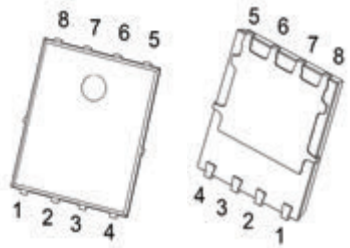
P-Channel MOSFET

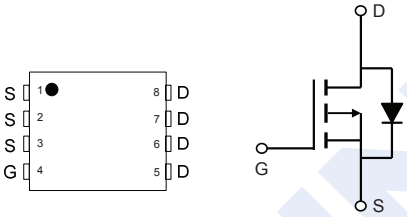
2KJ6043DFN

PDFN5x6-8



■ Features

- V_{DS} = -30V
- I_D = -36A
- $R_{DS(ON)}$ < 7.8mΩ @ V_{GS} =-10V
- $R_{DS(ON)}$ < 12.3mΩ @ V_{GS} =-4.5V



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±25	
Continuous Drain Current (Note 1)	T_C = 25℃	I_D	-36	A
Pulsed Drain Current (Note 2)		I_{DM}	-144	
Avalanche Current (Note 2)		I_{AS}	39	A
Avalanche Energy L = 0.1mH (Note 2)		E_{AS}	76	mJ
Thermal Resistance, Junction- to-Ambient (Note 3, 5)		$R_{\theta JA}$	55	℃/W
Thermal Resistance, Junction- to-Case		$R_{\theta JC}$	2.6	
Power Dissipation (Note 4)	T_C = 25℃	P_D	48	W
	T_C = 100℃		19	
Power Dissipation (Note 5)	T_A = 25℃	P_{DSM}	5.0	
	T_A = 70℃		3.2	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1. The maximum current rating is package limited.
2. Single pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
3. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.
4. 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.
5. 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 and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

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■ Electrical Characteristics (T_J = 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	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -30V, V_{GS} = 0V			-1	μA
		V_{DS}= -30V, V_{GS} = 0V, T_J = 55℃			-5	
Gate-Body Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±25V			±100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = -250μA	-1.0		-2.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -20A			7.8	mΩ
		V_{GS} = -10V, I_D = -20A, T_J = 125℃			10.7	
		V_{GS} = -4.5V, I_D = -20A			12.3	
Forward Transconductance	g_{FS}	V_{DS} = -5V, I_D = -20A		50		S
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS} = -15V, f = 1MHz		2830		pF
Output Capacitance	C_{oss}			430		
Reverse Transfer Capacitance	C_{rss}			365		
Gate Resistance	R_g	f = 1MHz		14	28	Ω
Switching characteristics						
Total Gate Charge	Q_g(10V)	V_{DS} = -15V, I_D = -20A, V_{GS} = -10V		50	70	nC
	Q_g(4.5V)			25	35	
Gate Source Charge	Q_{gs}			9		
Gate Drain Charge	Q_{gd}			12		
Turn-On DelayTime	$t_{d(on)}$	V_{DD}=-15V, R_L=0.75Ω, V_{GS}=-10V, R_{GEN}=3Ω		12.5		ns
Turn-On Rise Time	t_r			18		
Turn-Off DelayTime	$t_{d(off)}$			125		
Turn-Off Fall Time	t_f			66		
Drain-Source Diode Characteristics						
Reverse Recovery Time	t_{rr}	I_F=-20A, d_i/d_t=-500A/μs		32		nS
Reverse Recovery Charge	Q_{rr}			62		nC
Diode Forward Current	I_S				-36	A
Diode Forward Voltage	V_{SD}	I_S = -1 A,V_{GS} = 0V		-0.7	-1.0	V

Notes:

6. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.
7. 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.
8. 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	J6043 KC****

2KJ6043DFN

■ Typical Electrical and Thermal Characterisitics

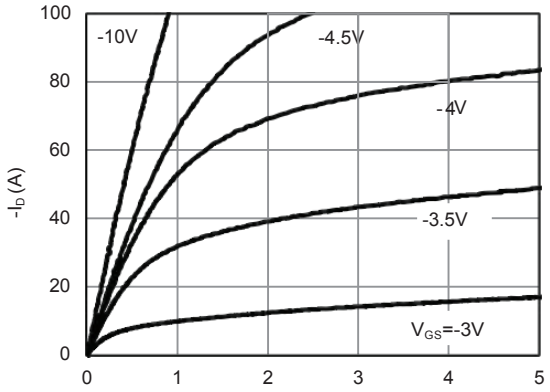

Figure 1: On -Region Characteristics (Note 6)

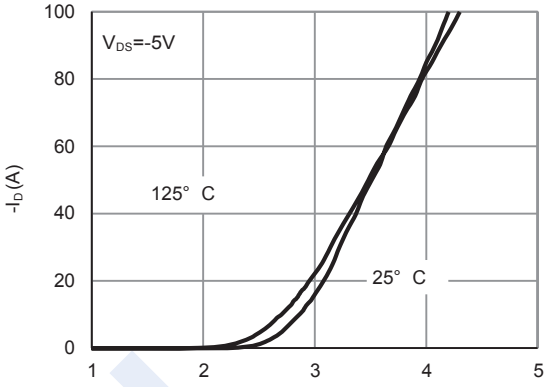

Figure 2: Transfer Characteristics (Note 6)

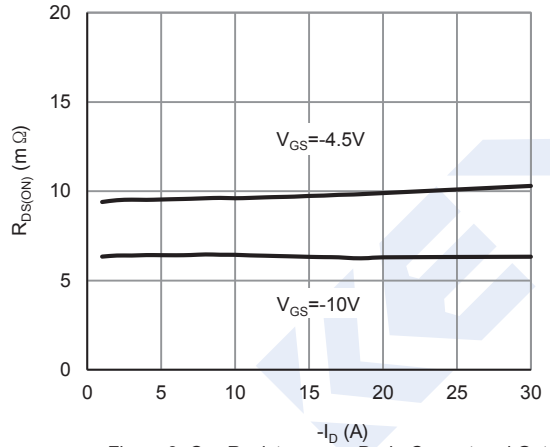

Figure 3: On -Resistance vs. Drain Current and Gate Voltage (Note 6)

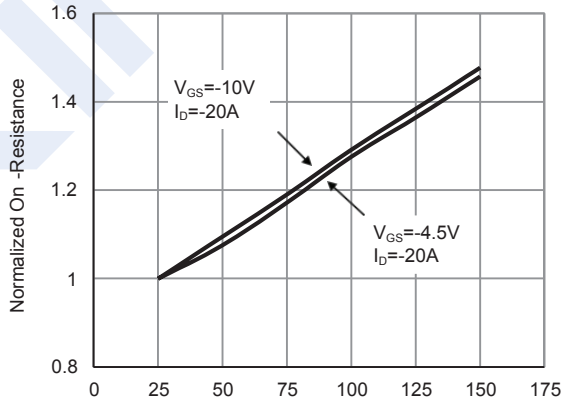

Figure 4: On -Resistance vs. Junction Temperature (Note 6)

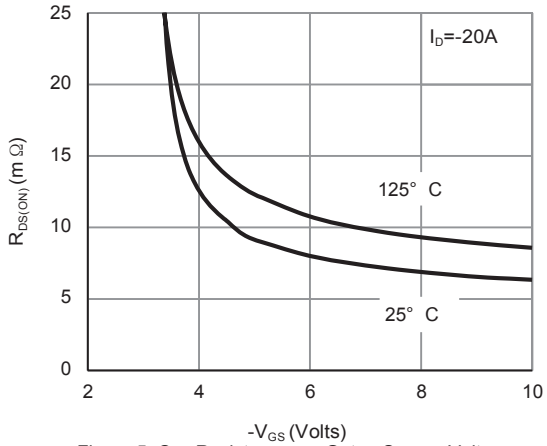

Figure 5: On -Resistance vs. Gate -Source Voltage (Note 6)

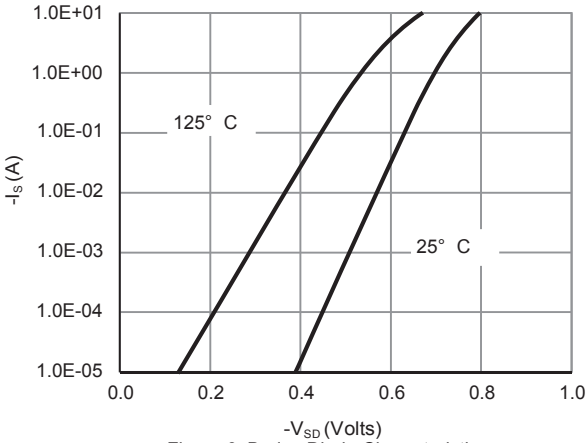

Figure 6: Body -Diode Characteristics (Note 6)

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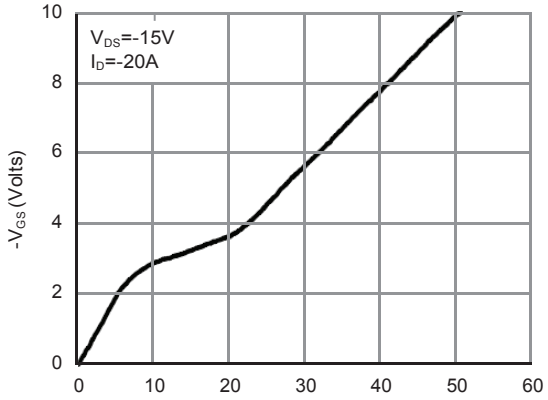


Figure 7: Gate -Charge Characteristics

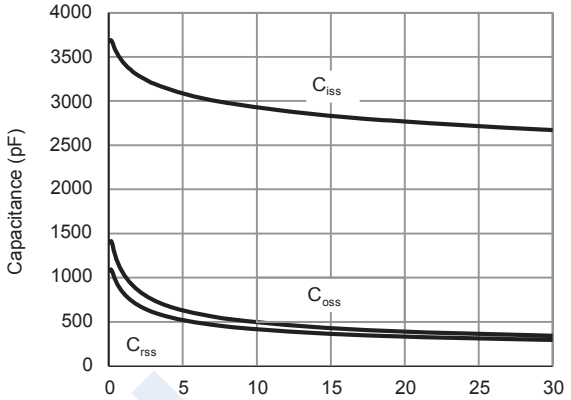
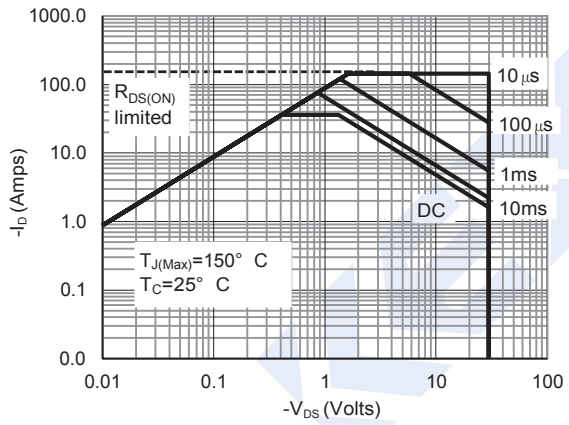


Figure 8: Capacitance Characteristics



-V_{GS}> or equal to -4.5V

Figure 9: Maximum Forward Biased Safe Operating Area (Note 7)

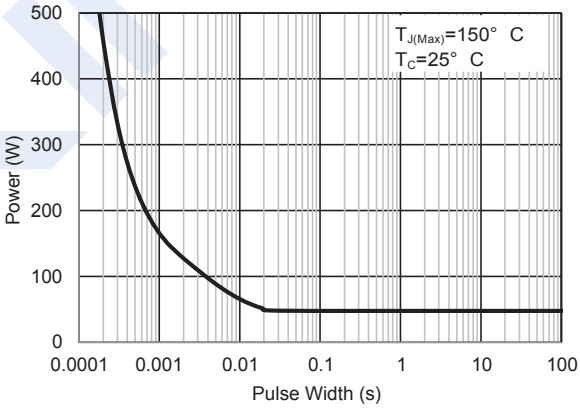


Figure 10: Single Pulse Power Rating Junction -to- Case (Note 7)

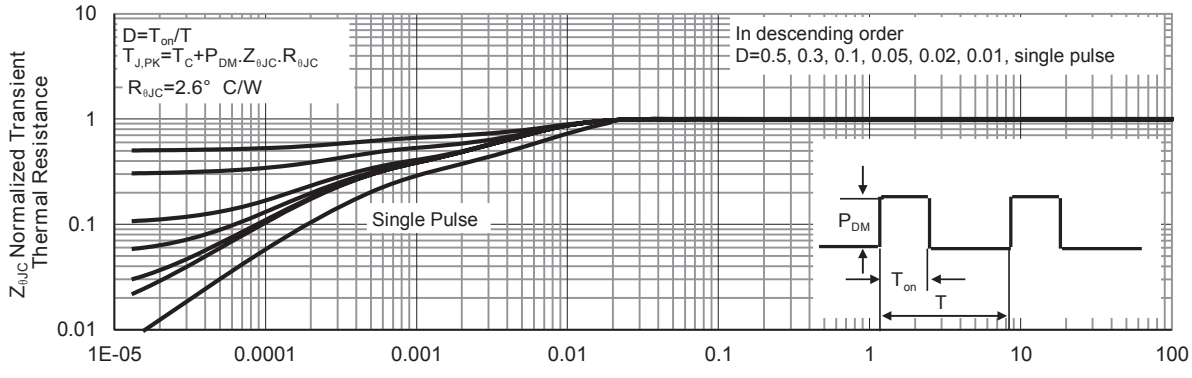


Figure 11: Normalized Maximum Transient Thermal Impedance (Note 7)

2KJ6043DFN

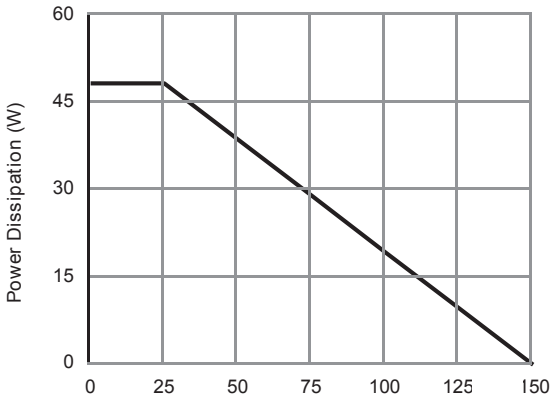


Figure 12: Power De -rating (Note 7)

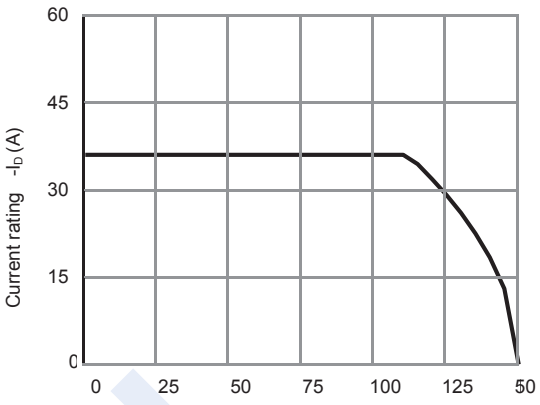


Figure 13: Current De -rating (Note 7)

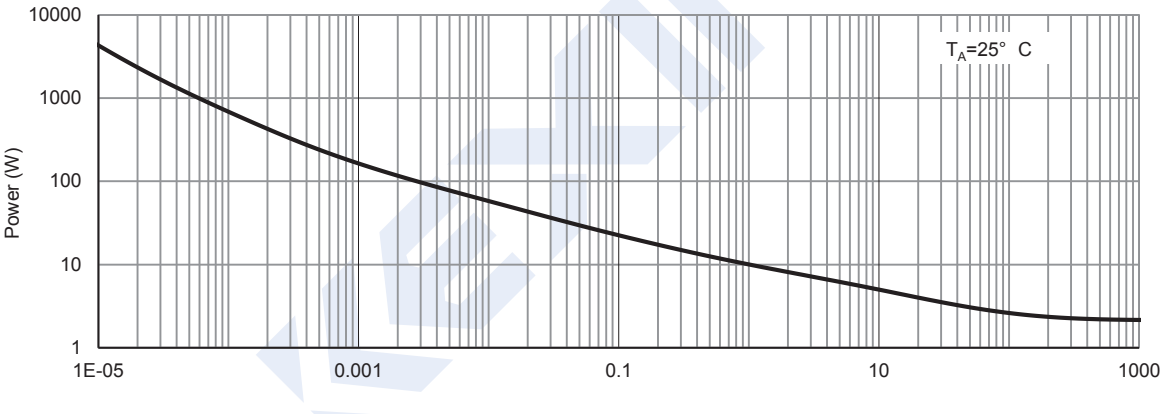


Figure 14: Single Pulse Power Rating Junction-to-Ambient (Note 8)

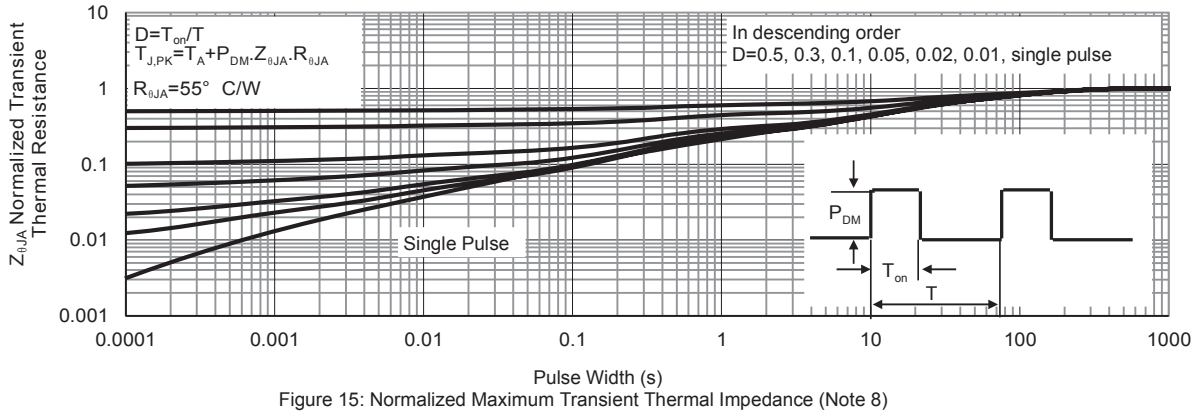


Figure 15: Normalized Maximum Transient Thermal Impedance (Note 8)

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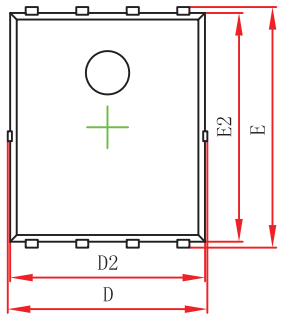
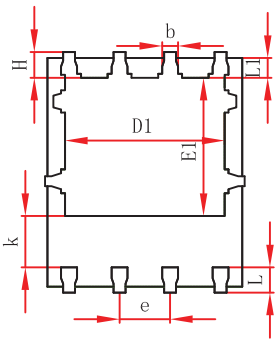
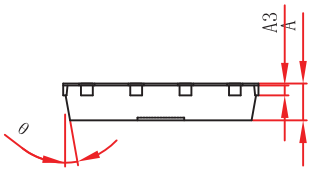
■ PDFN5x6-8 Package Outline Dimensions



Top View



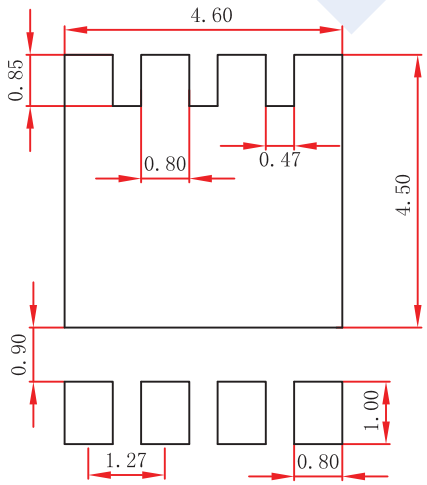
Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

■ PDFN5x6-8 Suggested Pad Layout



Note:

1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.