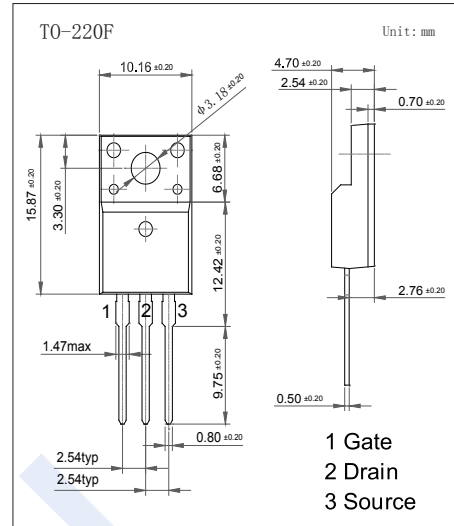
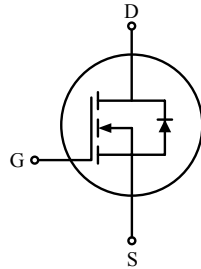


## N-Channel MOSFET

### KX10N60F

#### ■ Features

- $V_{DS}$  (V) = 600V
- $I_D$  = 10 A ( $V_{GS}$  = 10V)
- $R_{DS(on)}$  < 730m $\Omega$  ( $V_{GS}$  = 10V)
- $Q_g$ (typ.)= 29.5nC



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	600	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	
Continuous Drain Current	$I_D$	$T_c=25^\circ\text{C}$	10
		$T_c=70^\circ\text{C}$	6
Pulsed Drain Current (Note.1)	$I_{DM}$	25	A
Power Dissipation	$P_D$	$T_c=25^\circ\text{C}$	46
		Derate above $25^\circ\text{C}$	0.37
Repetitive Avalanche Energy (Note.2)	$E_{AR}$	16.5	mJ
Single Pulsed Avalanche Energy (Note.1)	$E_{AS}$	400	
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	$R_{thJC}$	2.7	
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to 150	

Note.1:  $L=5.5\text{mH}$ ,  $I_S=10\text{A}$ ,  $V_{DD}=50\text{V}$ ,  $R_G=25\Omega$ , Starting  $T_J=25^\circ\text{C}$ .

Note.2: Repetivity rating : Pulse width limited by junction temperature.

Note.3:  $I_S \leq 10\text{A}$ ,  $dI/dt \leq 200\text{A}/\mu\text{s}$ ,  $V_{DD} \leq BV_{DSS}$ , Starting  $T_J=25^\circ\text{C}$ .

## N-Channel MOSFET

### KX10N60F

#### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =250 μA, V <sub>GS</sub> =0V	600			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =600V, V <sub>GS</sub> =0V			10	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±30V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	2.5		4.5	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =5A			0.73	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz		1350		pF
Output Capacitance	C <sub>oss</sub>			140		
Reverse Transfer Capacitance	C <sub>rss</sub>			13		
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =480V, I <sub>D</sub> =10A (Note.1)		26		nC
Gate Source Charge	Q <sub>gs</sub>			6		
Gate Drain Charge	Q <sub>gd</sub>			10		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>DS</sub> =300V, I <sub>D</sub> =10A, R <sub>G</sub> =25 Ω (Note.1)		32		ns
Turn-On Rise Time	t <sub>r</sub>			35		
Turn-Off DelayTime	t <sub>d(off)</sub>			88		
Turn-Off Fall Time	t <sub>f</sub>			30		
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 10A, V <sub>GS</sub> =0, di/dt= 100A/ μs		350		
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> = 5A, di/dt= 100A/ μs		4.2		nC
Continuous Source Current	I <sub>S</sub>	V <sub>GS</sub> <V <sub>th</sub>			10	A
Pulsed Source Current	I <sub>SM</sub>				40	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =10A, V <sub>GS</sub> =0V			1.4	V

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

#### ■ Typical Characteristics

Fig1. I<sub>D</sub> - V<sub>DS</sub>

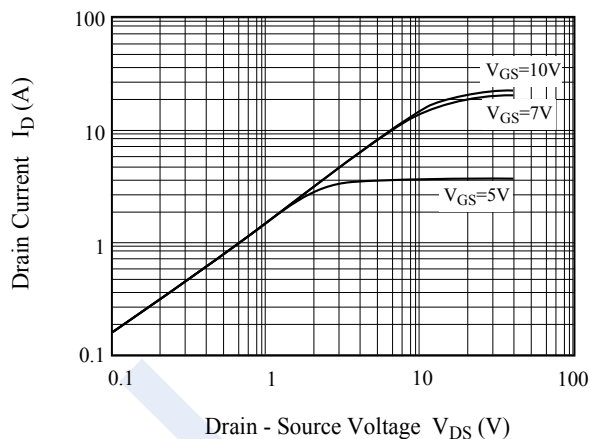
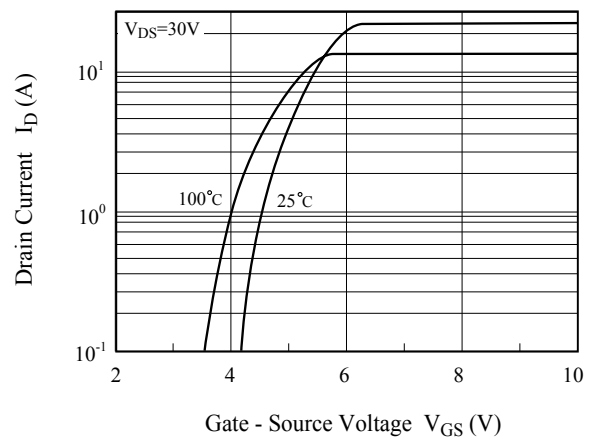


Fig2. I<sub>D</sub> - V<sub>GS</sub>



## N-Channel MOSFET KX10N60F

■ Typical Characteristics

Fig3.  $BV_{DSS} - T_j$

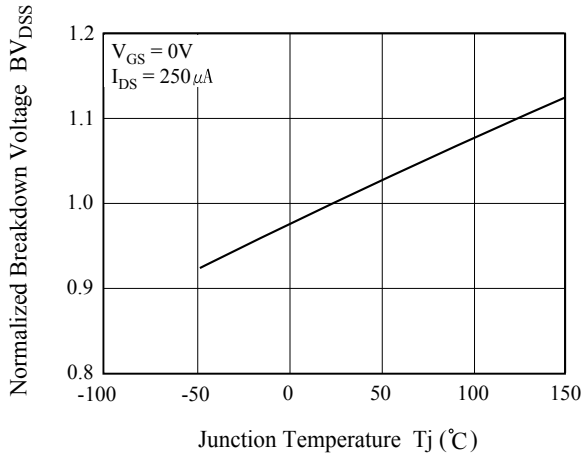


Fig4.  $R_{DS(ON)} - I_D$

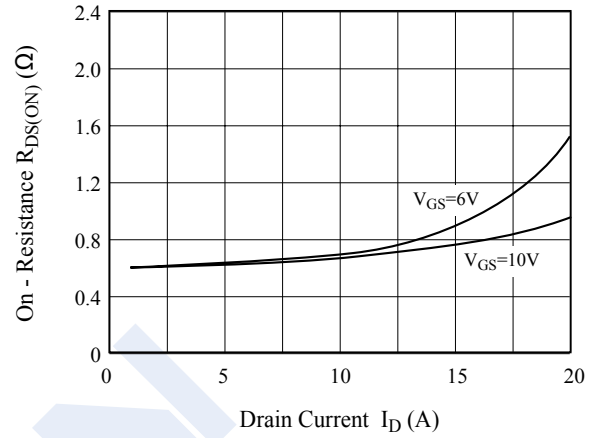


Fig5.  $I_S - V_{SD}$

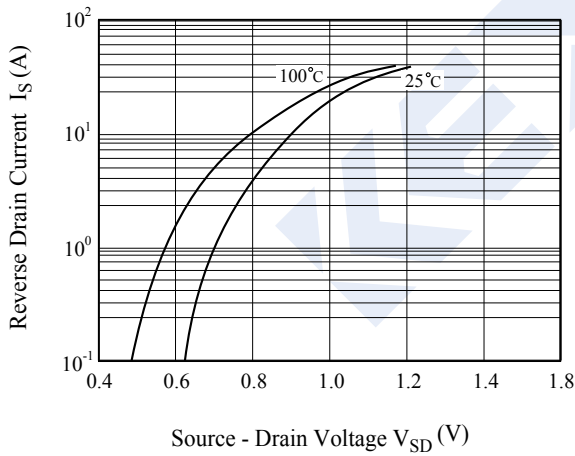


Fig6.  $R_{DS(ON)} - T_j$

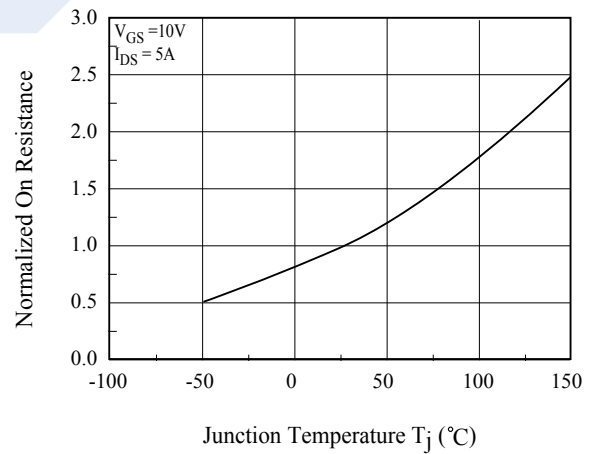


Fig 7.  $C - V_{DS}$

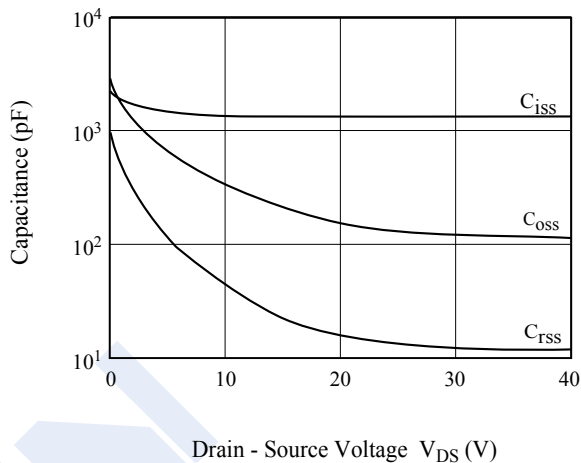
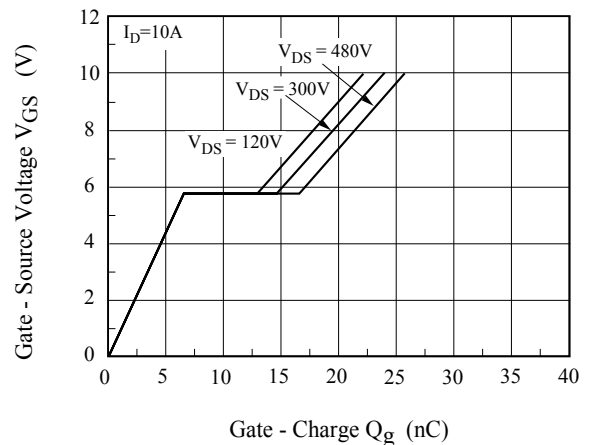


Fig8.  $Q_g - V_{GS}$



## N-Channel MOSFET KX10N60F

■ Typical Characteristics

Fig9. Safe Operation Area

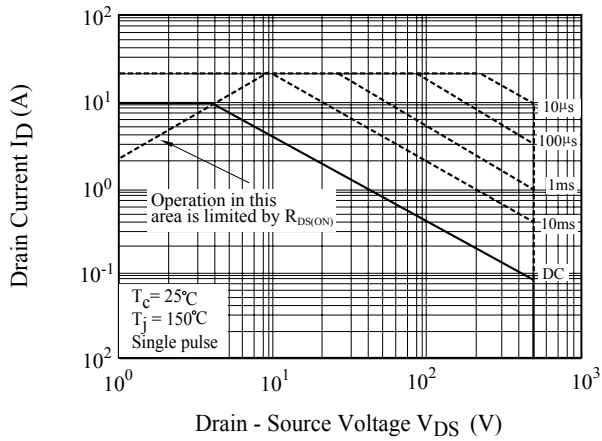


Fig10  $I_D - T_j$

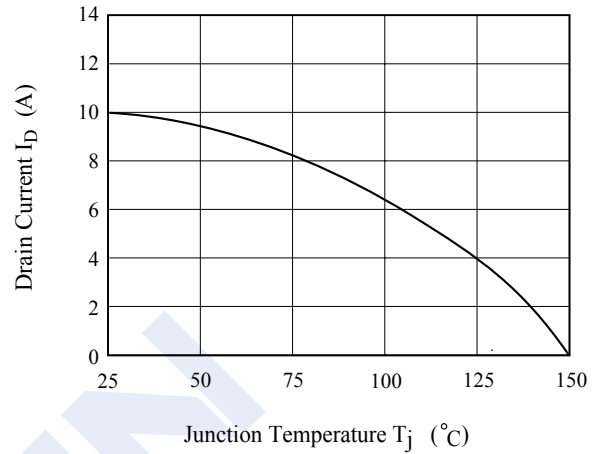


Fig11. Transient Thermal Response Curve

