

40A 200V SchottkyBarrierDiode

1 Description

Dual center tab Schottky rectifier suited for High Frequency server and telecom base station SMPS. Packaged in TO-3P/TO-247, this device combines

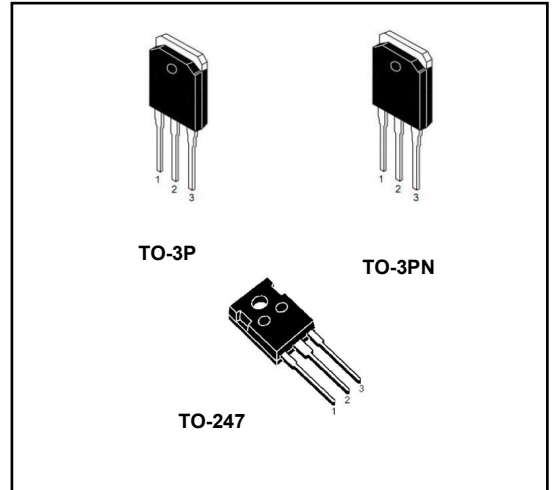
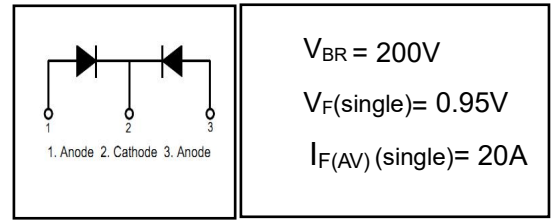
high current rating and low volume to enhance both reliability and power density of the application.

2 Features

- High junction temperature capability
- Low leakage current
- Low thermal resistance
- High frequency operation
- Avalanche specification

3 Applications

- Switching Power Supply
- Power Switching Circuits
- General Purpose



4 Electrical Characteristics

4.1 Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

| PARAMETER | | SYMBOL | VALUE | UNIT |
|---|-------------------------|--------------|---------|------|
| Peak Repetitive Reverse Voltage | | V_{RRM} | 200 | V |
| RMS Reverse Voltage | | $V_{R(RMS)}$ | 160 | V |
| DC Blocking Voltage | | V_R | 200 | V |
| Average Rectified Forward Current(single) | $T_C=120^\circ\text{C}$ | $I_{F(AV)}$ | 20 | A |
| Average Rectified Forward Current(double) | | | 40 | A |
| Repetitive Peak Surge Current(single) | | I_{FRM} | 30 | A |
| Nonrepetitive Peak Surge Current(single) | tp=8.3ms | I_{FSM} | 250 | A |
| Avalanche Energy(single) | L=1mH | E_{AS} | 50 | mJ |
| Operating Junction Temperature Range | | T_j | -55~150 | °C |
| Storage Temperature Range | | T_{stg} | -55~150 | °C |

4.2 Thermal Characteristics

| PARAMETER | SYMBOL | VALUE | | UNIT |
|---|------------|-----------|--------|------|
| | | TO-3P/3PN | TO-247 | |
| Thermal Resistance, Junction to Case-sink | R_{thJC} | 0.90 | 0.85 | °C/W |

4.3 Electrical Characteristics (Tc=25°C, unless otherwise noted)

| PARAMETER | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|---------------------------------------|------------------|---|-----|------|------|------|
| Maximum Instantaneous Forward Voltage | V _F | I _F = 20A | - | 0.88 | 0.95 | V |
| | | I _F = 20A, T _C = 125°C | - | - | 0.85 | V |
| | | I _F = 30A | - | 0.91 | 1.1 | V |
| Maximum Instantaneous Reverse | I _R | V _R = 200V | - | 2 | 100 | uA |
| | | V _R = 200V, T _C = 125°C | - | - | 20 | mA |
| Total capacitance | C _{tot} | V _R =10V f=1MHz | - | 180 | - | pF |
| DC Blocking Voltage | V _{BR} | I _R =100uA | 205 | 240 | - | V |

DEFINITIONS

V_F = Instantaneous forward voltage (pw = 300µs, D = 2%).

I_R = Instantaneous reverse current.

RθJC = Thermal resistance junction to case.

pw = pulse width.

D = duty cycle.

5 Typical characteristics diagrams

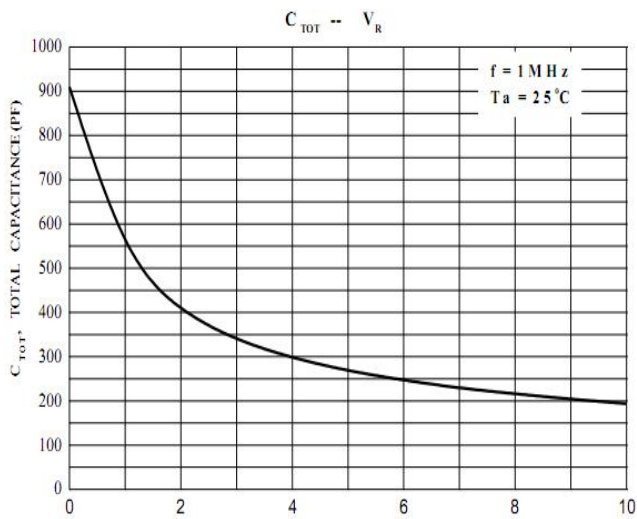


FIGURE 1. Total capacitance vs Voltage

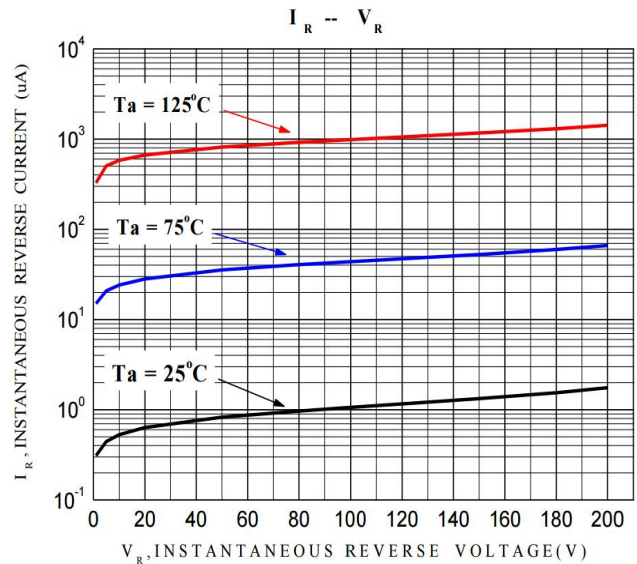


FIGURE 2. REVERSE CURRENT vs REVERSE VOLTAGE

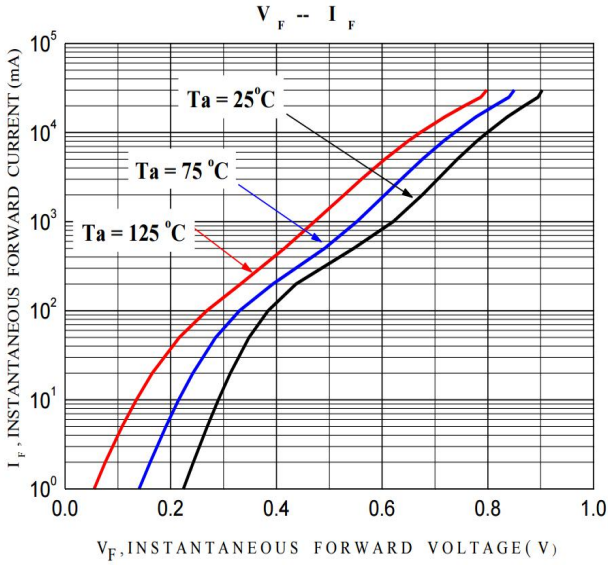


FIGURE 3. FORWARD CURRENT vs FORWARD VOLTAGE

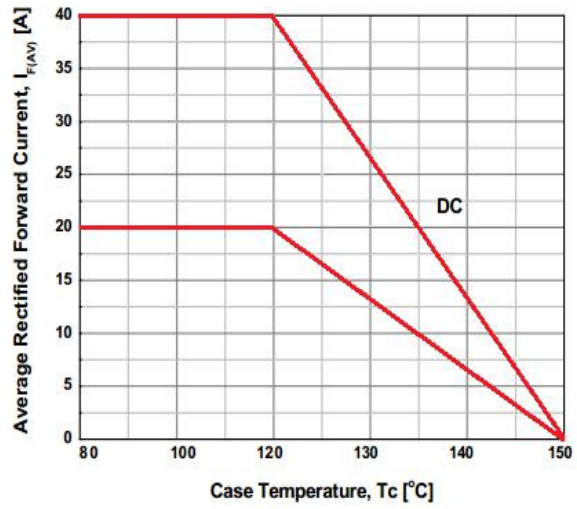


FIGURE 4. CURRENT DERATING CURVE

6 Typical Test Circuit and Waveform

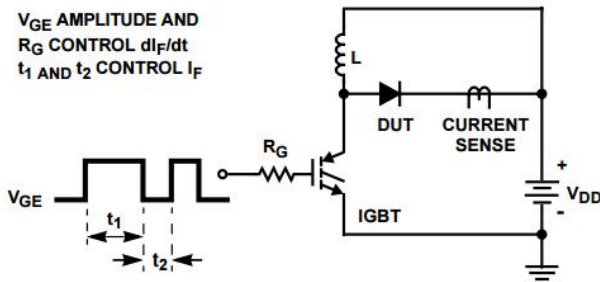


FIGURE 5. trr TEST CIRCUIT

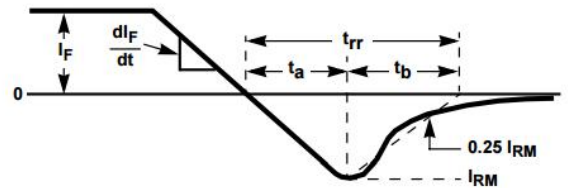


FIGURE 6. trr WAVEFORMS AND DEFINITIONS

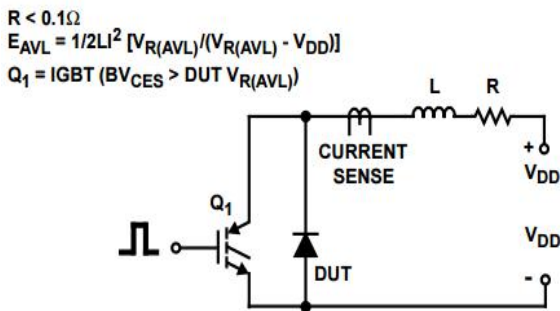


FIGURE 7. AVALANCHE ENERGY TEST CIRCUIT FIGURE

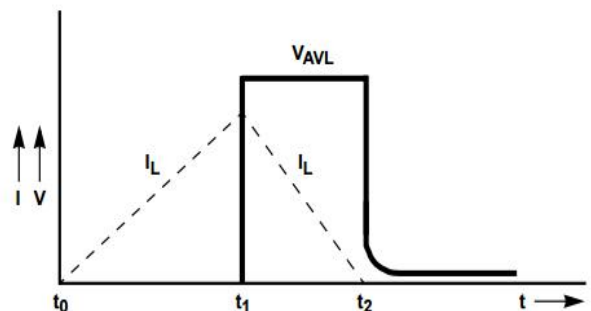
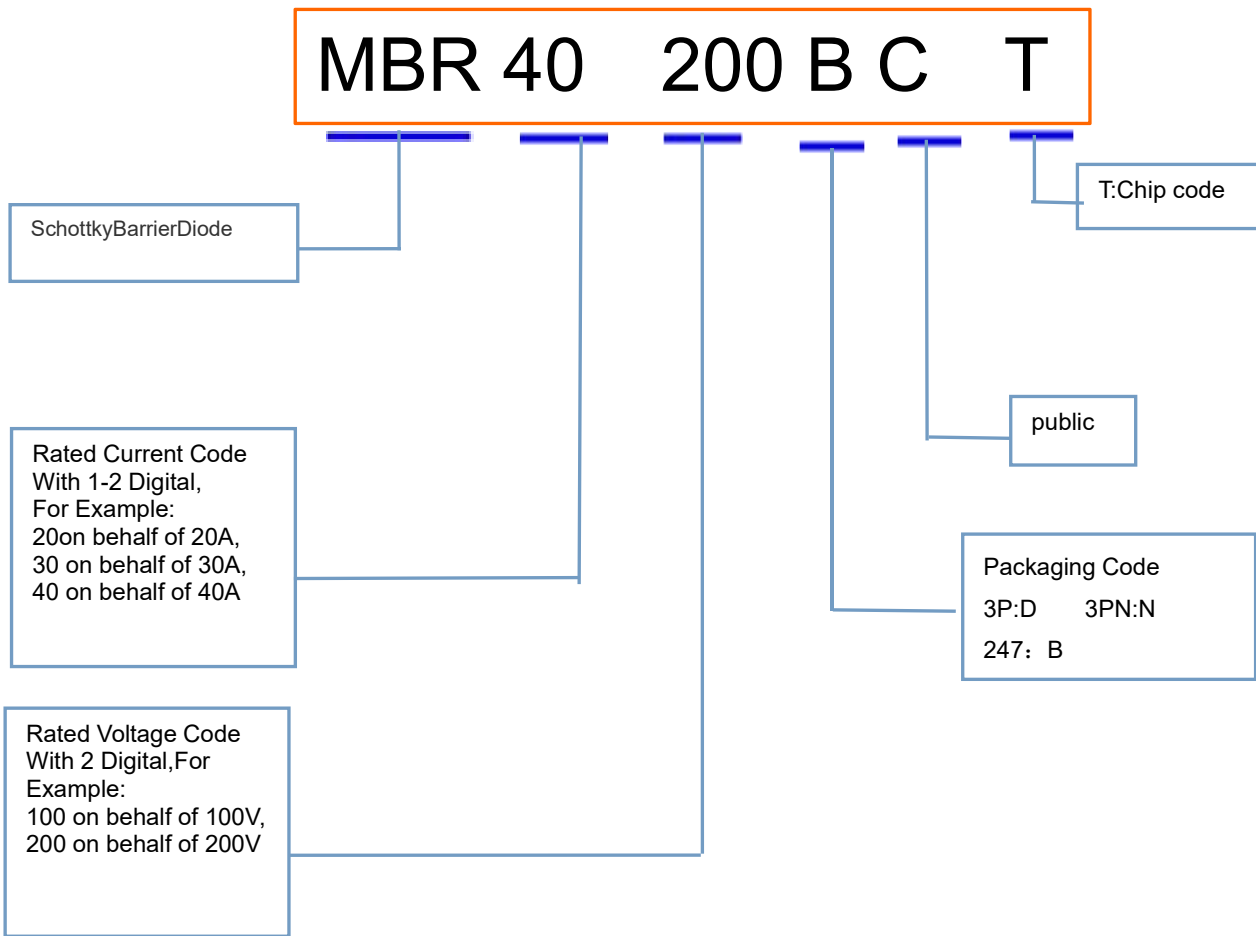


FIGURE 8. AVALANCHE CURRENT AND VOLTAGE WAVEFORMS

7 Product Names Rules

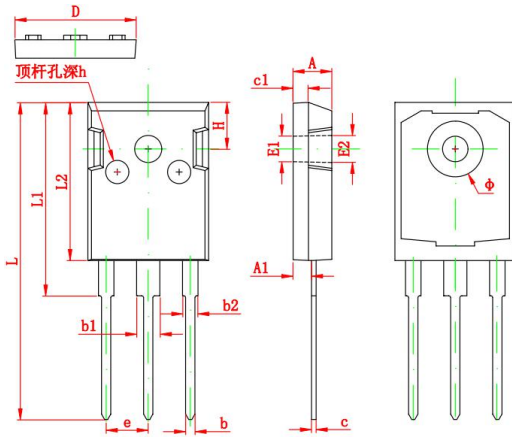


8 Product Specifications and Packaging Models

| Product Model | Package Type | Mark Name | RoHS | Package | Quantity |
|---------------|--------------|-------------|---------|---------|----------|
| MBR40200CT | TO-3P | MBR40200CT | Pb-free | Tube | 300/box |
| MBR40200BCT | TO-247 | MBR40200BCT | Pb-free | Tube | 300/box |
| MBR40200NCT | TO-3PN | MBR40200NCT | Pb-free | Tube | 300/box |

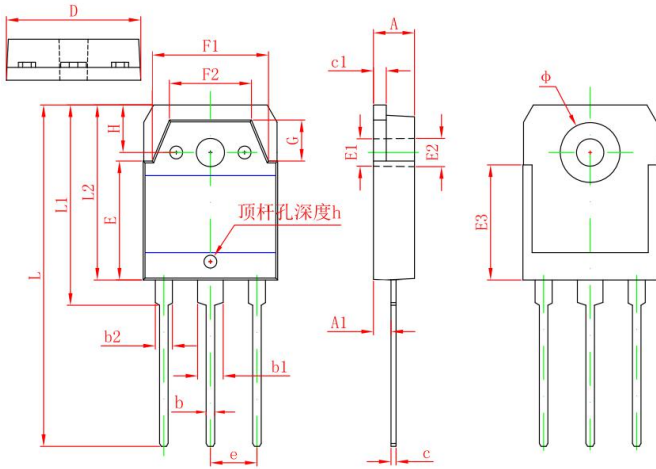
9 Dimensions

TO-247 PACKAGE OUTLINE DIMENSIONS

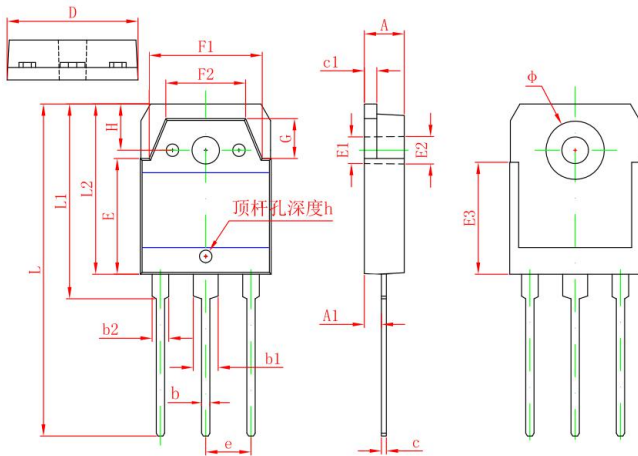


| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.600 | 5.000 | 0.181 | 0.197 |
| A1 | 2.200 | 2.600 | 0.087 | 0.102 |
| b | 0.800 | 1.200 | 0.031 | 0.047 |
| b1 | 2.800 | 3.200 | 0.110 | 0.126 |
| b2 | 1.800 | 2.200 | 0.071 | 0.087 |
| c | 0.500 | 0.700 | 0.020 | 0.028 |
| c1 | 1.450 | 1.650 | 0.057 | 0.065 |
| D | 15.450 | 15.850 | 0.608 | 0.624 |
| E | 13.700 | 14.100 | 0.539 | 0.555 |
| E1 | 3.200 REF | | 0.126 REF | |
| E2 | 3.300 REF | | 0.130 REF | |
| E3 | 13.450 REF | | 0.530 REF | |
| F1 | 13.400 | 13.800 | 0.528 | 0.543 |
| F2 | 9.400 | 9.800 | 0.370 | 0.386 |
| L | 39.900 | 40.300 | 1.571 | 1.587 |
| L1 | 23.200 | 23.600 | 0.913 | 0.929 |
| L2 | 20.300 | 20.600 | 0.799 | 0.811 |
| Φ | 6.900 | 7.100 | 0.272 | 0.280 |
| G | 5.150 | 5.550 | 0.203 | 0.219 |
| e | 5.450 TYP | | 0.215 TYP | |
| H | 5.000 REF | | 0.197 REF | |
| h | 0.000 | 0.300 | 0.000 | 0.012 |

TO-3P PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.600 | 5.000 | 0.181 | 0.197 |
| A1 | 1.200 | 1.600 | 0.047 | 0.063 |
| b | 0.800 | 1.200 | 0.031 | 0.047 |
| b1 | 2.800 | 3.200 | 0.110 | 0.126 |
| b2 | 1.800 | 2.200 | 0.071 | 0.087 |
| c | 0.500 | 0.700 | 0.020 | 0.028 |
| c1 | 1.450 | 1.650 | 0.057 | 0.065 |
| D | 15.450 | 15.850 | 0.608 | 0.624 |
| E | 13.700 | 14.100 | 0.539 | 0.555 |
| E1 | 3.200 REF | | 0.126 REF | |
| E2 | 3.300 REF | | 0.130 REF | |
| E3 | 13.450 REF | | 0.530 REF | |
| F1 | 13.400 | 13.800 | 0.528 | 0.543 |
| F2 | 9.400 | 9.800 | 0.370 | 0.386 |
| L | 39.900 | 40.300 | 1.571 | 1.587 |
| L1 | 23.200 | 23.600 | 0.913 | 0.929 |
| L2 | 20.300 | 20.600 | 0.799 | 0.811 |
| Φ | 6.900 | 7.100 | 0.272 | 0.280 |
| G | 5.150 | 5.550 | 0.203 | 0.219 |
| e | 5.450 TYP | | 0.215 TYP | |
| H | 5.000 REF | | 0.197 REF | |
| h | 0.000 | 0.300 | 0.000 | 0.012 |

TO-3PN PACKAGE OUTLINE DIMENSIONS


| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.600 | 5.000 | 0.181 | 0.197 |
| A1 | 2.200 | 2.600 | 0.087 | 0.102 |
| b | 0.800 | 1.200 | 0.031 | 0.047 |
| b1 | 2.800 | 3.200 | 0.110 | 0.126 |
| b2 | 1.800 | 2.200 | 0.071 | 0.087 |
| c | 0.500 | 0.700 | 0.020 | 0.028 |
| c1 | 1.450 | 1.650 | 0.057 | 0.065 |
| D | 15.450 | 15.850 | 0.608 | 0.624 |
| E | 13.700 | 14.100 | 0.539 | 0.555 |
| E1 | 3.200 REF | | 0.126 REF | |
| E2 | 3.300 REF | | 0.130 REF | |
| E3 | 13.450 REF | | 0.530 REF | |
| F1 | 13.400 | 13.800 | 0.528 | 0.543 |
| F2 | 9.400 | 9.800 | 0.370 | 0.386 |
| L | 39.900 | 40.300 | 1.571 | 1.587 |
| L1 | 23.200 | 23.600 | 0.913 | 0.929 |
| L2 | 20.300 | 20.600 | 0.799 | 0.811 |
| φ | 6.900 | 7.100 | 0.272 | 0.280 |
| G | 5.150 | 5.550 | 0.203 | 0.219 |
| e | 5.450 TYP | | 0.215 TYP | |
| H | 5.000 REF | | 0.197 REF | |
| h | 0.000 | 0.300 | 0.000 | 0.012 |

10 Attentions

- Jiangsu Donghai Semiconductor Technology Co., Ltd. reserves the right to change the specification without prior notice! The customer should obtain the latest version of the information before making the order and verify that the information is complete and up to date.
- It is the responsibility of the purchaser for any failure or failure of any semiconductor product under certain conditions. It is the responsibility of the purchaser to comply with safety standards and to take safety measures in the system design and machine manufacturing of WXDH products in order to avoid potential risk of failure. Injury or property damage.
- Product promotion is endless, our company will be dedicated to provide customers with better products.

11 Appendix

Revision history:

| Date | REV. | Description | Page |
|------------|------|-------------|------|
| 2017.08.29 | 1.0 | Original | |