N-Channel MOSFET

2KK5047DFN

PDFN5x6-8

■ Features

● $V_{DS (V)}$ = 25 V

● I_D = 100 A

● $R_{DS(ON)}$ (at V_{GS} = 10 V) = 3.1 mΩ (typ.)

● $R_{DS(ON)}$ (at V_{GS} = 4.5 V) = 4.1 mΩ (typ.)

(D) (D) (D) (D)
8   7   6   5

1   2   3   4
(S) (S) (S) (G)
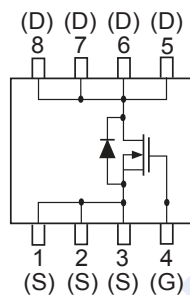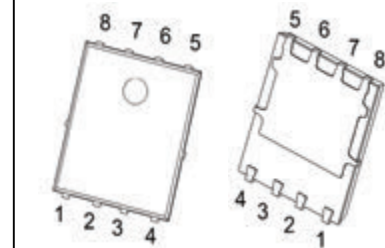
■ Absolute Maximum Ratings (Tc = 25℃ unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	25	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current	Tc = 25℃	I_D	100	A
	(Note 1)		24	
Pulsed Drain Current	(Note 2)	I_{DM}	156	
Single Pulse Avalanche Energy	(Note 3)	E_{AS}	106	mJ
Thermal Resistance.Junction- to-Ambient	(Note 4, 5)	$R_{θJA}$	51	℃/W
Thermal Resistance.Junction- to-Case	(Note 4)	$R_{θJC}$	2.6	
Power Dissipation	(Note 1)	P_D	3.1	W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1. $R_{θJA}$ = 41℃/W on 1in^2 Cu (2 oz.) on 0.060" thick FR4 PCB.

2. Pulse width ≤300ms, duty cycle ≤2%.

3. I_D = 46A, L = 0.1mH, R_G = 25Ω.

4. $R_{θJC}$ is determined with the device mounted on a 1 inch square 2 oz. Cu pad on a 1.5 × 1.5 in .060 inch thick FR4 board. $R_{θJC}$ is specified by design while $R_{θJC}$ is determined by the user's board design.

5. Device mounted on FR4 Material with 1 inch^2 of 2 oz. Cu.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BVDSS	ID = 250 µA, VGS = 0V	25			V
Zero Gate Voltage Drain Current	IDSS	VDS = 20 V, VGS = 0 V			1	µA
Gate to Source Leakage Current	IGSS	VDS = 0 V, VGS = ±12 V			±100	nA
Gate to Source Threshold Voltage	VGS(th)	VDS = VGS , ID = 250µA	1.2	1.6	1.9	V
Static Drain-Source On-Resistance	RDS(On)	VGS = 10 V, ID = 24 A		3.1	3.9	mΩ
		VGS = 4.5 V, ID = 24 A		4.1	5.6	
Forward Transconductance	gFS	VDS = 15 V, ID = 24 A		95		S
Dynamic Characteristics						
Input Capacitance	Ciss	VGS = 0 V, VDS = 12.5 V, f = 1 MHz		1370	1780	pF
Output Capacitance	Coss			1060	1380	
Reverse Transfer Capacitance	Crss			84	109	
Gate Resistance	Rg	f = 1 MHz		0.9	1.8	Ω
Total Gate Charge (4.5V)	Qg	VDS = 12.5 V, ID = 24 A		9	11.7	nC
Gate Source Charge	Qgs			2.5		
Gate Drain Charge	Qgd			3.5		
Output Charge	QOSS	VDS = 13.1V, VGS = 0V		21		
Turn-On DelayTime	td(on)	VGS = 4.5 V, VDD = 12.5 V, ID = 24A, RG = 5 Ω		9.1		ns
Turn-On Rise Time	tr			15.9		
Turn-Off DelayTime	td(off)			10.7		
Turn-Off Fall Time	tf			5.7		
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time	trr	VDD = 13.1V, IF = 24A, dI/dt = 300 A/µs,		28		ns
Body Diode Reverse Recovery Charge	Qrr			32		nC
Diode Forward Voltage	VSD	VGS = 0 V, IS = 24 A		0.85	1	V

■ Marking

Marking	K5047 KC***

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■ Typical Characterisitics T_A = 25℃ unless othewise specified
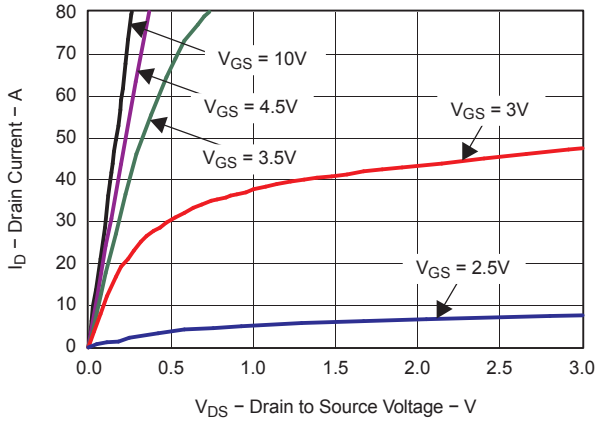

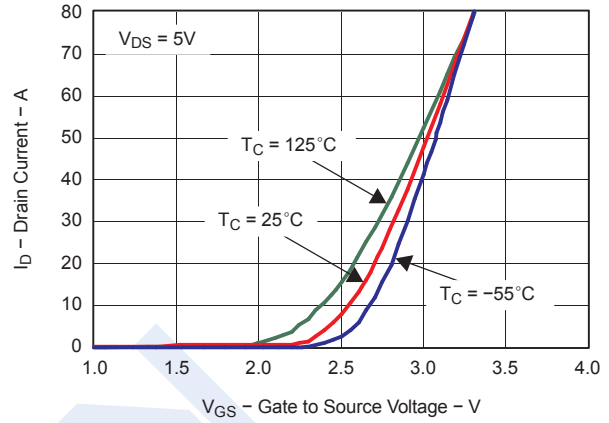Figure 1. Saturation Characteristics
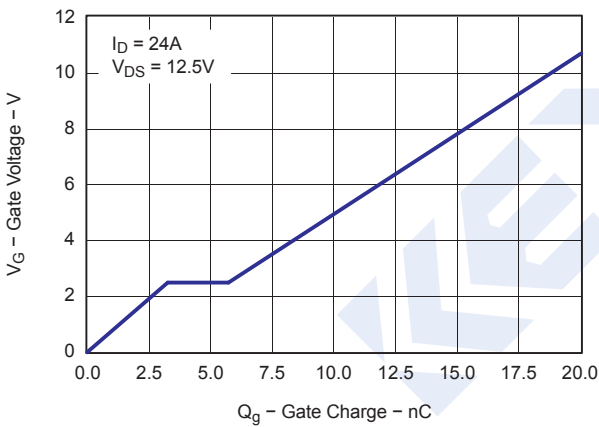

Figure 2. Transfer Characteristics
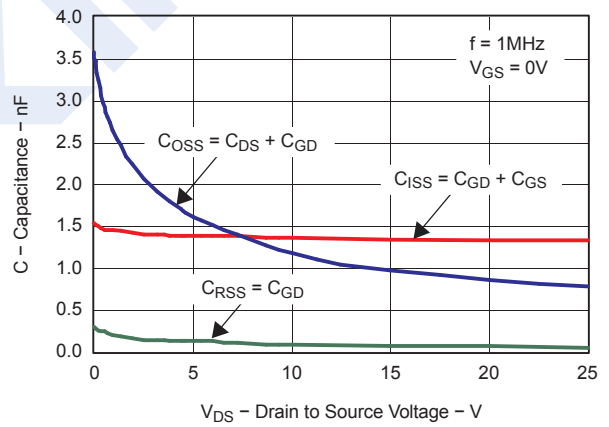

Figure 3. Gate Charge
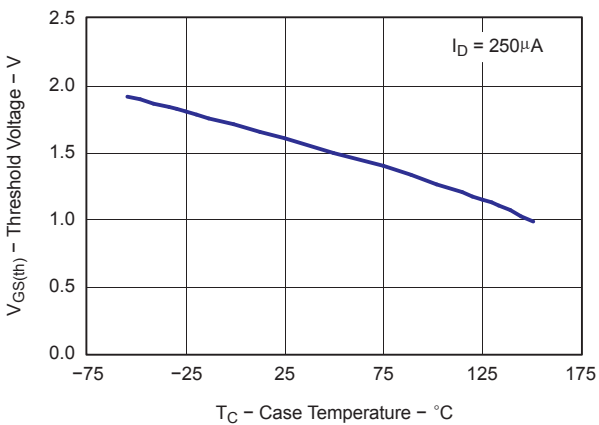

Figure 4. Capacitance
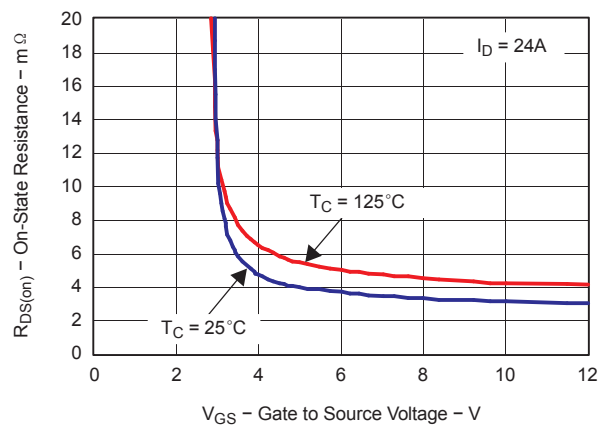

Figure 5. Threshold Voltage vs. Temperature

Figure 6. On Resistance vs. Gate Voltage

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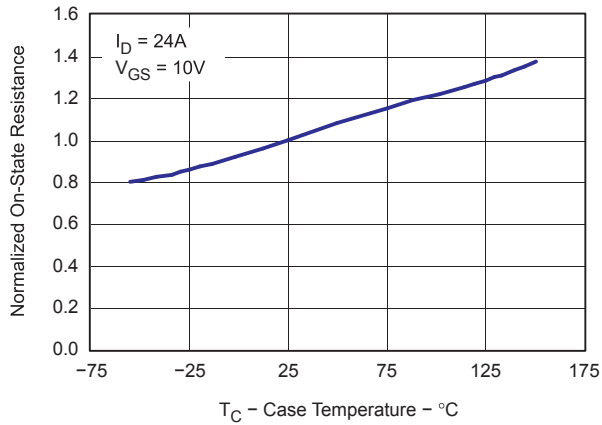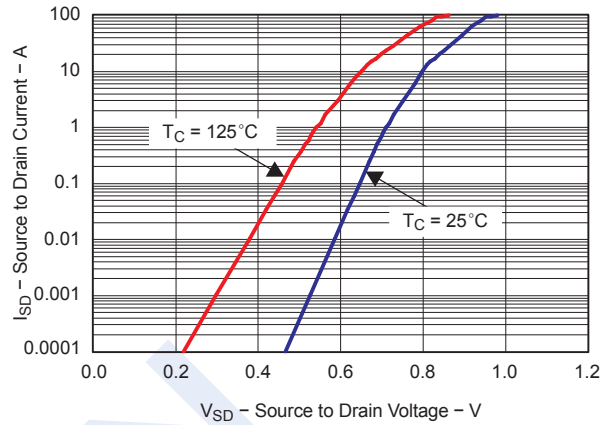

Figure 7. On Resistance vs. Temperature
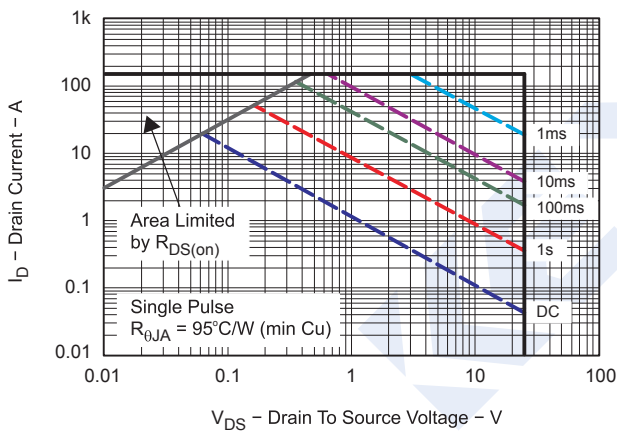

Figure 8. Typical Diode Forward Voltage

Figure 9.   Maximum Safe Operating Area

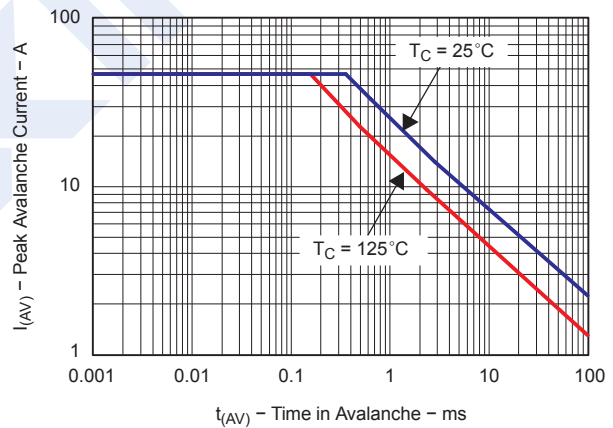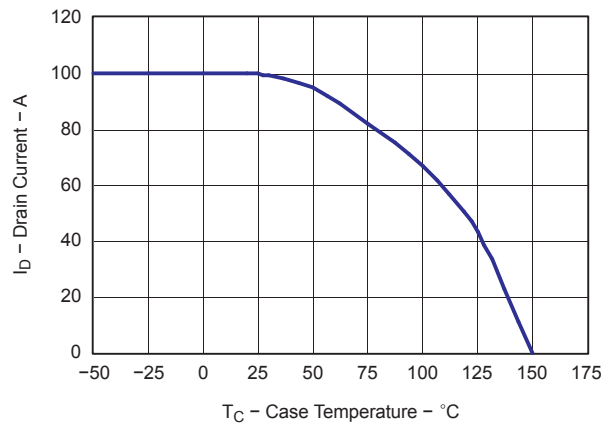**Figure 10. Single Pulse Unclamped Inductive Switching**
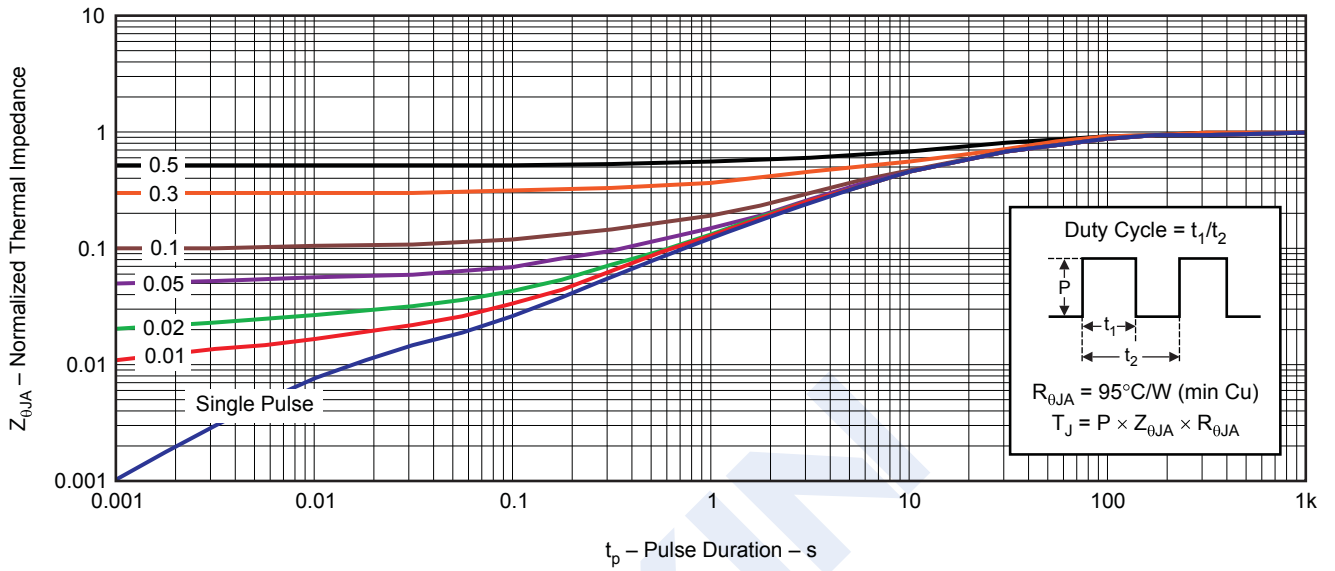

Figure 11. Maximum Drain Current vs. Temperature
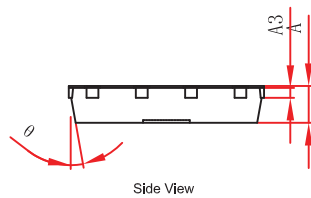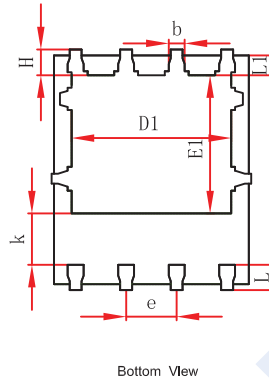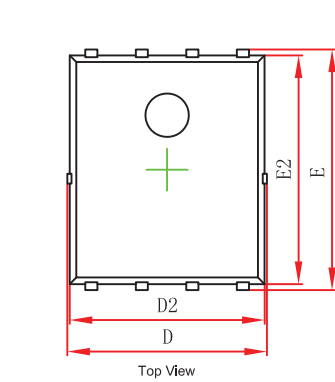
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Figure 12. Transient Thermal Impedance

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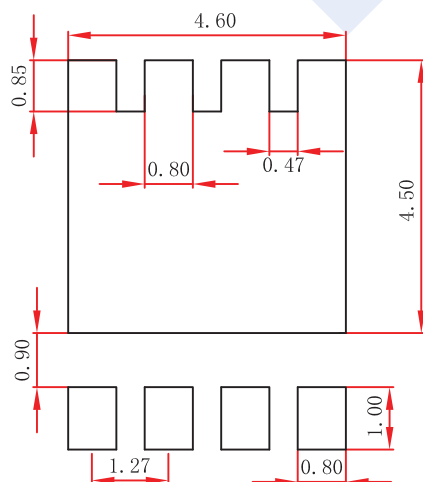
Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.