

#### FEATURES

- \* Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- \* Dual rectifier construction, positive centertap
- \* Glass passivated chip junctions
- \* Low power loss
- \* Low forward voltage, high current capability
- \* High surge current capability
- \* Ultra fast recovery times for high efficiency
- \* High temperature soldering guaranteed : 260°C/10 seconds at terminals

#### MECHANICAL DATA

**Case:** JEDEC TO-247 molded plastic

**Terminals:** Lead solderable per MIL-STD-750, Method 2026

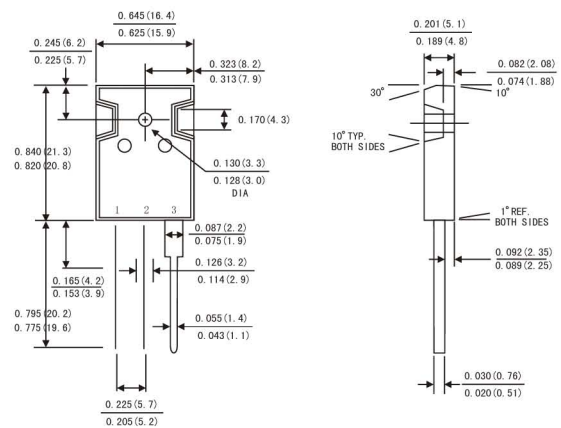
**Polarity:** As marked

**Weight:** 5.6 grams ( Approximately )

#### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.  
Single phase, half wave, 60 Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

#### TO-247



#### MAXIMUM RATINGS ( At $T_A = 25^\circ\text{C}$ unless otherwise noted )

RATINGS	SYMBOL	MUR3005CT	MUR3010CT	MUR3015CT	MUR3020CT	MUR3030CT	MUR3040CT	MUR3050CT	MUR3060CT	UNITS
Maximum Recurrent Peak Reverse Voltage	V <sub>RRM</sub>	50	100	150	200	300	400	500	600	Volts
Maximum RMS Voltage	V <sub>RMS</sub>	35	70	105	140	210	280	350	420	Volts
Maximum DC Blocking Voltage	V <sub>DC</sub>	50	100	150	200	300	400	500	600	Volts
Maximum Average Forward Rectified Current	I <sub>o</sub>	30.0								Amps
Peak Forward Surge Current 8.3 ms single half sine-wave superimposed on rated load (JEDEC method)	I <sub>FSM</sub>	300								Amps
Typical Junction capacitance per leg ( NOTE 1 )	C <sub>J</sub>	200				140				pF
Typical thermal resistance ( NOTE 2 )	R θ <sub>JC</sub>	1.0								°C / W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +175								°C

#### ELECTRICAL CHARACTERISTICS ( At $T_A = 25^\circ\text{C}$ unless otherwise noted )

CHARACTERISTICS		SYMBOL	MUR3005CT	MUR3010CT	MUR3015CT	MUR3020CT	MUR3030CT	MUR3040CT	MUR3050CT	MUR3060CT	UNITS
Maximum Instantaneous Forward Voltage at 15.0 A DC		V <sub>F</sub>	0.975				1.30		1.50		Volts
Maximum DC reverse current at rated DC blocking voltage per leg	T <sub>C</sub> = 25°C	I <sub>R</sub>	10.0								uAmps
	T <sub>C</sub> = 100°C		500								
Maximum reverse recovery time ( NOTE 3 ) per leg		trr	35				50				nS

- NOTES : 1. Measured at 1.0 MHz and applied reverse voltage of 4.0 Volts  
2. Thermal resistance from junction to case per leg mounted on heatsink  
3. Reverse recovery test conditions :  $I_F = 0.5 \text{ A}$ ,  $I_R = -1.0 \text{ A}$ ,  $I_{rr} = -0.25 \text{ A}$ .  
4. Suffix " C " = Common Cathode, Suffix " A " = Common Anode, Suffix " D " = Double.

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### RATING CHARACTERISTIC CURVES ( MUR3005CT THRU MUR3060CT )

Average Forward Current,  $I_A$  (A)

Single Half Wave 60Hz Resistive or Inductive Load

Case Temperature,  $(^{\circ}\text{C})$

Case Temperature, $(^{\circ}\text{C})$	Average Forward Current, $I_A$ (A)
0	30.0
25	30.0
50	30.0
75	30.0
100	30.0
125	15.0
150	0.0

8.3 ms Single Half Sine-Wave (JEDEC Method)

Number of Cycles at 60Hz	Peak Forward Surge Current ( $I_F$ ) in Amperes
0	300
2	240
4	195
6	165
8	145
10	130
20	105
40	85
60	78
80	75
100	75

Figure 1 is a graph showing the Forward Characteristics of the diodes. The Y-axis represents Instantaneous Forward Current (A) on a logarithmic scale from 0.1 to 120. The X-axis represents Instantaneous Forward Voltage (V) on a linear scale from 0 to 1.7. The graph is for  $T_J = 25^\circ\text{C}$  and Pulse Width = 300µs, 1% Duty Cycle. Three curves are plotted, corresponding to different diode models: MUR3005CT-MUR3020CT, MUR3030CT-MUR3040CT, and MUR3050CT&60CT. The curves show that the forward current increases exponentially with forward voltage.

This graph shows the relationship between the instantaneous reverse current and the applied reverse voltage for 1N4001 diodes at three different temperatures. The y-axis represents the instantaneous reverse current in microamperes (μA) on a logarithmic scale from 0.1 to 100. The x-axis represents the percent of rated peak reverse voltage from 0 to 140. Three curves are plotted for temperatures  $T_J = 25^\circ\text{C}$ ,  $75^\circ\text{C}$ , and  $100^\circ\text{C}$ . The current increases with both voltage and temperature, with a sharp increase occurring as the voltage approaches the rated peak reverse voltage of 100%.

Percent of Rated Peak Reverse Voltage (%)	Instantaneous Reverse Current (μA) at $T_J = 25^\circ\text{C}$	Instantaneous Reverse Current (μA) at $T_J = 75^\circ\text{C}$	Instantaneous Reverse Current (μA) at $T_J = 100^\circ\text{C}$
10	0.1	1.8	8.0
20	0.15	2.2	10.0
40	0.3	3.0	15.0
60	0.4	4.5	22.0
80	0.5	6.5	30.0
90	0.6	8.5	40.0
100	0.8	12.0	60.0
105	>100	>100	>100

Figure 3 is a graph showing the typical junction capacitance (pF) versus reverse voltage (V) for the MUR3005CT-MUR3020CT and MUR3030CT-MUR3060CT diodes. The y-axis represents junction capacitance in pF on a logarithmic scale from 10 to 1000. The x-axis represents reverse voltage in V on a logarithmic scale from 0.1 to 80. Two curves are plotted: a solid line for MUR3005CT-MUR3020CT and a dashed line for MUR3030CT-MUR3060CT. Both curves show a decrease in capacitance as reverse voltage increases. The solid line starts at approximately 500 pF at 0.1 V and decreases to about 50 pF at 80 V. The dashed line starts at approximately 300 pF at 0.1 V and decreases to about 30 pF at 80 V. A note indicates  $T_J = 25^\circ\text{C}$ .