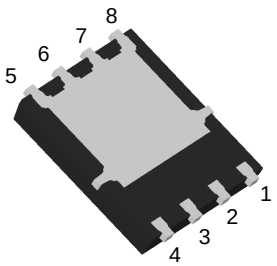
S-LN74009HCDT3WG

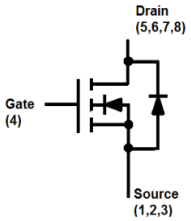
40V N-Channel Power MOSFET



CDFN5060-8H

1. FEATURES

- Low thermal impedance.
- Fast switching speed.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S-prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



2. APPLICATIONS

- Power Tools
- UPS
- Motor Control

3. DEVICE MARKING AND RESISTOR VALUES

Device	Marking	Shipping
S-LN74009HCDT3WG	LN74009HC	5000/Tape&Reel

4. MAXIMUM RATINGS

Parameter		Symbol	Limits	Unit
Drain−to−Source Voltage		VDS	40	V
Gate−to−Source Voltage		VGS	± 20	V
Continuous Drain Current(Note 1)	TA =25°C	ID	45	A
	TA =100°C		27	
Pulsed Drain Current(Note 2)	TA =25°C	IDM	180	
Continuous Drain Current	TC =25°C	ID	220	A
	TC =100°C		132	
Pulsed Drain Current	TC =25°C	IDM	880	
Avalanche Current		IAS	55	A
Avalanche energy(L=0.1mH)		EAS	151	mJ
Power Dissipation(Note 1)	TA =25°C	PD	3.3	W
	TA =100°C		1.7	
Power Dissipation	TC =25°C		150	
	TC =100°C		75	
Operating Junction and Storage Temperature Range		TJ , TSTG	-55~+175	℃

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Junction-to-Ambient(Note 1)	RθJA	45	℃/W
Junction-to-Case	RθJC	1	

Note:1.Surface mounted on "1.5in x 1.5in" FR4 board using 1*1 in pad, 2 oz Cu.

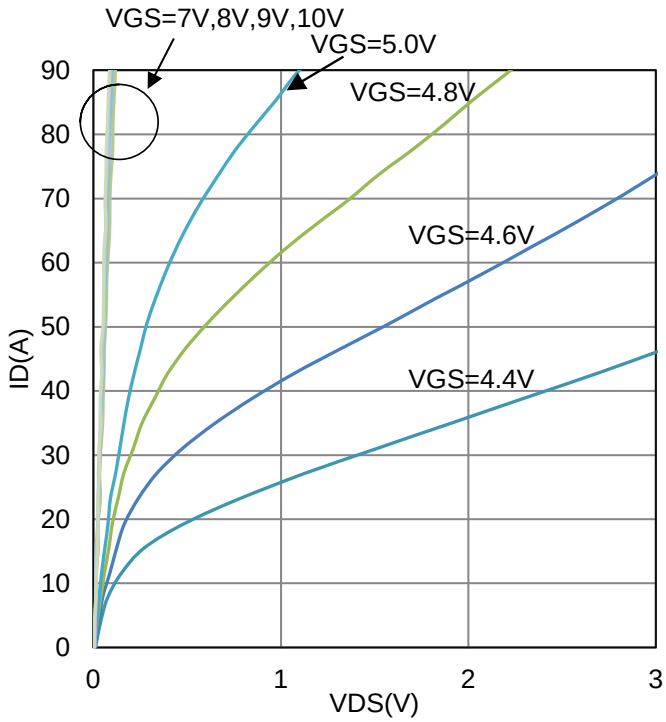
2.Pulse width limited by maximum junction temperature.

6. ELECTRICAL CHARACTERISTICS

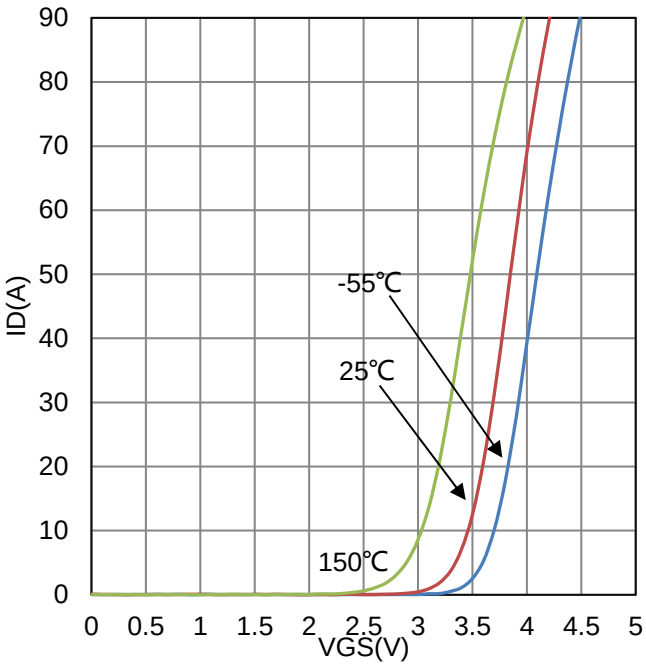
Characteristic		Symbol	Min.	Typ.	Max.	Unit
Static						
Drain to Source Breakdown Voltage (VGS = 0 V, ID = 250 μA)		BVDSS	40	-	-	V
Gate-Source Threshold Voltage (VDS = VGS , ID = 250 uA)		VGS(th)	2.2	2.8	3.4	V
Gate-Body Leakage (VDS = 0 V, VGS = ±20 V)		IGSS	-	-	±100	nA
Zero Gate Voltage Drain Current (VDS = 40 V, VGS = 0 V)		IDSS	-	-	1	μA
Drain-Source On-Resistance(Note 3) (VGS = 10 V, ID = 30 A) (VGS = 7 V, ID = 30 A)		RDS(on)	- -	0.76 -	0.92 1.5	mΩ
Dynamic						
Input Capacitance	(VDS = 20 V, VGS = 0 V, f = 100KHz)	Ciss	-	5070	-	pF
Output Capacitance		Coss	-	1930	-	
Reverse Transfer Capacitance		Crss	-	280	-	
Total Gate Charge	(VDS = 20 V, VGS = 10 V,ID = 30 A)	Qg	-	97	-	nC
Gate-Source Charge		Qgs	-	24	-	
Gate-Drain Charge		Qgd	-	33	-	
Turn-On Delay Time	(VDS = 20 V, ID = 30 A, VGS = 10 V, RG = 6 Ω)	td(on)	-	37	-	ns
Rise Time		tr	-	52	-	
Turn-Off Delay Time		td(off)	-	85	-	
Fall Time		tf	-	72	-	
Diode characteristics						
Continuous Current TC =25° C		IS	-	-	220	A
Plused Current TC =25° C		ISM	-	-	880	A
Diode Forward Voltage (IS = 20 A,VGS = 0 V)		VSD	-	0.75	1.3	V
Reverse Recovery Time (VR=20V,IF=20A,dIF/dt=100A/us)		trr	-	107	-	ns
Reverse Recovery Charge (VR=20V,IF=20A,dIF/dt=100A/us)		Qrr	-	183	-	nC
Reverse Recovery Current (VR=20V,IF=20A,dIF/dt=100A/us)		IRRM	-	3.45	-	A

3.Pulse test: PW ⩽ 300us duty cycle ⩽ 2%.

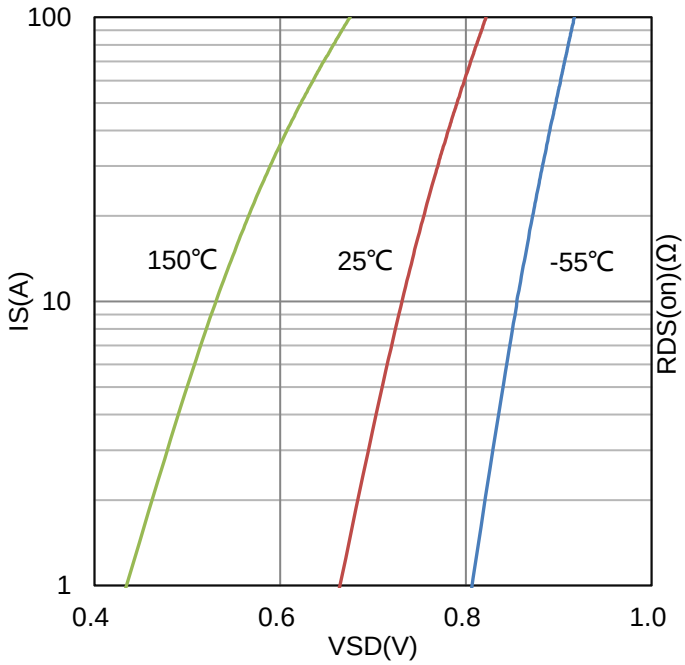
7. ELECTRICAL CHARACTERISTICS CURVES



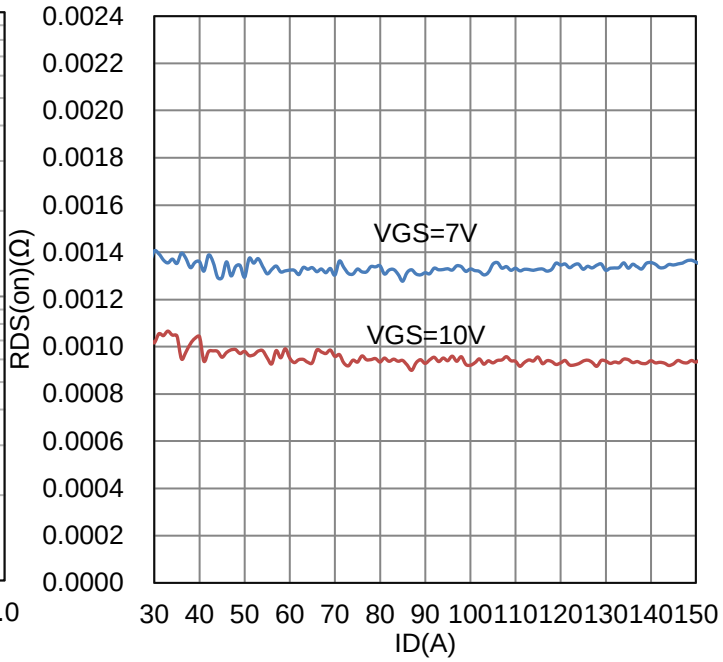
ID vs. VDS



ID vs. VGS

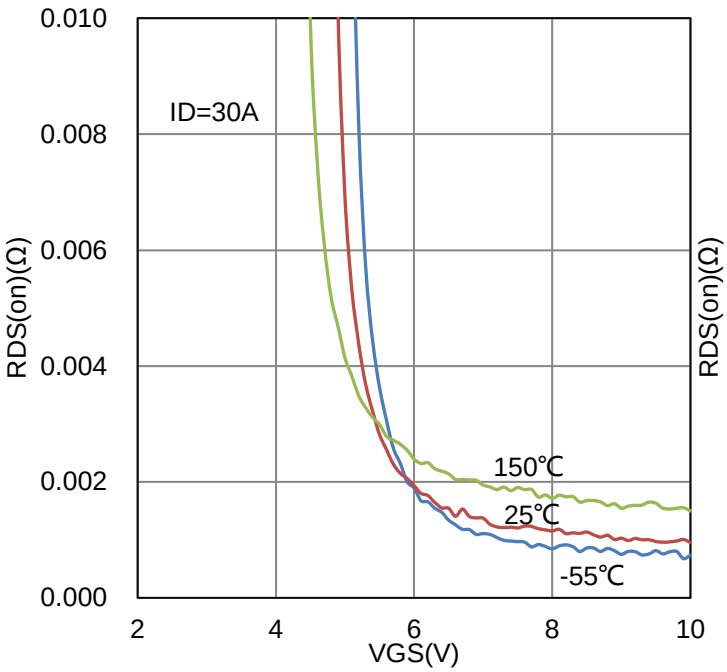


IS vs. VSD

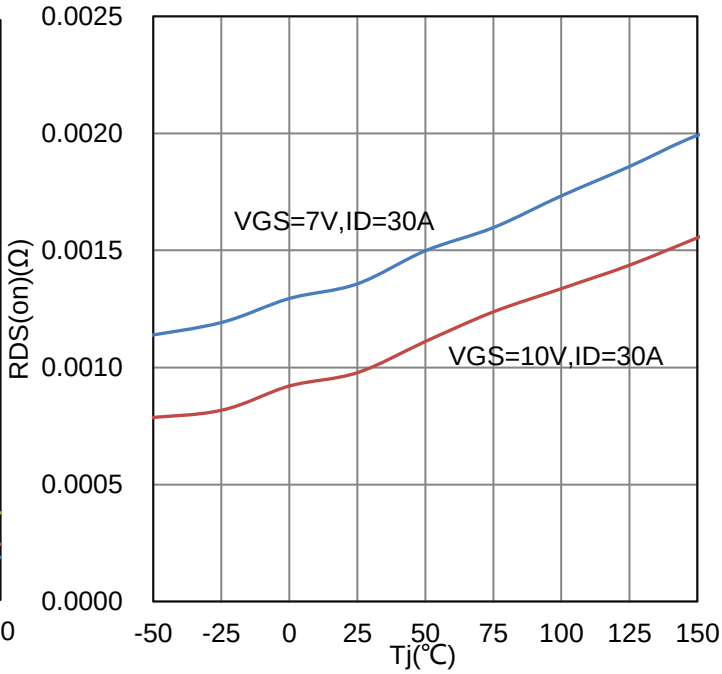


RDS(on) vs. ID

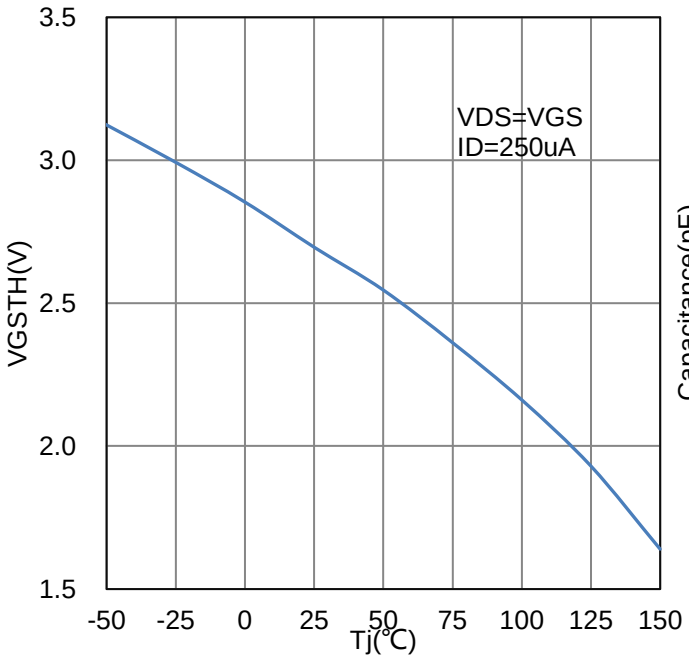
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



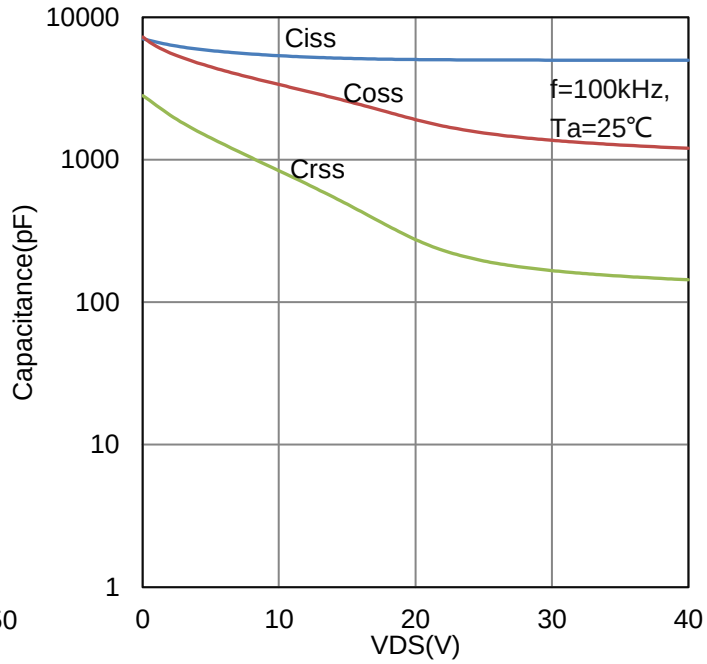
RDS(on) vs. VGS



RDS(on) vs. Tj

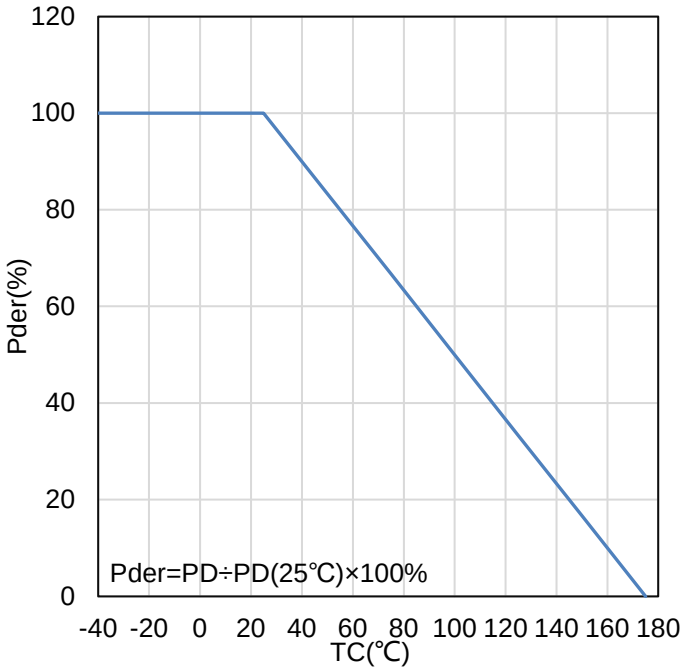


VGSth vs. Tj

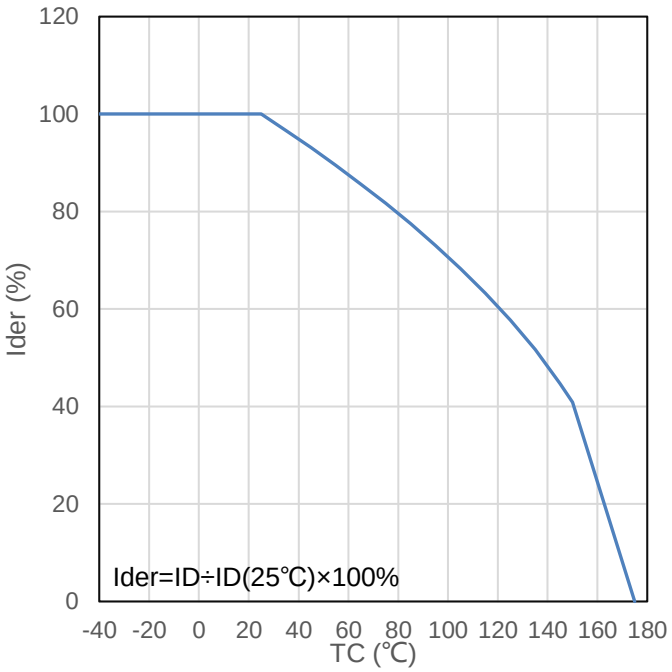


Capacitance

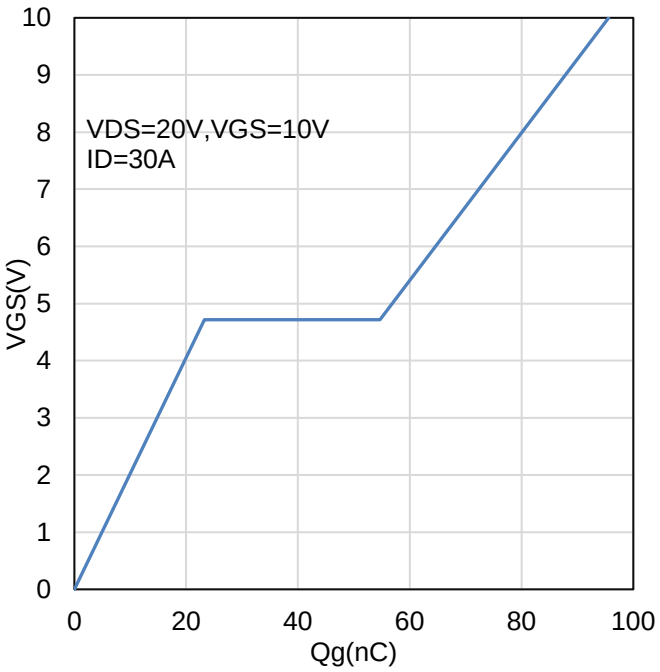
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



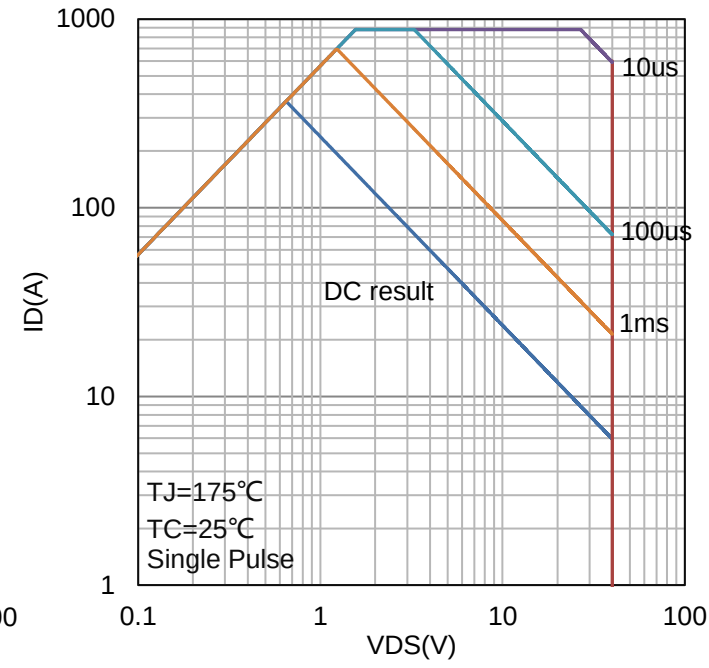
Normalized Derating Curve



Normalized drain Current

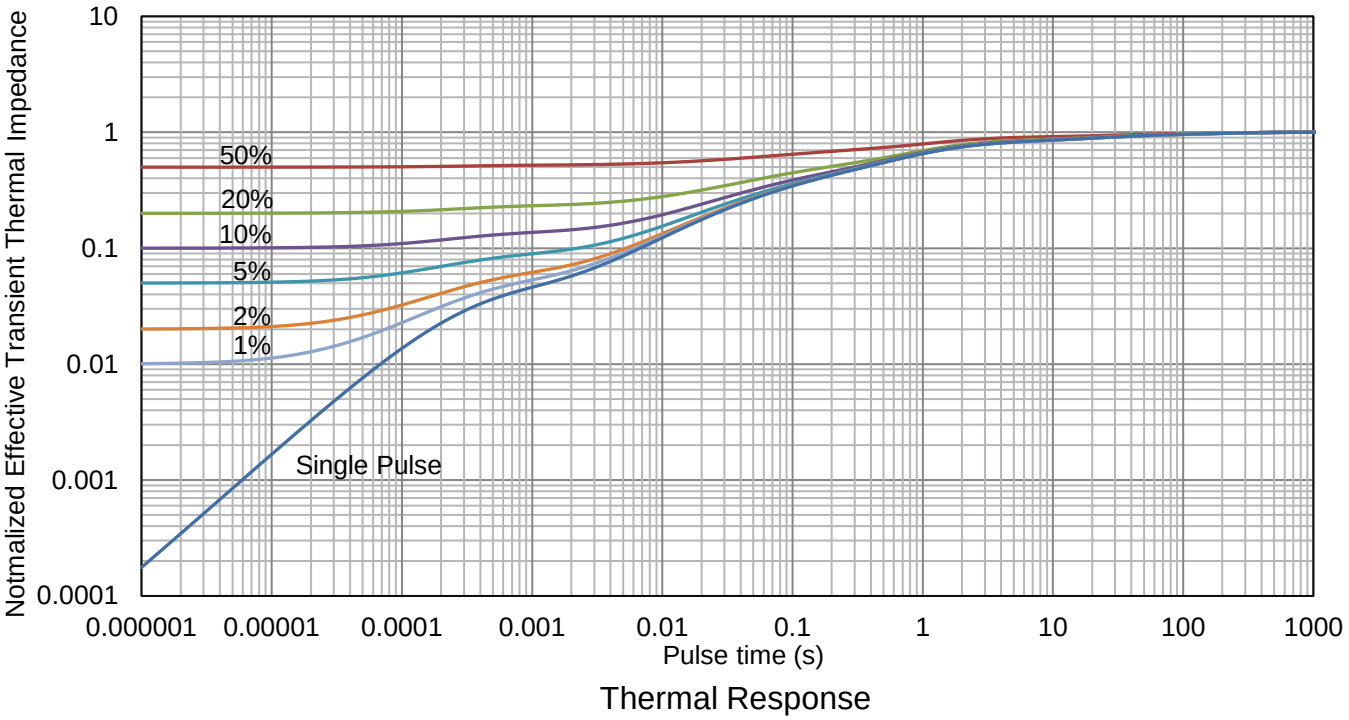


VGS vs. Qg



Safe Operating Area

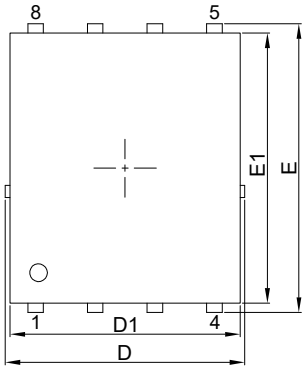
7. ELECTRICAL CHARACTERISTICS CURVES(Con.)



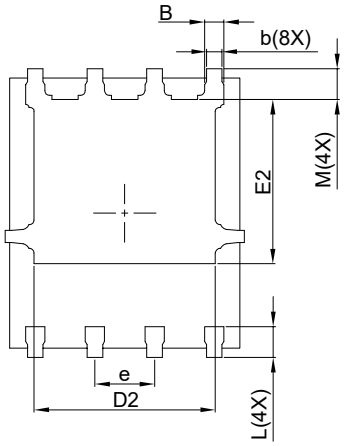
Thermal Response

8.OUTLINE AND DIMENSIONS

CDFN5060-8H(T1.00)

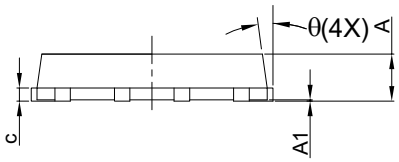


TOP VIEW



BOTTOM VIEW

CDFN5060-8H			
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
M	0.56	0.66	0.76
e	1.27BSC		
c	0.254REF.		
θ	0 °	-	12°

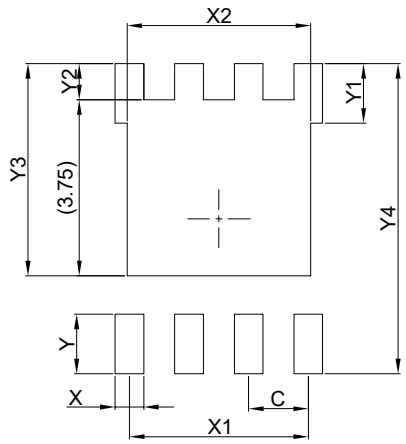


SIDE VIEW

GENERAL NOTES

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

9.SOLDERING FOOTPRINT



CDFN5060-8H	
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

DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.

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