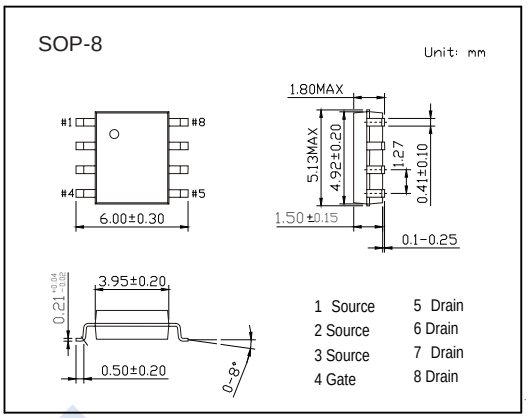
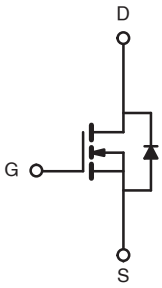
N-Channel MOSFET

2KK7109



■ Features

- V_{DS} =150V,I_D =5.2A
- $R_{DS(ON)}$ <53mΩ @ VGS=10V
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Low gate to drain charge to reduce switching losses



■ Absolute Maximum Ratings (T_A = 25℃, unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25℃	I_D	5.2	A
	T_C = 100℃		3.7	
Pulsed Drain Current (Note 1)		I_{DM}	42	
Power Dissipation		P_D	3.5	W
Thermal Resistance.Junction- to-Case (Note 2)		R_{thJC}	35.7	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=250μA, V_{GS}=0V	150			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=150V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	2.0		4.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D = 5.2A			53	mΩ
Forward Transconductance	g_{fs}	V_{GS}=10V, I_D = 5.2A	12			S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, f=1MHz		1700		pF
Output Capacitance	C_{oss}			190		
Reverse Transfer Capacitance	C_{rss}			90		
Switching Characteristics (Note 4)						
Turn-On DelayTime	$t_{d(on)}$	V_{DD}=75V, I_D = 3.1A, V_{GS} = 10V, R_{GEN} = 6.5Ω		15		ns
Turn-On Rise Time	t_r			13		
Turn-Off DelayTime	$t_{d(off)}$			26		
Turn-Off Fall Time	t_f			14		
Total Gate Charge	Q_g	V_{DS}=75V, I_D=3.1A, V_{GS}=10V		35.8		nC
Gate Source Charge	Q_{gs}			7.5		
Gate Drain Charge	Q_{gd}			13		
Drain-Source Diode Characteristics						
Diode Forward Current (Note 2)	I_S				2.7	A
Diode Forward Voltage (Note 3)	V_{SD}	I_S=3.1A,V_{GS}=0V			1.2	V
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F = 3.1A, di/dt = 100A/μs		50		nS
Reverse Recovery Charge	Q_{rr}			140		nC

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4. Guaranteed by design, not subject to production

■ Marking

Marking	4N15 KC****

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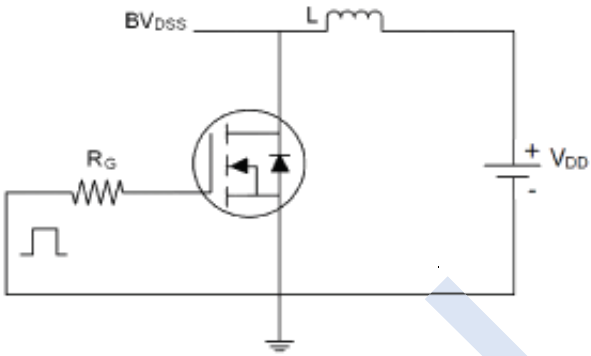
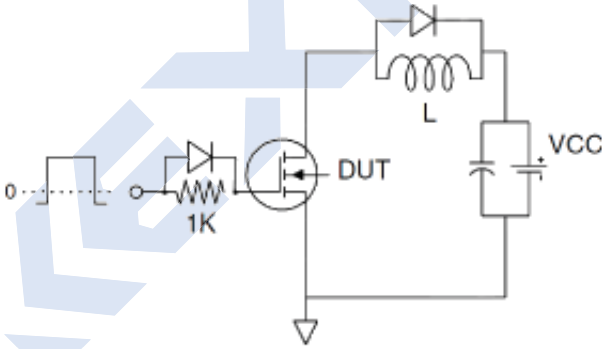
■ Test Circuit

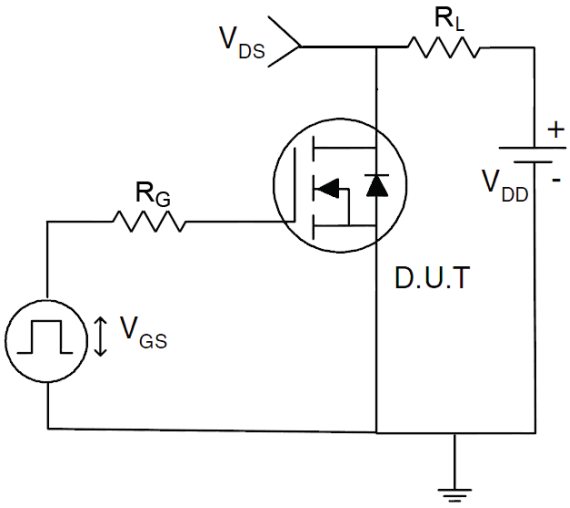
1）E_{AS} test Circuit



2）Gate charge test Circuit



3）Switch Time Test Circuit



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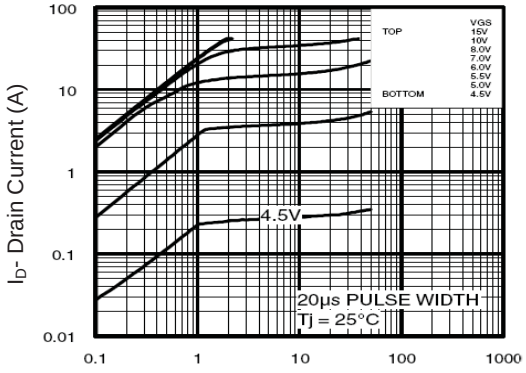
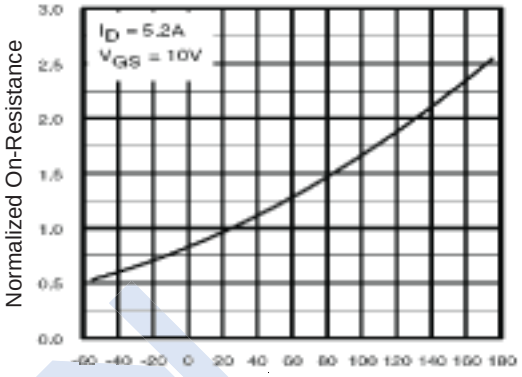
■ Typical Characterisitics Thermal Characteristics



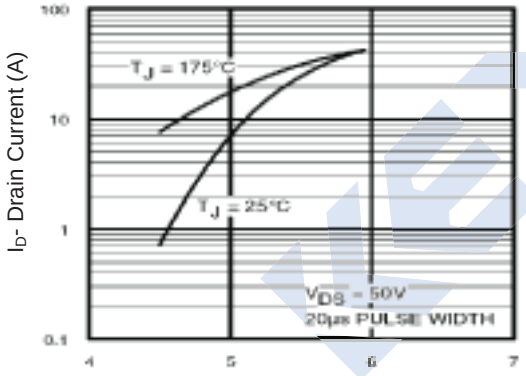
Vds Drain-Source Voltage (V)

Figure 1 Output Characteristics



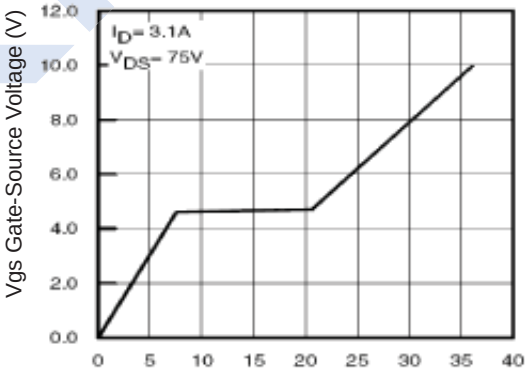
T_J-Junction Temperature(℃)

Figure 4 Rdson-JunctionTemperature



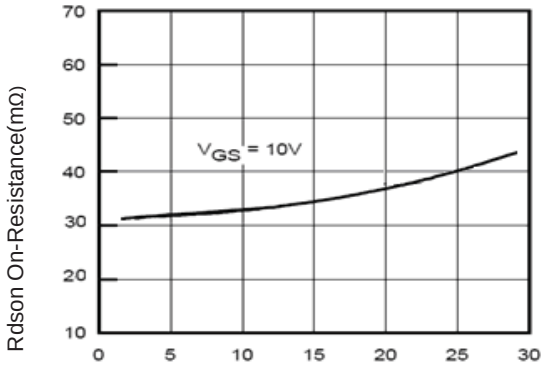
Vgs Gate-Source Voltage (V)

Figure 2 Transfer Characteristics



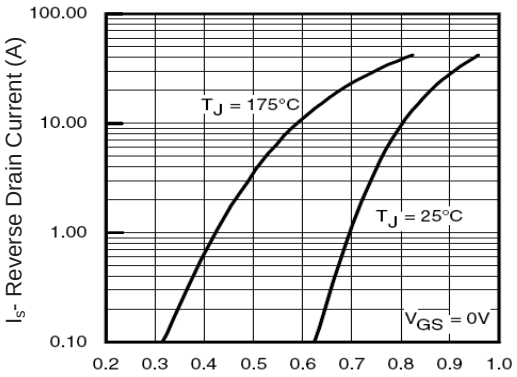
Qg Gate Charge (nC)

Figure 5 Gate Charge



I_D- Drain Current (A)

Figure 3 Rdson- Drain Current



Vsd Source-Drain Voltage (V)

Figure 6 Source- Drain Diode Forward

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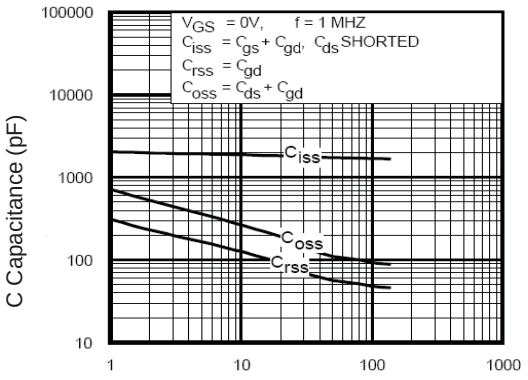

Figure 7 Capacitance vs Vds

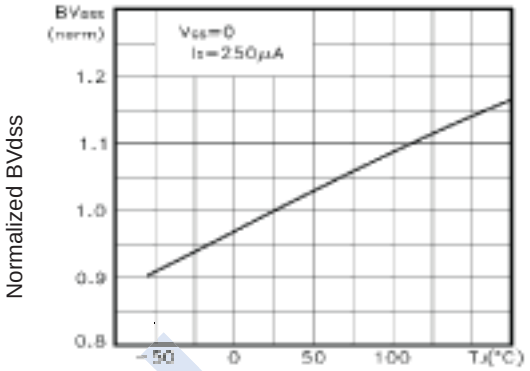

Figure 9 BV_{DSS} vs Junction Temperature

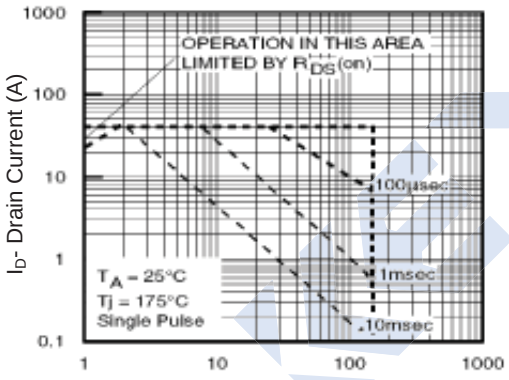

Figure 8 Safe Operation Area

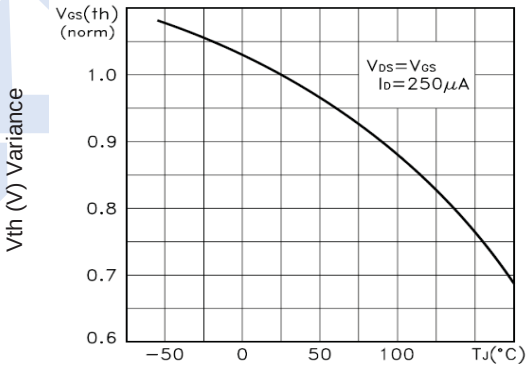

Figure 10 $V_{GS(th)}$ vs Junction Temperatur

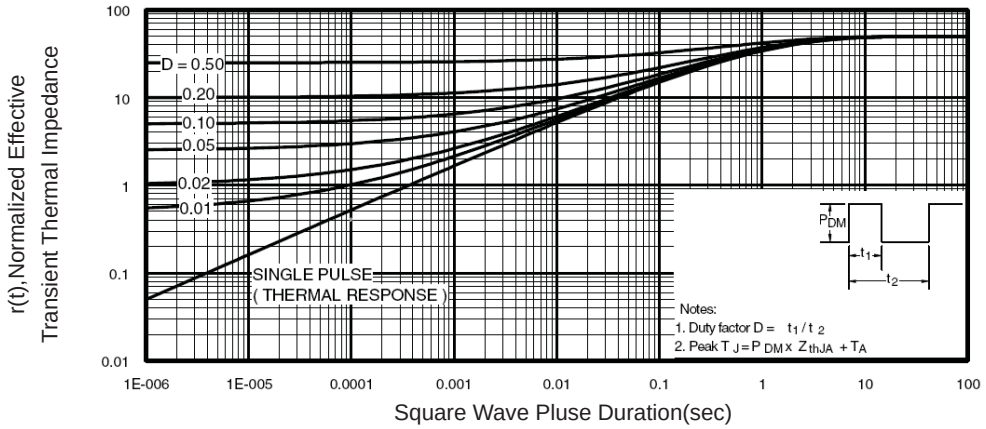

Figure 11 Normalized Maximum Transient Thermal Impedance