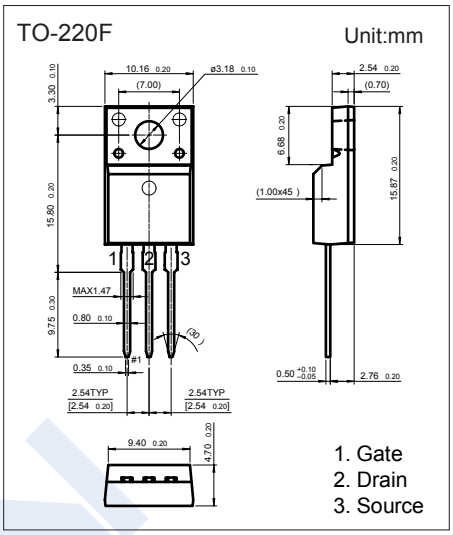
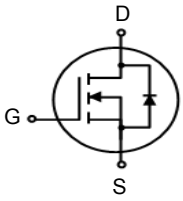
N-Channel MOSFET
KX12N65F



■ Features

- $V_{DS\ (V)}$ = 650V
- I_D = 12 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 850mΩ (V_{GS} = 10V)
- High ruggedness



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	650	V
Gate-Source Voltage		V_{GS}	±30	
Continuous Drain Current	Tc=25℃	I_D	12	A
	Tc=100℃		7.6	
Pulsed Drain Current (Note.1)		I_{DM}	48	
Power Dissipation	Tc=25℃	P_D	54	W
Derating Factor above 25oC			0.43	W/℃
Single pulsed Avalanche Energy (Note.2)		E_{AS}	790	mJ
Repetitive Avalanche Energy (Note.1)		E_{AR}	104	
Peak diode Recovery dv/dt (Note.3)		dv/dt	4.5	V/ns
Thermal Resistance.Junction- to-Ambient		R_{thJA}	45.3	℃/W
Thermal Resistance.Junction- to-Case		R_{thJC}	2.3	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Note.1: Repeatitive rating : pulse width limited by junction temperature.

Note.2: L = 11mH, I_{AS} = 12A, V_{DD} = 50V, R_G=25Ω, Starting T_J = 25℃

Note.3: I_{SD} ≤ 12.0A, di/dt = 100A/us, V_{DD} ≤ BV_{DSS}, Staring T_J =25℃

N-Channel MOSFET
KX12N65F

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	650			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V			1	uA
		V_{DS}=520V, V_{GS}=0V, T_J=125℃			50	
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=6A			850	mΩ
Forward Transconductance	g_{FS}	V_{DS}=20V, I_D=6A	7			S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		1450		pF
Output Capacitance	C_{oss}			160		
Reverse Transfer Capacitance	C_{rss}			35		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=520V, I_D=12A (Note.1)		28	50	nC
Gate Source Charge	Q_{gs}			9		
Gate Drain Charge	Q_{gd}			9		
Turn-On DelayTime	$t_{d(on)}$	V_{DS}=325V, I_D=12A,R_{GEN}=25Ω (Note.1)		23	60	ns
Turn-On Rise Time	t_r			38	80	
Turn-Off DelayTime	$t_{d(off)}$			63	130	
Turn-Off Fall Time	t_f			36	80	
Body Diode Reverse Recovery Time	t_{rr}	I_F= 12A, di/dt= 100A/μs		456		
Body Diode Reverse Recovery Charge	Q_{rr}			6.2		uC
Maximum Body-Diode Continuous Current	I_S	Integral reverse p-n Junction diode in the MOSFET			12	A
Pulsed source current	I_{SM}				48	
Diode Forward Voltage	V_{SD}	I_S=12A,V_{GS}=0V			1.5	V

Note.1: Pulse Width ≤ 300us, duty cycle ≤ 2%

N-Channel MOSFET

KX12N65F

■ Typical Characterisitics

Fig. 1. On-state characteristics

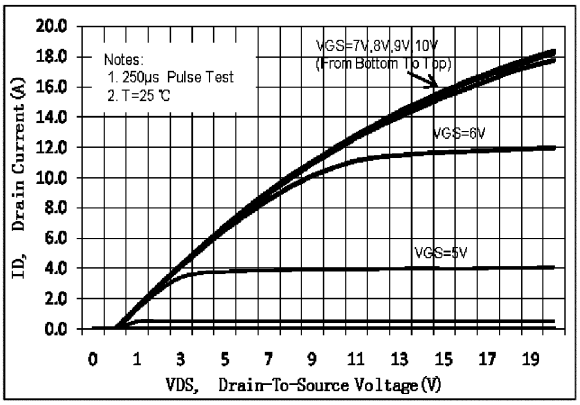


Fig. 2. On-resistance variation vs. drain current and gate voltage

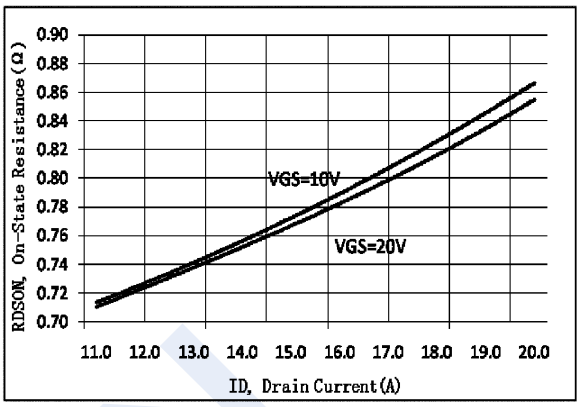


Fig. 3. Gate charge characteristics

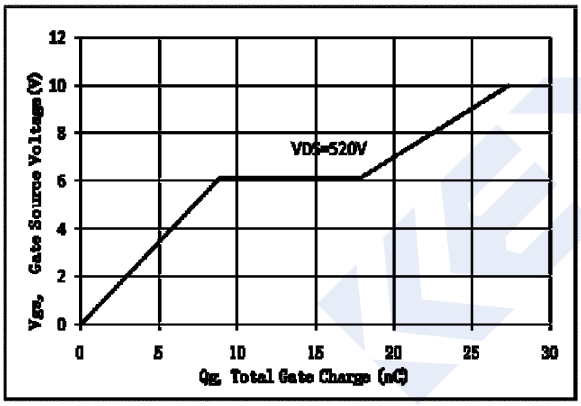


Fig. 4. On state current vs. diode forward voltage

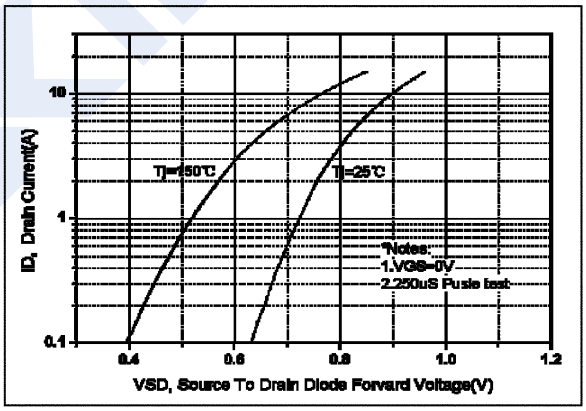


Fig 5. Breakdown Voltage Variation vs. Junction Temperature

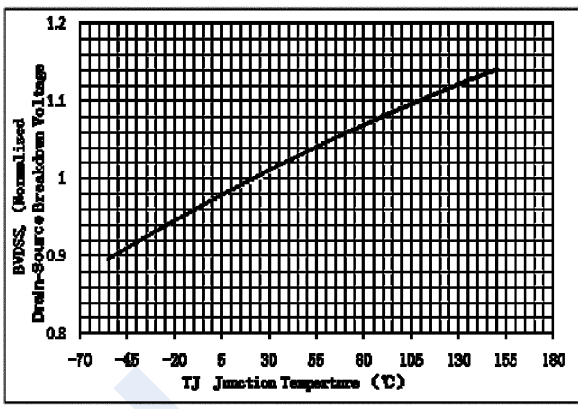
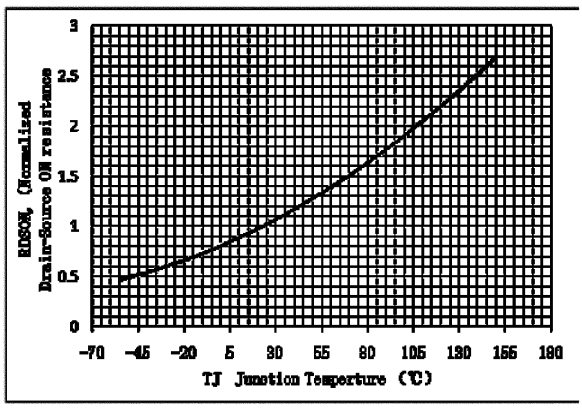


Fig. 6. On resistance variation vs. junction temperature



N-Channel MOSFET

KX12N65F

■ Typical Characterisitics

Fig. 7. Maximum safe operating area

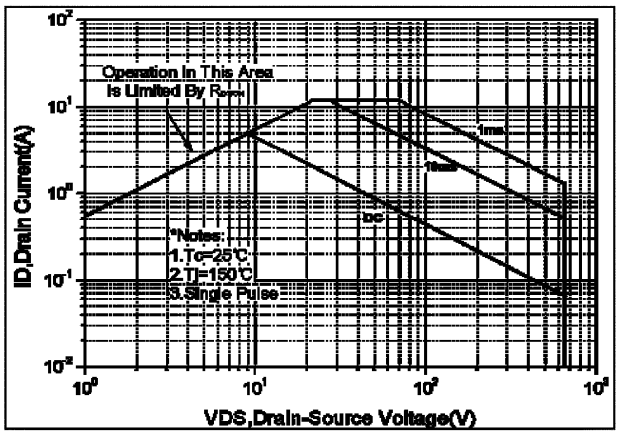


Fig. 8. Transient thermal response curve