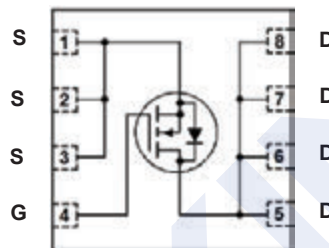


## N-Channel MOSFET

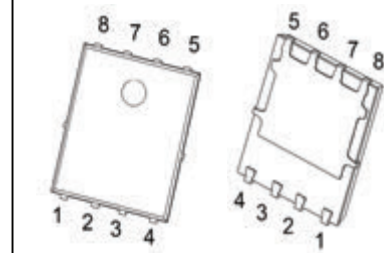
## 2KK5071DFN

## ■ Features

- $V_{DS} = 40\text{ V}$
- $I_D = 200\text{ A}$
- $I_D$  (Package limited) = 130 A
- $R_{DS(ON)} < 1.1\text{ m}\Omega$  @  $V_{GS}=10\text{V}$
- $R_{DS(ON)} < 2.0\text{ m}\Omega$  @  $V_{GS}=4.5\text{V}$
- 100% UIS Tested
- 100%  $\nabla V_{DS}$  Tested
- Low  $R_{DS(on)}$  & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery



PDFN5x6-8

■ Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	40	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Drain Current	$I_D$	200	A	
Drain Current (Note 1)	$I_D$	$T_C = 25^\circ\text{C}$		130
		$T_C = 100^\circ\text{C}$		82
Pulsed Drain Current (Note 2)	$I_{DM}$	600		
Avalanche Energy (Note 3)	EAS	144	mJ	
Power Dissipation (Note 4)	P <sub>D</sub>	$T_C = 25^\circ\text{C}$	149	W
		$T_C = 100^\circ\text{C}$	60	
Thermal Resistance, Junction- to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$	
Thermal Resistance, Junction- to-Case	$R_{\theta JC}$	0.84		
Junction Temperature	$T_J$	150	$^\circ\text{C}$	
Storage Temperature Range	$T_{stg}$	-55 to 150		

## N-Channel MOSFET

## 2KK5071DFN

■ Electrical Characteristics ( $T_J = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$I_D = 250 \mu\text{A}$ , $V_{GS} = 0\text{V}$	40			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 40\text{V}$ , $V_{GS} = 0\text{V}$			1	$\mu\text{A}$
Gate to Source Leakage Current	$I_{GSS}$	$V_{DS} = 0\text{V}$ , $V_{GS} = \pm 20\text{V}$			$\pm 100$	nA
Gate to Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$	1.2	1.8	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}$ , $I_D = 20\text{A}$		0.9	1.1	m $\Omega$
		$V_{GS} = 4.5\text{V}$ , $I_D = 20\text{A}$		1.5	2.0	
Gate Resistance	$R_g$	$f = 1\text{MHz}$ , Open drain		3.2		$\Omega$
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{V}$ , $V_{DS} = 25\text{V}$ , $f = 100\text{KHz}$		5453		pF
Output Capacitance	$C_{oss}$			1951		
Reverse Transfer Capacitance	$C_{rss}$			113		
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$	$V_{GS} = 10\text{V}$ , $V_{DS} = 40\text{V}$ , $I_D = 40\text{A}$		85.6		nC
Gate Source Charge	$Q_{gs}$			17.6		
Gate Drain Charge	$Q_{gd}$			14.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10\text{V}$ , $V_{DD} = 40\text{V}$ , $I_D = 40\text{A}$ , $R_{GEN} = 2.0\Omega$		23.9		ns
Turn-On Rise Time	$t_r$			17		
Turn-Off Delay Time	$t_{d(off)}$			80		
Turn-Off Fall Time	$t_f$			97.5		
<b>Drain-Source Diode Characteristics</b>						
Reverse Recovery Charge	$Q_{rr}$	$I_F = 40\text{A}$ , $di/dt = 100\text{A}/\mu\text{s}$		50.1		nC
Reverse Recovery Time	$t_{rr}$			71.1		ns
Maximum Body-Diode Continuous Current	$I_S$				130	A
Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0\text{V}$ , $I_S = 20\text{A}$			1.3	V

Notes:

1. The maximum current rating is package limited.
2. Repetitive rating; pulse width limited by max. junction temperature.
3.  $V_{DD} = 50\text{V}$ ,  $R_G = 25\Omega$ ,  $L = 0.3\text{mH}$ , starting  $T_J = 25^\circ\text{C}$ .
4.  $P_d$  is based on max. junction temperature, using junction-case thermal resistance.

## N-Channel MOSFET

### 2KK5071DFN

#### Typical Characteristics

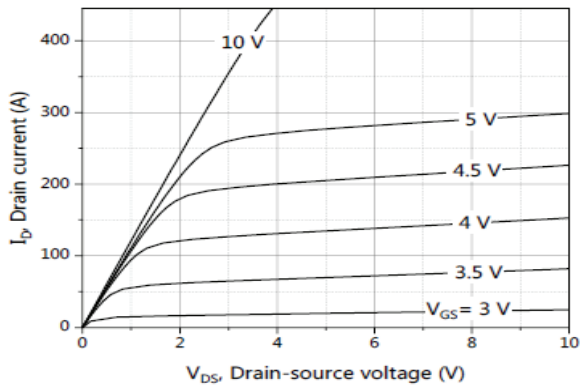


Figure1. Output Characteristics

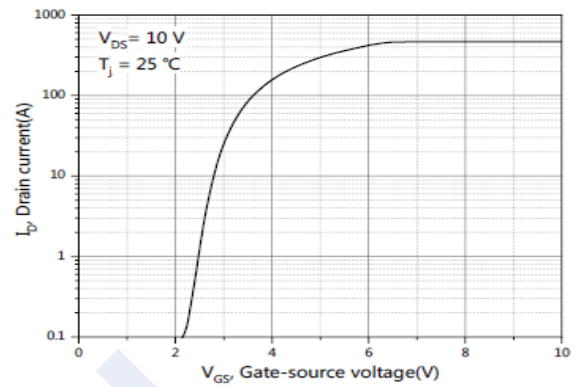


Figure2. Transfer Characteristics

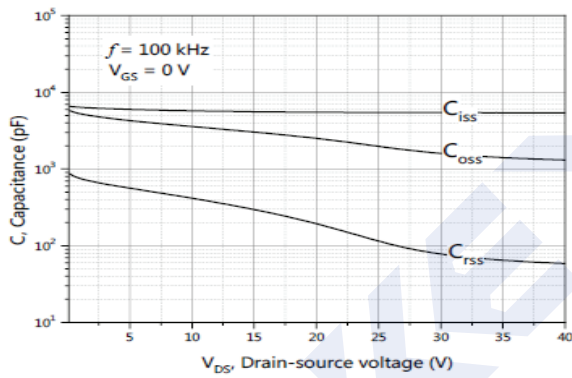


Figure3. Capacitance Characteristics

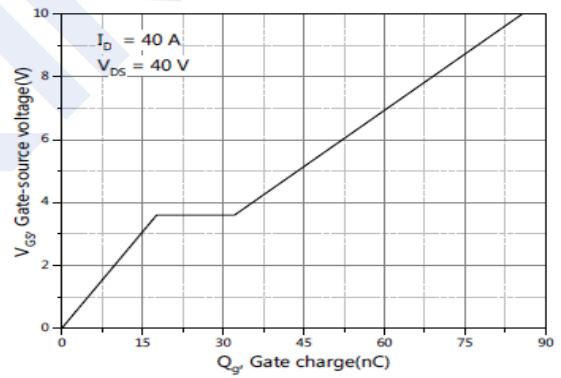


Figure4. Gate Charge

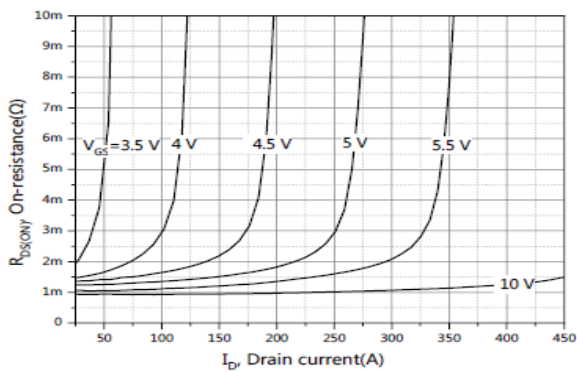


Figure5. Drain-Source on Resistance

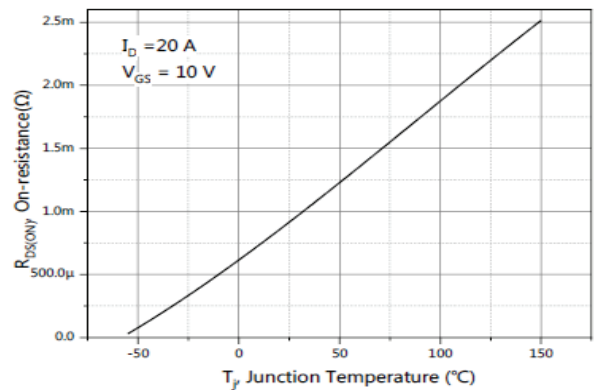


Figure6. Drain-Source on Resistance

### N-Channel MOSFET

### 2KK5071DFN

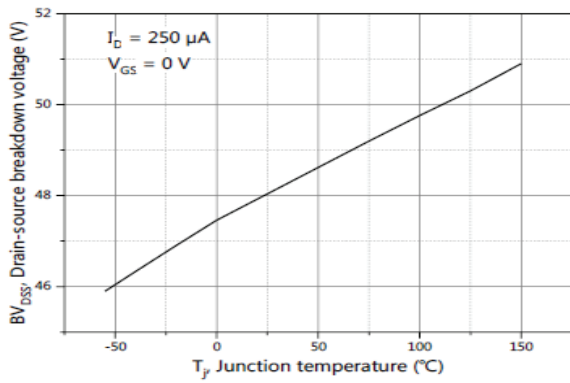


Figure7. Drain-source breakdown voltage

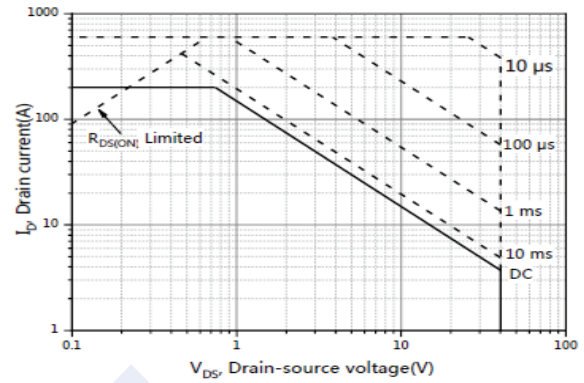


Figure8.Safe Operation Area

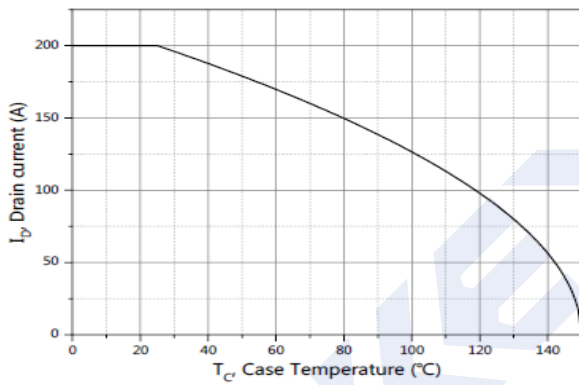


Figure9. Drain current

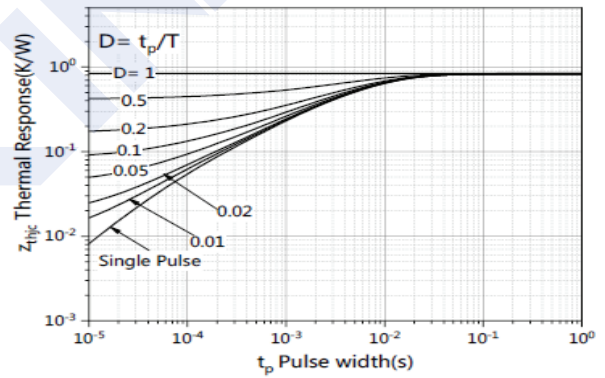
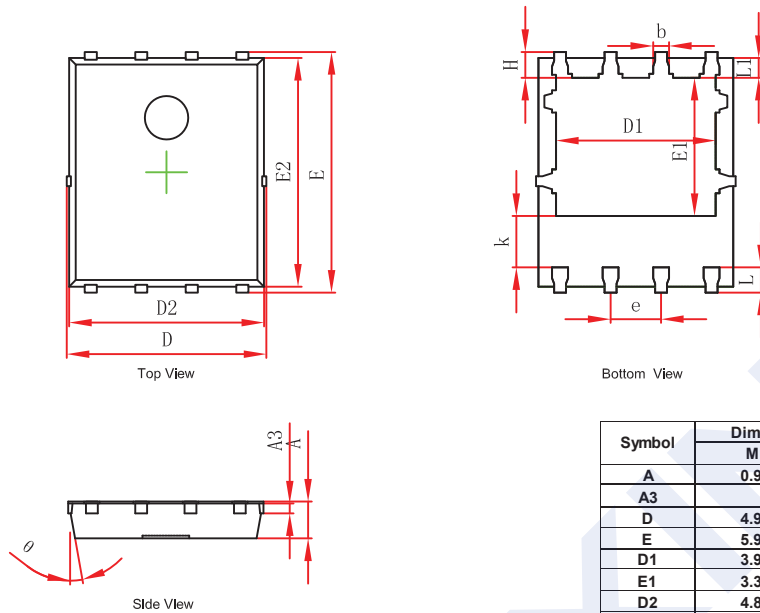


Figure10.Transient thermal impedance

## N-Channel MOSFET

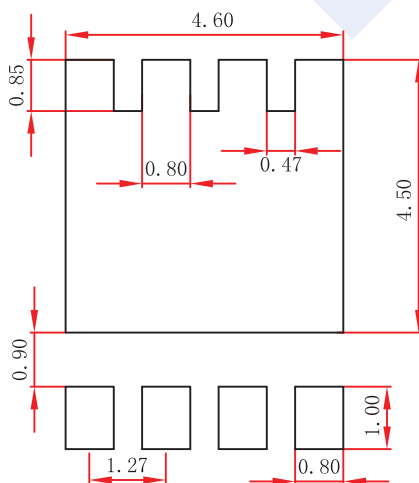
### 2KK5071DFN

#### 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°

#### PDFN5x6-8 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.