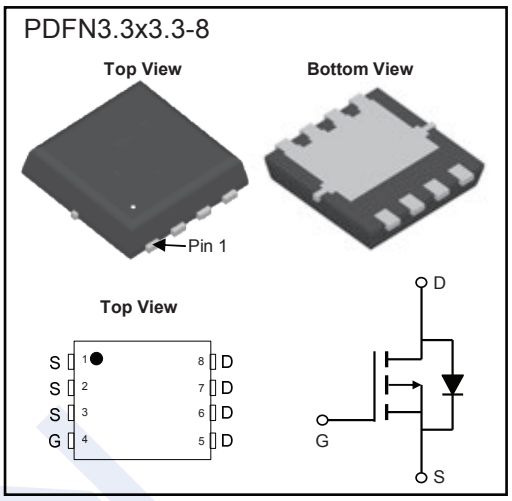
P-Channel MOSFET

2KJ7115DFN

■ Features

- V_{DS} -40 V
- I_D (at V_{GS}=-10V) -7.2 A
- $R_{DS(ON)}$ (at V_{GS} = - 10V) < 25 mΩ
- $R_{DS(ON)}$ (at V_{GS} = - 4.5V) < 45 mΩ



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current (Note 2)	T_A=25℃	I_D	-7.2	A
	T_A=70℃		-5.77	
Pulsed Drain Current (Note 3)		I_{DM}	-80	
Maximum Body Diode Forward Current (Note 2)		I_S	-7.2	
Pulsed Source Current (Note 3)		I_{SM}	-80	
Power Dissipation	(Note 1)	P_D	0.81	W
	(Note 2)		1.95	
Thermal Resistance, Junction- to-Ambient	(Note 1)	$R_{\theta JA}$	155	℃/W
	(Note 2)		64	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
2. For a device surface mounted on 25mm x 25mm FR-4 PCB with 2oz copper, in still air conditions.
3. Same as note 2, except the device is pulsed with D= 0.02 and pulse width 300μs.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = -250μA, V_{GS} = 0V	-40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -40V, V_{GS} = 0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = -250μA	-0.8		-1.8	V
Static Drain-Source On-Resistance (Note 4)	$R_{DS(on)}$	V_{GS} = -10V, I_D = -3A		18	25	mΩ
		V_{GS} = -4.5V, I_D = -3A		30	45	
Forward Transconductance (Note 4,5)	g_{FS}	V_{DS} = -5V, ID = -3A		16.6		S
Diode Forward Voltage (Note 4)	V_{SD}	I_S = -1 A,V_{GS} = 0V		-0.7	-1.0	V
DYNAMIC CHARACTERISTICS (Note 5)						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS} = -20V, f = 1MHz		1643		pF
Output Capacitance	C_{oss}			179		
Reverse Transfer Capacitance	C_{rss}			128		
Gate resistance	Rg	V_{GS}=0V, V_{DS}=0V, f=1MHz		6.43		Ω
Total Gate Charge (V_{GS} = -10V)	Q_g	V_{DS} = -20V, I_D = -3A		14.0		nC
Total Gate Charge (V_{GS} = -4.5V)				33.7		
Gate Source Charge	Q_{gs}			5.5		
Gate Drain Charge	Q_{gd}			7.3		
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = -10V, V_{DS} = -20V, I_D = -3A		6.9		ns
Turn-On Rise Time	t_r			14.7		
Turn-Off DelayTime	$t_{d(off)}$			53.7		
Turn-Off Fall Time	t_f			30.9		

Notes:

4. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%.
5. For design aid only, not subject to production testing.
6. Switching characteristics are independent of operating junction temperatures.

■ Marking

Marking	J7115 KC****

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■ Typical Characterisitics

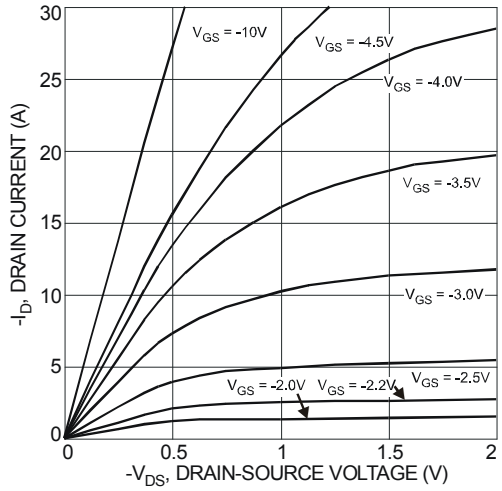

Figure 1 Typical Output Characteristic

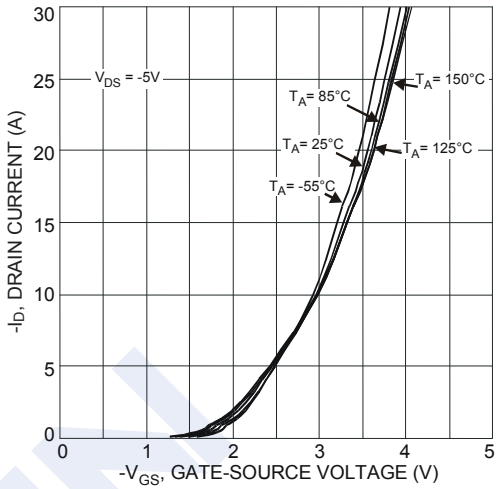

Figure 2 Typical Transfer Characteristic

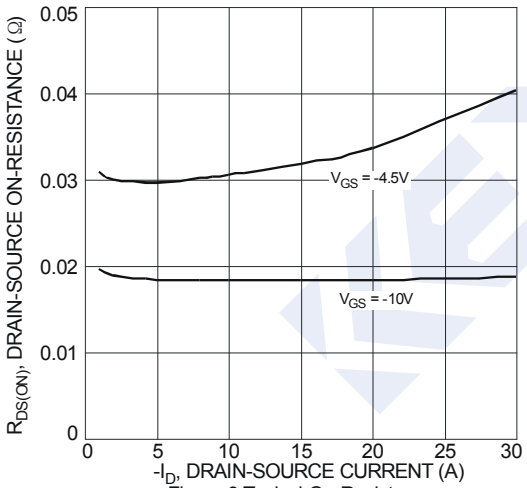

Figure 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

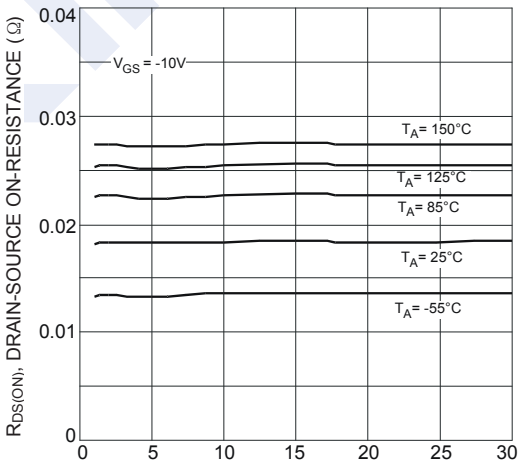

Figure 4 Typical On-Resistance
vs. Drain Current and Temperature

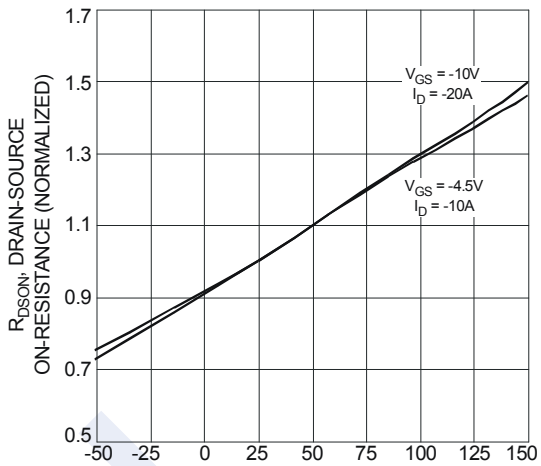

Figure 5 On-Resistance Variation with Temperature

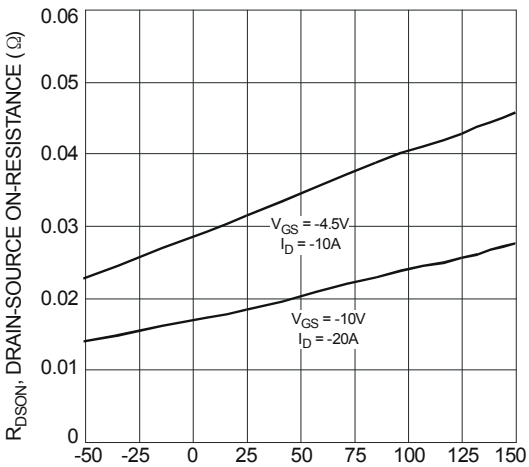

Figure 6 On-Resistance Variation with Temperature

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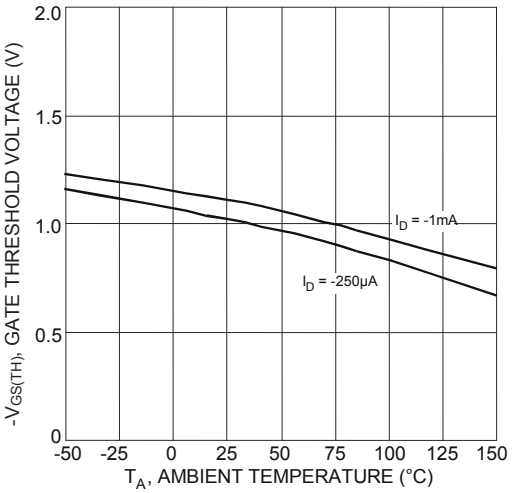

Figure 7 Gate Threshold Variation vs. Ambient Temperature

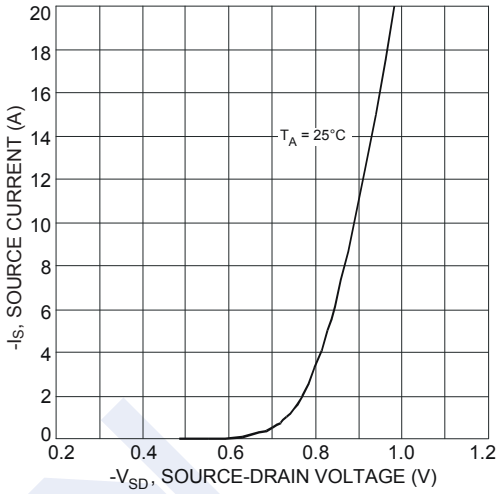

Figure 8 Diode Forward Voltage vs. Current

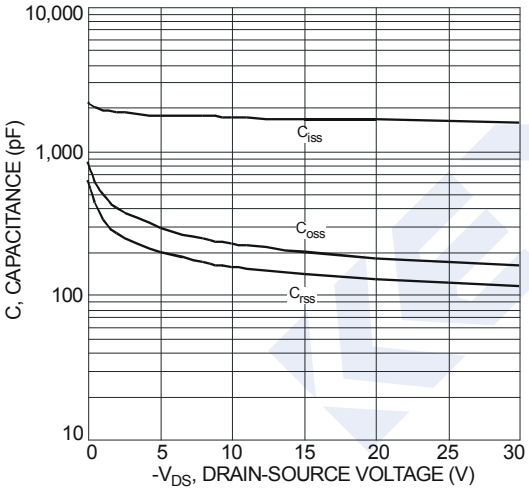

Figure 9 Typical Total Capacitance

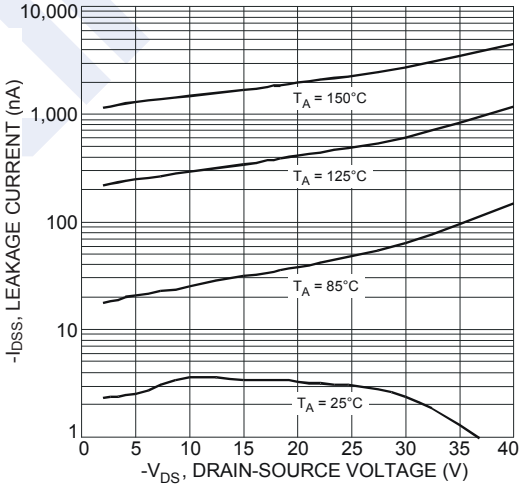

Figure 10 Typical Leakage Current vs. Drain-Source Voltage

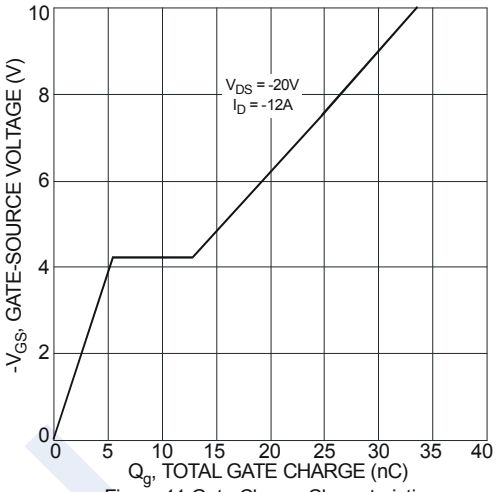

Figure 11 Gate-Charge Characteristics

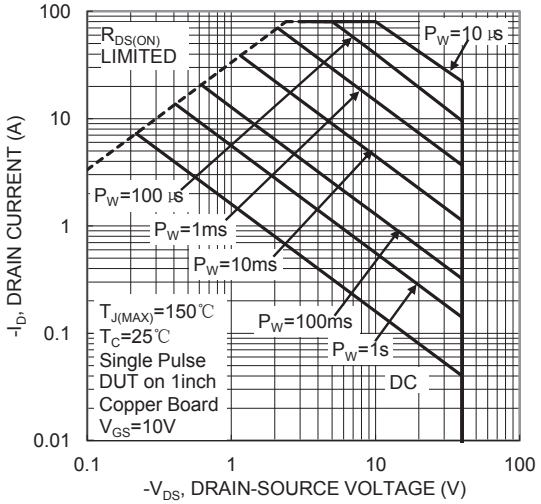

Figure 12. SOA, Safe Operation Area

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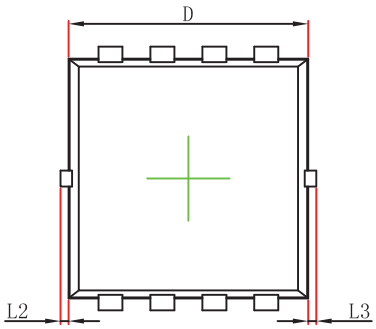
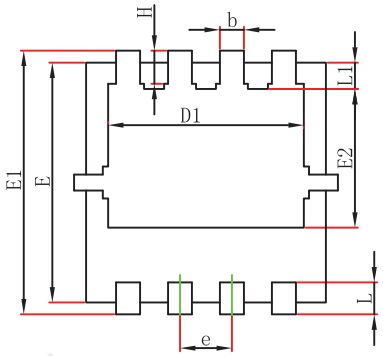
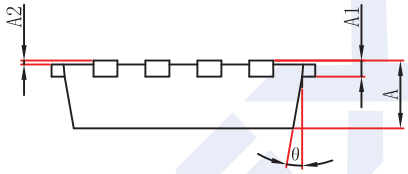
■ **PDFN3.3x3.3-8 Package Outline Dimensions**



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°