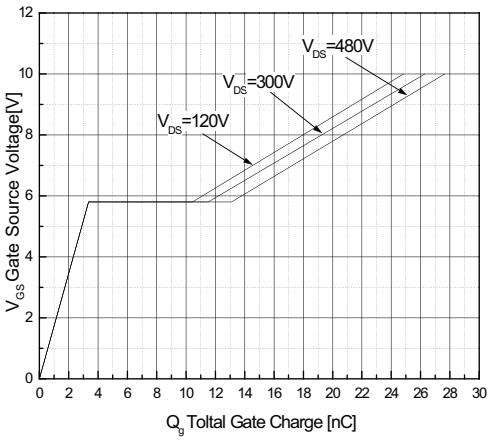
Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance Characteristics



Gate Charge Characteristics



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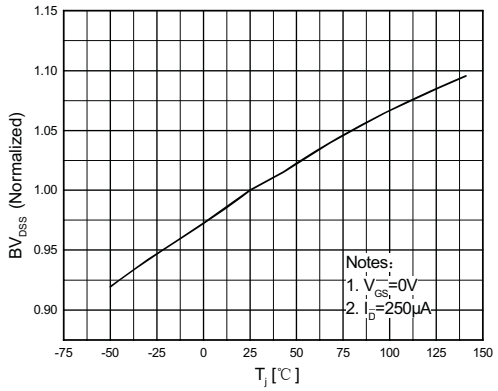
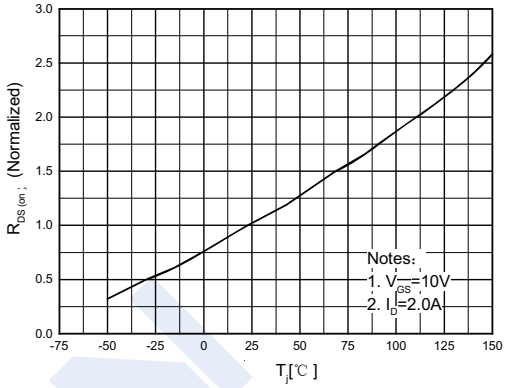
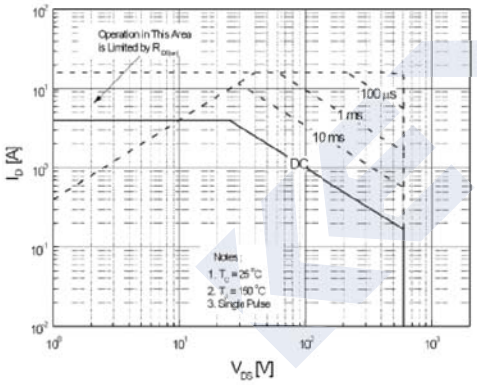
Breakdown Voltage Variation vs. Temperature



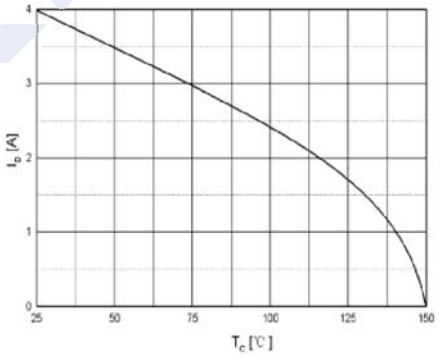
On-Resistance Variation vs. Temperature



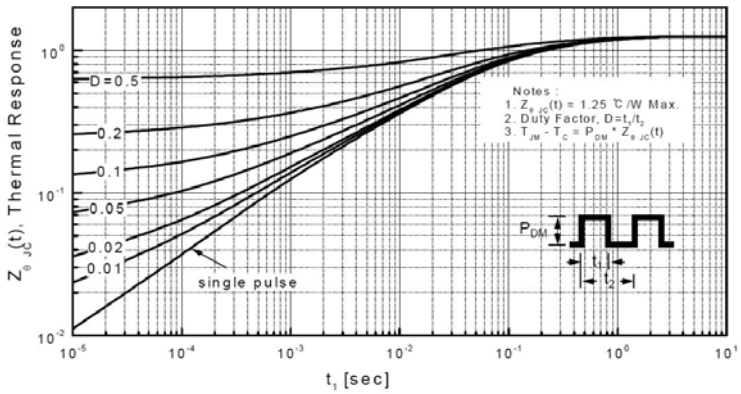
Maximum Safe Operating Area



Maximum Drain Current vs. Case Temperature



Transient Thermal Response Curve



Transient Thermal Response Curve