# STATIC ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Characteristic / Test Conditions</th>
<th>APT60S20B2CT(G)</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_F$</td>
<td>Forward Voltage</td>
<td></td>
<td>Volts</td>
</tr>
<tr>
<td>$I_F$</td>
<td>$I_F = 60A$</td>
<td>.83</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>$I_F = 120A$</td>
<td>.98</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$I_F = 60A, T_J = 125^\circ C$</td>
<td>.72</td>
<td></td>
</tr>
<tr>
<td>$I_{R\text{M}}$</td>
<td>Maximum Reverse Leakage Current</td>
<td>$V_R = 200V$</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>$V_R = 200V, T_J = 125^\circ C$</td>
<td>25</td>
<td>mA</td>
</tr>
<tr>
<td>$C_T$</td>
<td>Junction Capacitance, $V_R = 200V$</td>
<td>300</td>
<td>pF</td>
</tr>
</tbody>
</table>

Microsemi Website - http://www.microsemi.com
## Dynamic Characteristics

### Symbol | Characteristic | Test Conditions | MIN | TYP | MAX | UNIT
--- | --- | --- | --- | --- | --- | ---
$t_{rr}$ | Reverse Recovery Time | $I_F = 60A, \frac{di_F}{dt} = -200A/\mu s$ $V_R = 133V, T_C = 25^\circ C$ | - | 55 | - | ns
$Q_{rr}$ | Reverse Recovery Charge | $I_F = 60A, \frac{di_F}{dt} = -200A/\mu s$ $V_R = 133V, T_C = 25^\circ C$ | - | 160 | - | nC
$I_{\text{RPM}}$ | Maximum Reverse Recovery Current | $I_F = 60A, \frac{di_F}{dt} = -200A/\mu s$ $V_R = 133V, T_C = 25^\circ C$ | - | 5 | - | Amps
$t_{rr}$ | Reverse Recovery Time | $I_F = 60A, \frac{di_F}{dt} = -700A/\mu s$ $V_R = 133V, T_C = 125^\circ C$ | - | 100 | - | ns
$Q_{rr}$ | Reverse Recovery Charge | $I_F = 60A, \frac{di_F}{dt} = -700A/\mu s$ $V_R = 133V, T_C = 125^\circ C$ | - | 490 | - | nC
$I_{\text{RPM}}$ | Maximum Reverse Recovery Current | $I_F = 60A, \frac{di_F}{dt} = -700A/\mu s$ $V_R = 133V, T_C = 125^\circ C$ | - | 1100 | - | nC
$t_{rr}$ | Reverse Recovery Time | $I_F = 60A, \frac{di_F}{dt} = -200A/\mu s$ $V_R = 133V, T_C = 125^\circ C$ | - | 80 | - | ns
$Q_{rr}$ | Reverse Recovery Charge | $I_F = 60A, \frac{di_F}{dt} = -200A/\mu s$ $V_R = 133V, T_C = 125^\circ C$ | - | 1100 | - | nC
$I_{\text{RPM}}$ | Maximum Reverse Recovery Current | $I_F = 60A, \frac{di_F}{dt} = -200A/\mu s$ $V_R = 133V, T_C = 125^\circ C$ | - | 27 | - | Amps

### Thermal and Mechanical Characteristics

### Symbol | Characteristic / Test Conditions | MIN | TYP | MAX | UNIT
--- | --- | --- | --- | --- | ---
$R_{\text{JUC}}$ | Junction-to-Case Thermal Resistance | .30 | 40 | °C/W
$R_{\text{JUA}}$ | Junction-to-Ambient Thermal Resistance | 0.22 | 5.9 | oz
$W_T$ | Package Weight | 0.05 | 0.30 | °C/W

Note: $D = \frac{t_1}{t_2}$

Peak $T_J = P_{DM} \times Z_{\text{EXT}} + Z_{\text{JUC}} + T_C$

**FIGURE 1a. Maximum Effective Transient Thermal Impedance, Junction-to-Case vs. Pulse Duration**

**FIGURE 1b. Transient Thermal Impedance Model**

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

Figure 2. Forward Current vs. Forward Voltage

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

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

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

Figure 6. Dynamic Parameters vs. Junction Temperature

Figure 7. Maximum Average Forward Current vs. Case Temperature

Figure 8. Junction Capacitance vs. Reverse Voltage

Figure 9. Single Pulse UIS SOA
1. $I_F$ - Forward Conduction Current
2. $\frac{\text{di}}{\text{dt}}$ - 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 9. Diode Test Circuit**

**Figure 10. Diode Reverse Recovery Waveform and Definitions**

**T-MAX™ (B2) Package Outline**

- 2-Pins.
- Dimensions in Millimeters and (Inches)