

NCD6A65P8

Silicon Carbide Schottky Diode



Voltage: 650 Volts

Current: 6 A

Package: PDFN8*8

Features

- Zero Reverse Recovery
- Positive Temperature Coefficient On VF
- Extremely Fast Switching
- Extremely Low Leakage Current

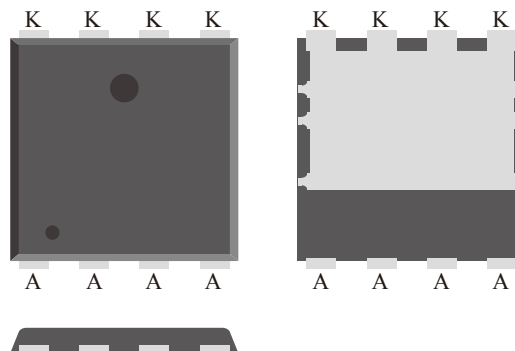
Mechanical Data

- **Case:** Molded With UL-94 Class V-0 Recognized, RoHS-Compliant
- **Polarity:** Look At The Diagram And Polarity On The Right
- **Terminals:** Tin Plated Leads, Solderable Per J-STD-002 And JESD22-B102

Typical Applications

- Solar Inverter
- Uninterruptible Power Supply (UPS)
- Switch Mode Power Supply (SMPS)
- Power Factor Correction (PFC)

Diagram:



Polarity:



Single Phase, Half Wave, 60Hz, Resistive Or Inductive Load. For Capacitive Load, Derate Current By 20%

Maximum Ratings (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	650	V
Maximum RMS Voltage		V_{RMS}	455	V
Maximum DC Blocking Voltage		V_{DC}	650	V
Max Average Forward Rectified Current	TC=150°C	$I_{F(AV)}$	6	A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	48	A
Current Squared Time	$t < 8.3ms$	$I^2 t$	9.6	A ² sec
Avalanche Current, Single Pulse (Note 1)	L= 0.5 mH	I_{AS}	6.5	A
Single Pulse Avalanche Energy (Note 1)	L= 0.5 mH, $I_{PK}= 6.5$ A Starting $T_j=25^\circ C$, $V_{DD} = 50.0$ V	E_{AS}	11	mJ

Electrical Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings			Unit
			Min.	Typ.	Max.	
Instantaneous Forward Voltage Per Diode	Ta=25°C Ta=175°C If= 6.0 A	V_F	--	1.37 1.70	1.65 --	V
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25°C VR=VRRM Ta=175°C VR=80%*VRRM	I_{RRM}	--	0.5 7.0	25.0 --	uA
Capacitance stored energy	VR= 400.0 V	E_C	--	2.5	--	uJ
Total Capacitive Charge	VR= 400.0 V	Q_C	--	17	-	nC
Typical Junction Capacitance Per Diode	1.0 V, 1MHz	C_J	--	227	--	pF
	200 V, 1MHz		--	34	--	
	400 V, 1MHz		--	25	--	

Thermal Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Ratings	Unit
Operating Junction Temperature Range		T_J	-55 to 175	°C
Storage Temperature Range		T_{STD}	-55 to 175	
Max Thermal Resistance Junction-Case With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	$R_{\theta JC}$	2.6	°C/W

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Typical Characteristics Curves

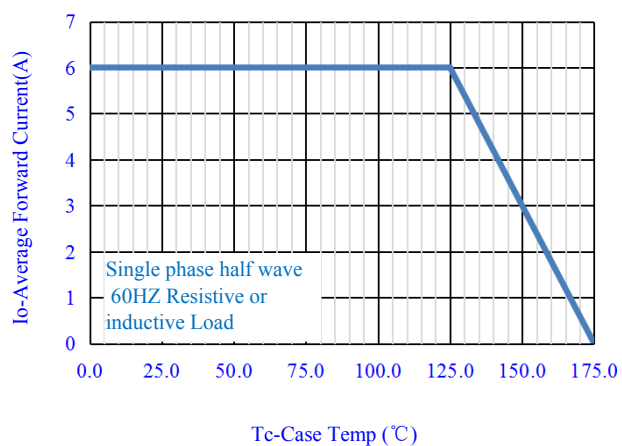


Fig.1-Forward Current Derating Curve

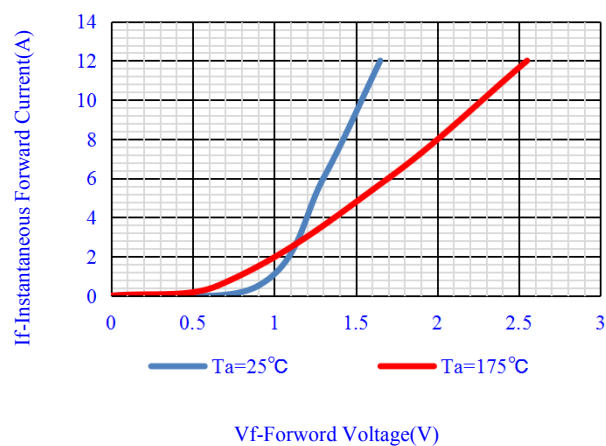


Fig.2-Typical Instantaneous Forward

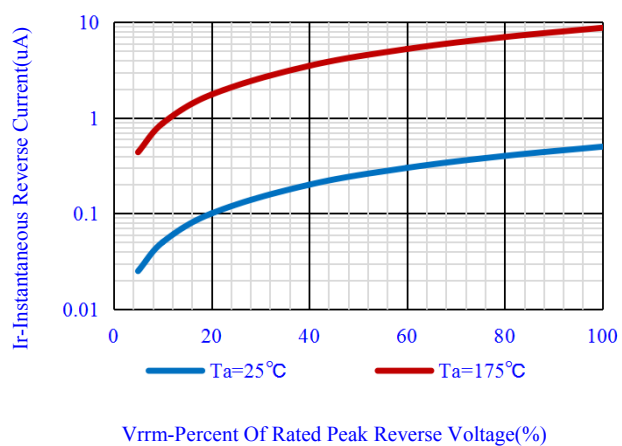


Fig.3-Typical Reverse Characteristics

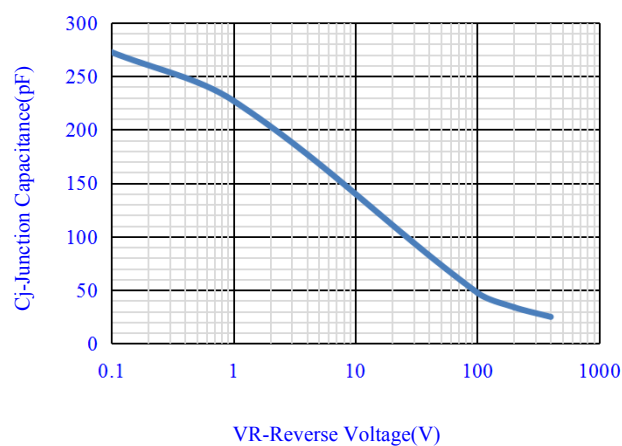


Fig.4-Typical Junction Capacitance

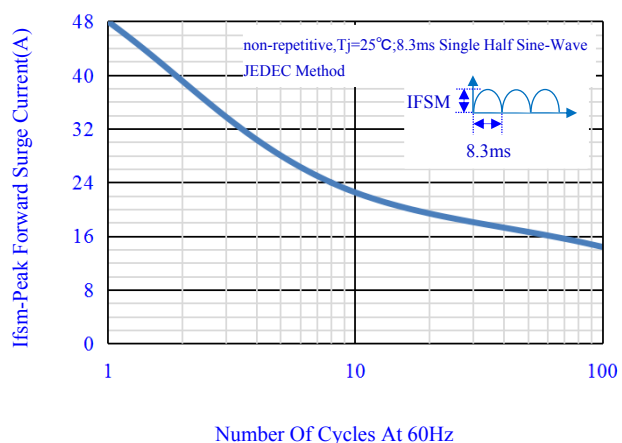


Fig.5-Max. Non-Repetitive Surge Current

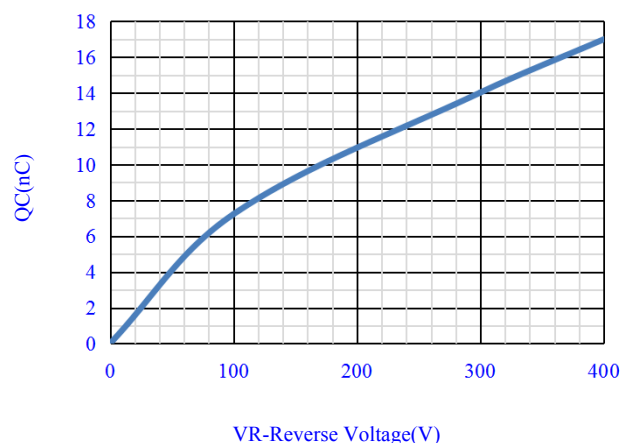


Fig.6-Total Capacitance Charge Characteristics vs. Reverse Voltage

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Typical Characteristics Curves

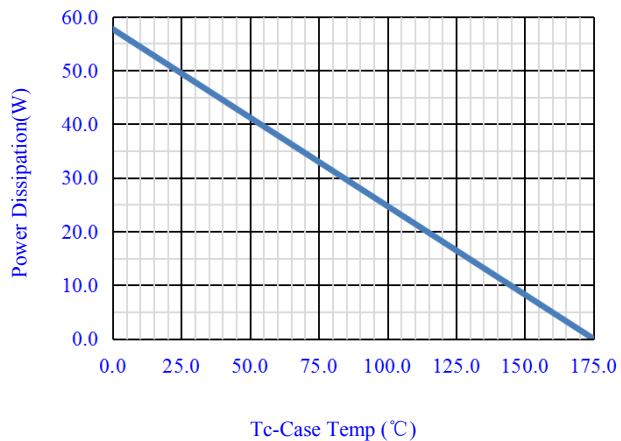


Fig.7-Power dissipation as function of case temperature

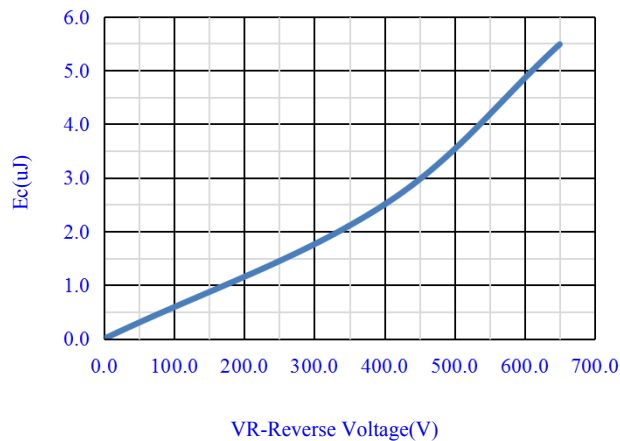


Fig.8-Capacitance Stored Energy

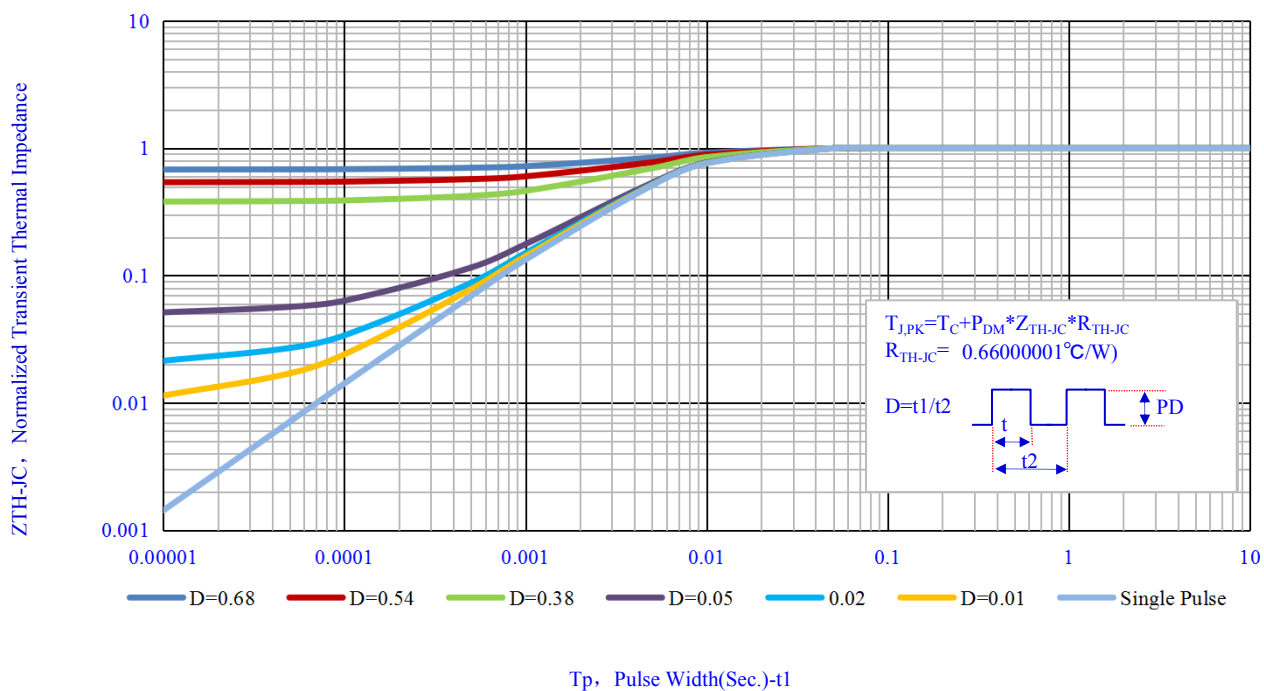


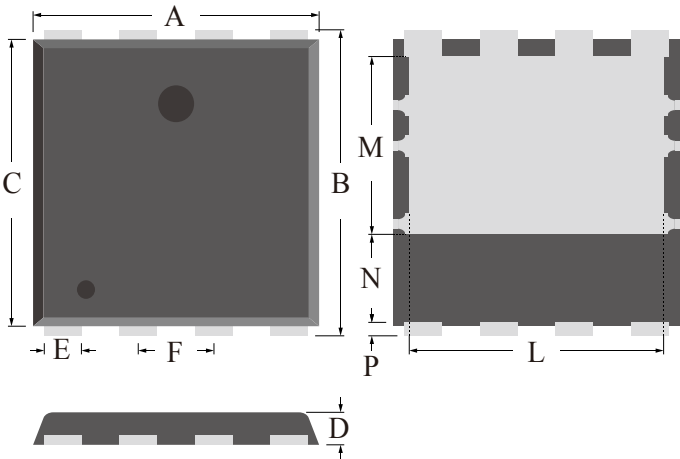
Fig.9- Normalized Maximum Transient Thermal Impedance Vs.Pulse Width

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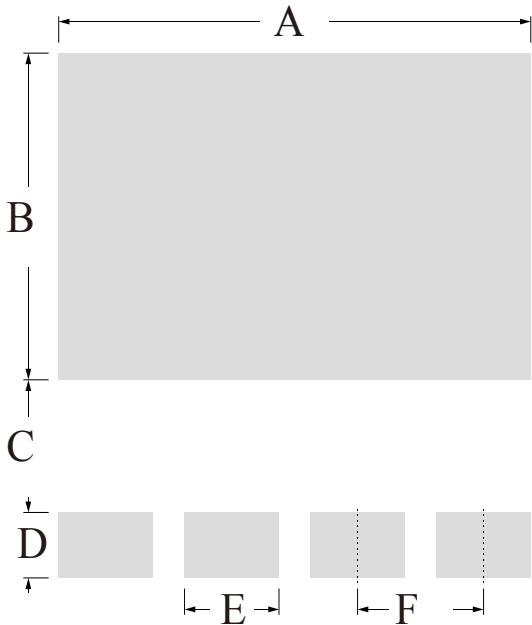
OUTLINE DRAWINGS



PDFN8*8

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.70	-	8.70	0.2638	-	0.3425
B	7.00	-	9.00	0.2756	-	0.3543
C	6.50	-	8.50	0.2559	-	0.3346
D	0.55	-	1.15	0.0217	-	0.0453
E	0.70	-	1.30	0.0276	-	0.0512
F	1.35	-	2.55	0.0531	-	0.1004
L	6.30	-	7.30	0.2480	-	0.2874
M	4.00	-	5.00	0.1575	-	0.1969
N	1.60	-	2.60	0.0630	-	0.1024
P	0.20	-	0.50	0.0079	-	0.0197

RECOMMEDND LAYOUT DRAWINGS



PDFN8*8

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	7.50	-	-	0.2953	-
B	-	5.00	-	-	0.1969	-
C	-	2.00	-	-	0.0787	-
D	-	1.00	-	-	0.0394	-
E	-	1.50	-	-	0.0591	-
F	-	1.95	-	-	0.0768	-

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MARKING



MARKING INSTRUCTION

NH=Niuhang Trademark
FF=Product Line Code,According To Actual Changes
YWW=Date Code,According To Actual Changes
LLWWF=Inernal Code,According To Actual Changes
NCD6A65P8=Model

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
PDFN8*8	P1	0.23	13" Reel	5000	10000	50000

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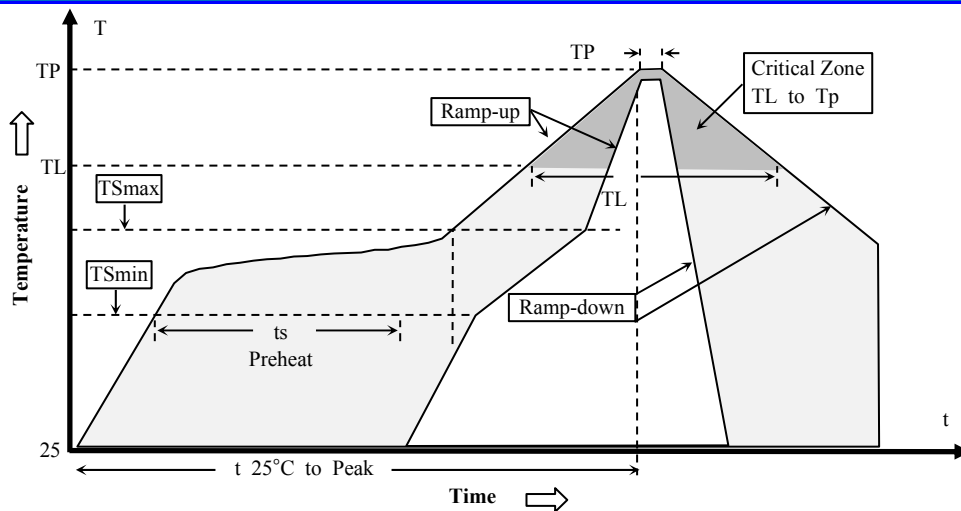
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Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat -Temperature Min(T _S min) -Temperature Max(T _S max) -Time(t _s min to t _s max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (T _L) - Time (t _L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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