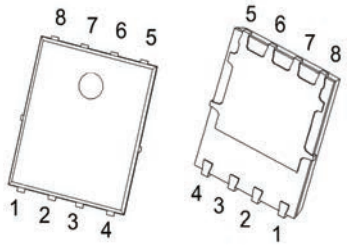
N-Channel MOSFET

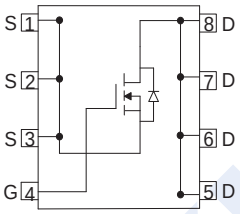
2KK5096DFN

PDFN5x6-8



■ Features

- $V_{DS\ (V)}$ = 40 V
- I_D = 100 A
- $R_{DS(ON)}$ (at V_{GS} = 10 V) < 3.5 mΩ
- $R_{DS(ON)}$ (at V_{GS} = 4.5 V) < 5.3 mΩ
- Split Gate Trench Technology
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25℃	I_D	100	A
	T_C = 100℃		65	
Pulsed Drain Current (Note 1)		I_{DM}	400	
Power Dissipation	T_C = 25℃	P_D	69	W
	T_A = 25℃		2.5	
Single Pulse Avalanche Current (Note 2)		I_{AS}	50	A
Single Pulse Avalanche Energy (Note 2)		E_{AS}	65	mJ
Thermal Resistance, Junction- to-Ambient		$R_{\theta JA}$	50	℃/W
Thermal Resistance, Junction- to-Case		$R_{\theta JC}$	1.8	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition : T_j=25℃,V_{DD}=25V,V_G=10V,L=1mH,,I_{AS}=30A

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■ Electrical Characteristics (T_J = 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	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 40 V, V_{GS} = 0 V			1	μA
		V_{DS} = 40 V, V_{GS} = 0 V, T_J=125℃			100	
Gate to Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
On Characteristics (Note 1)						
Gate to Source 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} = 10 V, I_D = 10 A			3.5	mΩ
		V_{GS} = 4.5 V, I_D = 10 A			5.3	
Forward Transconductance	g_{FS}	V_{DS} = 10 V, I_D = 10 A		21		S
Dynamic Characteristics (Note 1)						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 20 V, f = 1 MHz		1560		pF
Output Capacitance	C_{oss}			565		
Reverse Transfer Capacitance	C_{rss}			38		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz		3		Ω
Switching Characteristics (Note 1)						
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DD} = 20 V, I_D = 20 A		31		nC
Gate Source Charge	Q_{gs}			6		
Gate Drain Charge	Q_{gd}			3.8		
Turn-On DelayTime	$t_{d(on)}$	V_{DD} = 20V, V_{GS} = 10V, R_L = 1Ω, R_G = 3Ω		7		ns
Turn-On Rise Time	t_r			2.8		
Turn-Off DelayTime	$t_{d(off)}$			24		
Turn-Off Fall Time	t_f			3.9		
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time	t_{rr}	I_S = 10A, dI/dt = 100 A/μs		32		ns
Body Diode Reverse Recovery Charge	Q_{rr}			35		nC
Maximum Body-Diode Continuous Current	I_S	V_G=V_D=0V , Force Current			50	A
Diode Forward Voltage (Note 1)	V_{SD}	V_{GS} = 0 V, I_S = 10 A			1.2	V

Notes:

1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

■ Marking

Marking	K5096 KC***

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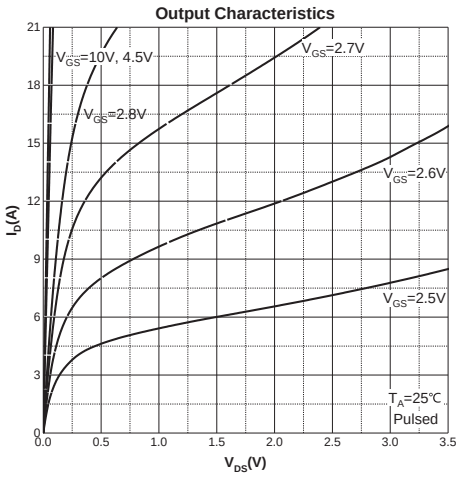
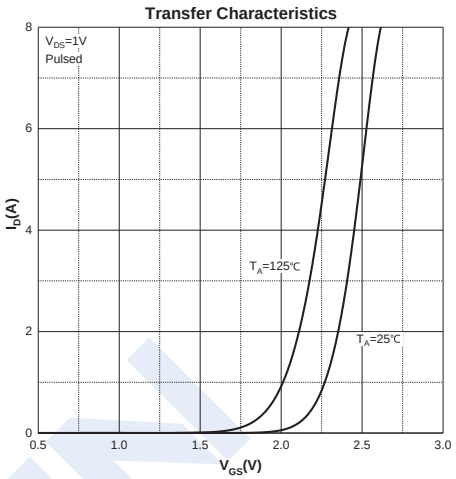
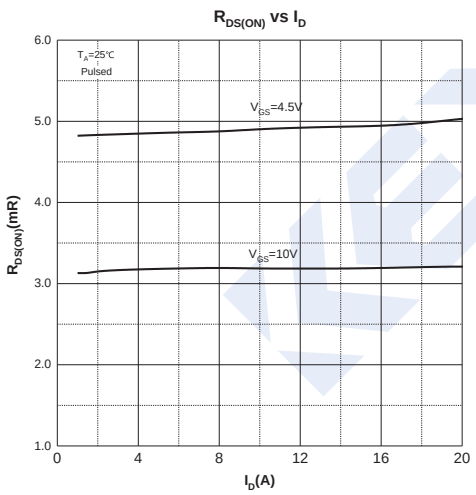
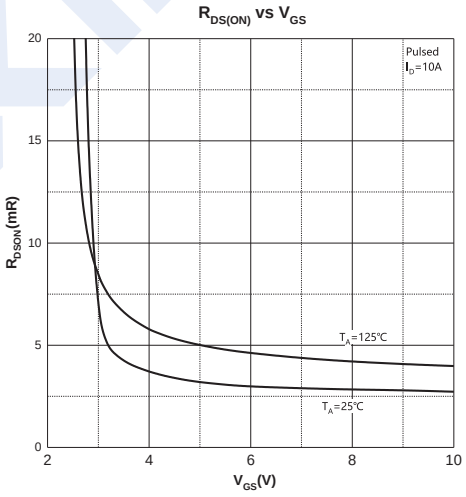
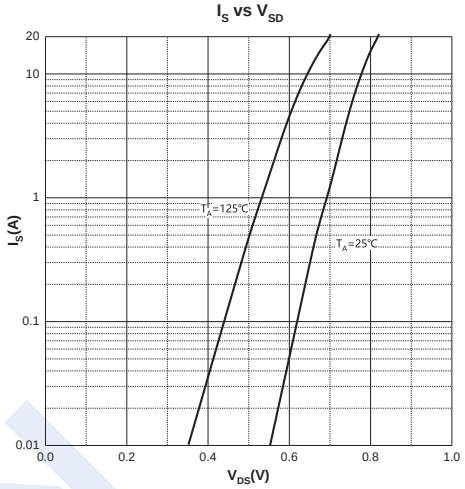
■ Typical Electrical Characteristics

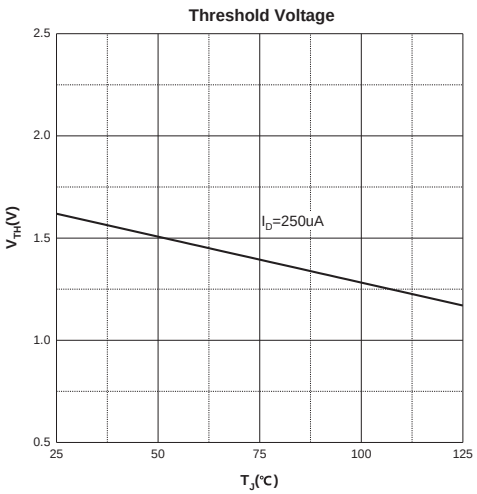












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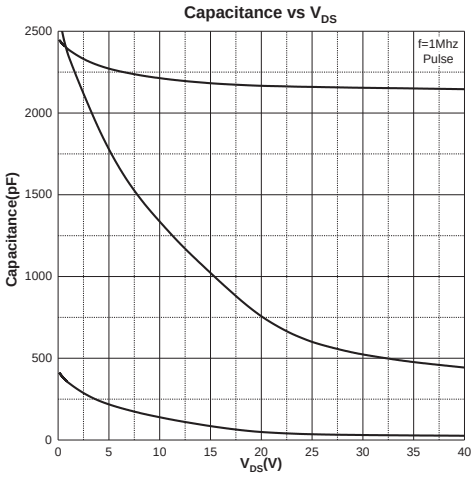

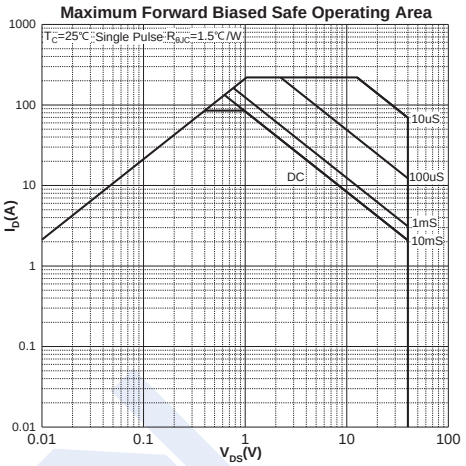

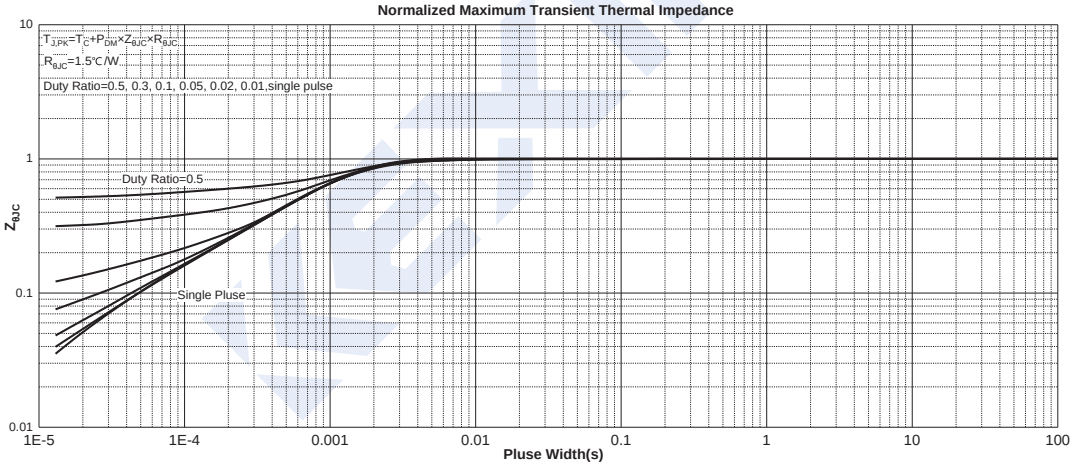

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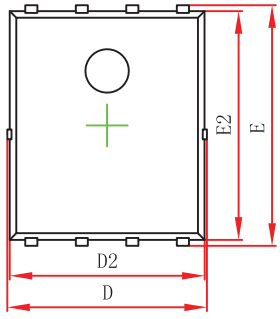
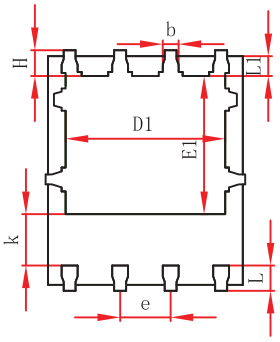
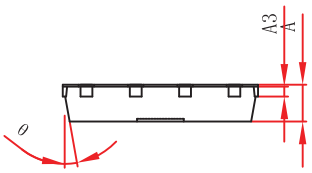
■ PDFN5x6-8 Package Outline Dimensions



Top View



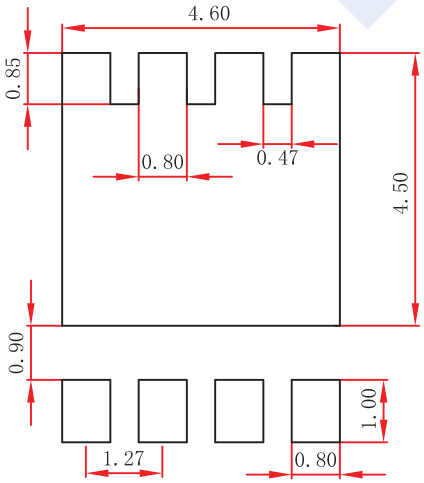
Bottom View



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.