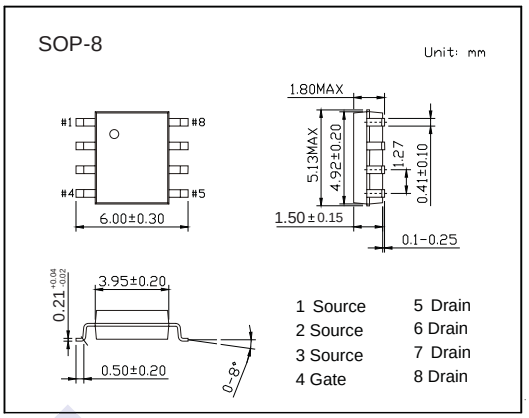
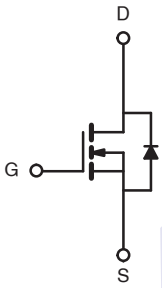
N-Channel MOSFET

2KK7106



■ Features

- BV_{DSS} = 60 V
- I_D = 12 A
- $R_{DS(ON)}$ Typ. (at V_{GS} = 4.5 V) = 12 mΩ
- Low On-resistance
- High conversion efficiency
- Fast Switching Characteristic



■ Absolute Maximum Ratings (T_j = 25℃ unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A=25℃	I_D	12	A
	T_A=70℃		8	
Pulsed Drain Current *1		I_{DM}	48	
Avalanche Current, Single pulsed *2		I_{AS}	40	
Avalanche Energy, Single pulsed *2		E_{AS}	80	mJ
Power Dissipation	T_C=25℃	P_D	2.0	W
Thermal Resistance, Junction- to-Ambient		$R_{\theta JA}$	72	℃/W
Thermal Resistance, Junction- to-Case		$R_{\theta JC}$	20	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1. Repetitive rating; pulse width limited by max. junction temperature.
2. Limited by T_{Jmax}, starting T_J = 25°C, L = 0.1mH, R_G = 25Ω, I_{AS} = 40A, V_{GS} =10V. Part not recommended for use above this value

N-Channel MOSFET

2KK7106

■ Electrical Characteristics (T_C = 25℃ unless othewise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250 μA, V_{GS} = 0V	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48 V, V_{GS} = 0 V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Gate to Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250μA	1		2.5	V
Static Drain-Source On-Resistance *3	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 8 A		11	14	mΩ
		V_{GS} = 4.5 V, I_D = 4 A		12	16	
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		2250		pF
Output Capacitance	C_{oss}			220		
Reverse Transfer Capacitance	C_{rss}			162		
Gate Resistance	R_g	V_{GS} = 0 V, f = 1 MHz		1.2		Ω
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DS} = 25 V, I_D = 4 A		58		nC
Gate Source Charge	Q_{gs}			5.9		
Gate Drain Charge	Q_{gd}			14.5		
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = 10V, V_{DD} = 25 V, R_G =6.8 Ω, I_D = 4A		20		ns
Turn-On Rise Time	t_r			98		
Turn-Off DelayTime	$t_{d(off)}$			46		
Turn-Off Fall Time	t_f			91		
Body Diode Reverse Recovery Time	t_{rr}	I_S = 4 A, V_{GS} = 0V, dI/dt = 100 A/μs		20		
Body Diode Reverse Recovery Charge	Q_{rr}			13		nC
Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 8 A			1.2	V

Note 3 : Pulse width ≤ 300μs; duty cycle≤ 2%.

■ Marking

Marking	K7106 KC****

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■ Typical Characterisitics

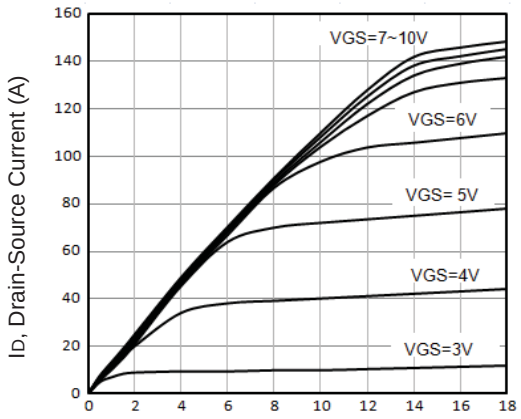


Fig1. Typical Output Characteristics

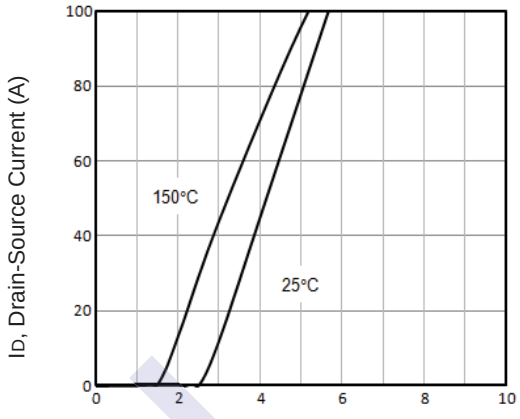


Fig2. Typical Transfer Characteristics

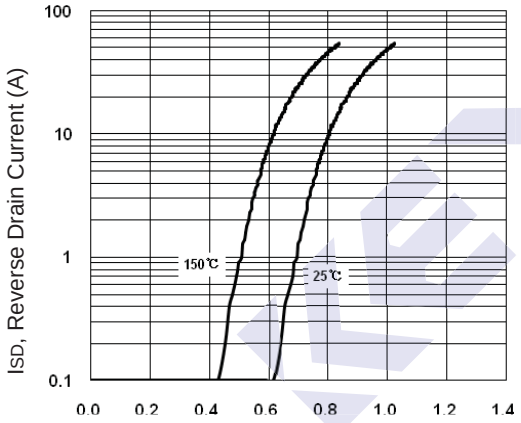


Fig3. Typical Source-Drain Diode Forward

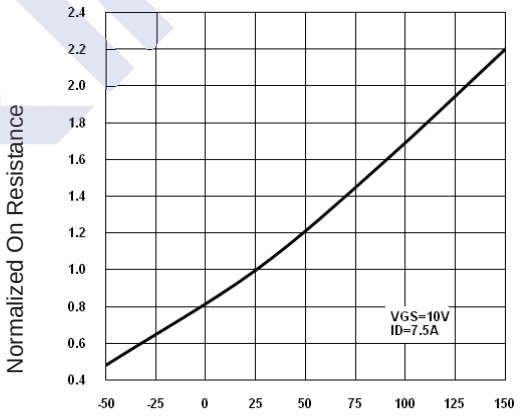


Fig4. Normalized On-Resistance Vs. Temperature

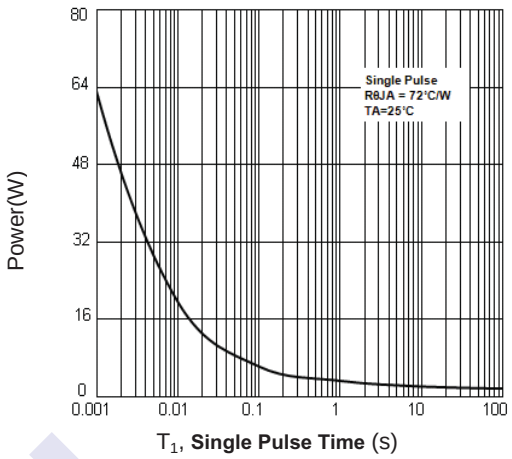


Fig5. Single Pulse Maximum Power Dissipation

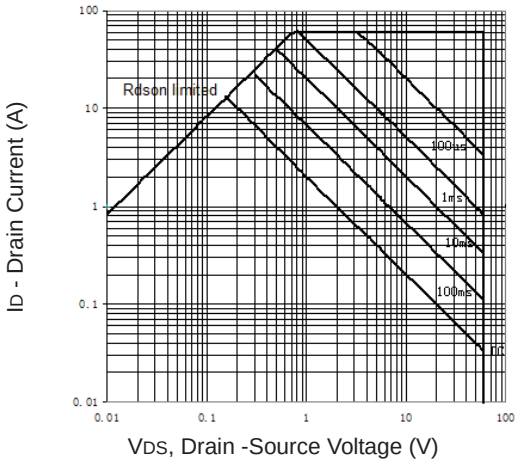
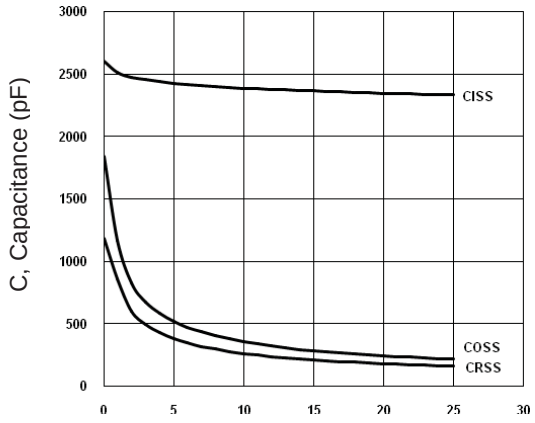


Fig6. Maximum Safe Operating Area

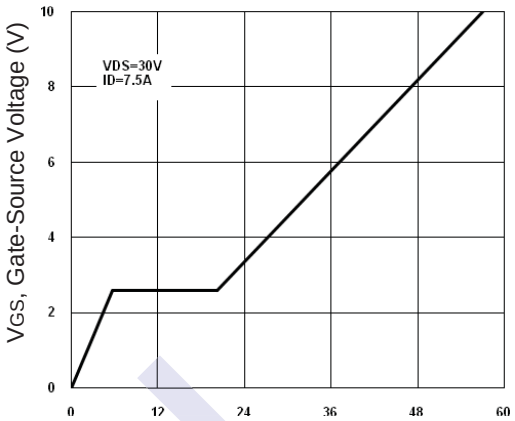
N-Channel MOSFET

2KK7106



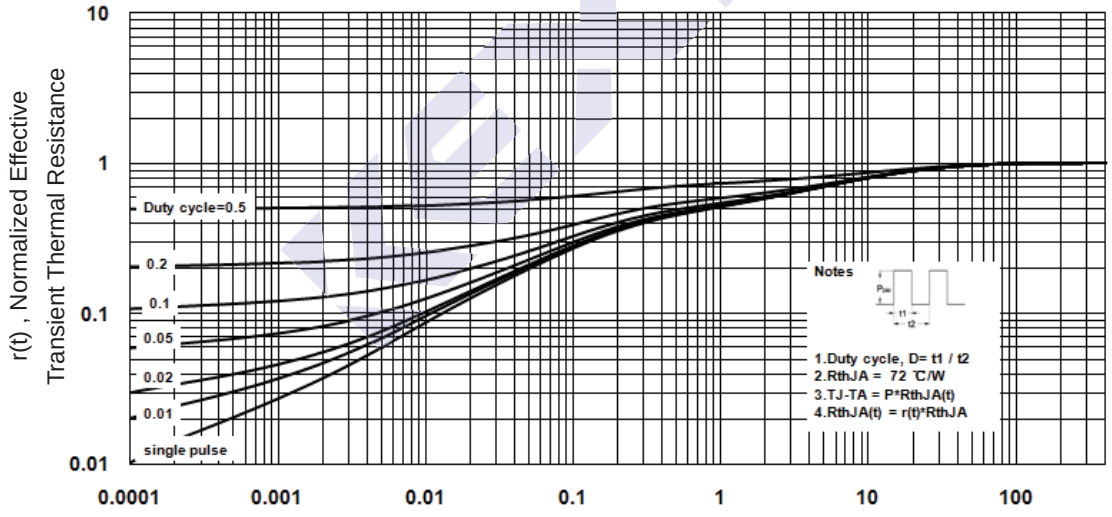
VDS , Drain-Source Voltage (V)

Fig7. Typical Capacitance Vs.Drain-Source Voltage



Qg -Total Gate Charge (nC)

Fig8. Typical Gate Charge Vs.Gate-Source Voltage



T_1, Square Wave Pulse Duration(sec)

Fig9. **T1 ,Transient Thermal Response Curve**

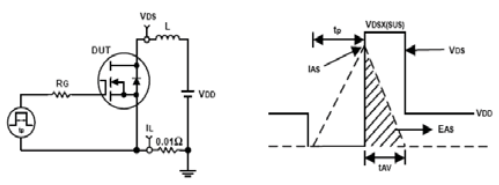


Fig10. Unclamped Inductive Test Circuit and waveforms

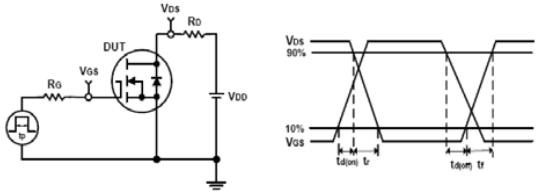


Fig11. Switching Time Test Circuit and waveforms