Anode Gate Silicon Controlled Rectifier
Series 050R

Note 1: 1/4–28 UNF–3A
Note 2: Full thread within 2 1/2 threads

TO–208AC (TO–65)

Microsemi Catalog Number
050R02GOF
050R04GOF
050R06GOF
050R08GOF
050R10GOF
050R12GOF

Forward & Reverse Repetitive Blocking
VDRM, VRRM
200
400
600
800
1000
1200

To specify dv/dt other than 200V/usec, contact factory.

Electrical Characteristics

Max. RMS on–state current
\( I_{T(RMS)} \) 80 Amps
Max. average on–state cur.
\( I_{T(AV)} \) 50 Amps
Max. peak on–state voltage
\( V_{TM} \) 1.5 Volts
Max. holding current
\( I_{H} \) 200 mA
Max. peak one cycle surge current
\( I_{TSM} \) 1200 Amps
Max. \( I^2t \) capability for fusing
\( I^2 t \) 6000A^2S

\( T_C = 94^\circ C \)
\( T_C = 94^\circ C \)
\( I_{TM} = 200 \text{ A(peak)} \)
\( T_C = 94^\circ C \) 60Hz
\( t = 8.3 \text{ ms} \)

TJ
TSTG
RJC
RBCS

Thermal and Mechanical Characteristics

Operating junction temp range
-65°C to 125°C
Storage temperature range
-65°C to 150°C
Maximum thermal resistance
0.35°C/W Junction to case
Typical thermal resistance (greased)
0.20°C/W Case to sink
Mounting torque
25–30 inch pounds
Weight
0.56 ounces (16 grams) typical

3–6–01 Rev. IR
\( T_J = 25^\circ C \) unless otherwise indicated

## Switching

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical rate of rise of on–state current (note 1)</td>
<td>( di/dt )</td>
<td>200A/usec. ( T_J = 125^\circ C )</td>
</tr>
<tr>
<td>Typical delay time (note 1)</td>
<td>( t_d )</td>
<td>3.0 usec.</td>
</tr>
<tr>
<td>Typical circuit commuted turn–off time (note 2)</td>
<td>( t_q )</td>
<td>100 usec. ( T_J = 125^\circ C )</td>
</tr>
</tbody>
</table>

Note 1: \( I_{TM} = 50A, V_D = V_{DRM}, GT = 12V \) open circuit, 20 ohm–0.1 usec. rise time

Note 2: \( I_{TM} = 50A, di/dt = 5A/usec., V_R \) during turn–off interval = 50V min., reapplied \( dv/dt = 20V/usec. \), linear to rated \( V_{DRM}, V_G = 0V \)

## Triggering – Third Quadrant

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. gate voltage to trigger</td>
<td>( V_{GT} )</td>
<td>-3.0V ( T_J = 125^\circ C )</td>
</tr>
<tr>
<td>Max. nontriggering gate voltage</td>
<td>( V_{GD} )</td>
<td>-0.25V</td>
</tr>
<tr>
<td>Max. gate current to trigger</td>
<td>( I_{GT} )</td>
<td>-100mA</td>
</tr>
<tr>
<td>Max. peak gate power</td>
<td>( P_{GM} )</td>
<td>10W</td>
</tr>
<tr>
<td>Average gate power</td>
<td>( P_{G(AV)} )</td>
<td>1.0W ( t_p = 10 ) usec.</td>
</tr>
</tbody>
</table>

## Blocking

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. leakage current</td>
<td>( I_{DRM} )</td>
<td>6mA ( T_J = 125^\circ C ) &amp; ( V_{DRM} )</td>
</tr>
<tr>
<td>Max. reverse leakage</td>
<td>( I_{RRM} )</td>
<td>6mA ( T_J = 125^\circ C ) &amp; ( V_{RRM} )</td>
</tr>
<tr>
<td>Critical rate of rise of off–state voltage</td>
<td>( dv/dt )</td>
<td>200V/usec. ( T_J = 125^\circ C )</td>
</tr>
</tbody>
</table>