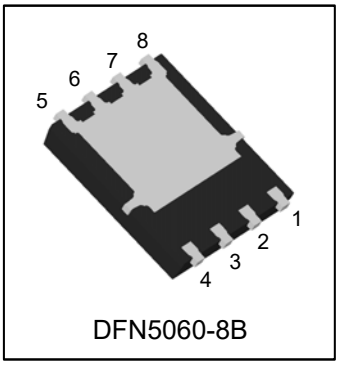
N7709D

120V N-Channel Power MOSFET



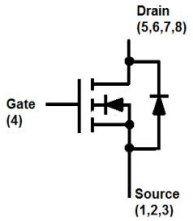
DFN5060-8B

1. FEATURES

- High Speed Power Switching
- Enhanced Body diode dv/dt capability
- Enhanced Avalanche Ruggedness
- We declare that the material of product compliance with RoHS requirements and Halogen Free.

2. APPLICATIONS

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- DC/DC Conversion



3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
N7709D	LN7709	3000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter		Symbol	Limits	Unit
Drain-to-Source Voltage		VDS	120	V
Gate-to-Source Voltage		VGS	±20	V
Continuous Drain Current(Note 1)	TA=25℃	ID	15	A
	TA=75℃		13	
	TC=25℃		75	
	TC=75℃		66	
Pulsed Drain Current (Note 2)		IDM	60	A
Avalanche Current		IAS	40	A
Avalanche Energy(L=0.1mH)		EAS	80	mJ
Power Dissipation(Note 1)	TA=25℃	PD	2.5	W
	TC=25℃		62.5	
Operating Junction and Storage Temperature Range		Tj/Tstg	-55~+150	℃

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Thermal Resistance,Junction-to-Ambient(Note 1)	RθJA	50	℃/W
Thermal Resistance,Junction-to-Ambient(Note3)	RθJA	125	
Thermal Resistance,Junction-to-Case	RθJC	2	

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.

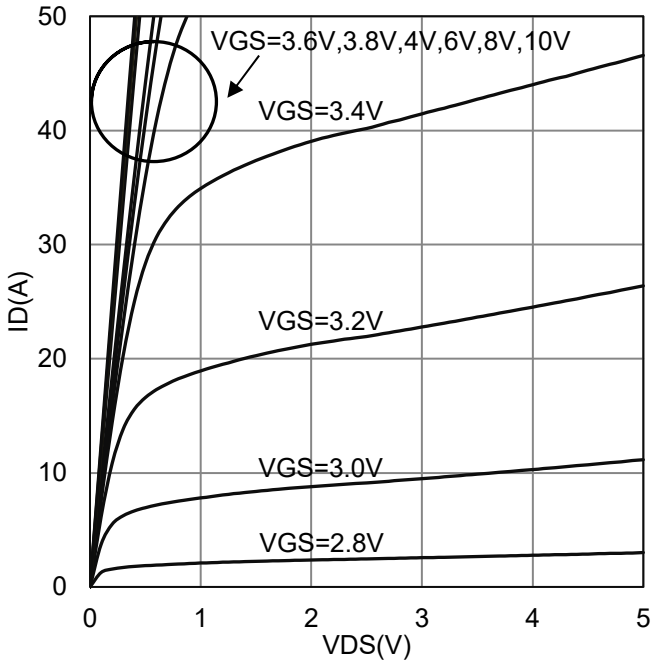
3.Surface mounted on FR4 board using the minimum recommended pad size.

6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

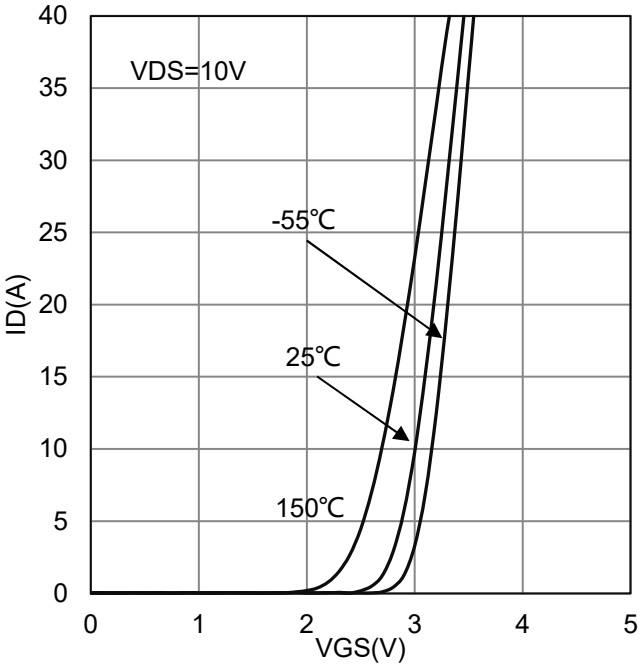
Characteristic		Symbol	Min.	Typ.	Max.	Unit
Static						
Drain–Source Breakdown Voltage (VGS = 0, ID = 250μA)		VBRDSS	120	-	-	V
Gate Threshold Voltage (VDS = VGS , ID = 250 uA)		VGS(th)	2	3	4	V
Gate-Body leakage current (VDS =0V, VGS = ±20V)		IGSS	-	-	±100	nA
Zero Gate Voltage Drain Current (VDS = 120 V, VGS = 0 V)		IDSS	-	-	1	μA
Drain-to-Source On-Resistance (Note 4) (VGS = 10 V, ID = 9 A)		RDS(ON)	-	7.8	10.2	mΩ
Diode Forward Voltage (IS = 20 A, VGS = 0 V)		VSD	-	0.9	1.2	V
Dynamic						
Total Gate Charge	(VDS = 60 V, VGS = 10 V,ID = 20 A)	Qg(10V)	-	31	-	nC
Gate to Source Charge		Qgs	-	10	-	
Gate to Drain Charge		Qgd	-	5	-	
Turn-on Delay Time	(VDS =60V, ID =20A, VGS =10V,RG =10 Ω)	td(on)	-	12	-	nS
Rise Time		tr	-	7	-	
Turn-Off Delay Time		td(off)	-	20	-	
Fall Time		tf	-	9	-	
Input Capacitance	(VDS = 60 V, VGS = 0 V, f = 1 MHz)	Ciss	-	2509	-	pF
Output Capacitance		Coss	-	306	-	
Reverse Transfer Capacitance		Crss	-	10	-	

4.Pulse test: PW ≤ 300μs duty cycle ≤ 2%.

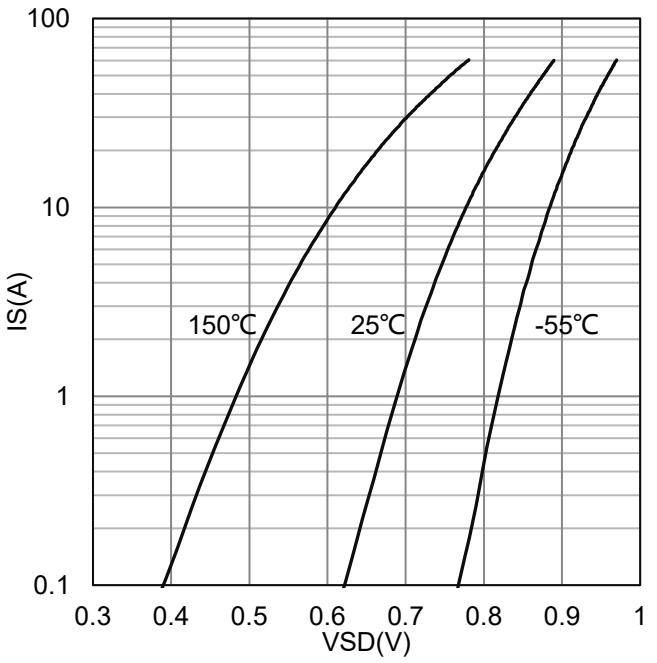
7. ELECTRICAL CHARACTERISTICS CURVES



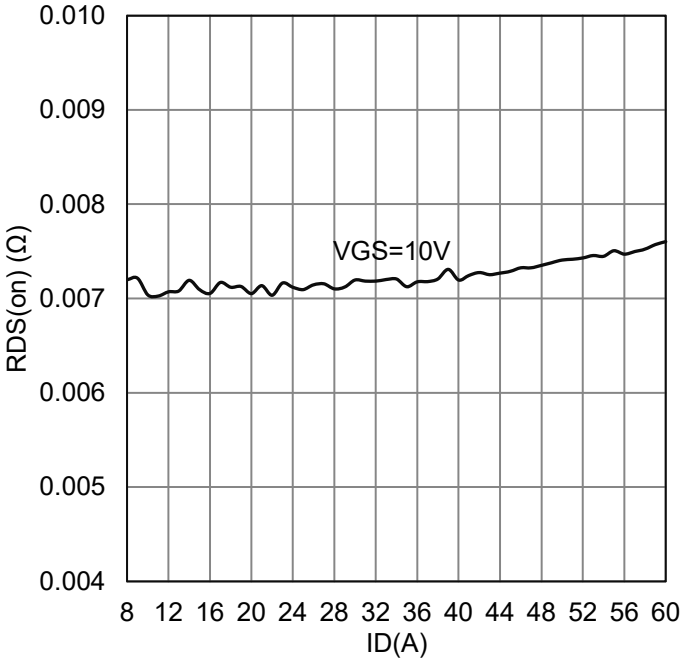
ID vs. VDS



ID vs. VGS

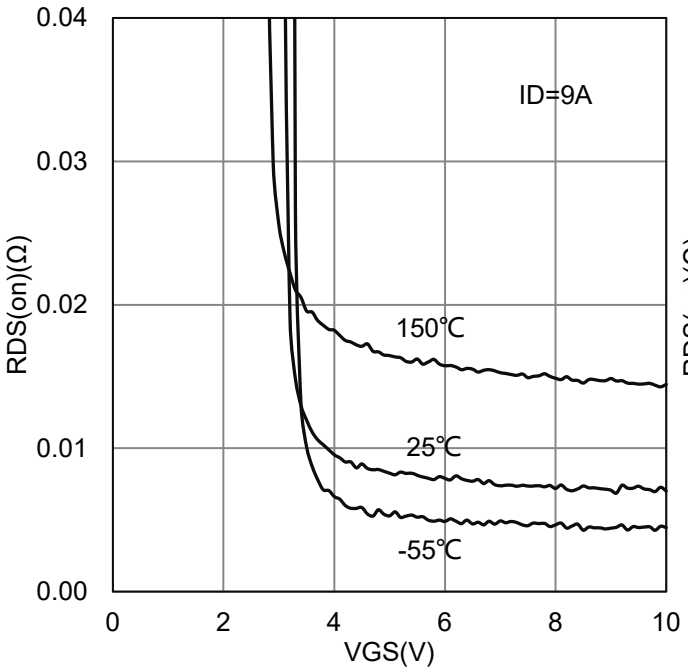


IS vs. VSD

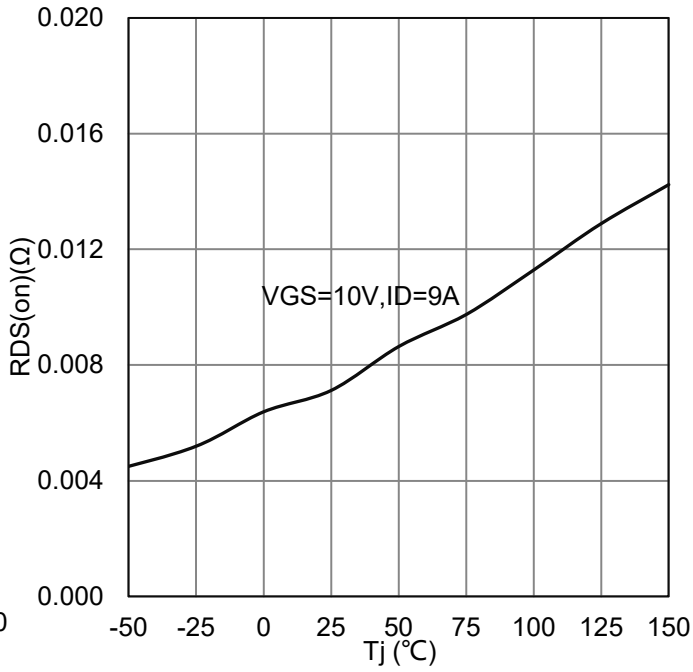


RDS(on) vs. ID

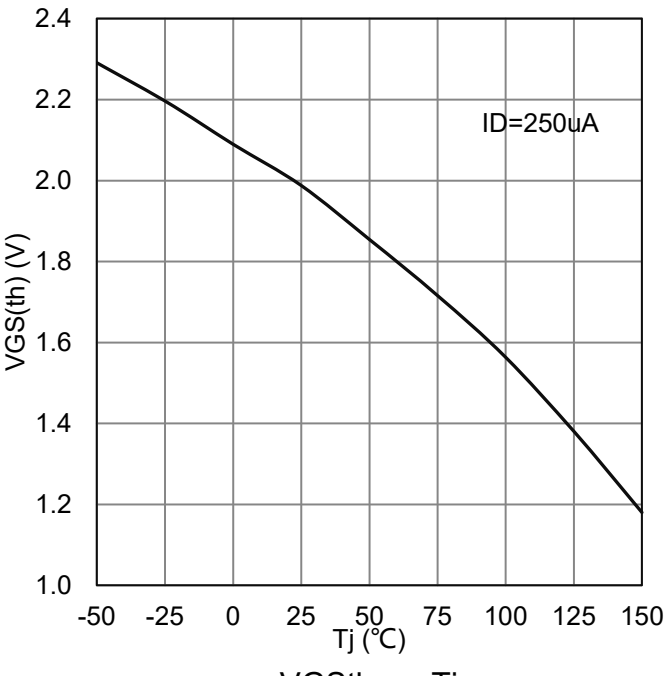
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



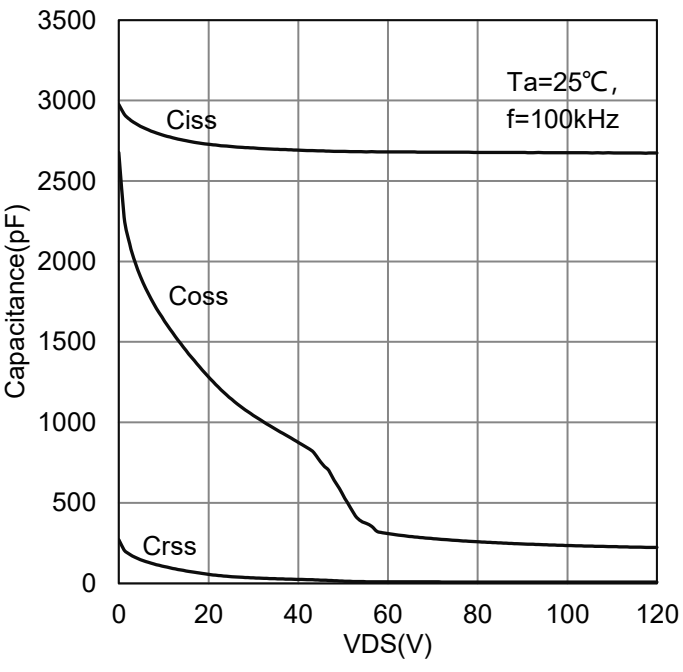
RDS(on) vs. VGS



RDS(on) vs. Tj

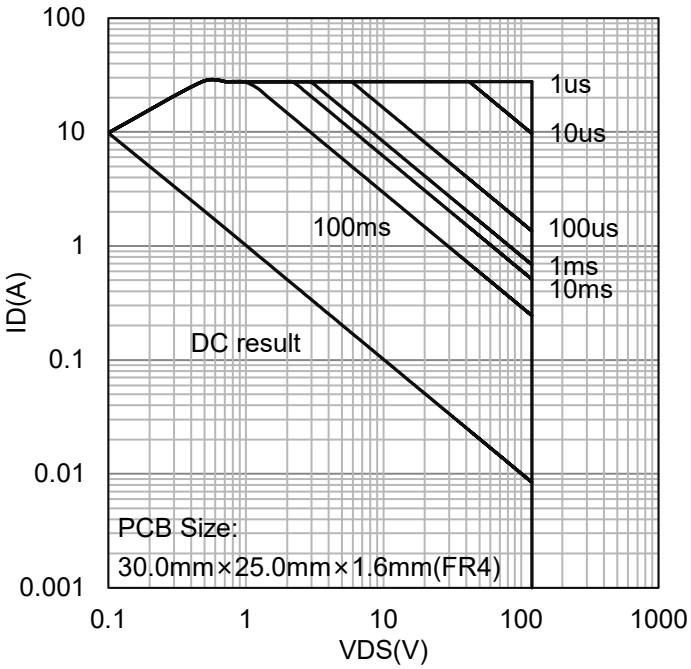


VGSth vs. Tj

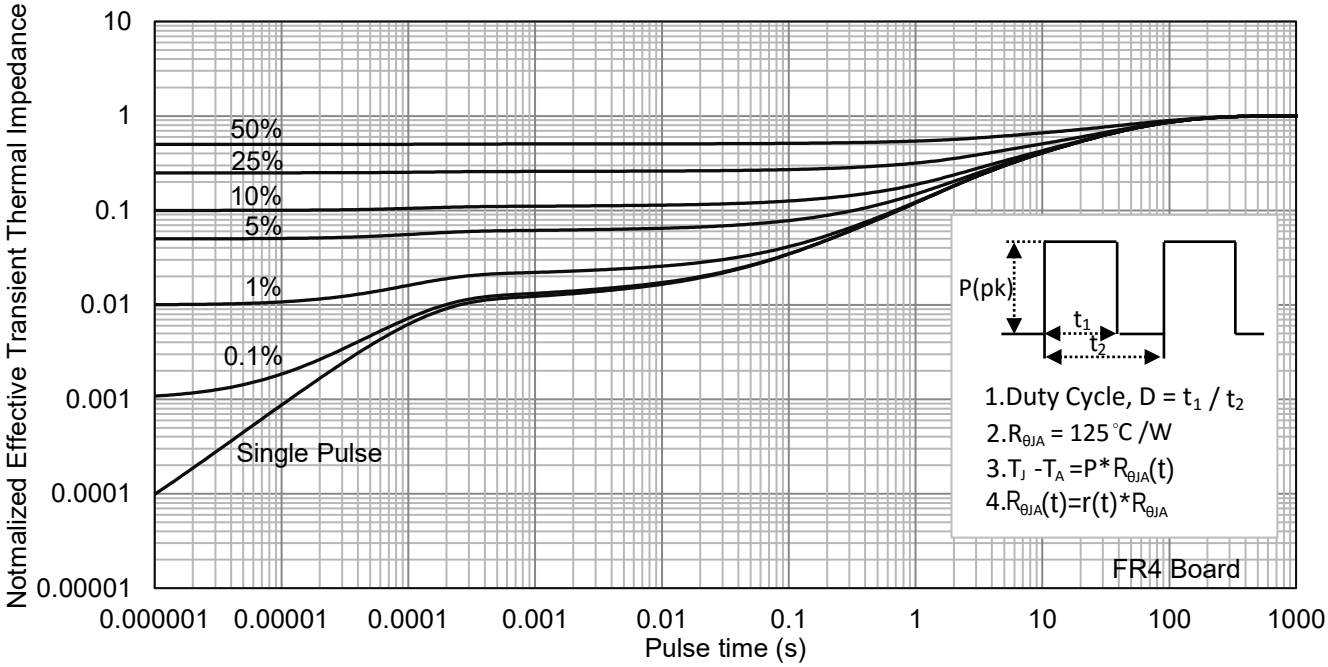


Capacitance

7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



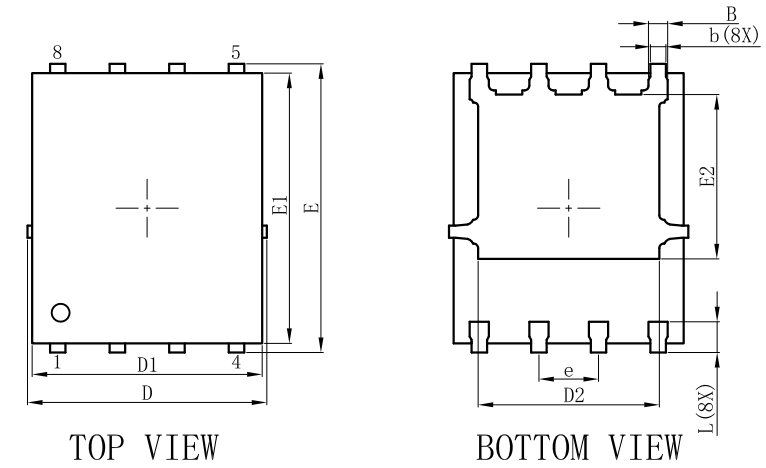
Safe Operating Area



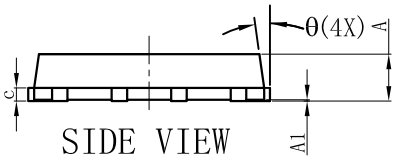
Thermal Response

8.OUTLINE AND DIMENSIONS

DFN5060-8B



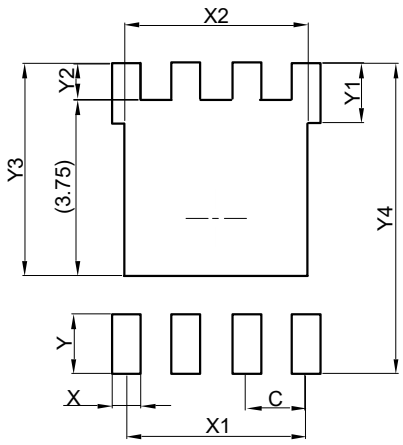
DFN5060-8B			
DIM	MIN	NOR	MAX
A	0.90	1.00	1.10
A1	0.00	0.02	0.05
E	6.00	6.15	6.30
E1	5.66	5.76	5.86
E2	3.40	3.50	3.60
D	4.95	5.10	5.25
D1	4.80	4.90	5.00
D2	3.76	3.86	3.96
b	0.30	0.35	0.40
B	0.36	0.41	0.46
L	0.56	0.66	0.76
e	1.27BSC		
c	0.254REF.		
θ	0°	-	12°
All Dimensions in mm			



GENERAL NOTES

1. Top package surface finish Ra0.4±0.2um
2. Bottom package surface finish Ra0.7±0.2um
3. Side package surface finish Ra0.4±0.2um
4. Protrusion or Gate Burrs shall not exceed 0.05mm per side.
5. Offcenter Max0.038mm; Mismatch Max 0.038mm.

9.SOLDERING FOOTPRINT



DFN5060-8B	
DIM	(mm)
C	1.27
X	0.61
X1	3.81
X2	3.91
Y	1.27
Y1	1.27
Y2	0.77
Y3	4.52
Y4	6.61