Switch-mode Power Rectifier

DPAK Surface Mount Package

MURD320, NRVUD320, **SURD8320**

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

Features

- Ultrafast 35 Nanosecond Recovery Time
- Low Forward Voltage Drop
- Low Leakage
- NRVUD, SURD8 Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-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
- ESD Ratings:
 - ◆ Machine Model = C (> 400 V)
 - Human Body Model = 3B (> 8 kV)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _R	200	٧
Average Rectified Forward Current (T _C = 158°C)	I _{F(AV)}	3.0	Α
Peak Repetitive Forward Current (Square Wave, Duty = 0.5, T _C = 158°C)	I _{FRM}	6.0	Α
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, 60 Hz)	I _{FSM}	75	Α
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-65 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.



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ULTRAFAST RECTIFIER 3.0 AMPERES, 200 VOLTS



CASE 369C



MARKING DIAGRAM





MURD320T4G **SURD8320T4G** NRVUD320VT4G

= Assembly Location**

= Year

WW = Work Week

= 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 [†]
MURD320T4G	DPAK (Pb-Free)	2500 / Tape & Reel
NRVUD320VT4G	DPAK (Pb-Free)	2500 / Tape & Reel
NRVUD320W1T4G	DPAK (Pb-Free)	2500 / Tape & Reel
NRVUD320W1T4G- VF01	DPAK (Pb-Free)	2500 / Tape & Reel
SURD8320T4G	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.

MURD320, NRVUD320, SURD8320

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance – Junction-to-Case	$R_{ heta JC}$	6	°C/W
Thermal Resistance – Junction-to-Ambient (Note 1)	$R_{\theta JA}$	80	°C/W

^{1.} Rating applies when surface mounted on the minimum pad sizes recommended.

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage Drop (Note 2) ($i_F = 3$ Amps, $T_J = 25$ °C) ($i_F = 3$ Amps, $T_J = 125$ °C)	VF	0.95 0.75	Volts
Maximum Instantaneous Reverse Current (Note 2) (T _J = 25°C, Rated dc Voltage) (T _J = 125°C, Rated dc Voltage)	i _R	5 500	μА
Maximum Reverse Recovery Time (I _F = 1 Amp, di/dt = 50 Amps/ μ s, V _R = 30 V, T _J = 25°C) (I _F = 0.5 Amp, i _R = 1 Amp, I _{REC} = 0.25 A, V _R = 30 V, T _J = 25°C)	t _{rr}	35 25	ns

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.

2. Pulse Test: Pulse Width = 300 μ s, Duty Cycle \leq 2.0%.

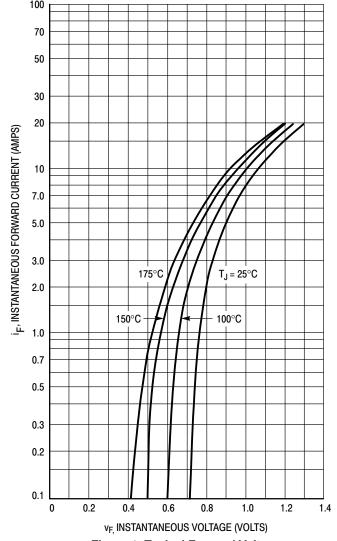


Figure 1. Typical Forward Voltage

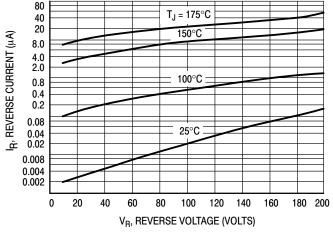


Figure 2. Typical Reverse Current*

* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if V_R is sufficiently below rated V_R .

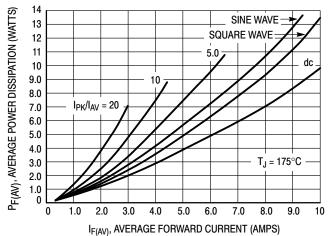


Figure 3. Average Power Dissipation

MURD320, NRVUD320, SURD8320

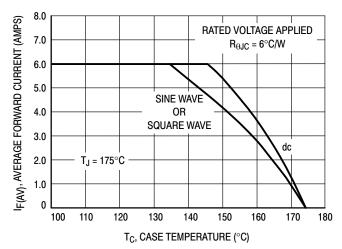


Figure 4. Current Derating, Case

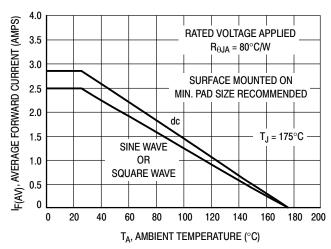


Figure 5. Current Derating, Ambient

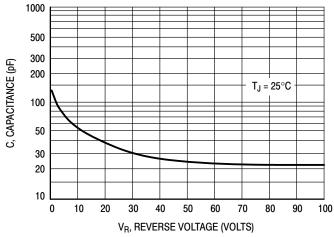
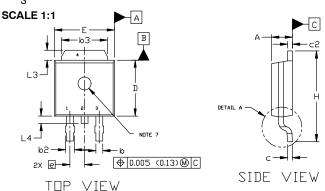


Figure 6. Typical Capacitance





DATE 31 MAY 2023



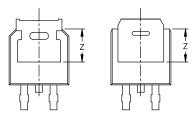


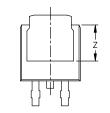
- DIMENSIONING AND TOLERANCING ASME Y14.5M, 1994. CONTROLLING DIMENSION: INCHES
- THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS 63,
- L3. AND Z. L3, AND Z.

 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.
 DIMENSIONS D AND E ARE DETERMINED AT THE
 OUTERMOST EXTREMES OF THE PLASTIC BODY.
 DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
 DETININAL MOLD ESCALUPE.

- OPTIONAL MOLD FEATURE.

DIM	INCHES		MILLIMETERS	
MIM	MIN.	MAX.	MIN.	MAX.
Α	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	
Н	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	

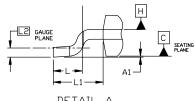




BOTTOM VIEW

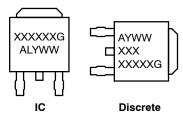
BOTTOM VIEW ALTERNATE CONSTRUCTIONS

5.80 [0.228] 6.20 [0.244] 2.58 3.00 [0.102] [0.118] 1.60 [0.063] 6.17 [0.243]



DETAIL A ROTATED 90° CW

GENERIC MARKING DIAGRAM*



XXXXXX	= Device Code
Α	= Assembly Location
L	= Wafer Lot
Υ	= Year
WW	= Work Week
G	= Pb-Free Package

*This information is generic. Please refer to

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

3 FMITTER

4. COLLECTOR

s

3 GATE

RECOMMENDED MOUNTING FOOTPRINT*

STYLE 1: STYLE 2: PIN 1. BASE PIN 1. GATE 2. COLLECTOR 2. DRAIL 3. EMITTER 3. SOUF 4. COLLECTOR 4. DRAIL	N 2. CATHODE RCE 3. ANODE	3. GATE	STYLE 5: PIN 1. GATE 2. ANODE 3. CATHODE 4. ANODE
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STYLE 7: PIN 1. GATE 2. COLLECTOR STYLE 6: STYLE 8: STYLE 9: STYLE 10: PIN 1. MT1 2. MT2 PIN 1. N/C 2. CATHODE 3. ANODE PIN 1. ANODE 2. CATHODE

4. CATHODE

device data sheet for actual part marking. PIN 1. CATHODE 2. ANODE 3. CATHODE Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may 3 RESISTOR ADJUST not follow the Generic Marking. 4. ANODE

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