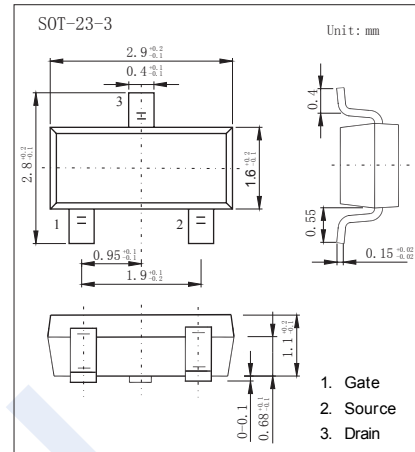


N-Channel Power MOSFET

KX1N60DS

■ Features

- ESD improved capability
- Depletion mode
- dv/dt rated
- Pb-free lead plating;ROHS compliant
- Halogen Free

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current $T_c = 70^\circ\text{C}$	I_D	30	mA
		24	
Pulsed Drain Current (Note.1)	I_{DM}	120	
Power Dissipation	P_D	0.5	W
Gate Source ESD(HBM-C=100pF,R=1.5K Ω)	$V_{ESD(G-S)}$	300	V
Peak Diode Recovery dv/dt (Note.2)	dv/dt	5	V/ns
Thermal Resistance.Junction- to-Ambient	R_{thJA}	250	$^\circ\text{C}/\text{W}$
Maximum Temperature for soldering	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: $I_f=0.01\text{A}, di/dt \leq 100\text{A}/\mu\text{s}, V_{DD} \leq BV_{DS}, \text{Start } T_J=25^\circ\text{C}$

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■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSX}	I _D =250 μA, V _{GS} =-5V	600			V
Gate-Source Breakdown Voltage	V _{GSS}	I _{GS} = ± 1mA (Open Drain)	20			
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =25V, V _{GS} =0V	12			mA
Off-State Drain-Source Current	I _{D(off)}	V _{DS} =600V, V _{GS} =-5V			0.1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±10	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =3V, I _D =8 μA	-2.7	-1.8	-1	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 0V, I _D =3mA		350	700	Ω
		V _{GS} = 10V, I _D =16mA		400	800	
Forward Transconductance	g _{FS}	V _{DS} =50V, I _D =10mA	0.008	0.017		S
Input Capacitance	C _{iss}	V _{GS} =-5V, V _{DS} =25V, f=1MHz		50		pF
Output Capacitance	C _{oss}			4.53		
Reverse Transfer Capacitance	C _{rss}			1.08		
Total Gate Charge	Q _g	V _{GS} =-5V to 5V, V _{DD} =400V, I _D =10mA		1.14		nC
Gate Source Charge	Q _{gs}			0.5		
Gate Drain Charge	Q _{gd}			0.37		
Turn-On DelayTime	t _{d(on)}	I _D =10mA, V _{DS} =300V, R _{GEN} =6 Ω, V _{GS} = -5...7V		9.9		ns
Turn-On Rise Time	t _r			55.8		
Turn-Off DelayTime	t _{d(off)}			56.4		
Turn-Off Fall Time	t _f			136		
Body Diode Reverse Recovery Time	t _{rr}	I _F = 10mA, di/dt= 100A/μs, V _R =300V, T _j = 25°C		243		nC
Body Diode Reverse Recovery Charge	Q _{rr}			636		
Maximum Body-Diode Continuous Current	I _S	Ta = 25°C			25	mA
Maximum Pulsed Drain-Source Current	I _{SM}				100	
Diode Forward Voltage	V _{SD}	I _S =16mA, V _{GS} =-5V			1.2	V

N-Channel Power MOSFET

KX1N60DS

■ Typical Characteristics

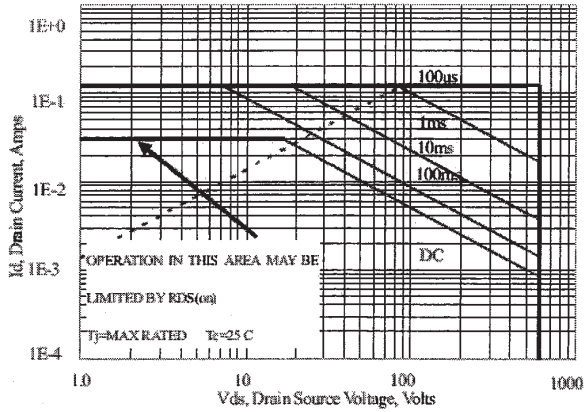


Figure 1 Maximum Forward Bias Safe Operating Area

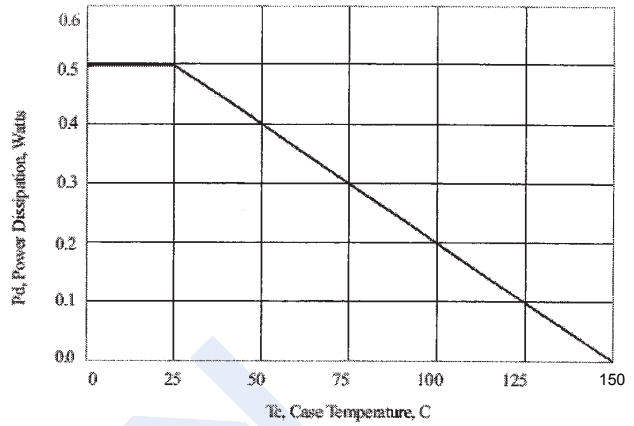


Figure 2 Maximum Power Dissipation vs Case Temperature

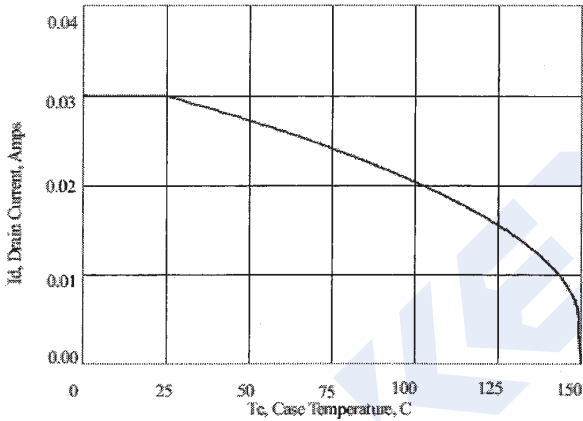


Figure 3 Maximum Continuous Drain Current vs Case Temperature

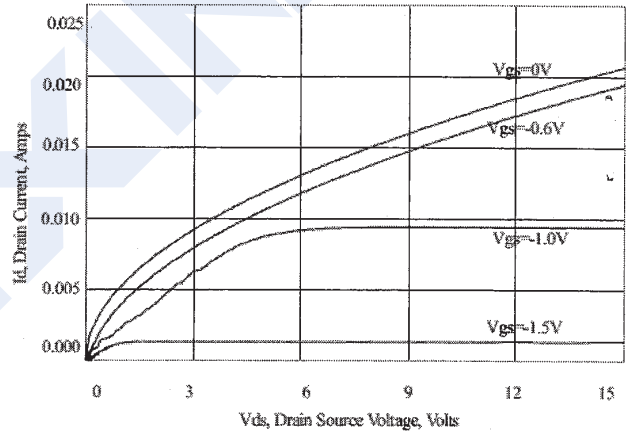


Figure 4 Typical Output Characteristics

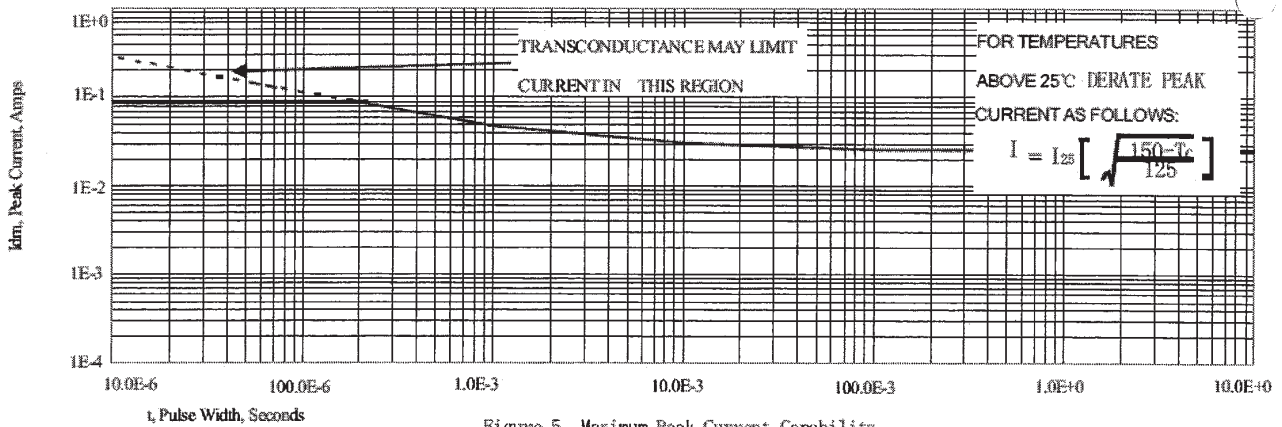


Figure 5 Maximum Peak Current Capability

N-Channel Power MOSFET KX1N60DS

■ Typical Characteristics

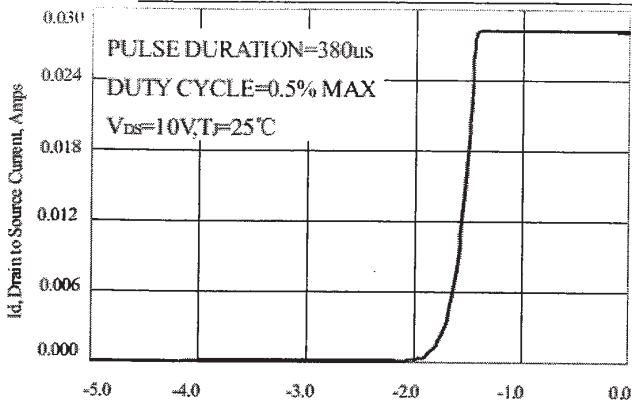


Figure 6 Typical Transfer Characteristics

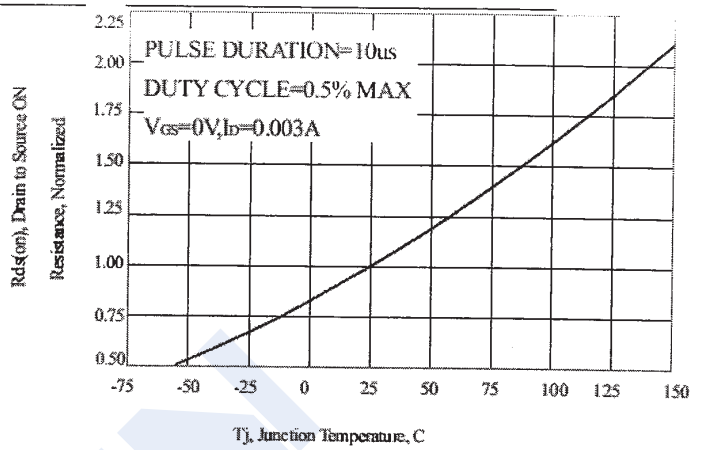


Figure 7 Typical Drain to Source ON Resistance vs Junction Temperature

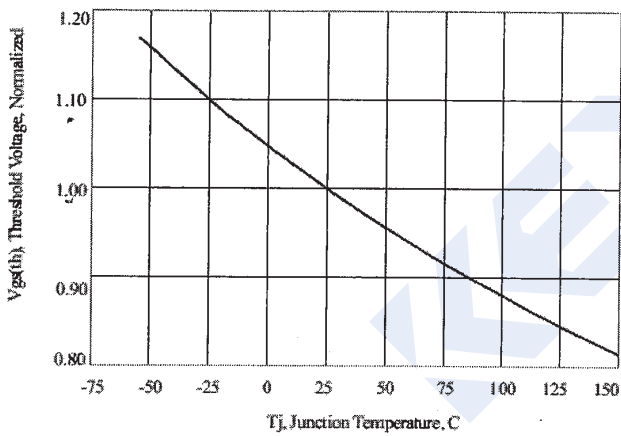


Figure 8 Typical Threshold Voltage vs Junction Temperature

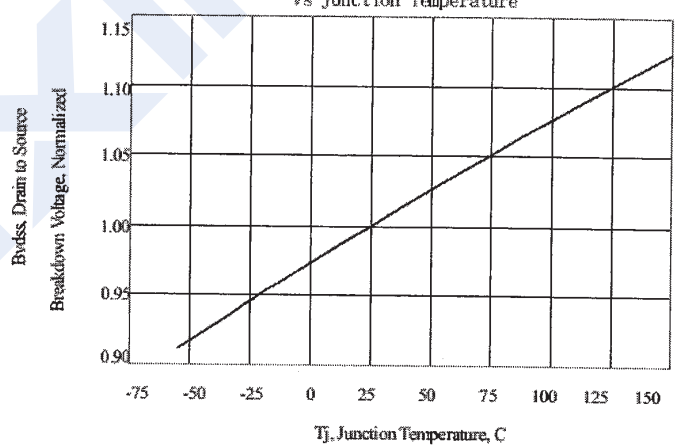


Figure 9 Typical Breakdown Voltage vs Junction Temperature

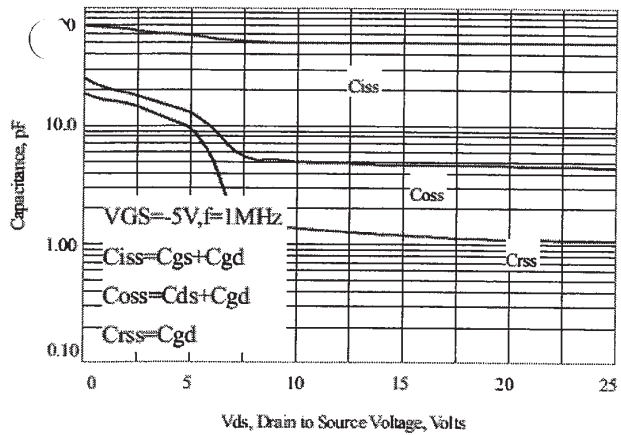


Figure 10 Typical Capacitance vs Drain to Source Voltage

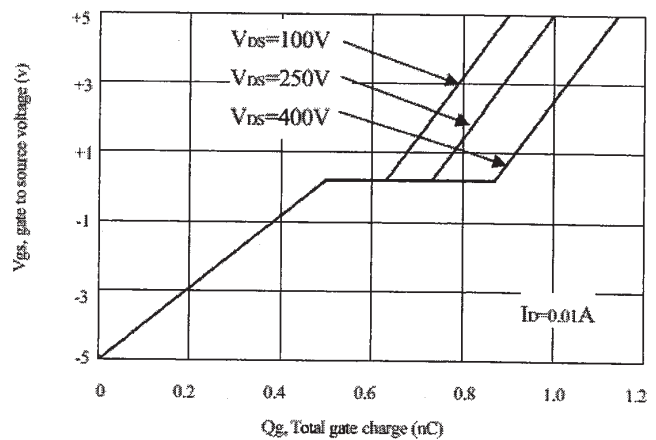


Figure 11 Typical Gate Charge vs Gate to Source Voltage

N-Channel Power MOSFET

KX1N60DS

■ Typical Characteristics

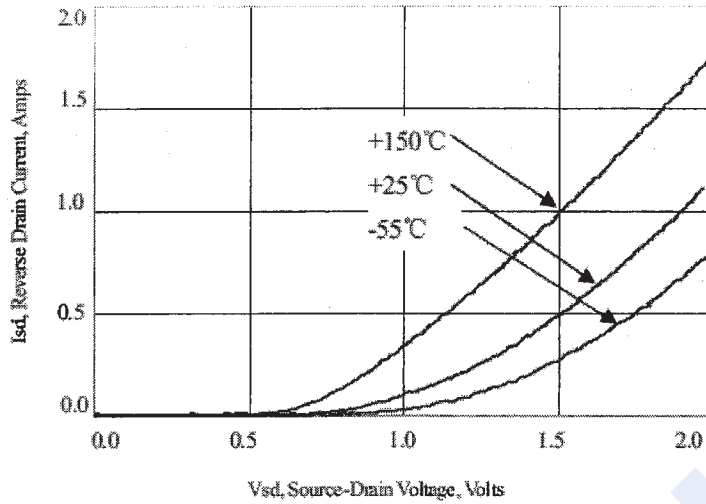


Figure 12 Typical Body Diode Transfer Characteristics