# Switch-mode Power Rectifier
## DPAK Surface Mount Package

# MURD530T4G, SURD8530T4G, SURD8530T4G-VF01

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

### Features

- Ultrafast 50 Nanosecond Recovery Time
- Low Forward Voltage Drop
- Low Leakage
- 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

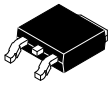
| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 300 | V |
| Average Rectified Forward Current ($T_C$ = 165°C) | $I_{F(AV)}$ | 5.0 | A |
| Peak Repetitive Forward Current (Square Wave, Duty = 0.5, $T_C$ = 165°C) | $I_{FRM}$ | 10 | A |
| Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, 60 Hz) | $I_{FSM}$ | 75 | A |
| 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.

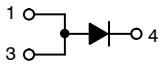
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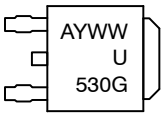
## ULTRAFAST RECTIFIER
## 5.0 AMPERES, 300 VOLTS



**DPAK**
**CASE 369C**




### MARKING DIAGRAM




U530 = Specific Device Number
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† |
|---|---|---|
| MURD530T4G | DPAK (Pb−Free) | 2,500/Tape & Reel 16 mm |
| SURD8530T4G | DPAK (Pb−Free) | 2,500/Tape & Reel 16 mm |
| SURD8530T4G−VF01 | DPAK (Pb−Free) | 2,500/Tape & Reel 16 mm |

†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.

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## THERMAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Thermal Resistance – Junction–to–Case (Note 1) | $R_{\theta JC}$ | 3 | °C/W |
| Thermal Resistance – Junction–to–Ambient (Note 2) | $R_{\theta JA}$ | 92 | °C/W |
| Thermal Resistance – Junction–to–Ambient (Note 3) | $R_{\theta JA}$ | 57 | °C/W |

1. Rating applies for one diode leg.
2. Rating applies when for both diode legs when mounted on 130 $mm^2$ pad size.
3. Rating applies for both diode legs when mounted on 1 in pad size.

## ELECTRICAL CHARACTERISTICS

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Maximum Instantaneous Forward Voltage Drop (Note 4)<br>($i_F$ = 3 A, $T_J$ = 25°C)<br>($i_F$ = 3 A, $T_J$ = 125°C)<br>($i_F$ = 5 A, $T_J$ = 25°C)<br>($i_F$ = 5 A, $T_J$ = 125°C) | $v_F$ | <br>0.95<br>0.80<br>1.05<br>0.90 | Volts |
| Maximum Instantaneous Reverse Current (Note 4)<br>($T_J$ = 25°C, Rated dc Voltage)<br>($T_J$ = 125°C, Rated dc Voltage) | $i_R$ | <br>5.0<br>150 | μA |
| Maximum Reverse Recovery Time<br>($I_F$ = 1 Amp, di/dt = 50 A/μs, $V_R$ = 30 V, $T_J$ = 25°C) | $t_{rr}$ | <br>50 | ns |

4. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

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.

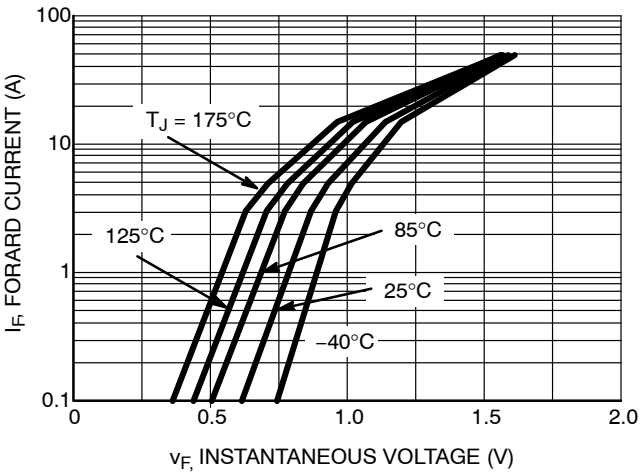



**Figure 1. Maximum Forward Voltage**

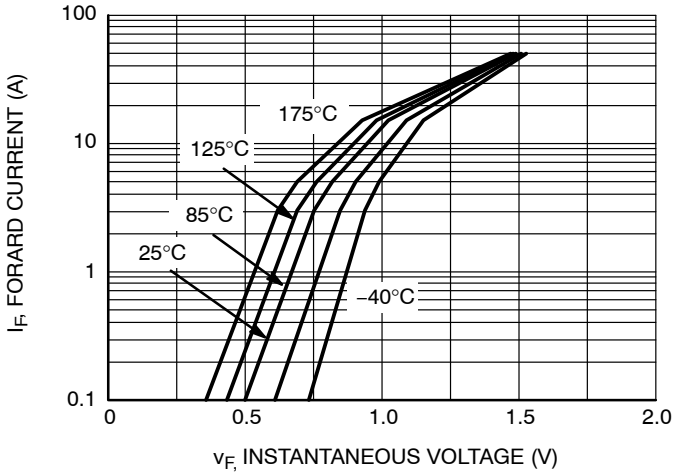



**Figure 2. Typical Forward Voltage**

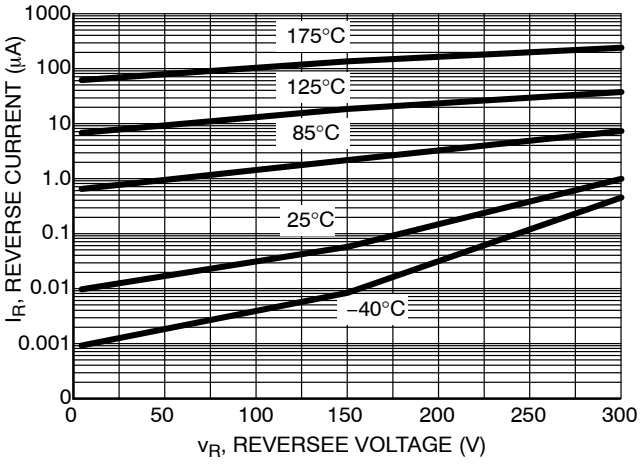



**Figure 3. Maximum Reverse Voltage**

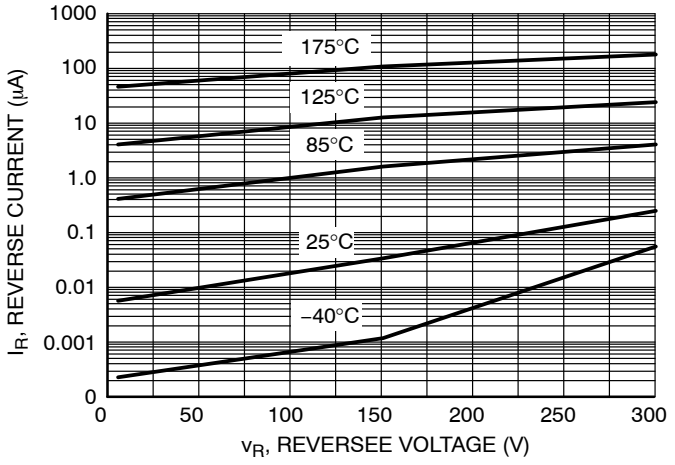



**Figure 4. Typical Reverse Voltage**

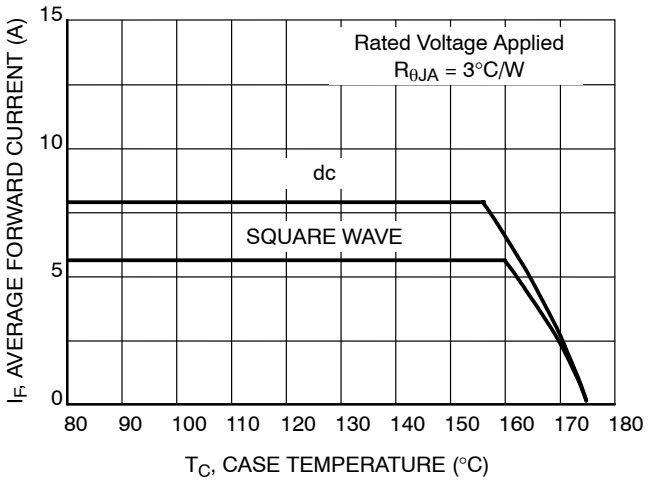



**Figure 5. Typical Current Derating, Case**

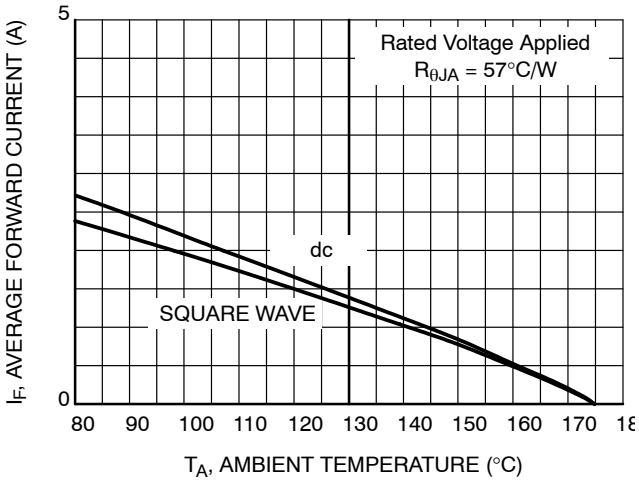



**Figure 6. Typical Current Derating, Ambient**

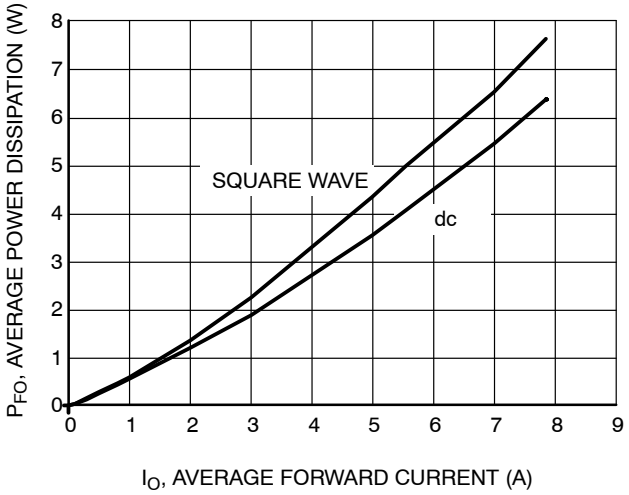



**Figure 7. Forward Power Dissipation**

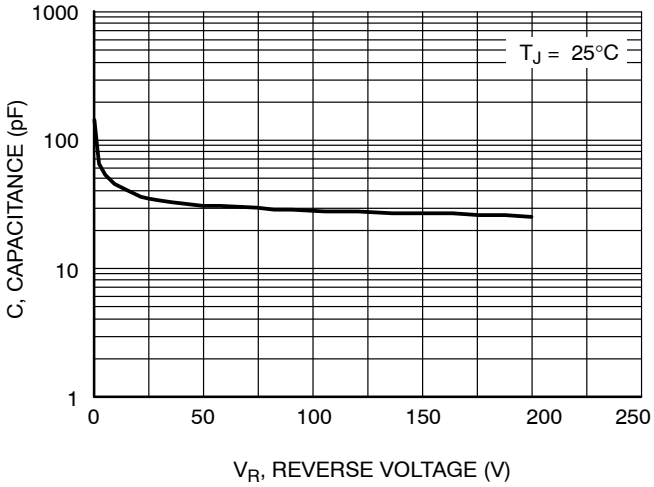



**Figure 8. Typical Capacitance**

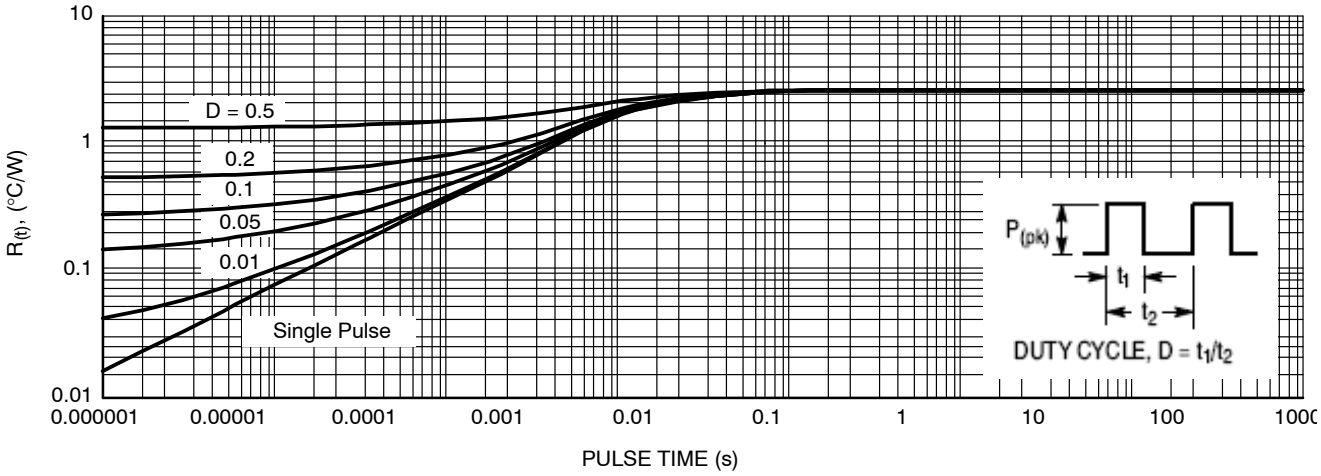



**Figure 9. $R_{(t)}$ on an Infinite Heatsink Power (J1) 0.800 W Power (J2) 0.800 W**

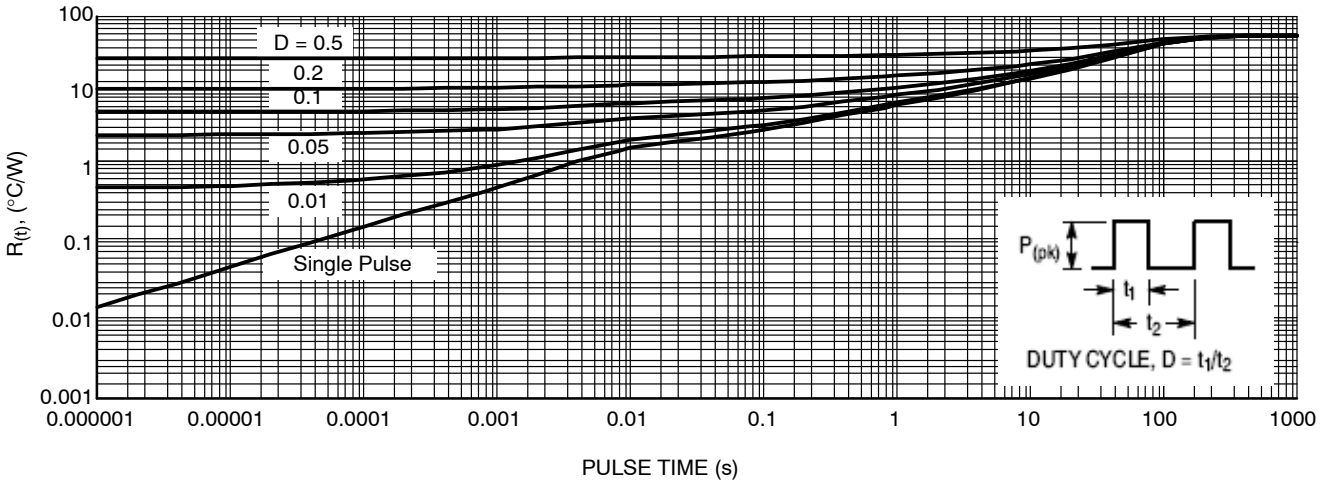
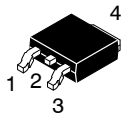


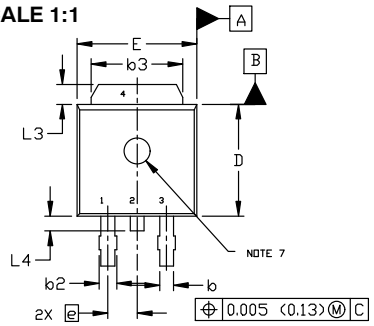

**Figure 10. PCB Cu Area 650 mm$^2$ PCB Cu thk 1 oz Power (J1) 0.800 W Power (J2) 0.800 W**



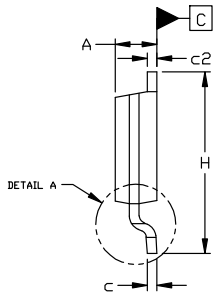

# DPAK (SINGLE GAUGE)
CASE 369C
ISSUE G

DATE 31 MAY 2023

**SCALE 1:1**




TOP VIEW

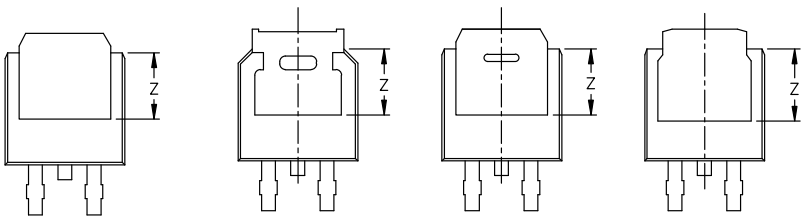



SIDE VIEW

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.

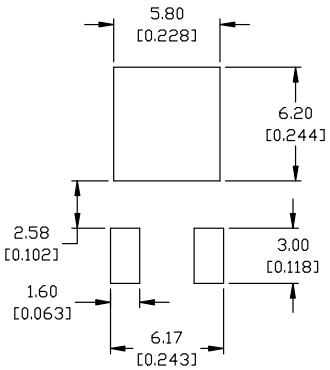
| DIM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.086 | 0.094 | 2.18 | 2.38 |
| A1 | 0.000 | 0.005 | 0.00 | 0.13 |
| b | 0.025 | 0.035 | 0.63 | 0.89 |
| b2 | 0.028 | 0.045 | 0.72 | 1.14 |
| b3 | 0.180 | 0.215 | 4.57 | 5.46 |
| c | 0.018 | 0.024 | 0.46 | 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

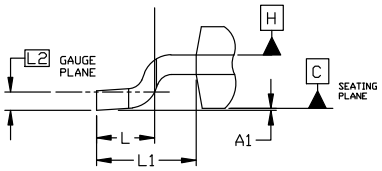
BOTTOM VIEW

ALTERNATE CONSTRUCTIONS



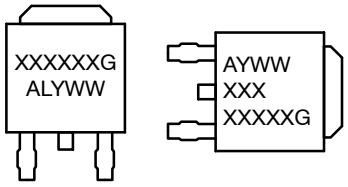

RECOMMENDED MOUNTING FOOTPRINT*

*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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