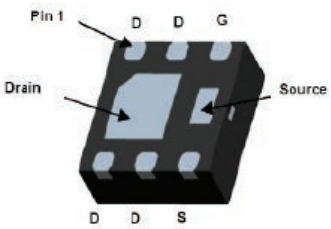
N-Channel MOSFET

2KK5089DFN

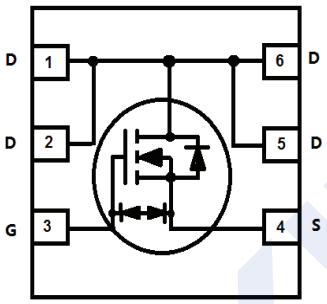
DFN2X2-6



DFN2X2-6 bottom view

■ Features

- V_{DS} = 30 V
- I_D = 10 A
- Low $R_{DS(on)}$ trench technology
- Fast Switching Speed
- Low Thermal Impedance
- ESD Protected Gate



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current (Note 1)	T_A=25℃	I_D	10	A
	T_A=70℃		8	
Pulsed Drain Current (Note 2)		I_{DM}	40	
Avalanche Current		I_{AS}	20	
Avalanche Energy L = 0.1 mH		E_{AS}	20	mJ
Power Dissipation (Note 1)	T_A=25℃	P_D	2	W
	T_A=70℃		1.3	
Thermal Resistance, Junction- to-Ambient	(Note 1)	$R_{\theta JA}$	62.5	℃/W
	(Note 3)		141	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1. Surface mounted on "1.5 x 1.5" FR4 board using 1 sq in pad, 2 oz Cu.
2. Pulse width limited by maximum junction temperature.
3. Surface−mounted on FR4 board using the minimum recommended pad size.

2KK5089DFN

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

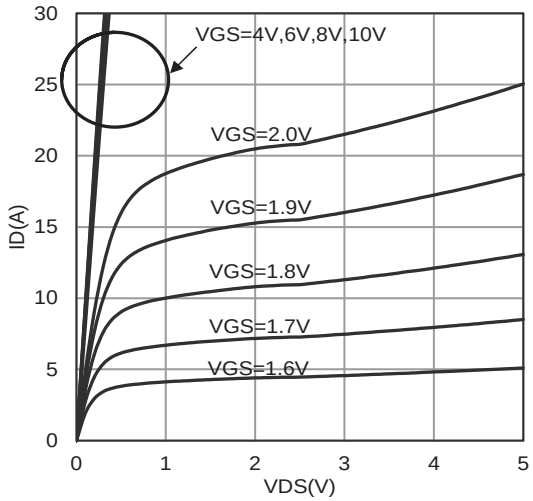
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250 μA, V_{GS} = 0V	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30 V, V_{GS} = 0 V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8 V			±10	μA
Gate to Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250μA	0.45		1	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 4.5 V, I_D = 6 A			16	mΩ
		V_{GS} = 2.5 V, I_D = 6 A			20	
		V_{GS} = 1.8 V, I_D = 6 A			39	
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz		1613		pF
Output Capacitance	C_{oss}			34		
Reverse Transfer Capacitance	C_{rss}			59		
Total Gate Charge	Q_g	V_{GS} = 4.5V, V_{DS} = 15 V, I_D = 8A		20		nC
Gate Source Charge	Q_{gs}			3.8		
Gate Drain Charge	Q_{gd}			5.3		
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = 4.5V, RL =1.8Ω, V_{DS} = 15 V, R_{GEN} = 3Ω		3		ns
Turn-On Rise Time	t_r			3		
Turn-Off DelayTime	$t_{d(off)}$			26		
Turn-Off Fall Time	t_f			3.5		
Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1 A			1.2	V

■ Marking

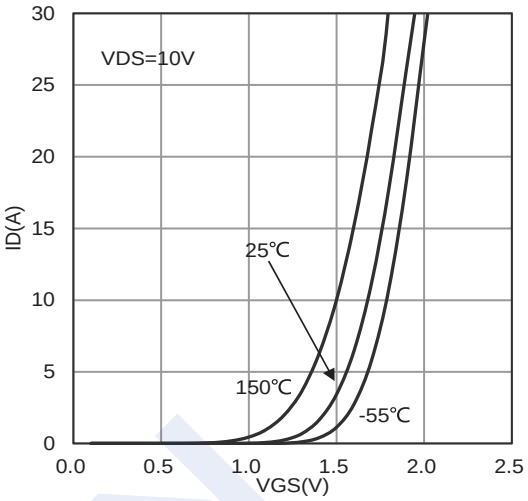
Marking	KCK

2KK5089DFN

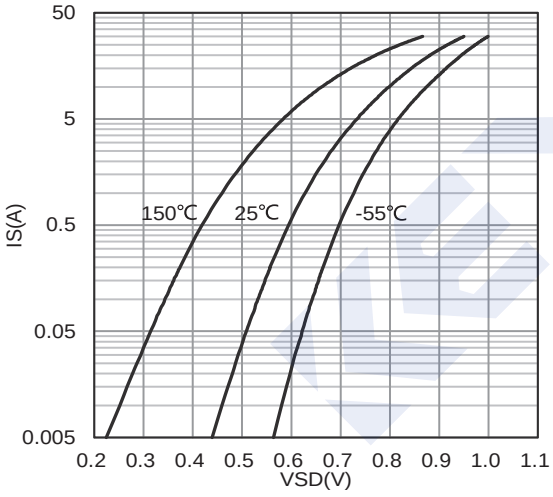
■ Typical Characterisitics



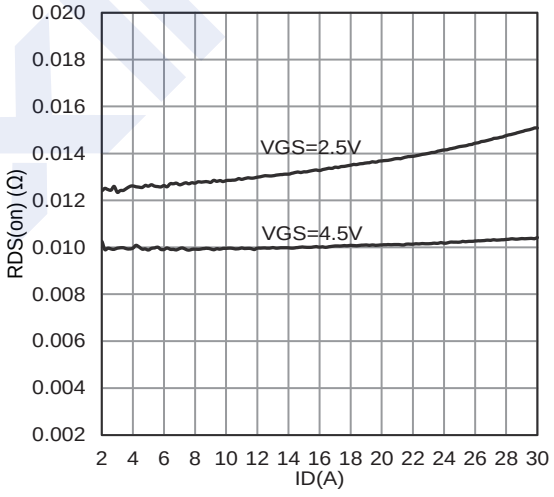
ID vs. VDS



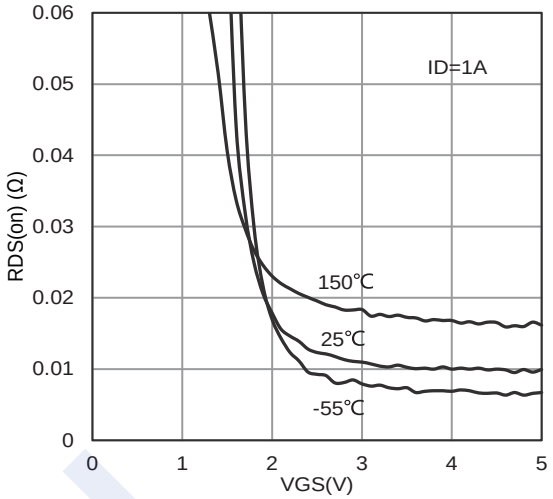
ID vs. VGS



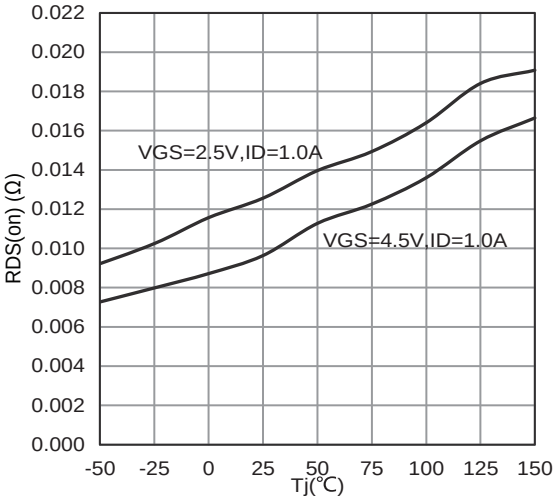
IS vs. VSD



RDS(on) vs. ID

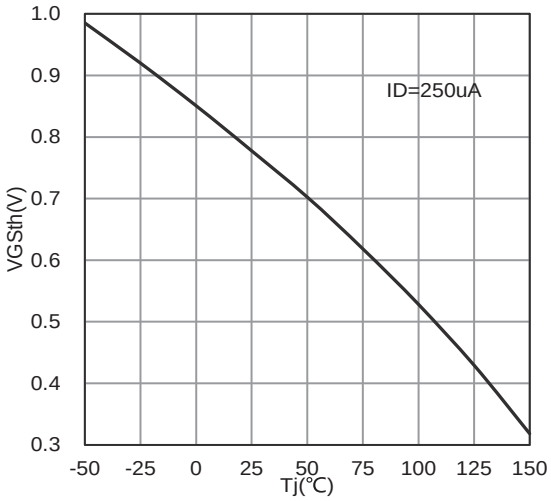


RDS(on) vs. VGS

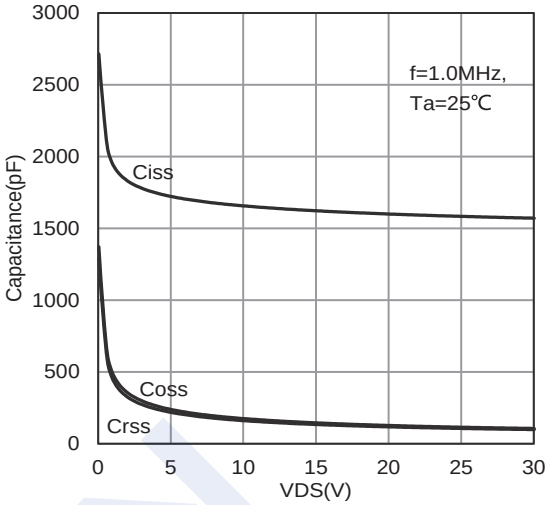


RDS(on) vs. Tj

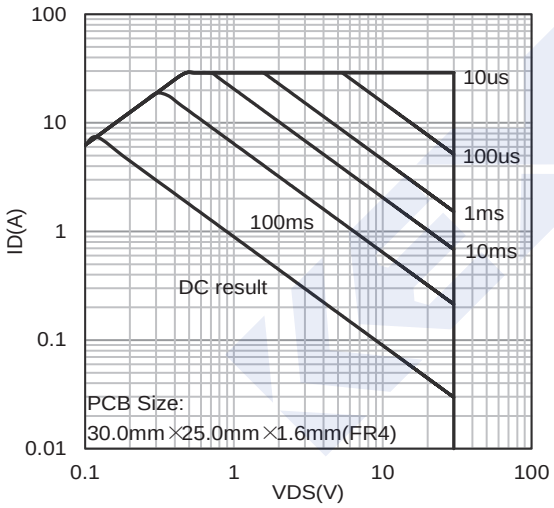
2KK5089DFN



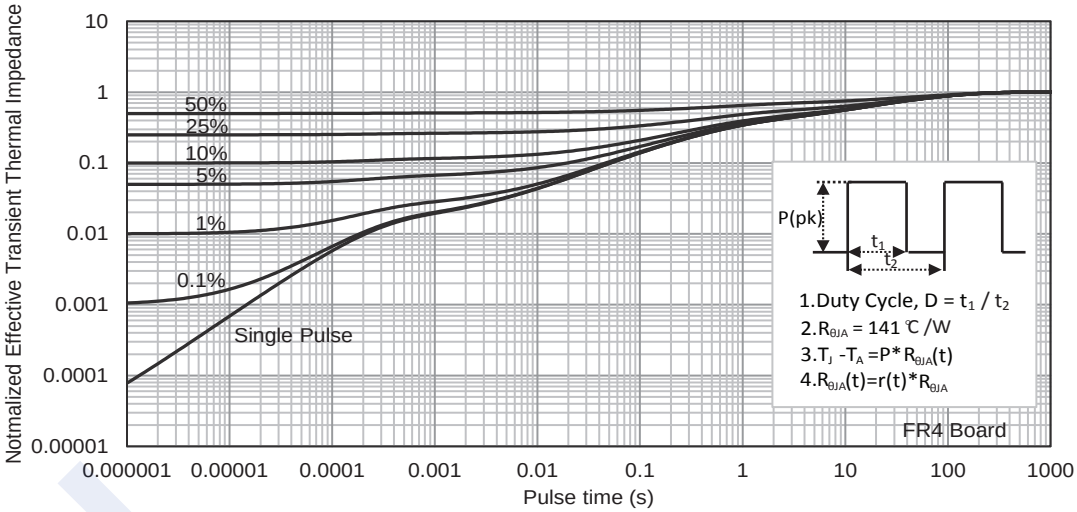
VGSth vs. Tj



Capacitance



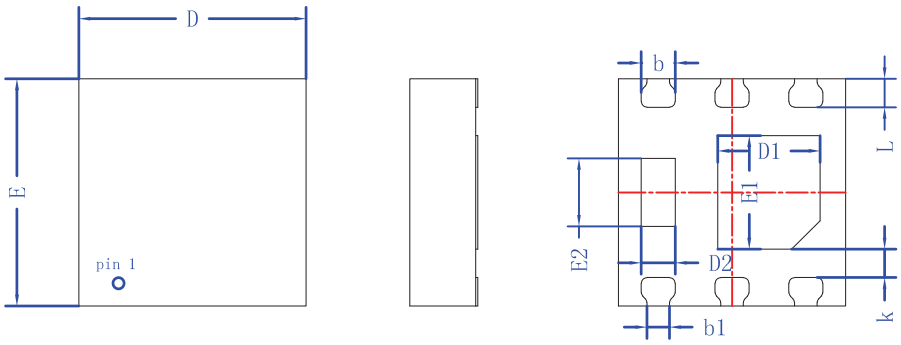
Safe Operating Area

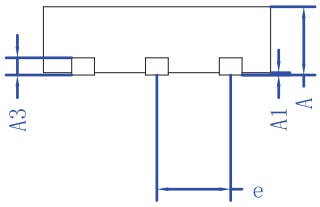


Thermal Response

2KK5089DFN

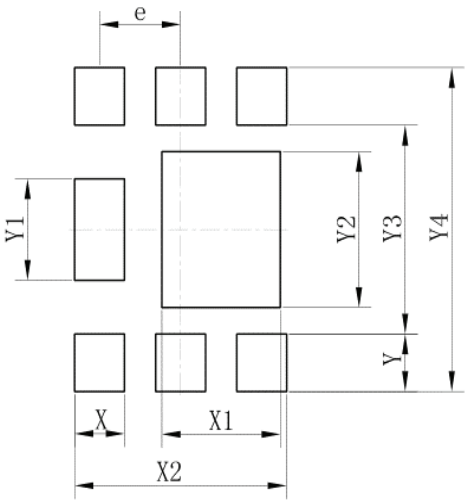
■ DFN2X2-6 Package Outline Dimensions





Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.50	0.55	0.65	0.022	0.024	0.026
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3		0.152 REF.			0.006REF.	
D	1.90	2.00	2.10	0.075	0.079	0.083
D1	0.80	0.90	1.00	0.031	0.035	0.039
D2	0.20	0.30	0.40	0.008	0.012	0.016
E	1.90	2.00	2.10	0.075	0.079	0.083
E1	0.90	1.00	1.10	0.035	0.039	0.043
E2	0.50	0.60	0.70	0.020	0.024	0.028
b	0.25	0.30	0.35	0.010	0.012	0.014
b1	0.15	0.20	0.25	0.006	0.008	0.010
e		0.65TYP.			0.026TYP.	
k		0.20MIN.			0.006MIN.	
L	0.20	0.25	0.30	0.008	0.010	0.012

■ DFN2x2-6 Suggested Pad Layout



Dim	(mm)
X	0.40
X1	0.95
X2	1.70
e	0.65
Y	0.43
Y1	0.75
Y2	1.15
Y3	1.54
Y4	2.39