

# Switch-mode Power Rectifier

# D<sup>2</sup>PAK Power Surface Mount Package

# MURB1660CT, NRVUB1660CTT4G

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

#### Features

- Package Designed for Power Surface Mount Applications
- Ultrafast 60 Nanosecond Recovery Times
- 175°C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- High Temperature Glass Passivated Junction
- High Voltage Capability to 600 V
- Low Leakage Specified @ 150°C Case Temperature
- Short Heat Sink Tab Manufactured Not Sheared!
- Similar in Size to Industrial Standard TO-220 Package
- NRV Prefix 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

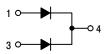
#### **Mechanical Characteristics:**

- Case: Epoxy, Molded, Epoxy Meets UL 94 V-0
- Weight: 1.7 Grams (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
- Device Meets MSL1 Requirements
- ESD Ratings:
  - ◆ Machine Model, C > 400 V
  - ♦ Human Body Model, 3B > 8000 V

# ULTRAFAST RECTIFIER 16 AMPERES, 600 VOLTS



D<sup>2</sup>PAK CASE 418B STYLE 3



#### **MARKING DIAGRAM**



A = Assembly Location

= Year

WW = Work Week

U1660 = Specific Device Code G = Pb-Free Package AKA = Diode Polarity

#### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
MURB1660CTG	D <sup>2</sup> PAK (Pb-Free)	50 Units/Rail
MURB1660CTT4G	D <sup>2</sup> PAK (Pb-Free)	800 / Tape & Reel
NRVUB1660CTT4G	D <sup>2</sup> PAK (Pb-Free)	800 / Tape & Reel

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

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<sup>\*</sup>For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, <u>SOLDERRM/D</u>.

### MURB1660CT, NRVUB1660CTT4G

#### MAXIMUM RATINGS (Per Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	600	V
Average Rectified Forward Current (Rated V <sub>R</sub> , T <sub>C</sub> = 150°C) Total Device	I <sub>F(AV)</sub>	8.0 16	Α
Peak Repetitive Forward Current (Rated V <sub>R</sub> , Square Wave, 20 kHz, T <sub>C</sub> = 150°C)	I <sub>FM</sub>	16	Α
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I <sub>FSM</sub>	100	Α
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-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.

### THERMAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-Case	$R_{ heta JC}$	2.0	°C/W
Maximum Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{ heta JA}$	50	°C/W
Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	TL	260	°C

<sup>1.</sup> See Chapter 7 for mounting conditions.

#### **ELECTRICAL CHARACTERISTICS** (Per Leg)

Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) (i <sub>F</sub> = 8.0 Amp, $T_C$ = 150°C) (i <sub>F</sub> = 8.0 Amp, $T_C$ = 25°C)	VF	1.20 1.50	V
Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, T <sub>C</sub> = 150°C) (Rated dc Voltage, T <sub>C</sub> = 25°C)	i <sub>R</sub>	500 10	μΑ
Maximum Reverse Recovery Time $ \begin{aligned} &(I_F=1.0 \text{ Amp, di/dt}=50 \text{ Amp/}\mu\text{s}) \\ &(I_F=0.5 \text{ Amp, }i_R=1.0 \text{ Amp, }I_{REC}=0.25 \text{ Amp}) \end{aligned} $	t <sub>rr</sub>	60 50	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.

<sup>2.</sup> Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

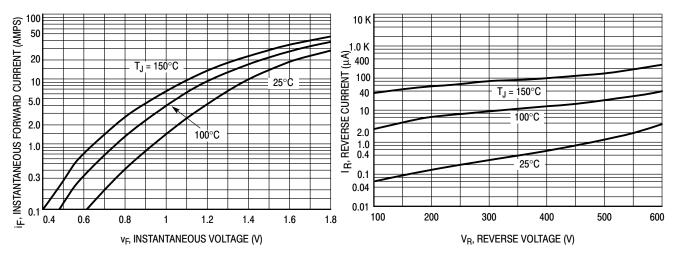


Figure 1. Typical Forward Voltage, Per Leg

Figure 2. Typical Reverse Current, Per Leg

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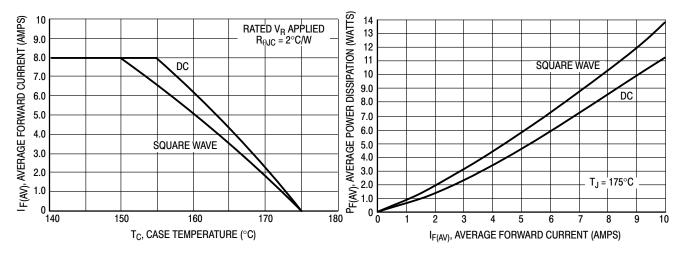


Figure 3. Current Derating, Case, Per Leg

Figure 4. Power Dissipation, Per Leg

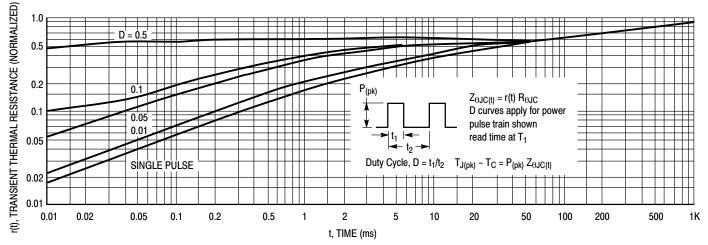


Figure 5. Thermal Response

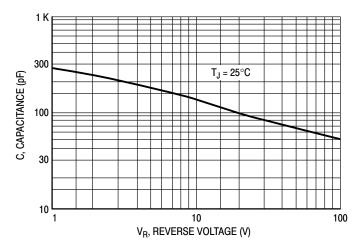


Figure 6. Typical Capacitance, Per Leg

# **MECHANICAL CASE OUTLINE**

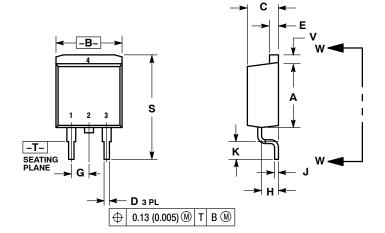




D<sup>2</sup>PAK 3 CASE 418B-04 **ISSUE L** 

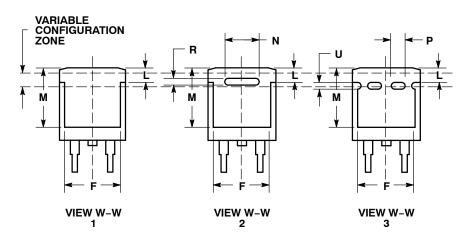
**DATE 17 FEB 2015** 

#### SCALE 1:1



- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
   CONTROLLING DIMENSION: INCH.
- 3. 418B-01 THRU 418B-03 OBSOLETE, NEW STANDARD 418B-04.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
Α	0.340	0.380	8.64	9.65
В	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.83
D	0.020	0.035	0.51	0.89
Е	0.045	0.055	1.14	1.40
F	0.310	0.350	7.87	8.89
G	0.100 BSC		2.54 BSC	
Н	0.080	0.110	2.03	2.79
J	0.018	0.025	0.46	0.64
K	0.090	0.110	2.29	2.79
L	0.052	0.072	1.32	1.83
М	0.280	0.320	7.11	8.13
N	0.197 REF		5.00 REF	
Р	0.079 REF		2.00 REF	
R	0.039 REF		0.99 REF	
S	0.575	0.625	14.60	15.88
٧	0.045	0.055	1.14	1.40



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. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 5:

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

STYLE 6:

PIN 1. NO CONNECT
2. CATHODE
3. ANODE
4. CATHODE

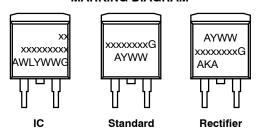
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# GENERIC MARKING DIAGRAM\*



xx = Specific Device Code A = Assembly Location

 WL
 = Wafer Lot

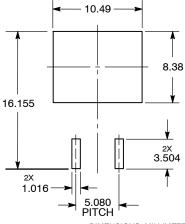
 Y
 = Year

 WW
 = Work Week

 G
 = Pb-Free Package

 AKA
 = Polarity Indicator

#### **SOLDERING FOOTPRINT\***



DIMENSIONS: MILLIMETERS

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<sup>\*</sup>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.

<sup>\*</sup>For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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