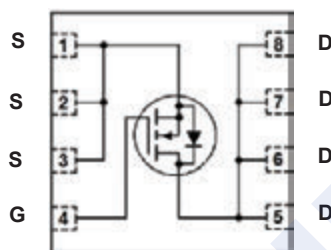


## N-Channel MOSFET

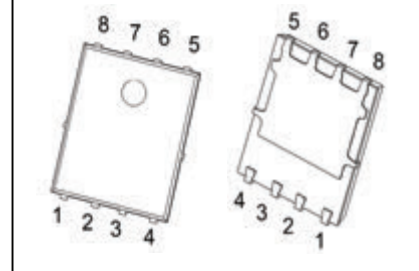
## 2KK5098DFN

## ■ Features

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



PDFN5x6-8

■ Absolute Maximum Ratings ( $T_j = 25^\circ C$  unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	80	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
Continuous Drain Current	$I_D$	$T_c = 25^\circ C$	23
		$T_c = 100^\circ C$	15
Pulsed Drain Current (Note 1)	$I_{DM}$	92	A
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	$^\circ C/W$
Thermal Resistance.Junction- to-Case (Note 3)	$R_{\theta JC}$	3.9	$^\circ C/W$
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to 150	

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition :  $I_D=12A$ ,  $R_g=25\Omega$
3. Surface Mounted on FR4 Board,  $t \leq 10$  sec.

## N-Channel MOSFET

## 2KK5098DFN

■ Electrical Characteristics (T<sub>c</sub> = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> = 250 μA, V <sub>GS</sub> = 0V	80			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 80 V, V <sub>GS</sub> = 0 V			1	μA
Gate to Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V			±100	nA
Gate to Source Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	2		3.5	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 12 A			34	mΩ
		V <sub>GS</sub> = 6 V, I <sub>D</sub> = 6 A			66	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 12 A	8			S
<b>Dynamic Characteristics (Note 1)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0 V, V <sub>DS</sub> = 40 V, f = 1 MHz		564		pF
Output Capacitance	C <sub>oss</sub>			156		
Reverse Transfer Capacitance	C <sub>rss</sub>			7		
Gate Resistance	R <sub>g</sub>	f = 1 MHz		1		Ω
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 40 V, I <sub>D</sub> = 12A, R <sub>G</sub> = 1.6 Ω		8		ns
Turn-On Rise Time	t <sub>r</sub>			3		
Turn-Off Delay Time	t <sub>d(off)</sub>			11		
Turn-Off Fall Time	t <sub>f</sub>			2		
<b>Gate Charge Characteristics (Note 1)</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 40 V, I <sub>D</sub> = 12 A		6.8		nC
Gate Source Charge	Q <sub>gs</sub>			2.4		
Gate Drain Charge	Q <sub>gd</sub>			1.5		
<b>Drain-Source Diode Characteristics</b>						
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 12A, di/dt = 100 A/μs, T <sub>J</sub> = 25°C		43		ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			41		nC
Maximum Body-Diode Continuous Current	I <sub>S</sub>				23	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 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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## N-Channel MOSFET

### 2KK5098DFN

#### ■ Typical Electrical and Thermal Characteristics

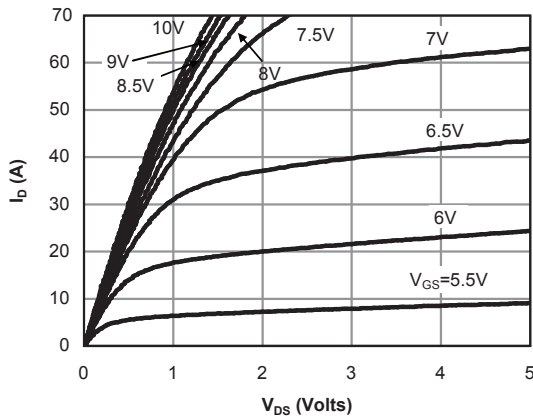


Fig 1: On-Region Characteristics

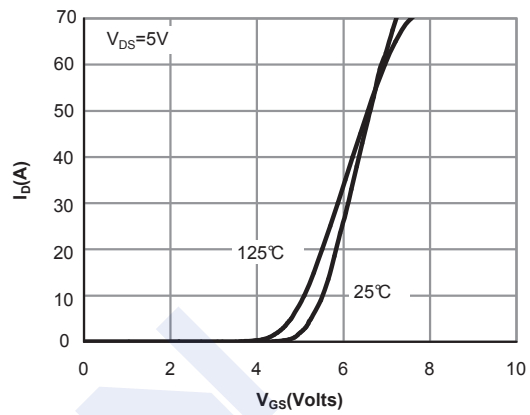


Figure 2: Transfer Characteristics

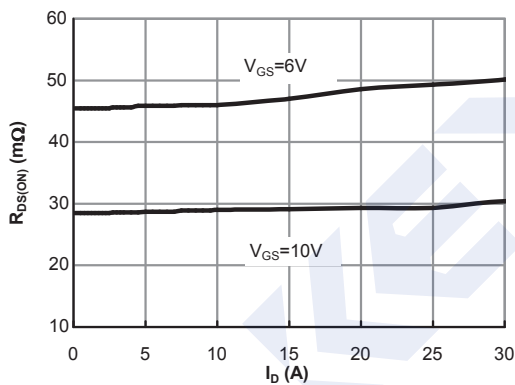


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

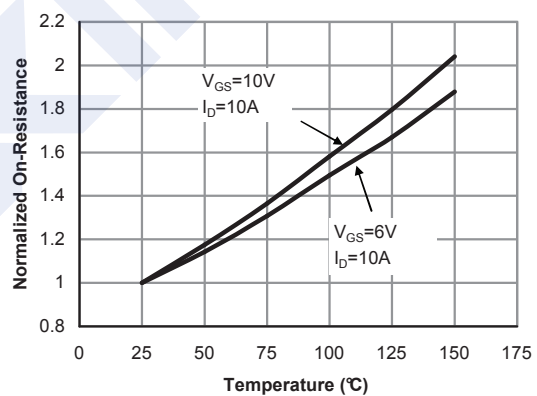


Figure 4: On-Resistance vs. Junction Temperature

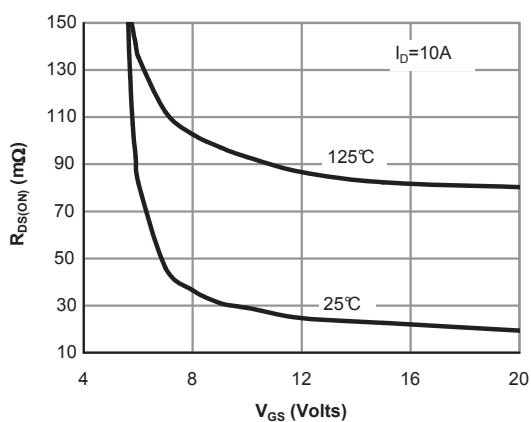


Figure 5: On-Resistance vs. Gate-Source Voltage

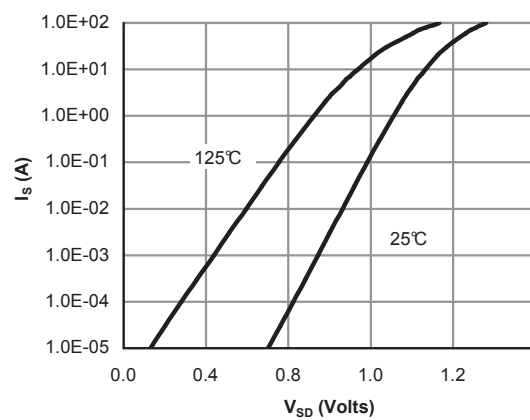


Figure 6: Body-Diode Characteristics

# N-Channel MOSFET

## 2KK5098DFN

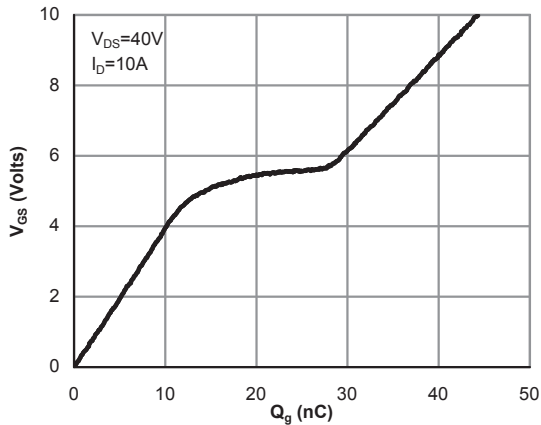


Figure 7: Gate-Charge Characteristics

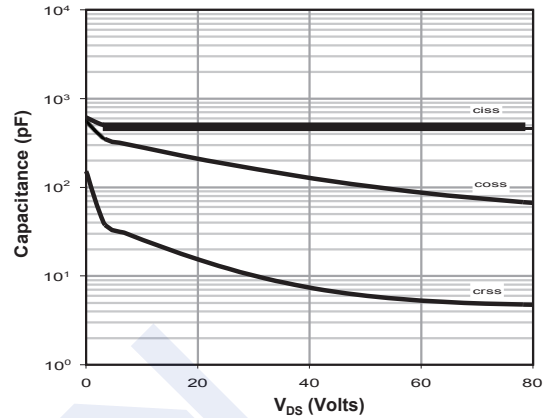


Figure 8: Capacitance Characteristics

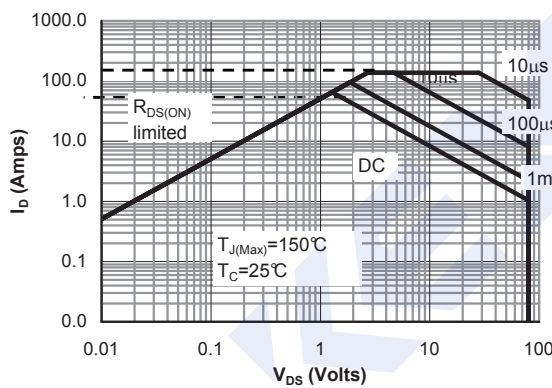


Figure 9: Maximum Forward Biased Safe Operating Area

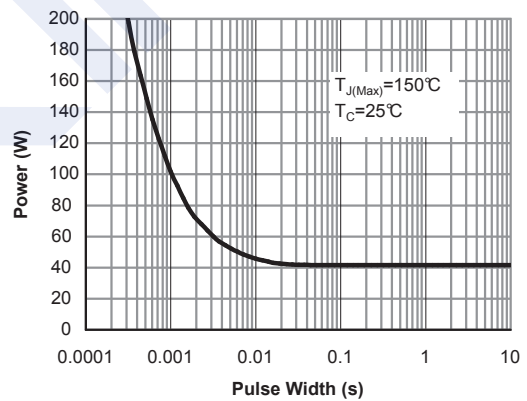


Figure 10: Single Pulse Power Rating Junction-to-Case

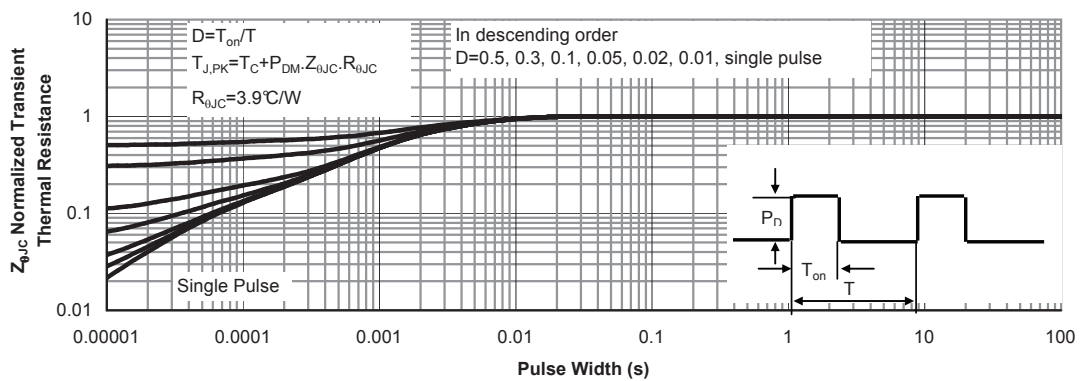
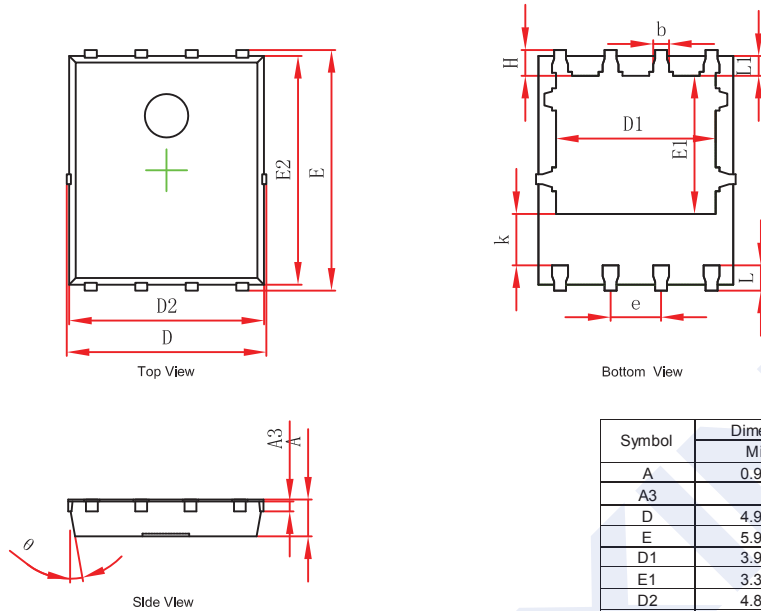


Figure 11: Normalized Maximum Transient Thermal Impedance

## N-Channel MOSFET

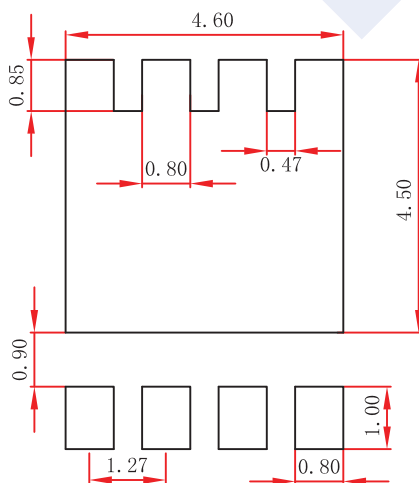
### 2KK5098DFN

#### PDFN5x6-8 Package Outline Dimensions



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
$\theta$	10°	12°	10°	12°

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



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$
  3. The pad layout is for reference purposes only.