Silicon Carbide Schottky Barrier Diode

### Features
- Temperature Independent Switching Behavior
- High Surge Current Capability
- Positive Temperature Coefficient on $V_F$
- Low Conduction Loss
- Zero Reverse Recovery
- High junction temperature 175°C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data
- Case: TO-220AC molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.067 ounces, 1.89 grams

### Application
- PFC, UPS, PV Inverter, EV Charging Station, Welder

### Maximum Ratings and Thermal Characteristics ($T_C = 25 \degree C$ unless otherwise specified)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>LIMIT</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repetitive Peak Reverse Voltage</td>
<td>$V_{RRM}$</td>
<td>1200</td>
<td>V</td>
</tr>
<tr>
<td>DC Blocking Voltage</td>
<td>$V_{DC}$</td>
<td>1200</td>
<td>V</td>
</tr>
<tr>
<td>Continuous Forward Current</td>
<td>$I_{F}$</td>
<td>10</td>
<td>A</td>
</tr>
<tr>
<td>Temperature $T_C$</td>
<td>$T_C$</td>
<td>155°C</td>
<td></td>
</tr>
<tr>
<td>Repetitive Peak Surge Current, Half Sine Wave, $D=0.1$</td>
<td>$I_{FRM}$</td>
<td>48 A, 40 A</td>
<td></td>
</tr>
<tr>
<td>Temperature $T_C$</td>
<td>$T_C$</td>
<td>25°C, 10ms</td>
<td></td>
</tr>
<tr>
<td>Repetitive Peak Surge Current, $D=0.1$</td>
<td>$I_{FRM}$</td>
<td>48 A, 40 A</td>
<td></td>
</tr>
<tr>
<td>Temperature $T_C$</td>
<td>$T_C$</td>
<td>125°C, 10ms</td>
<td></td>
</tr>
<tr>
<td>Peak Forward Surge Current, Half Sine Wave</td>
<td>$I_{FSM}$</td>
<td>76 A, 68 A</td>
<td></td>
</tr>
<tr>
<td>Temperature $T_C$</td>
<td>$T_C$</td>
<td>25°C, 10ms</td>
<td></td>
</tr>
<tr>
<td>Peak Forward Surge Current, $t_p = 10us$</td>
<td>$I_{FSM}$</td>
<td>640 A</td>
<td></td>
</tr>
<tr>
<td>Temperature $T_C$</td>
<td>$T_C$</td>
<td>125°C, 10ms</td>
<td></td>
</tr>
<tr>
<td>Maximum Power Dissipation</td>
<td>$P_{total}$</td>
<td>151.5 W</td>
<td></td>
</tr>
<tr>
<td>Operating Junction Temperature Range</td>
<td>$T_J$</td>
<td>-55~175 °C</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>$T_{STG}$</td>
<td>-55~175 °C</td>
<td></td>
</tr>
</tbody>
</table>
### Electrical Characteristics \((T_C = 25 \, ^{\circ}C\) unless otherwise specified\)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>TEST CONDITION</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward Voltage Drop</td>
<td>(V_F)</td>
<td>(I_F = 10 , A, T_J = 25 , ^{\circ}C)</td>
<td>-</td>
<td>1.5</td>
<td>1.7</td>
<td>V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(I_F = 10 , A, T_J = 175 , ^{\circ}C)</td>
<td>-</td>
<td>2.0</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Reverse Leakage Current</td>
<td>(I_R)</td>
<td>(V_R = 1200 , V, T_J = 25 , ^{\circ}C)</td>
<td>-</td>
<td>6</td>
<td>100</td>
<td>(\mu A)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(V_R = 1200 , V, T_J = 175 , ^{\circ}C)</td>
<td>-</td>
<td>0.085</td>
<td>-</td>
<td>mA</td>
</tr>
<tr>
<td>Total Capacitive Charge</td>
<td>(Q_C)</td>
<td>(I_F = 10 , A, V_R = 800V)</td>
<td>-</td>
<td>42</td>
<td>-</td>
<td>nC</td>
</tr>
<tr>
<td>Total Capacitance</td>
<td>(C)</td>
<td>(V_R = 1V, f = 1MHz)</td>
<td>-</td>
<td>529</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(V_R = 400V, f = 1MHz)</td>
<td>-</td>
<td>36</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(V_R = 800V, f = 1MHz)</td>
<td>-</td>
<td>25</td>
<td>-</td>
<td>pF</td>
</tr>
<tr>
<td>Capacitance Stored Energy</td>
<td>(E_C)</td>
<td>(V_R = 800V)</td>
<td>-</td>
<td>12</td>
<td>-</td>
<td>(\mu J)</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>(R_{BJC})</td>
<td></td>
<td>-</td>
<td>0.99</td>
<td>-</td>
<td>(^{\circ}C/W)</td>
</tr>
</tbody>
</table>
TYPICAL CHARACTERISTIC CURVES

Fig.1 Forward Characteristics

Fig.2 Reverse Characteristics

Fig.3 Power Derating Curve

Fig.4 Current Derating Curve

Fig.5 Typical Junction Capacitance

Fig.6 Capacitance Stored Energy
# Product and Packing Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Package Type</th>
<th>Packing Type</th>
<th>Marking</th>
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<tbody>
<tr>
<td>PCDP10120G1</td>
<td>TO-220AC</td>
<td>50pcs / Tube</td>
<td>CDP10120G1</td>
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## Packaging Information

**TO-220AC Dimension**

<table>
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<th>Unit: inch(mm)</th>
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<tbody>
<tr>
<td>Max.</td>
</tr>
<tr>
<td>Min.</td>
</tr>
<tr>
<td>Value</td>
</tr>
<tr>
<td>Value</td>
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<tr>
<td>Value</td>
</tr>
<tr>
<td>Value</td>
</tr>
</tbody>
</table>

**Note:** Dimensions are approximate and may vary slightly due to manufacturing tolerances.
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