

# 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 Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	300	V
Average Rectified Forward Current ( $T_C = 165^\circ\text{C}$ )	$I_{F(AV)}$	5.0	A
Peak Repetitive Forward Current (Square Wave, Duty = 0.5, $T_C = 165^\circ\text{C}$ )	$I_{FRM}$	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

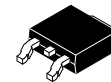
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



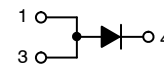
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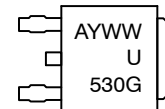
## ULTRAFAST RECTIFIER 5.0 AMPERES, 300 VOLTS



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 ejector 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.

# MURD530T4G,

## THERMAL CHARACTERISTICS

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

1. Rating applies for one diode leg.
2. Rating applies when for both diode legs when mounted on 130 mm<sup>2</sup> 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) ( $i_F = 3\text{ A}$ , $T_J = 25^{\circ}C$ ) ( $i_F = 3\text{ A}$ , $T_J = 125^{\circ}C$ ) ( $i_F = 5\text{ A}$ , $T_J = 25^{\circ}C$ ) ( $i_F = 5\text{ A}$ , $T_J = 125^{\circ}C$ )	$V_F$	0.95 0.80 1.05 0.90	Volts
Maximum Instantaneous Reverse Current (Note 4) ( $T_J = 25^{\circ}C$ , Rated dc Voltage) ( $T_J = 125^{\circ}C$ , Rated dc Voltage)	$i_R$	5.0 150	$\mu A$
Maximum Reverse Recovery Time ( $I_F = 1\text{ Amp}$ , $di/dt = 50\text{ A}/\mu s$ , $V_R = 30\text{ V}$ , $T_J = 25^{\circ}C$ )	$t_{rr}$	50	ns

4. Pulse Test: Pulse Width = 300  $\mu s$ , Duty Cycle  $\leq 2.0\%$ .

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.

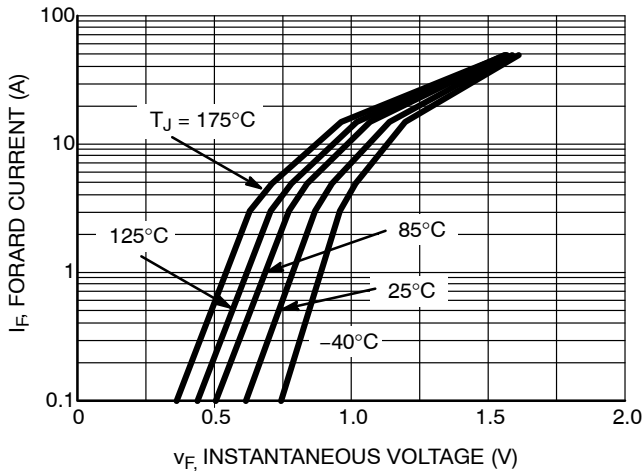


Figure 1. Maximum Forward Voltage

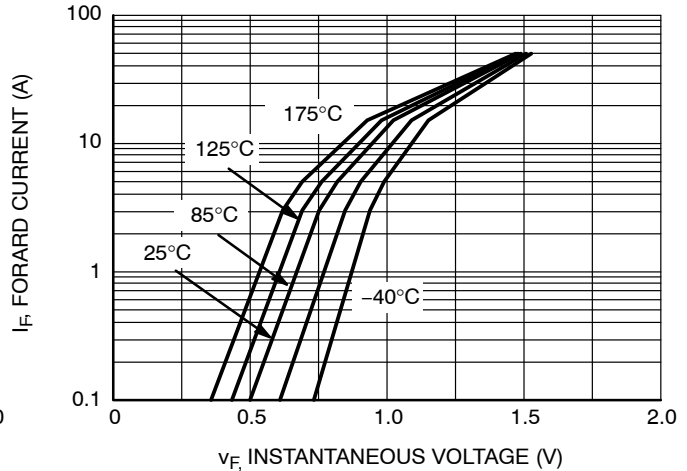


Figure 2. Typical Forward Voltage

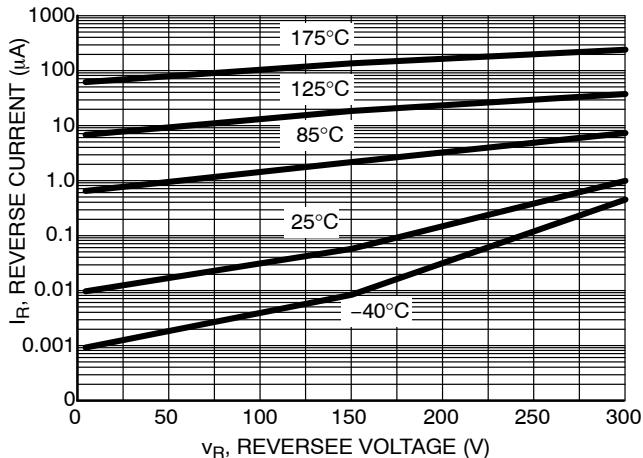


Figure 3. Maximum Reverse Voltage

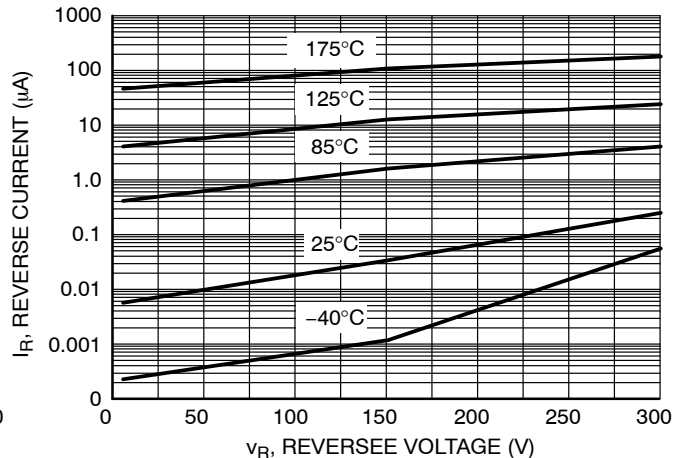


Figure 4. Typical Reverse Voltage

# MURD530T4G,

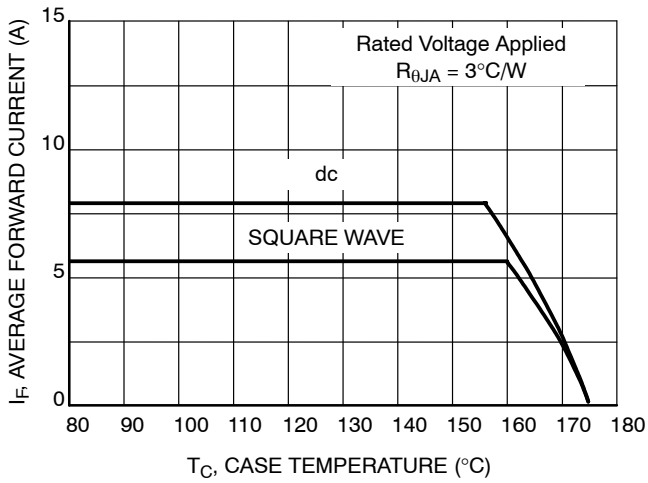


Figure 5. Typical Current Derating, Case

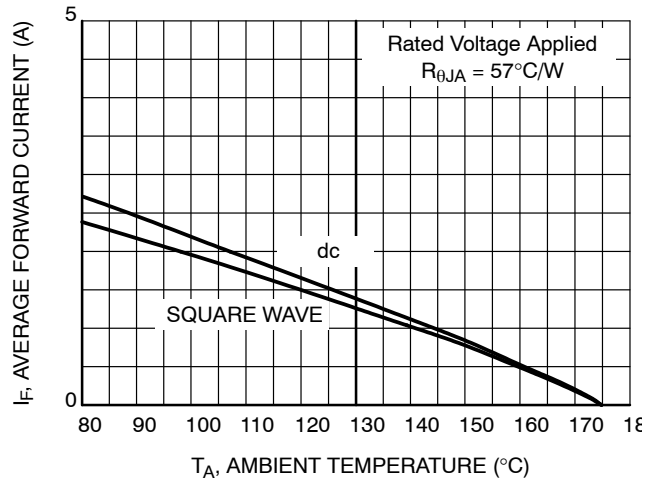


Figure 6. Typical Current Derating, Ambient

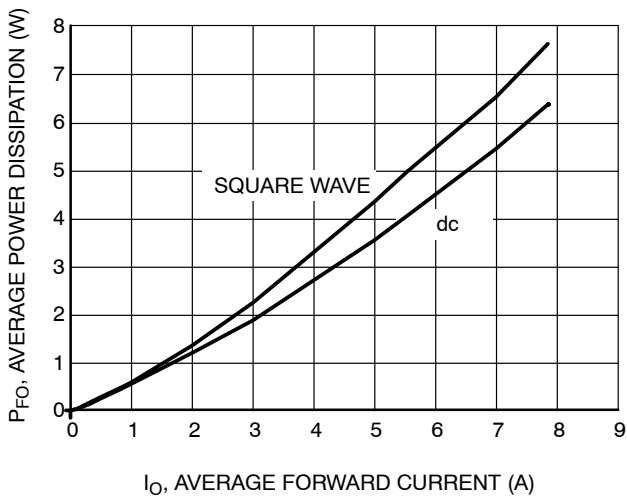


Figure 7. Forward Power Dissipation

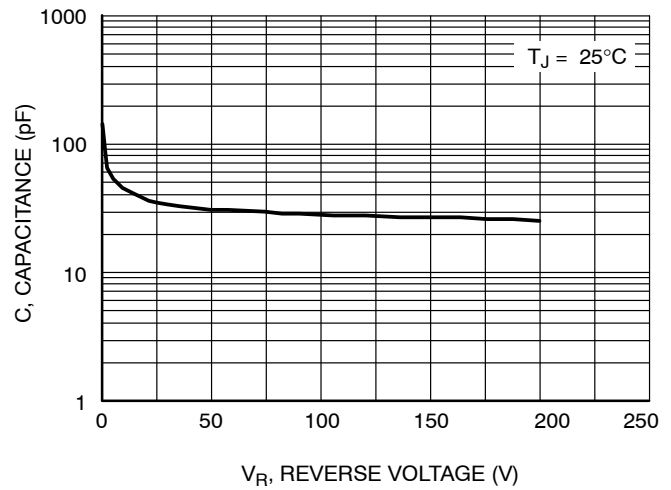


Figure 8. Typical Capacitance

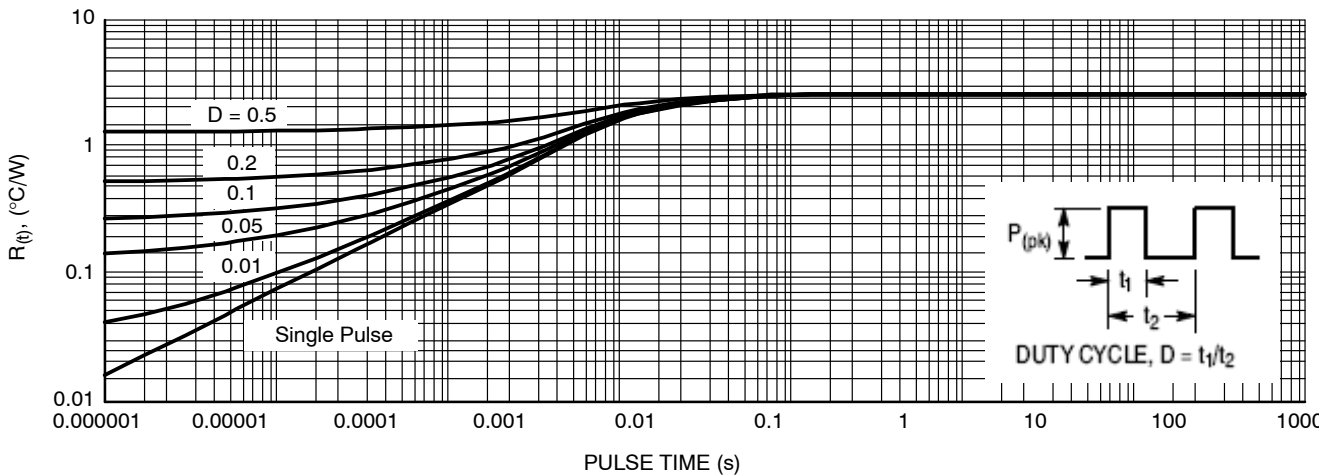


Figure 9.  $R_{\theta(t)}$  on an Infinite Heatsink Power (J1) 0.800 W Power (J2) 0.800 W

# MURD530T4G,

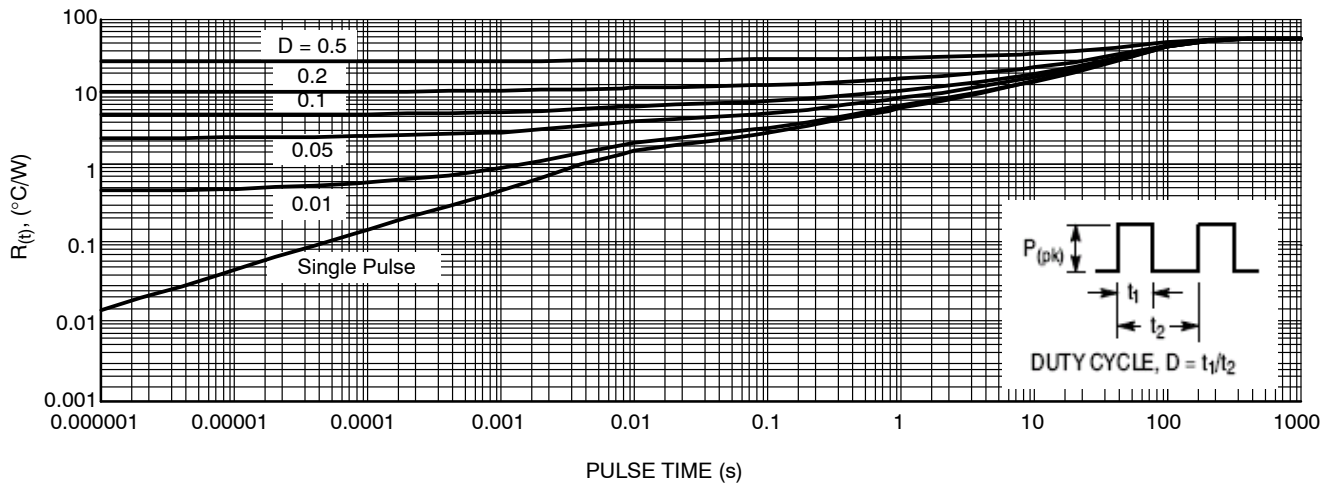
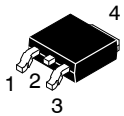


Figure 10. PCB Cu Area 650 mm<sup>2</sup> PCB Cu thk 1 oz Power (J1) 0.800 W Power (J2) 0.800 W

# MECHANICAL CASE OUTLINE

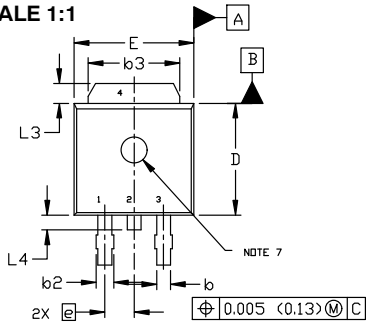
## PACKAGE DIMENSIONS



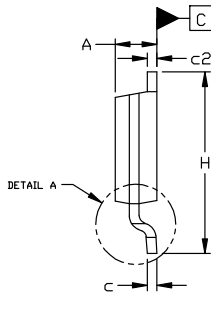
### DPAK (SINGLE GAUGE) CASE 369C ISSUE G

DATE 31 MAY 2023

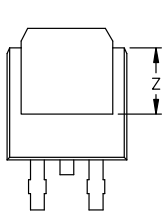
SCALE 1:1



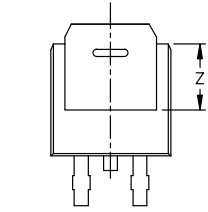
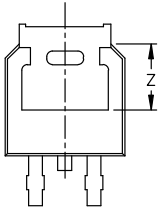
TOP VIEW



SIDE VIEW

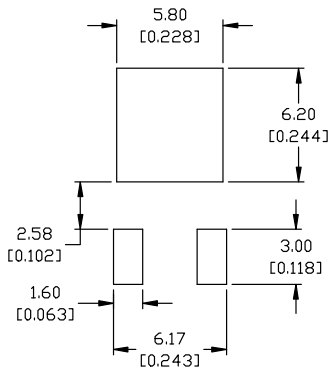


BOTTOM VIEW



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.

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

NOTES:

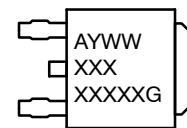
1. DIMENSIONING AND TOLERANCING ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3, AND Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. 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	---

#### 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.

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