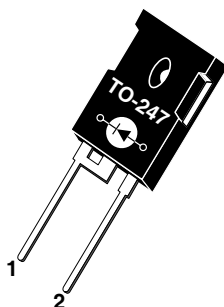


1 - Cathode  
2 - Anode  
Back of Case - Cathode



**APT100S20B(G) 200V 120A**

\*G Denotes RoHS Compliant, Pb Free Terminal Finish.

## HIGH VOLTAGE SCHOTTKY DIODE

| PRODUCT APPLICATIONS                                                                                                                                                                                                                                                                                                                                                                                                          | PRODUCT FEATURES                                                                                                                                                                                                                                                                     | PRODUCT BENEFITS                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Parallel Diode <ul style="list-style-type: none"> <li>-Switchmode Power Supply</li> <li>-Inverters</li> </ul> </li> <li>Free Wheeling Diode <ul style="list-style-type: none"> <li>-Motor Controllers</li> <li>-Converters</li> </ul> </li> <li>Snubber Diode</li> <li>Uninterruptible Power Supply (UPS)</li> <li>48 Volt Output Rectifiers</li> <li>High Speed Rectifiers</li> </ul> | <ul style="list-style-type: none"> <li>Ultrafast Recovery Times</li> <li>Soft Recovery Characteristics</li> <li>Popular TO-247 Package or Surface Mount D<sup>3</sup>PAK Package</li> <li>Low Forward Voltage</li> <li>High Blocking Voltage</li> <li>Low Leakage Current</li> </ul> | <ul style="list-style-type: none"> <li>Low Losses</li> <li>Low Noise Switching</li> <li>Cooler Operation</li> <li>Higher Reliability Systems</li> <li>Increased System Power Density</li> </ul> |

### MAXIMUM RATINGS

All Ratings:  $T_C = 25^\circ\text{C}$  unless otherwise specified.

| Symbol         | Characteristic / Test Conditions                                                             | APT100S20B(G) | UNIT             |
|----------------|----------------------------------------------------------------------------------------------|---------------|------------------|
| $V_R$          | Maximum D.C. Reverse Voltage                                                                 | 200           | Volts            |
| $V_{RRM}$      | Maximum Peak Repetitive Reverse Voltage                                                      |               |                  |
| $V_{RWM}$      | Maximum Working Peak Reverse Voltage                                                         |               |                  |
| $I_{F(AV)}$    | Maximum Average Forward Current <sup>①</sup> ( $T_C = 125^\circ\text{C}$ , Duty Cycle = 0.5) | 120           | Amps             |
| $I_{F(RMS)}$   | RMS Forward Current (Square wave, 50% duty) <sup>①</sup>                                     | 318           |                  |
| $I_{FSM}$      | Non-Repetitive Forward Surge Current ( $T_J = 45^\circ\text{C}$ , 8.3ms)                     | 1000          |                  |
| $T_J, T_{STG}$ | Operating and Storage Temperature Range                                                      | -55 to 150    | $^\circ\text{C}$ |
| $T_L$          | Lead Temperature for 10 Sec.                                                                 | 300           |                  |
| $E_{VAL}$      | Avalanche Energy (2A, 50mH)                                                                  | 100           | mJ               |

### STATIC ELECTRICAL CHARACTERISTICS

| Symbol   |                                           | MIN                                          | TYP | MAX  | UNIT  |
|----------|-------------------------------------------|----------------------------------------------|-----|------|-------|
| $V_F$    | Forward Voltage                           | $I_F = 100\text{A}$                          |     | .89  | Volts |
|          |                                           | $I_F = 200\text{A}$                          |     | 1.06 |       |
|          |                                           | $I_F = 100\text{A}, T_J = 125^\circ\text{C}$ |     | .76  |       |
| $I_{RM}$ | Maximum Reverse Leakage Current           | $V_R = 200\text{V}$                          |     | 2    | mA    |
|          |                                           | $V_R = 200\text{V}, T_J = 125^\circ\text{C}$ |     | 40   |       |
| $C_T$    | Junction Capacitance, $V_R = 200\text{V}$ |                                              | 470 |      | pF    |

| Symbol    | Characteristic                   | Test Conditions                                                        | MIN | TYP  | MAX | UNIT |
|-----------|----------------------------------|------------------------------------------------------------------------|-----|------|-----|------|
| $t_{rr}$  | Reverse Recovery Time            | $I_F = 100A, di_F/dt = -200A/\mu s$<br>$V_R = 133V, T_C = 25^\circ C$  | -   | 70   |     | ns   |
| $Q_{rr}$  | Reverse Recovery Charge          |                                                                        | -   | 230  |     | nC   |
| $I_{RRM}$ | Maximum Reverse Recovery Current |                                                                        | -   | 6    | -   | Amps |
| $t_{rr}$  | Reverse Recovery Time            | $I_F = 100A, di_F/dt = -200A/\mu s$<br>$V_R = 133V, T_C = 125^\circ C$ | -   | 110  |     | ns   |
| $Q_{rr}$  | Reverse Recovery Charge          |                                                                        | -   | 690  |     | nC   |
| $I_{RRM}$ | Maximum Reverse Recovery Current |                                                                        | -   | 11   | -   | Amps |
| $t_{rr}$  | Reverse Recovery Time            | $I_F = 100A, di_F/dt = -700A/\mu s$<br>$V_R = 133V, T_C = 125^\circ C$ | -   | 95   |     | ns   |
| $Q_{rr}$  | Reverse Recovery Charge          |                                                                        | -   | 1750 |     | nC   |
| $I_{RRM}$ | Maximum Reverse Recovery Current |                                                                        | -   | 32   |     | Amps |

## THERMAL AND MECHANICAL CHARACTERISTICS

| Symbol          | Characteristic / Test Conditions    | MIN | TYP  | MAX | UNIT         |
|-----------------|-------------------------------------|-----|------|-----|--------------|
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance |     |      | .18 | $^\circ C/W$ |
| $W_T$           | Package Weight                      |     | 0.22 |     | oz           |
|                 |                                     |     | 5.9  |     | g            |
| Torque          | Maximum Mounting Torque             |     |      | 10  | lb•in        |
|                 |                                     |     |      | 1.1 | N•m          |

Microsemi reserves the right to change, without notice, the specifications and information contained herein.

① Continuous current limited by package lead temperature.

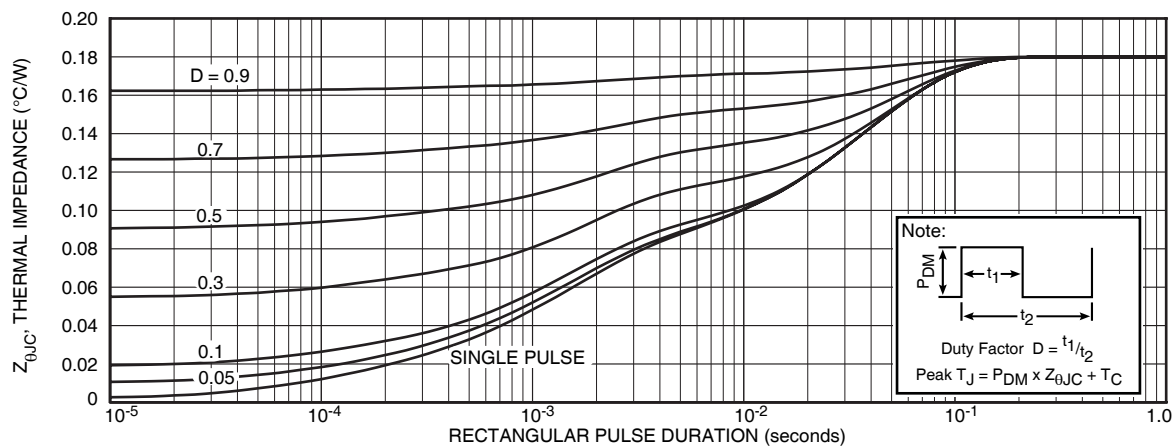


FIGURE 1a. MAXIMUM EFFECTIVE TRANSIENT THERMAL IMPEDANCE, JUNCTION-TO-CASE vs. PULSE DURATION

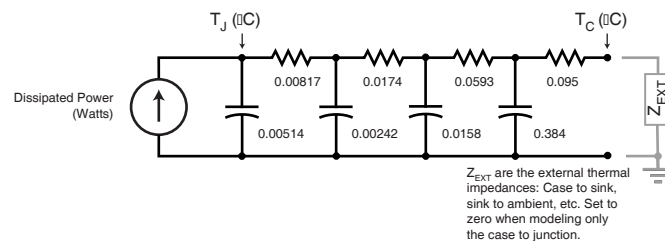


FIGURE 1b. TRANSIENT THERMAL IMPEDANCE MODEL

## TYPICAL PERFORMANCE CURVES

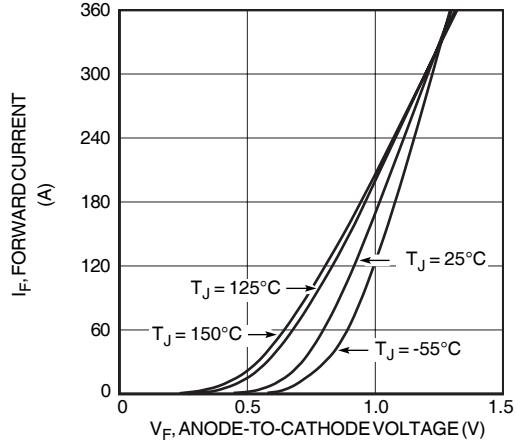


Figure 2. Forward Current vs. Forward Voltage

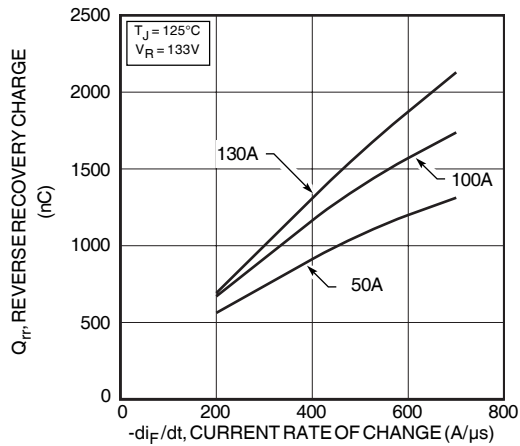


Figure 4. Reverse Recovery Charge vs. Current Rate of Change

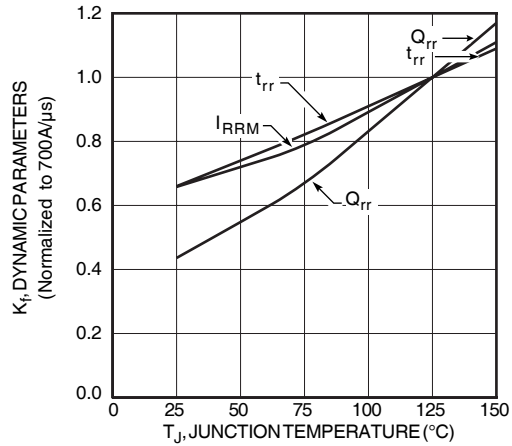


Figure 6. Dynamic Parameters vs. Junction Temperature

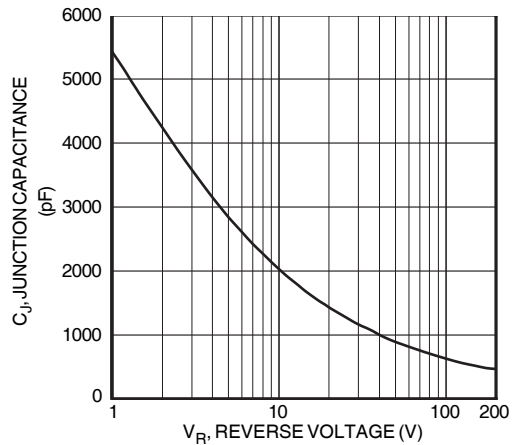


Figure 8. Junction Capacitance vs. Reverse Voltage

## APT100S20B(G)

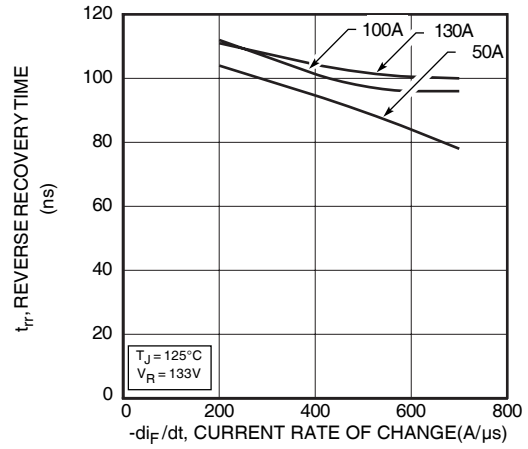


Figure 3. Reverse Recovery Time vs. Current Rate of Change

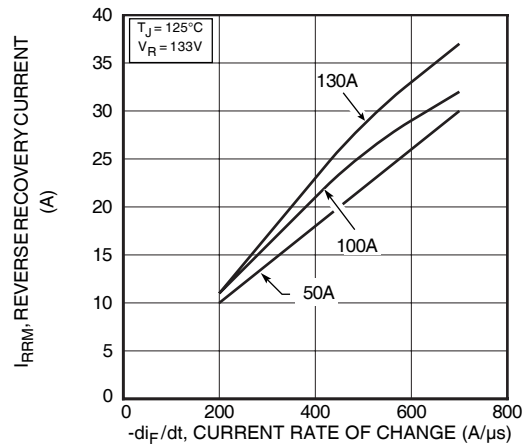


Figure 5. Reverse Recovery Current vs. Current Rate of Change

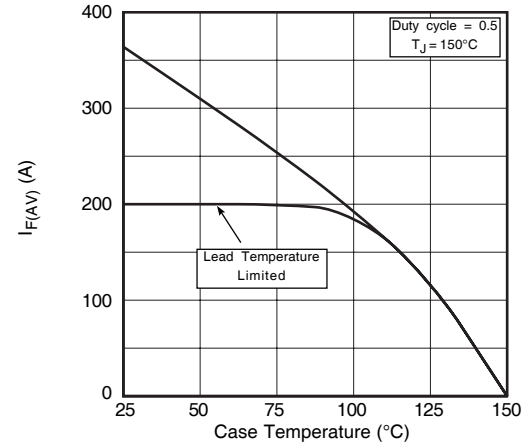


Figure 7. Maximum Average Forward Current vs. Case Temperature

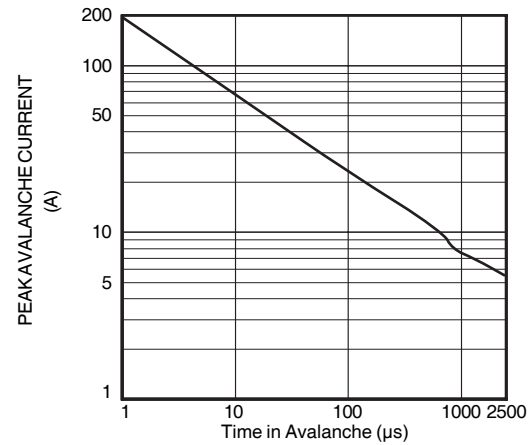


Figure 9. Single Pulse UIS SOA

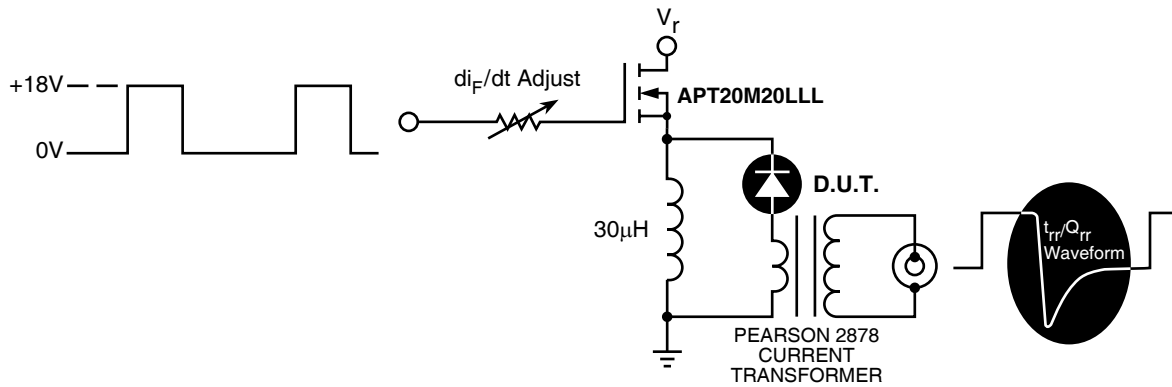


Figure 9. Diode Test Circuit

- 1  $I_F$  - Forward Conduction Current
- 2  $di_F/dt$  - Rate of Diode Current Change Through Zero Crossing.
- 3  $I_{RRM}$  - Maximum Reverse Recovery Current.
- 4  $t_{rr}$  - Reverse Recovery Time, measured from zero crossing where diode current goes from positive to negative, to the point at which the straight line through  $I_{RRM}$  and  $0.25 \cdot I_{RRM}$  passes through zero.
- 5  $Q_{rr}$  - Area Under the Curve Defined by  $I_{RRM}$  and  $t_{rr}$ .

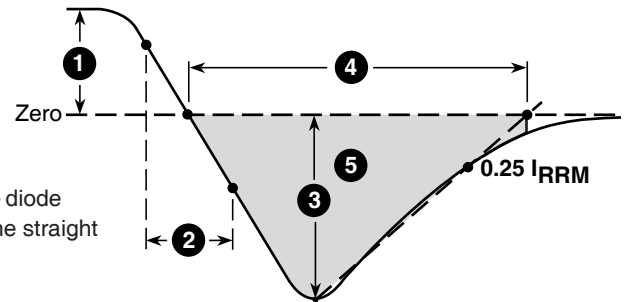
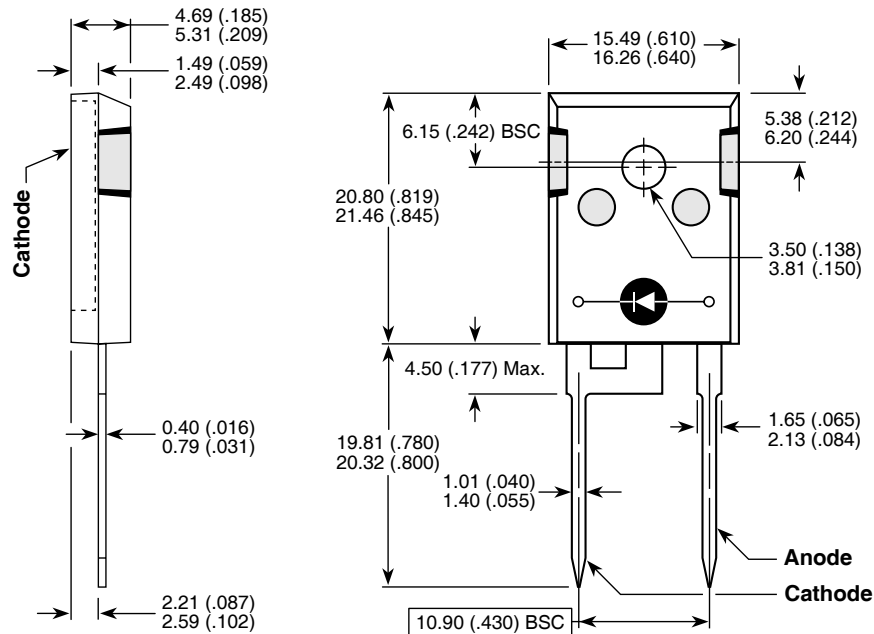


Figure 10. Diode Reverse Recovery Waveform and Definitions

### TO-247 Package Outline

e1 SAC: Tin, Silver, Copper



Dimensions in Millimeters and (Inches)

## Данный компонент на территории Российской Федерации

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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

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