# Silicon Carbide (SiC) Power modules

Superior performance for high power, high frequency applications needing best-in-class power density.

## Features

SiC MOSFET devices qualified at $T_j=200^\circ C$ and to AEC-Q101 standards

<table>
<thead>
<tr>
<th>Module Type</th>
<th>Part Number</th>
<th>Voltage Rating (V)</th>
<th>Current/Switch (A)</th>
<th>$R_{DS(on)}$ @25°C (mΩ)</th>
<th>$R_{th(j-c)}$</th>
<th>Max Junction Temp (°C)</th>
<th>Size W x L x H (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diode Modules</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Bridge Rectifier</td>
<td>GE06020HAA4</td>
<td>650</td>
<td>200</td>
<td>N/A</td>
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<td></td>
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<tr>
<td>Center Tap Rectifier</td>
<td>GE06040GAA4</td>
<td>650</td>
<td>400</td>
<td>N/A</td>
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<td></td>
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<tr>
<td><strong>MOSFET Modules</strong></td>
<td></td>
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</tr>
<tr>
<td>Dual</td>
<td>GE12047BCA3</td>
<td>1200</td>
<td>475</td>
<td>3.90</td>
<td>$R_{th(j-c)} = 0.12$</td>
<td>175</td>
<td>48 x 86 x 18</td>
</tr>
<tr>
<td></td>
<td>GE17042BCA3</td>
<td>1700</td>
<td>425</td>
<td>4.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2 Bridge</td>
<td>GE12047CCA3</td>
<td>1200</td>
<td>475</td>
<td>3.90</td>
<td>$R_{th(j-c)} = 0.12$</td>
<td>175</td>
<td>48 x 86 x 18</td>
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<td></td>
<td>GE17042CCA3</td>
<td>1700</td>
<td>425</td>
<td>4.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2 Bridge</td>
<td>GE12090CDA3</td>
<td>1200</td>
<td>900</td>
<td>2.15</td>
<td>$R_{th(j-c)} = 0.055$</td>
<td>175</td>
<td>100 x 140 x 38</td>
</tr>
<tr>
<td></td>
<td>GE17080CDA3</td>
<td>1700</td>
<td>800</td>
<td>2.60</td>
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<tr>
<td>1/2 Bridge</td>
<td>GE12160CEA3</td>
<td>1200</td>
<td>1600</td>
<td>1.35</td>
<td>$R_{th(j-c)} = 0.034$</td>
<td>175</td>
<td>90 x 134 x 41</td>
</tr>
<tr>
<td></td>
<td>GE17140CEA3</td>
<td>1700</td>
<td>1400</td>
<td>1.60</td>
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<tr>
<td>6 Switch</td>
<td>GE12050HEA3</td>
<td>1200</td>
<td>6 x 500</td>
<td>3.90</td>
<td>$R_{th(j-c)} = 0.1$</td>
<td>175</td>
<td>90 x 134 x 37</td>
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<tr>
<td></td>
<td>GE17045HEA3</td>
<td>1700</td>
<td>6 x 450</td>
<td>4.75</td>
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<tr>
<td>6 Pack (3 phase)</td>
<td>GE12050EEA3</td>
<td>1200</td>
<td>3 x 500</td>
<td>3.90</td>
<td>$R_{th(j-c)} = 0.1$</td>
<td>175</td>
<td>90 x 134 x 30</td>
</tr>
<tr>
<td></td>
<td>GE17045EEA3</td>
<td>1700</td>
<td>3 x 450</td>
<td>4.75</td>
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</tr>
</tbody>
</table>

* All current ratings are for standard AlSiC baseplates. Copper baseplates, available, yield 10% higher current rating

GE Aviation  
LI/PB_SIc_PM_12/20_REV03e
Module part numbering code

E = Electrical Configuration
A = Single
B = Dual
C = 1/2 Bridge
D = 1/2 Bridge with Diodes
E = Six Pack
F = Full bridge
G = Rectifier – Center Tap
H = Rectifier – Full Bridge
I = Reserved

P = Package Configuration
A = Wirebond
B = Single POL Tile
C = Two POL Tiles
D = Four POL Tiles
E = Six POL Tiles
F = Reserved

Q = Package Material Grade
A = Si$_3$N$_4$ on AlSiC
B = Si$_3$N$_4$ on Copper
C = AlN on AlSiC
D = AlN on Copper
E = Insulated Metal Substrate (IMS)
F = Reserved

N = Generation of Die
A = Single
B = Dual
C = 1/2 Bridge
D = 1/2 Bridge with Diodes
E = Six Pack
F = Full bridge
G = Rectifier – Center Tap
H = Rectifier – Full Bridge
I = Reserved

Examples

- Dual Module with 1700V Gen3 Die; 400A current rating; Si3N4 on AlSiC Baseplate
  GE17040BCA3

- Six Pack Module with 1700V Gen3 Die; 400A current rating; 6 POLs; Si3N4 on Cu Baseplate
  GE17040EEB3

- 1/2 Bridge Module with 1200V Gen3 Die; 1600A current rating; 6 POLs; Si3N4 on AlSiC BP
  GE12160CEA3

Conversion and control systems

SiC power modules are produced at the State-of-the-Art, Wide Band Gap development and manufacturing facility in Pompano Beach, Florida. For more information and pricing on standard and custom designed modules for environmentally demanding applications contact: SiC.Products@ge.com

Find out more at https://www.geaviation.com/military/systems/silicon-carbide

GE Aviation

2705 Gateway Drive
Pompano Beach, Florida 33069 USA
+1 954 984 2400

Part Number | Mass (Lbs./kg)
---|---
GE06020HAA4 | 0.67 / 0.304
GE06040GAA4 | 0.67 / 0.304
GE12047BCA3 | 0.26 / 0.118
GE17042BCA3 | 0.26 / 0.118
GE12040DCA3 | 0.26 / 0.118
GE12047CCA3 | 0.26 / 0.118
GE17042CCA3 | 0.26 / 0.118
GE12012DAF3 | 0.40 / 0.181
GE12120DEA3 | 1.01 / 0.458
GE12160CEA3 | 1.01 / 0.458
GE12160CEA3 | 1.01 / 0.458
GE17140CEA3 | 1.01 / 0.458
GE12090CDA3 | 1.66 / 0.755
GE17080CDA3 | 1.66 / 0.755
GE12050HEA3 | 1.14 / 0.517
GE17045HEA3 | 1.14 / 0.517
GE12050EEA3 | 1.20 / 0.544
GE17045EEA3 | 1.20 / 0.544