Switch-mode Power Rectifier

DPAK Surface Mount Package

SURD8330T4G-VF01

These state−of−the−art devices are designed for use in switching power supplies, inverters and as free wheeling diodes.

Features

- Low Forward Voltage Drop
- Low Leakage
- Ultra−Fast Recovery Time
- SURD8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

Mechanical Characteristics

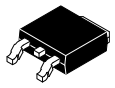
- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

MAXIMUM RATINGS

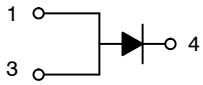
Rating	Symbol	Value	Unit
Rated Reverse Voltage	V_R	300	V
Average Rectified Forward Current (T_C = 170°C)	I_F	3.0	A
Non−Repetitive Peak Surge Current	I_{FSM}	75	A
Operating Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +175	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

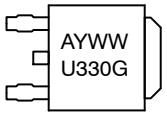
ULTRAFAST RECTIFIER
3 A, 300 V



DPAK
CASE 369C



MARKING DIAGRAM



U330 = Specific Device Code
A = Assembly Location*
Y = Year
WW = Work Week
G = Pb−Free Package

* The Assembly Location Code (A) is front side optional. In cases where the Assembly Location is stamped in the package bottom (molding ejecter pin), the front side assembly code may be blank.

ORDERING INFORMATION

Device	Package	Shipping†
SURD8330T4G−VF01	DPAK (Pb−Free)	2500 / Tape & Reel

DISCONTINUED (Note 1)

MURD330T4G	DPAK (Pb−Free)	2500 / Tape & Reel
SURD8330T4G	DPAK (Pb−Free)	2500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

1. **DISCONTINUED:** This device is not recommended for new design. Please contact your **onsemi** representative for information. The most current information on this device may be available on www.onsemi.com.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance − Junction−to−Case	$R_{\theta JC}$	2	°C/W
Thermal Resistance − Junction−to−Ambient (Note 1)	$R_{\theta JA}$	49	°C/W

1. Rating applies when surface mounted on a 700 mm^2, 1 oz Cu heat spreader.

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage Drop (I_F = 3 A, T_J = 25°C) (I_F = 3 A, T_J = 150°C)	V_F	 1.15 0.92	V
Maximum Instantaneous Reverse Current (T_J = 25°C, 300 V) (T_J = 150°C, 300 V)	I_R	 5 500	μA
Maximum Reverse Recovery Time (I_F = 1 A, di/dt = 50 A/μs, V_R = 30 V, T_J = 25°C)	t_{rr}	 50	ns
ESD Ratings: Machine Model = C Human Body Model = 3B		 > 400 > 8000	V
Typical Peak Reverse Recovery Current (I_F = 1.0 A, di/dt = 50 A/μs)	I_{RM}	1.5	A

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

TYPICAL CHARACTERISTICS

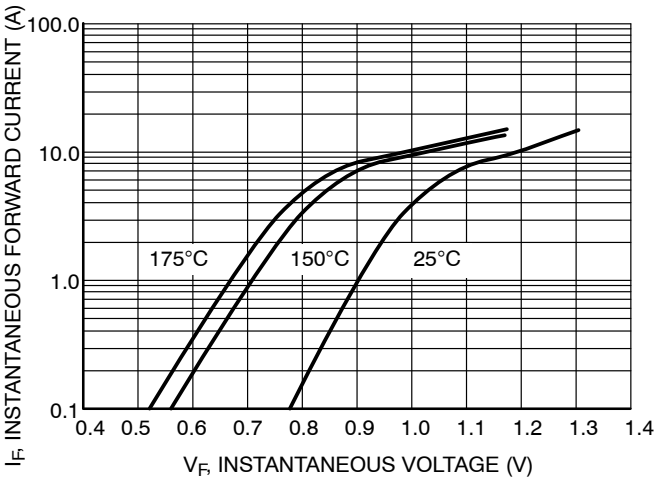


Figure 1. Typical Forward Voltage

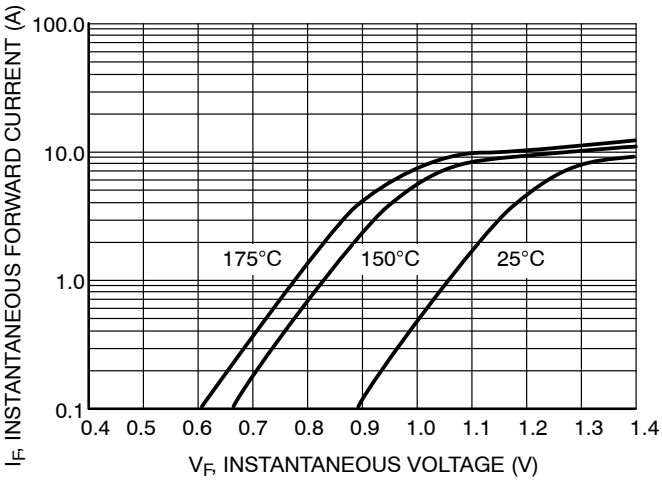


Figure 2. Maximum Forward Voltage

TYPICAL CHARACTERISTICS

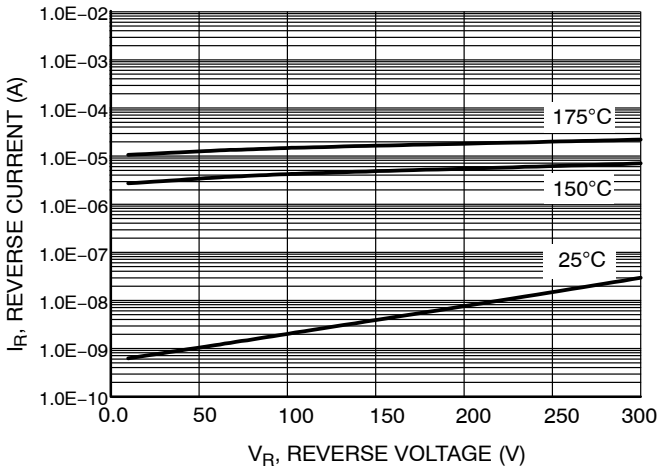


Figure 3. Typical Reverse Voltage

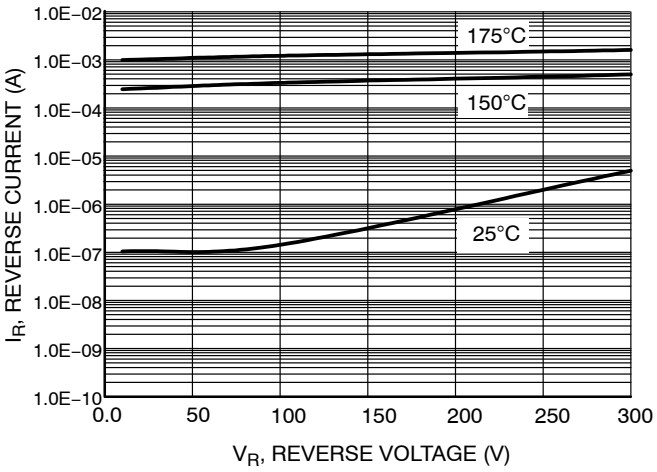


Figure 4. Maximum Reverse Voltage

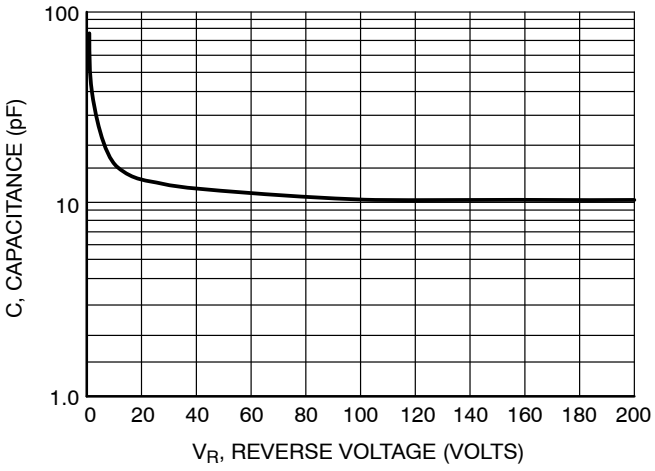


Figure 5. Typical Capacitance

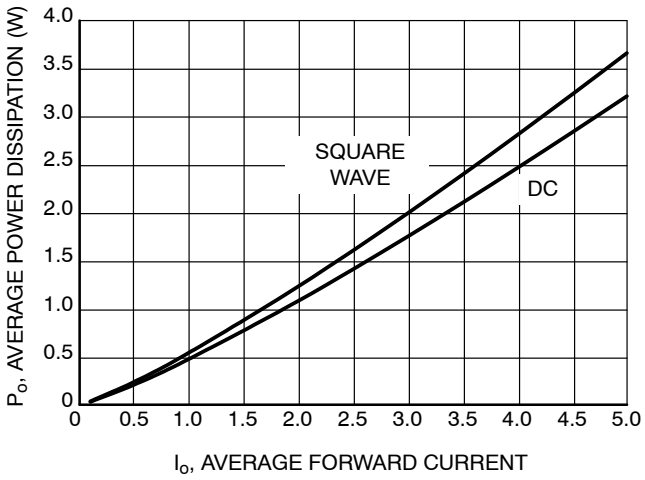


Figure 6. Power Dissipation

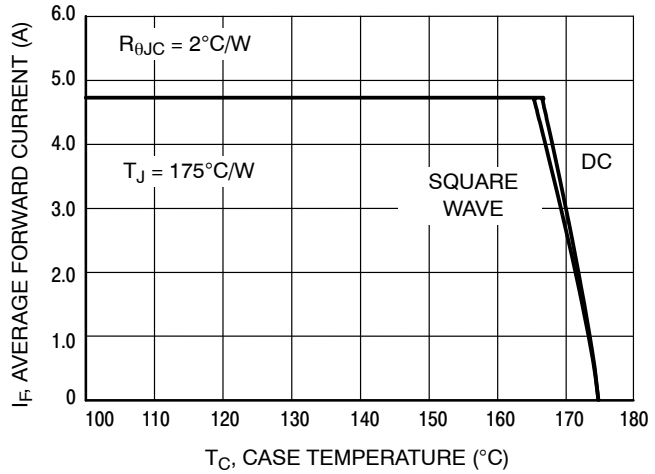


Figure 7. Current Derating, Case

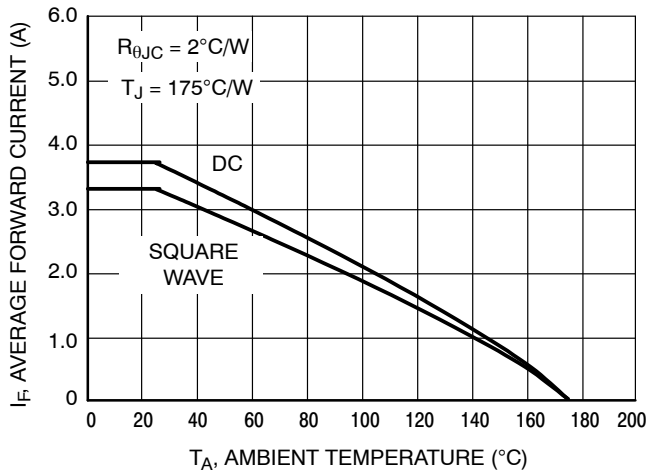
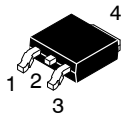


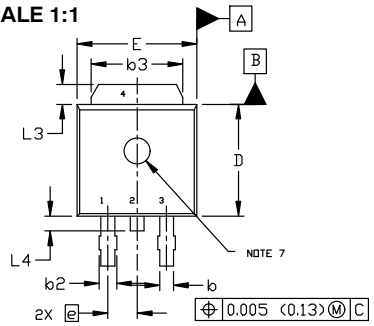
Figure 8. Current Derating, Ambient



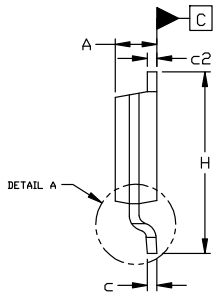
DPAK (SINGLE GAUGE)
CASE 369C
ISSUE G

DATE 31 MAY 2023

SCALE 1:1



TOP VIEW

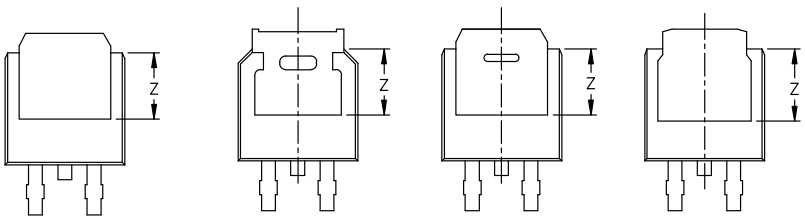


SIDE VIEW

NOTES:

1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.

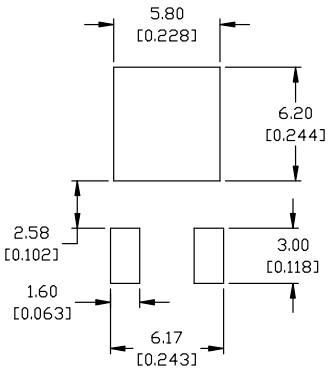
DIM	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.028	0.045	0.72	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.114 REF		2.90 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	----	0.040	---	1.01
Z	0.155	----	3.93	---



BOTTOM VIEW

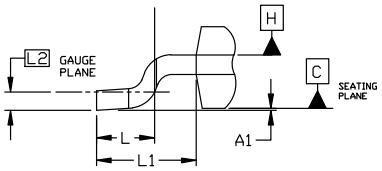
BOTTOM VIEW

ALTERNATE CONSTRUCTIONS



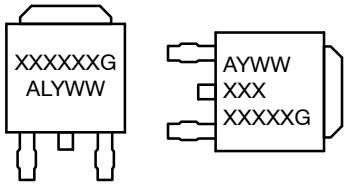
RECOMMENDED MOUNTING FOOTPRINT*

*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.



DETAIL A
ROTATED 90° CW

GENERIC MARKING DIAGRAM*



IC **Discrete**

XXXXXX = Device Code
A = Assembly Location
L = Wafer Lot
Y = Year
WW = Work Week
G = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 2:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 3:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

STYLE 4:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

STYLE 5:
PIN 1. GATE
2. ANODE
3. CATHODE
4. ANODE

STYLE 6:
PIN 1. MT1
2. MT2
3. GATE
4. MT2

STYLE 7:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 8:
PIN 1. N/C
2. CATHODE
3. ANODE
4. CATHODE

STYLE 9:
PIN 1. ANODE
2. CATHODE
3. RESISTOR ADJUST
4. CATHODE

STYLE 10:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE

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DESCRIPTION:	**DPAK (SINGLE GAUGE)**	**PAGE 1 OF 1**

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