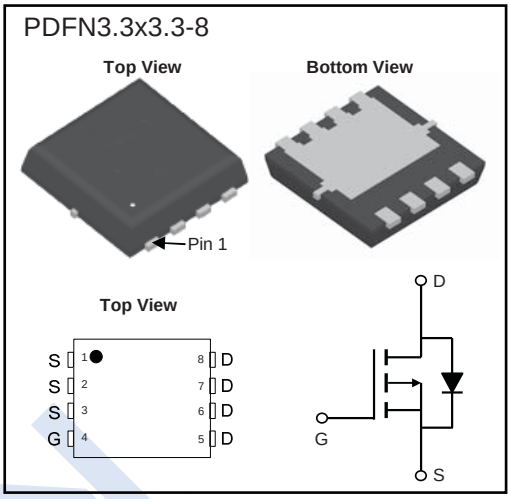
P-Channel MOSFET

2KJ7108DFN



■ Features

- V_{DS} -20V
- I_D (at V_{GS}=-4.5V) -40A
- $R_{DS(ON)}$ (at V_{GS} =-4.5V) < 18.4mΩ
- $R_{DS(ON)}$ (at V_{GS} =-2.5V) < 24.5mΩ

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	
Continuous Drain Current [G]	T_C=25℃	I_D	-40	A
	T_C=100℃		-29	
Pulsed Drain Current [C]		I_{DM}	-100	
Continuous Drain Current	T_A=25℃	I_{DSM}	-14.5	
	T_A=70℃		-11.5	
Avalanche Current [C]		I_{AS}, I_{AR}	-40	
Avalanche energy L=0.1mH [C]		E_{AS}, E_{AR}	80	mJ
Power Dissipation [B]	T_C=25℃	P_D	29	W
	T_C=100℃		12	
Power Dissipation [A]	T_A=25℃	P_{DSM}	3.1	
	T_A=70℃		2	
Thermal Resistance.Junction- to-Ambient [A]	t ⩽ 10s	$R_{\theta JA}$	40	℃/W
Thermal Resistance.Junction- to-Ambient [A D]	Steady-State		75	
Thermal Resistance.Junction- to-Case	Steady-State	$R_{\theta JC}$	4.2	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

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■ Electrical Characteristics (T_J = 25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = -250μA, V_{GS} = 0V	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -20V, V_{GS} = 0V			-1	μA
		V_{DS}= -20V, V_{GS} = 0V, T_J = 25℃			-5	
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = -250μA	-0.3		-0.9	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -10A			18.4	mΩ
		VGS = -2.5V, ID = -8A			24.2	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS} = -10V, f = 1MHz		3495		pF
Output Capacitance	C_{oss}			528		
Reverse Transfer Capacitance	C_{rss}			425		
Total Gate Charge	Q_g	VDS = -10V, ID = -10A VGS = -4.5V		44		nC
Gate Source Charge	Q_{gs}			9		
Gate Drain Charge	Q_{gd}			11		
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = -4.5V, V_{DS} = -10V, R_L = 0.75Ω, R_{GEN} = 3Ω		18		ns
Turn-On Rise Time	t_r			32		
Turn-Off DelayTime	$t_{d(off)}$			136		
Turn-Off Fall Time	t_f			59		
Body Diode Reverse Recovery Time	t_{rr}	IF= -10A, dI/dt= 500A/μs		33		
Body Diode Reverse Recovery Charge	Q_{rr}	IF= -10A, dI/dt= 500A/μs		100		nC
Maximum Body-Diode Continuous Current	I_S				-35	A
Diode Forward Voltage	V_{SD}	I_S = -1 A,V_{GS} = 0V			-1	V

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation P_{DSM} is based on $R_{\theta JA}$ t ≤ 10s value and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.

D. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.

E. The static characteristics in Figures 1 to 6 are obtained using <300s pulses, duty cycle 0.5% max.

F. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

G. The maximum current rating is package limited.

H. These tests are performed with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

■ Marking

Marking	J7108 KC****

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■ Typical Electrical and Thermal Characterisitics

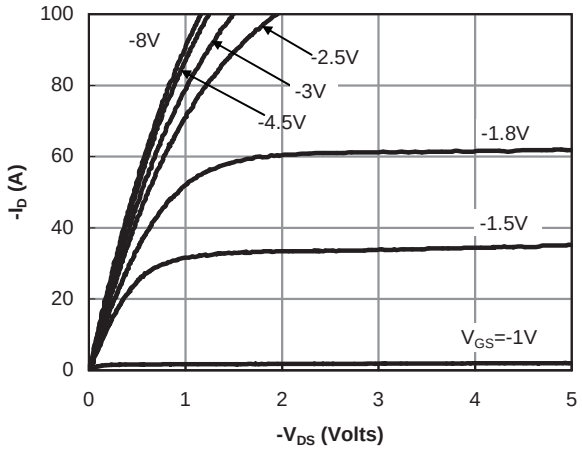

Fig 1: On-Region Characteristics (Note E)

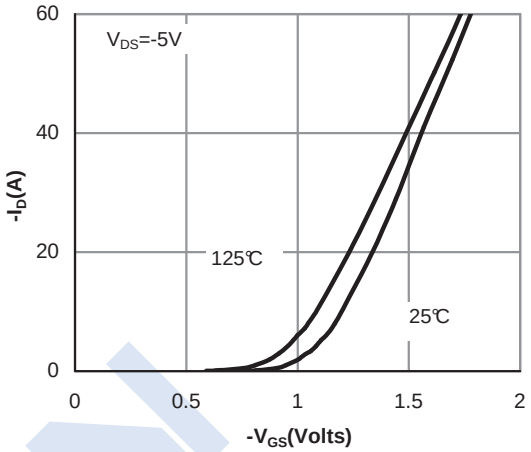

Figure 2: Transfer Characteristics (Note E)

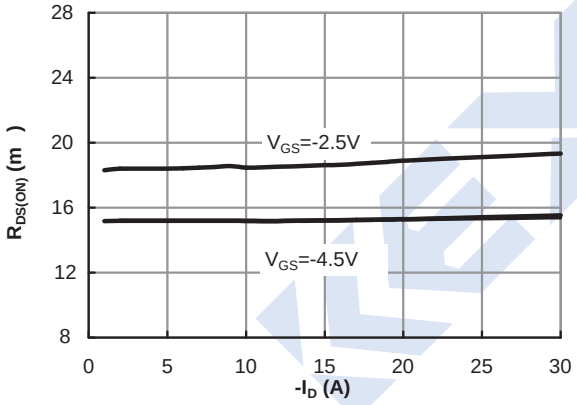

Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

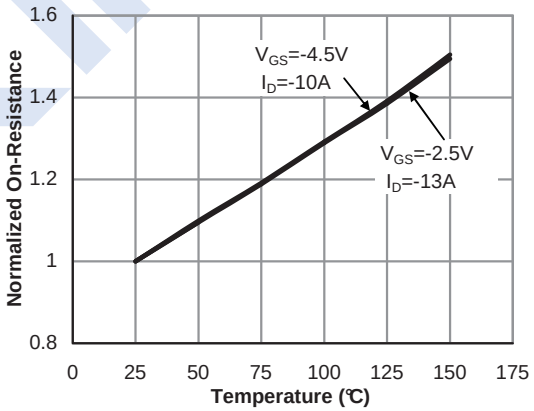

Figure 4: On-Resistance vs. Junction Temperature (Note E)

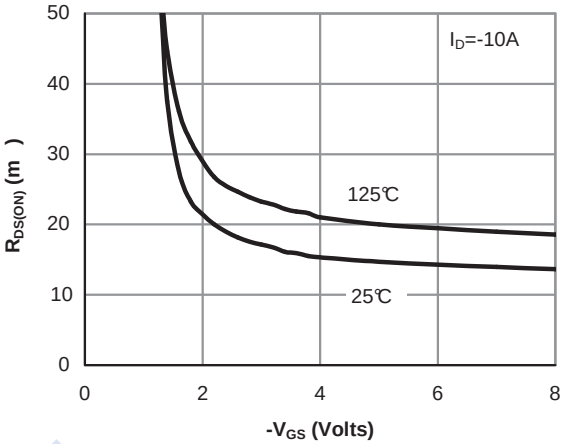

Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

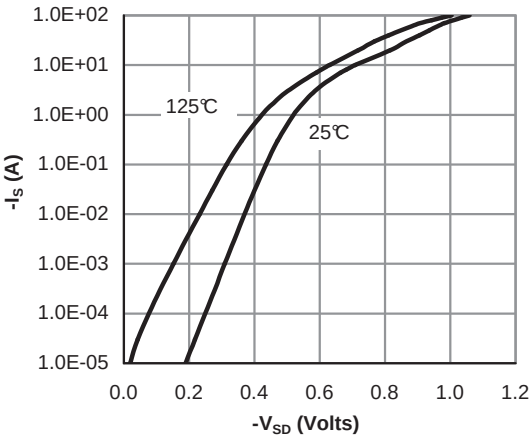

Figure 6: Body-Diode Characteristics (Note E)

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■ Typical Electrical and Thermal Characterisitics

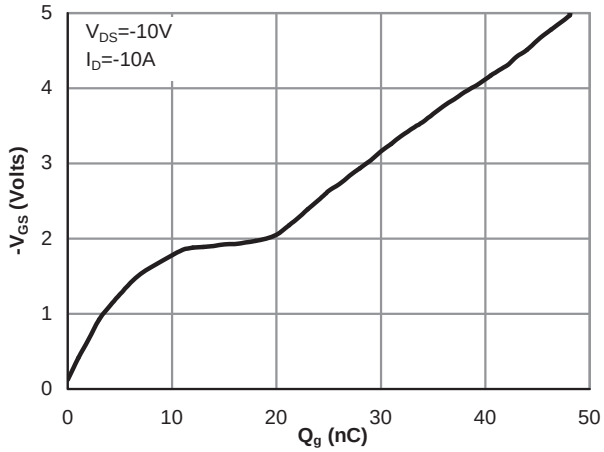

Figure 7: Gate-Charge Characteristics

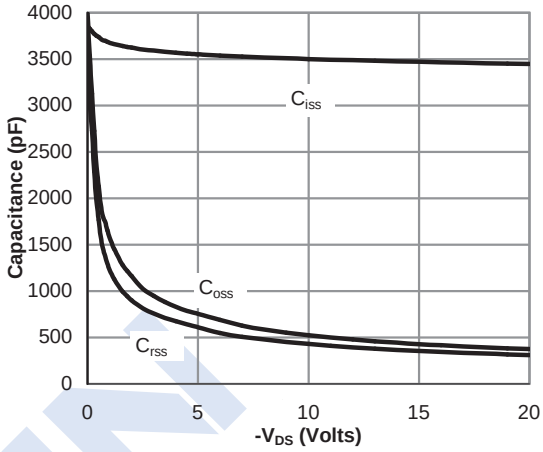

Figure 8: Capacitance Characteristics

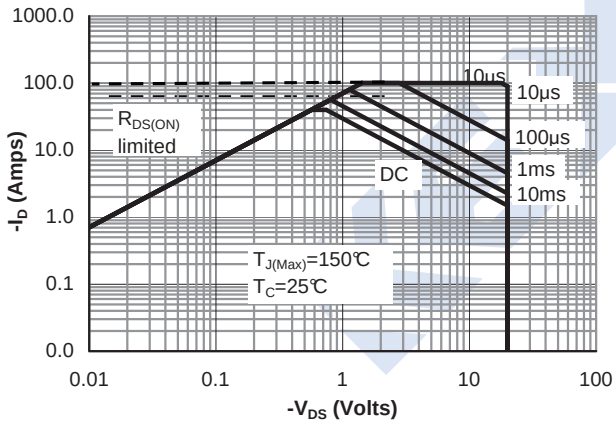

Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

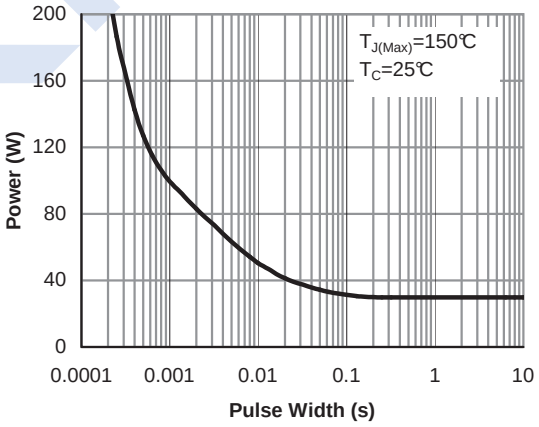

Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

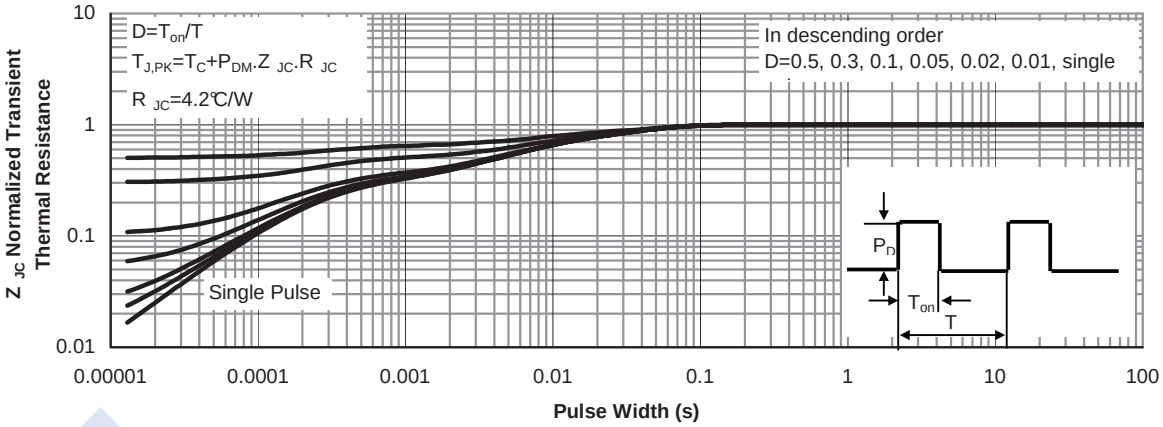

Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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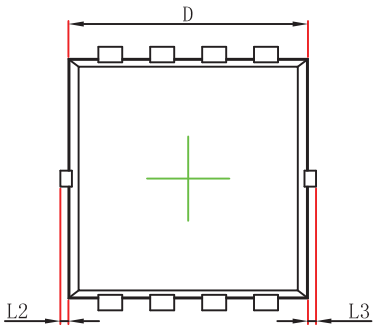
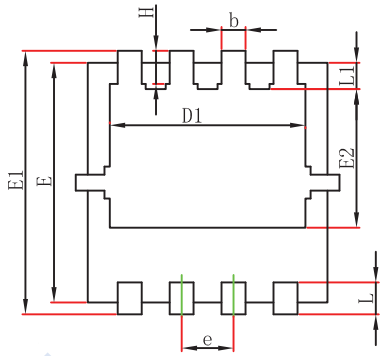
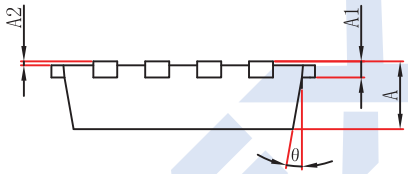
■ **PDFN3.3x3.3-8 Package Outline Dimensions**



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°