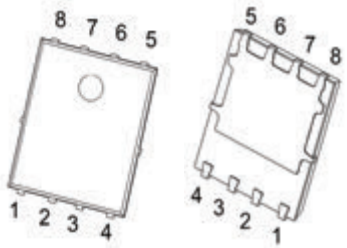
N-Channel MOSFET

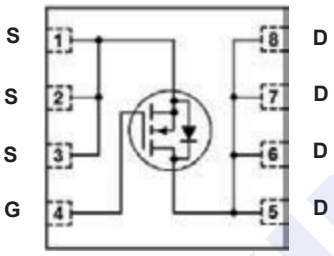
2KK5098DFN

PDFN5x6-8



■ Features

- $V_{DS\ (V)}$ = 80 V
- I_D = 23 A
- $R_{DS(ON)}$ (at V_{GS} = 10 V) < 34 mΩ



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25℃	I_D	23	A
	T_C = 100℃		15	
Pulsed Drain Current (Note 1)		I_{DM}	92	
Power Dissipation		P_D	32	W
Single Pulse Avalanche Energy (Note 2)		E_{AS}	20	mJ
Thermal Resistance.Junction- to-Ambient (Note 3)		$R_{\theta JA}$	50	℃/W
Thermal Resistance.Junction- to-Case (Note 3)		$R_{\theta JC}$	3.9	℃/W
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. E_{AS} condition : I_D=12A, R_g=25Ω
3. Surface Mounted on FR4 Board, t ≤ 10 sec.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250 μA, V_{GS} = 0V	80			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80 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	2		3.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 12 A			34	mΩ
		V_{GS} = 6 V, I_D = 6 A			66	
Forward Transconductance	g_{FS}	V_{DS} = 10 V, I_D = 12 A	8			S
Dynamic Characteristics (Note 1)						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 40 V, f = 1 MHz		564		pF
Output Capacitance	C_{oss}			156		
Reverse Transfer Capacitance	C_{rss}			7		
Gate Resistance	R_g	f = 1 MHz		1		Ω
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = 10V, V_{DD} = 40 V, I_D = 12A, R_G = 1.6 Ω		8		ns
Turn-On Rise Time	t_r			3		
Turn-Off DelayTime	$t_{d(off)}$			11		
Turn-Off Fall Time	t_f			2		
Gate Charge Characteristics (Note 1)						
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DD} = 40 V, I_D = 12 A		6.8		nC
Gate Source Charge	Q_{gs}			2.4		
Gate Drain Charge	Q_{gd}			1.5		
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time	t_{rr}	I_F = 12A, dI/dt = 100 A/μs, T_J = 25℃		43		ns
Body Diode Reverse Recovery Charge	Q_{rr}			41		nC
Maximum Body-Diode Continuous Current	I_S				23	A
Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 12 A		0.9	1.2	V

Notes:

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

■ Marking

Marking	K5098 KC****

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■ Typical Electrical and Thermal Characteristics

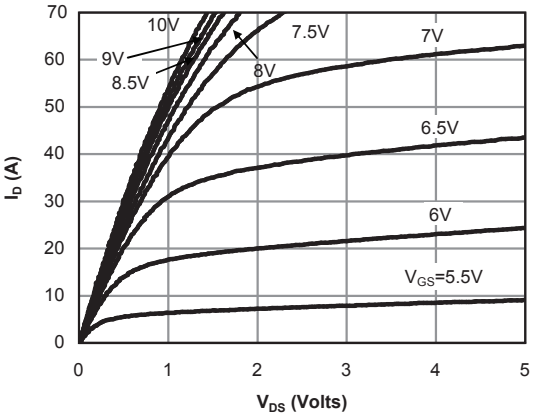

Fig 1: On-Region Characteristics

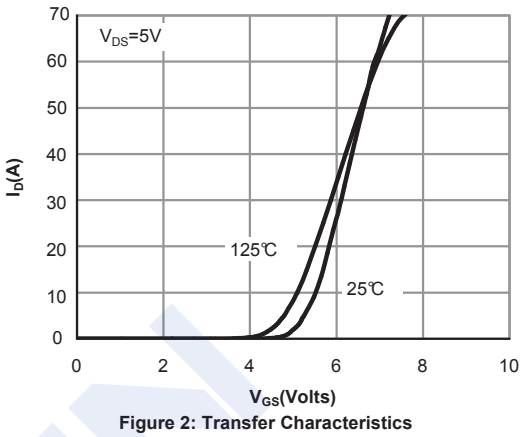

Figure 2: Transfer Characteristics

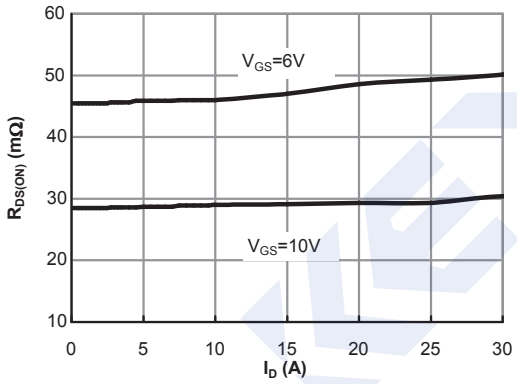

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

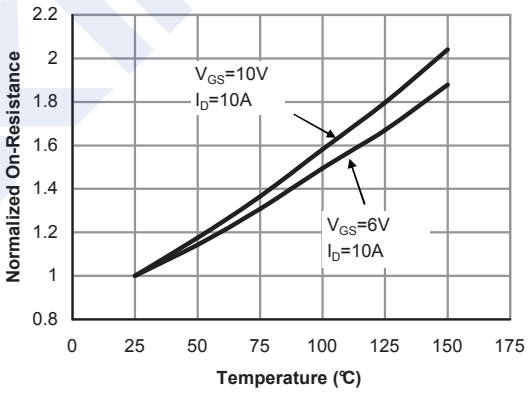

Figure 4: On-Resistance vs. Junction Temperature

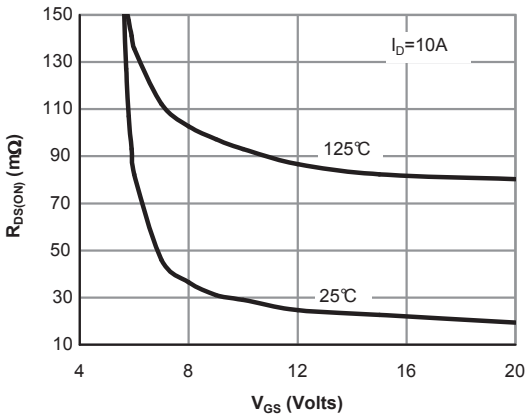

Figure 5: On-Resistance vs. Gate-Source Voltage

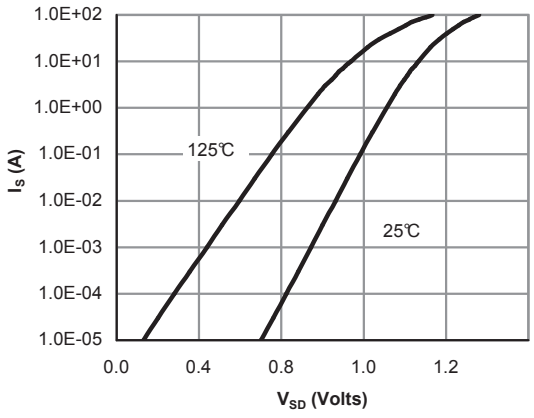

Figure 6: Body-Diode Characteristics

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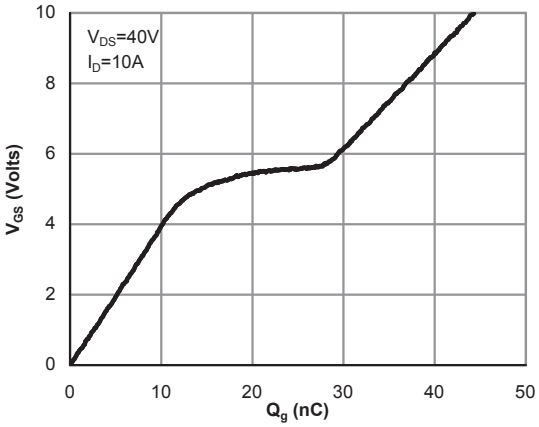

Figure 7: Gate-Charge Characteristics

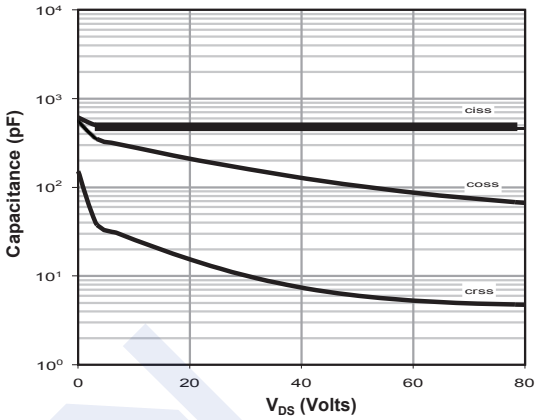

Figure 8: Capacitance Characteristics

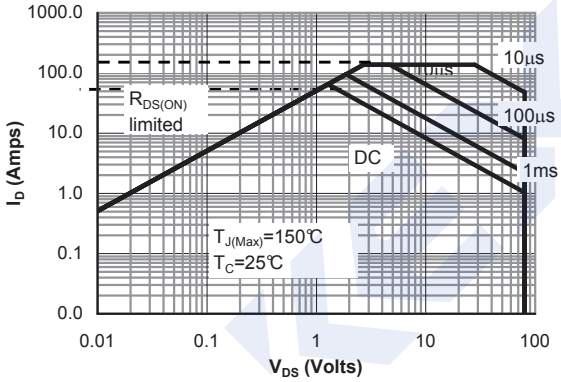

Figure 9: Maximum Forward Biased Safe Operating Area

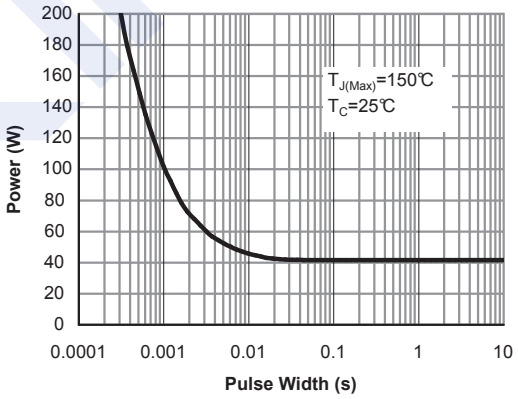

Figure 10: Single Pulse Power Rating Junction-to-Case

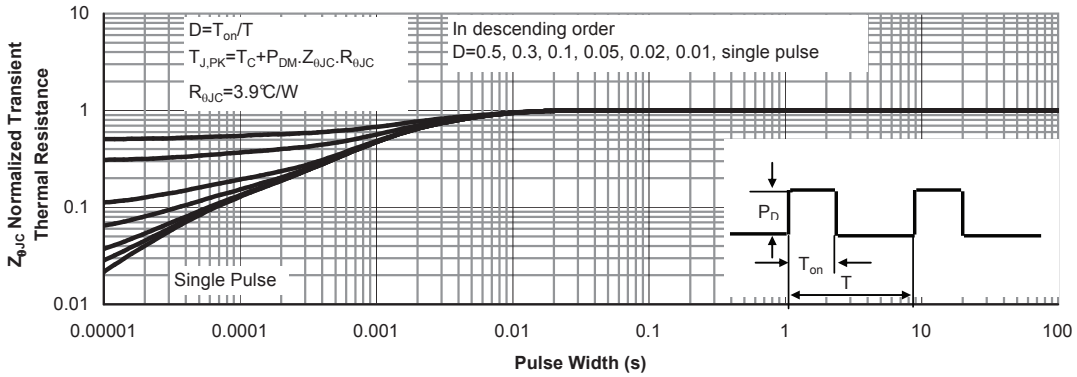

Figure 11: Normalized Maximum Transient Thermal Impedance

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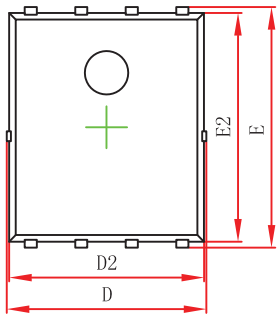
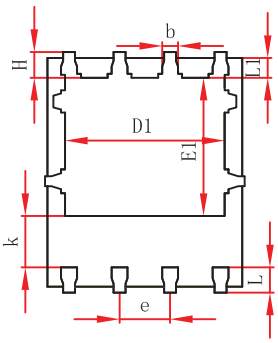
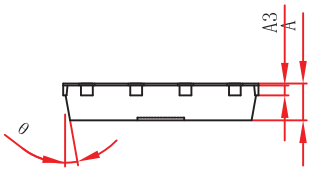
■ PDFN5x6-8 Package Outline Dimensions



Top View



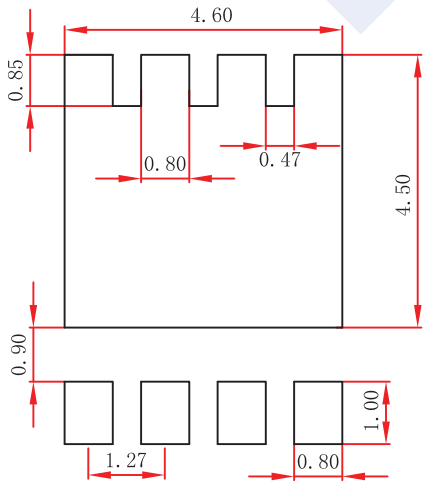
Bottom View



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°

■ DFN5x6-8(PDFNWB5x6-8L) Suggested Pad Layout



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