

## Features

- Zero Reverse Recovery Current
- Positive Temperature Coefficient
- High-Speed Switching
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant(Note 1) ("P" Suffix designates RoHS Compliant. See ordering information)

## Benefits

- Temperature-Independent Performance
- Low Switching Loss
- Low Heat Dissipation Requirements

## Applications

- Switching Power Supply
- Power Factor Correction
- Motor Drive, Traction
- Charging Pile

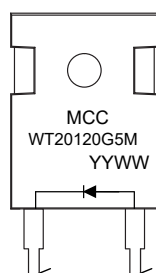
## Maximum Ratings

| Parameter                                                                                                     | Symbol                      | Rating | Unit |
|---------------------------------------------------------------------------------------------------------------|-----------------------------|--------|------|
| Peak Repetitive Reverse Voltage@ $T_j=25^{\circ}\text{C}$                                                     | $V_{RRM}$                   | 1200   | V    |
| Surge Peak Reverse Voltage@ $T_j=25^{\circ}\text{C}$                                                          | $V_{RSM}$                   | 1200   | V    |
| DC Reverse Voltage@ $T_j=25^{\circ}\text{C}$                                                                  | $V_{DC}$                    | 1200   | V    |
| Continuous forward Current                                                                                    | @ $T_c=25^{\circ}\text{C}$  | 45     | A    |
|                                                                                                               | @ $T_c=135^{\circ}\text{C}$ | 21     |      |
|                                                                                                               | @ $T_c=140^{\circ}\text{C}$ | 20     |      |
| Non-repetitive Peak Forward Surge Current<br>@ $T_c=25^{\circ}\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse | $I_{FSM}$                   | 180    | A    |
| Power Dissipation                                                                                             | @ $T_c=25^{\circ}\text{C}$  | 187    | W    |
|                                                                                                               | @ $T_c=110^{\circ}\text{C}$ | 81     |      |

Note:1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.  
2. High Temperature Solder Exemptions Applied, see EU Directive Annex 7a.

## Internal Structure:

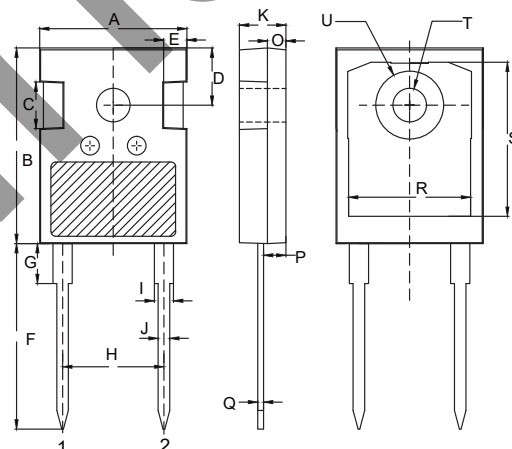
PIN 1  CASE  
PIN 2 



Device Code: WT20120G5M  
YYWW: Date Code (Year & Week)

# 20 Amp Silicon Carbide Schottky Barrier Rectifier 1200 Volts

TO-247AD



| DIM | INCHES |       | MM    |       | NOTE |
|-----|--------|-------|-------|-------|------|
|     | MIN    | MAX   | MIN   | MAX   |      |
| A   | 0.610  | 0.663 | 15.50 | 16.85 |      |
| B   | 0.815  | 0.839 | 20.70 | 21.30 |      |
| C   | 0.189  | 0.205 | 4.80  | 5.20  |      |
| D   | 0.242  |       | 6.15  |       | BSC. |
| E   | 0.091  | 0.106 | 2.30  | 2.70  |      |
| F   | 0.772  | 0.796 | 19.62 | 20.22 |      |
| G   | -----  | 0.169 | ----- | 4.30  |      |
| H   | 0.428  |       | 10.88 |       | BSC. |
| I   | 0.075  | 0.087 | 1.91  | 2.21  |      |
| J   | 0.044  | 0.054 | 1.11  | 1.36  |      |
| K   | 0.189  | 0.205 | 4.80  | 5.20  |      |
| O   | 0.073  | 0.085 | 1.85  | 2.15  |      |
| P   | 0.087  | 0.103 | 2.21  | 2.61  |      |
| Q   | 0.020  | 0.030 | 0.51  | 0.75  |      |
| R   | 0.512  | 0.535 | 13.00 | 13.60 |      |
| S   | 0.640  | 0.663 | 16.25 | 16.85 |      |
| T   | 0.134  | 0.150 | 3.40  | 3.80  | Φ    |
| U   | -----  | 0.287 | ----- | 7.30  | Φ    |

**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

| Parameter                 | Symbol | Conditions                    | Typ. | Max. | Units   |
|---------------------------|--------|-------------------------------|------|------|---------|
| Forward Voltage           | $V_F$  | $I_F=20A, T_J=25^{\circ}C$    | 1.48 | 1.70 | V       |
|                           |        | $I_F=20A, T_J=175^{\circ}C$   | 2.2  |      | V       |
| Reverse Leakage Current   | $I_R$  | $V_R=1200V, T_J=25^{\circ}C$  | 0.5  | 25   | $\mu A$ |
|                           |        | $V_R=1200V, T_J=175^{\circ}C$ | 30   |      | $\mu A$ |
| Total Capacitive Charge   | $Q_C$  | $V_R=800V$                    | 93   |      | nC      |
| Total capacitance         | C      | $V_R=0V, f=1MHz$              | 1265 |      | pF      |
|                           |        | $V_R=400V, f=1MHz$            | 87   |      | pF      |
|                           |        | $V_R=800V, f=1MHz$            | 67   |      | pF      |
| Capacitance Stored Energy | $E_C$  | $V_R=800V$                    | 26.5 |      | $\mu J$ |

**Thermal characteristics**

| Parameter                                | Symbol      | Min | Typ | Max | Units         |
|------------------------------------------|-------------|-----|-----|-----|---------------|
| Operating Junction Temperature Range     | $T_J$       | -55 |     | 175 | $^{\circ}C$   |
| Storage Temperature Range                | $T_{stg}$   | -55 |     | 175 | $^{\circ}C$   |
| Thermal Resistance from Junction to Case | $R_{thJ-C}$ |     | 0.8 |     | $^{\circ}C/W$ |

## Curve Characteristics

Figure 1. Forward Characteristics

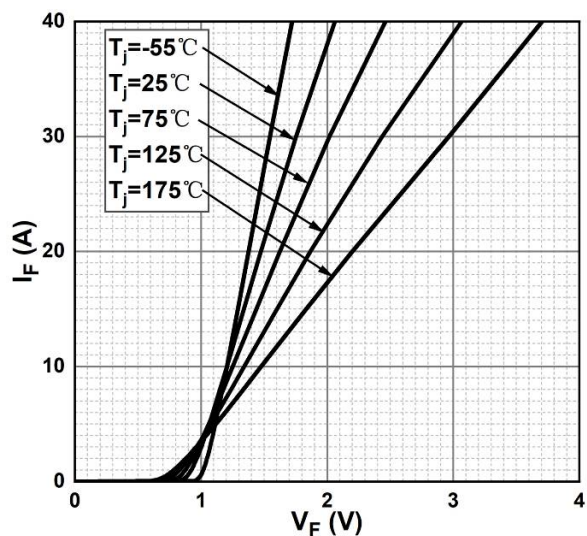


Figure 2. Reverse Characteristics

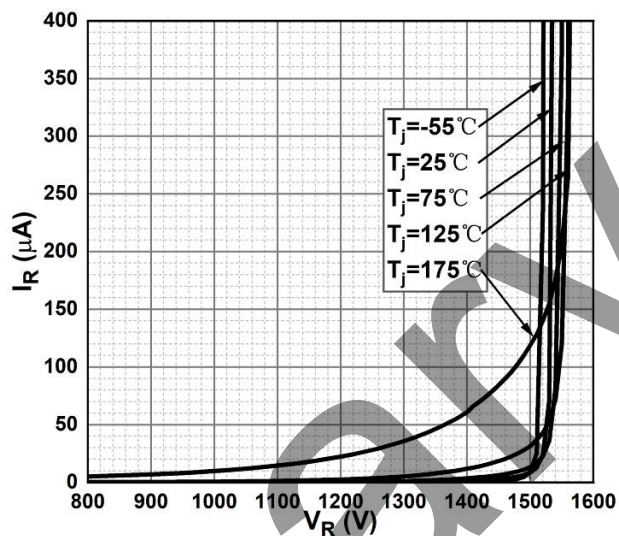


Figure 3. Capacitance vs. Reverse Voltage

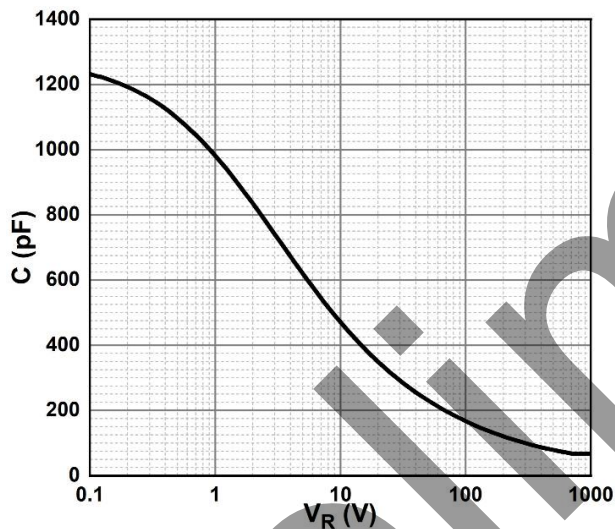


Figure 4. Total Capacitance Charge vs. Reverse Voltage

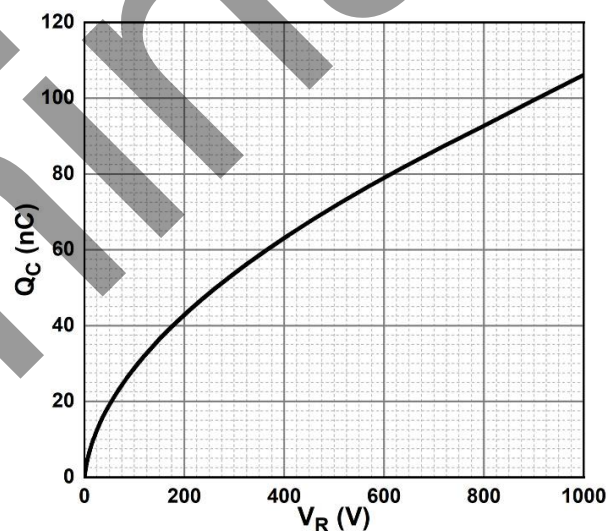


Figure 5. Capacitance Stored Energy

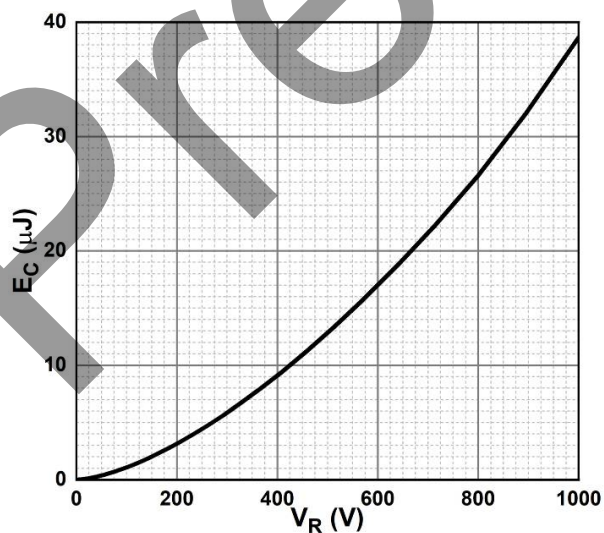
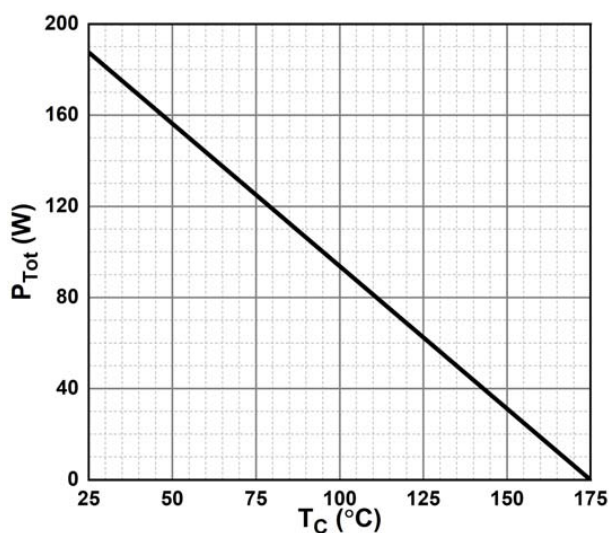


Figure 6. Power Derating



## Curve Characteristics

Fig. 7 - Current Derating

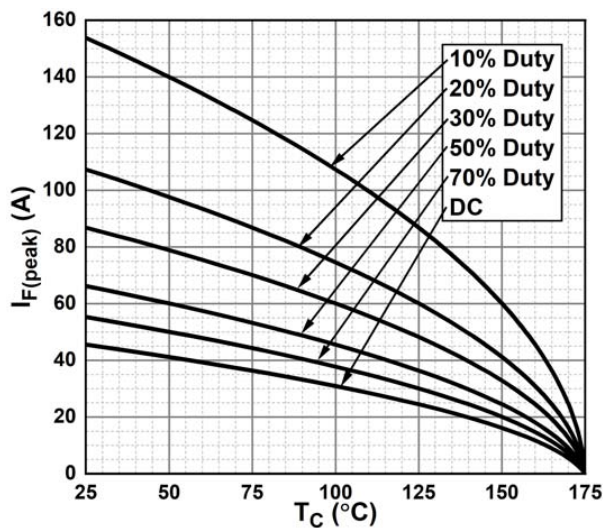
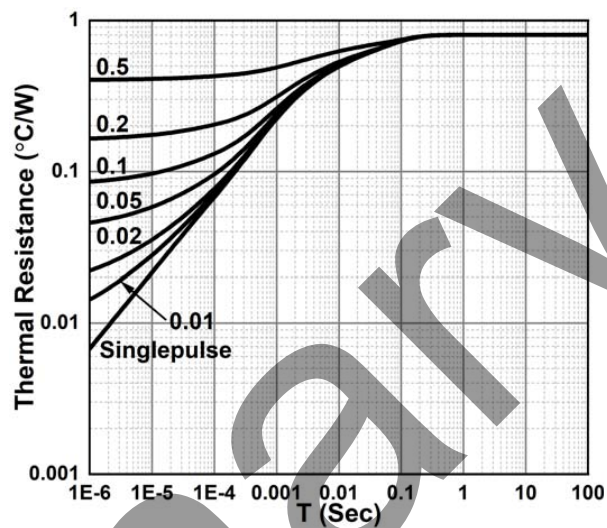


Fig. 8 - Normalized Transient Thermal Impedance



## Ordering Information

| Device         | Packing          |
|----------------|------------------|
| Part Number-BP | Bulk: 30pcs/Tube |

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