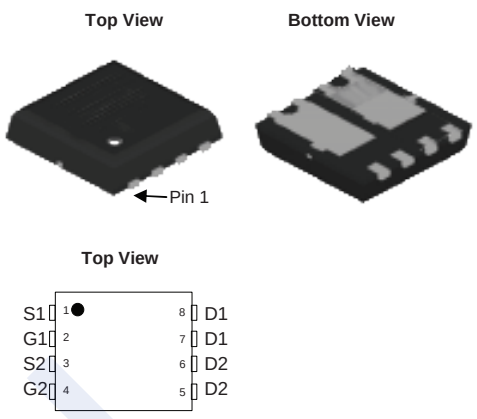
Dual N-Channel MOSFET

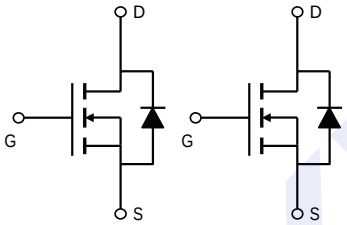
2KK5119DFN

PDFN3.3x3.3-8A



■ Features

- $V_{DS\ (V)}$ = 30 V
- I_D = 40 A
- $R_{DS(ON)}$ (at V_{GS} = 10 V) < 12 mΩ
- $R_{DS(ON)}$ (at V_{GS} = 4.5 V) < 18 mΩ



■ 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}	±20	
Continuous Drain Current (Note 1, 3)	T_A=25℃	I_D	40	A
	T_A=100℃		24	
Pulsed Drain Current (Note 2)		I_{DM}	120	
Power Dissipation	T_A=25℃	P_D	25	W
	T_A=100℃		9	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any givenapplication depends on the user's specific board design.
2. Repetitive rating, pulse width limited by junction temperature.
3. The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250 μA, V_{GS} = 0V	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30 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	1.0	1.5	2.2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 20 A	8	10	12	mΩ
		V_{GS} = 4.5 V, I_D = 15 A	12	15	18	
Forward Transconductance	g_{FS}	V_{DS} = 5 V, I_D = 20 A	20			S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz		740		pF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			90		
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DS} = 15 V, I_D = 20 A		21		nC
Gate Source Charge	Q_{gs}			6.5		
Gate Drain Charge	Q_{gd}			4.2		
Switching Characteristics (Note 4)						
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = 10V, I_D = 20 A , V_{DS} = 15 V, R_{GEN} = 2.7 Ω		6		ns
Turn-On Rise Time	t_r			4		
Turn-Off DelayTime	$t_{d(off)}$			18		
Turn-Off Fall Time	t_f			5		
Drain-Source Diode Characteristics (Note 2,3)						
Maximum Body-Diode Continuous Current	I_S				40	A
Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 20 A		0.78	1.2	V

Notes:

1. Repetitive rating, pulse width limited by 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	K5119 KA***

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■ Typical Characterisitics (T_A = 25 °C unless otherwise noted)

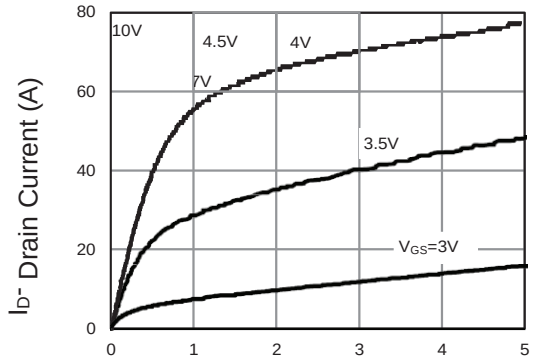

Figure 1 Output Characteristics

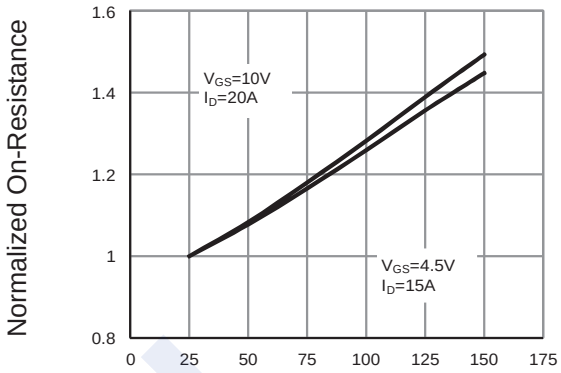

Figure 4 Rdson-Junction Temperature

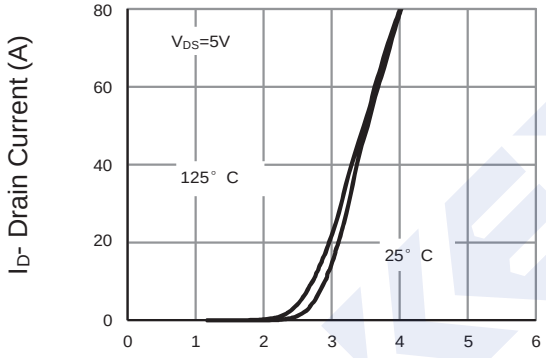

Figure 2 Transfer Characteristics

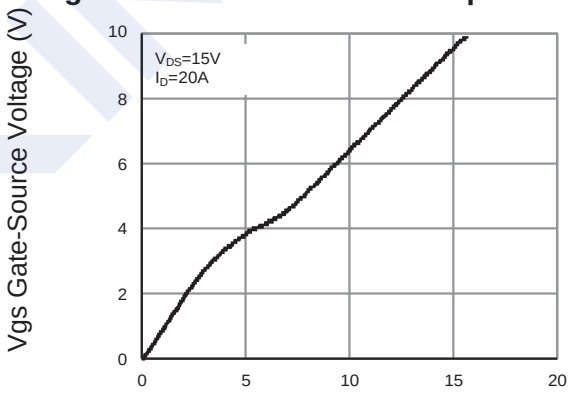

Figure 5 Gate Charge

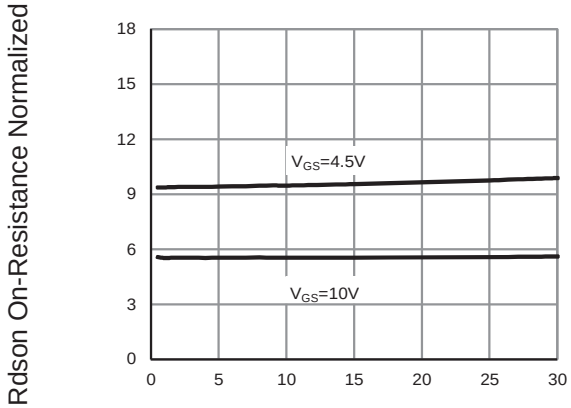

Figure 3 Rdson- Drain Current

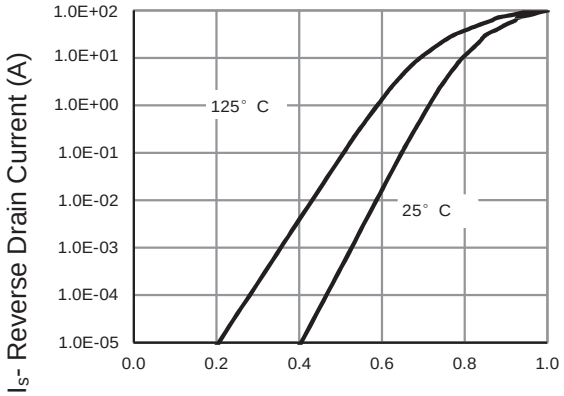

Figure 6 Source- Drain Diode Forward

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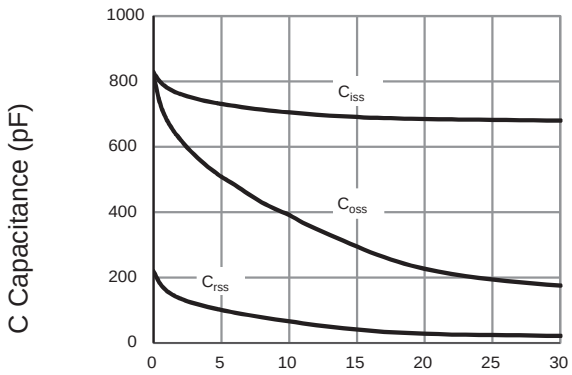

Figure 7 Capacitance vs Vds

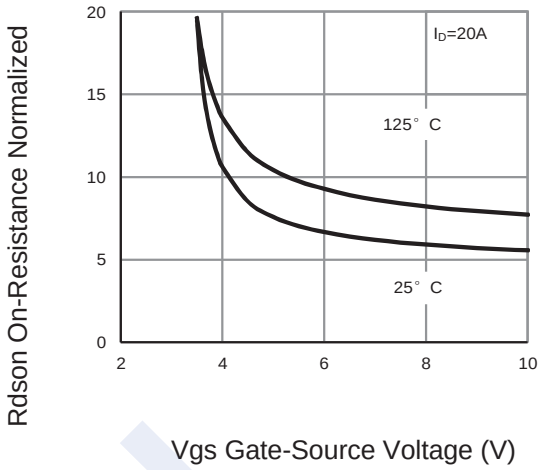

Figure 9: On-Resistance vs. Gate-Source Voltage

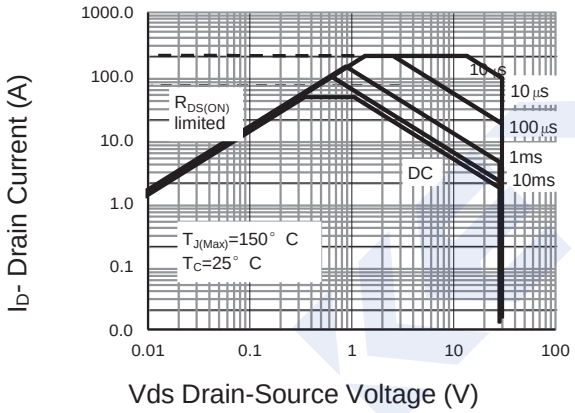

Figure 8 Safe Operation Area

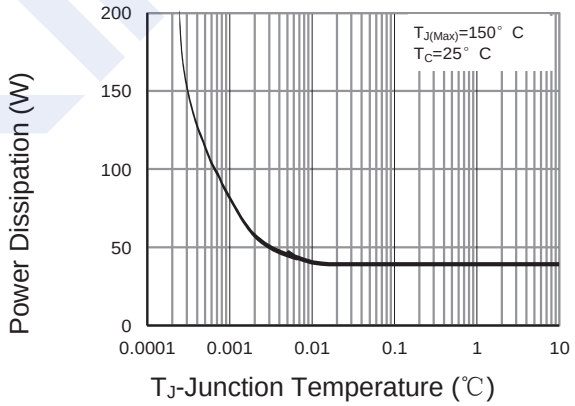

Figure 10 Power De-rating

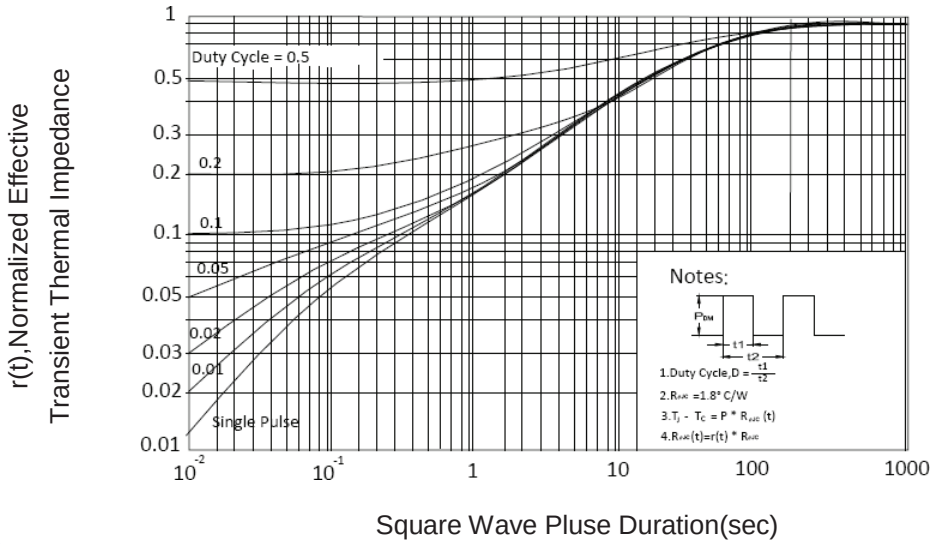

Figure 11 Normalized Maximum Transient Thermal Impedance

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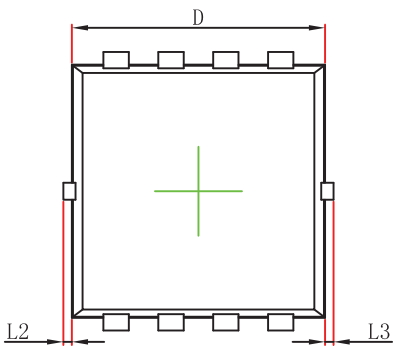
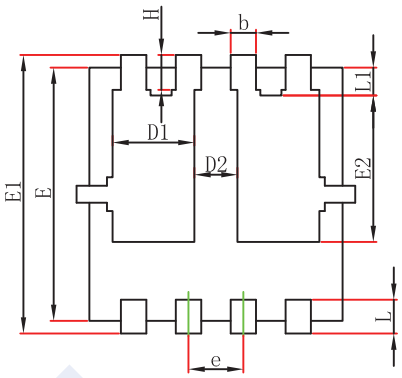
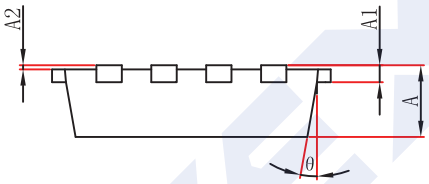
■ **PDFN3.3x3.3-8A Package Outline Dimensions**



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	0.935	1.135	0.037	0.045
D2	0.280	0.480	0.011	0.019
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°