



HVIGBT Line-up

Overview

Powerex offers industry standard HVIGBT modules in expanding current ranges. This line-up includes both Powerex self-manufactured HVIGBTs as well as Mitsubishi HVIGBT power modules. These two product lines are complementary and offer a broad range of devices to suit your specific application.

Powerex HVIGBTs feature highly insulating housings that offer enhanced protection by means of greater creepage and strike clearance distance for many demanding applications like medium voltage drives and auxiliary traction applications.

Applications

- High voltage power supplies
- Medium voltage drives
- Motor drives
- Traction

HVIGBT Product Advantages

- -40 to 150°C extended temperature range
- 100% dynamic tested
- Advanced Mitsubishi chip technology
- Aluminum nitride (AlN) ceramic substrate for low thermal impedance
- Rugged SWSOA and RRSOA



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VCE (V) IC (A)	Single				Dual				Chopper	
	1700	3300	4500	6500	1700	3300	4500	6500	1700	3300
85								QIC6508001 QID6508001		
150							QID4515001 QID4515002 QIF4515002 QID4515004			
200				CM200HG-130H			QID3320002 QID3320004			
400		CM400HG-66H	CM400HB-90H	CM400HG-130H		CM400DY-66H				CM400E4G-130H CM400E2G-130H
500						QID3340001 QID3350001				
600	QIS1760002			CM600HG-130H	CM600DY-34H				CM600E2Y-34H	
800	CM800HA-34H	CM800HB-66H CM800HC-66H	CM800HC-90R CM800HG-90R	CM800HG-130R	CM800DZ-34H				CM800E2C-66H CM800E2Z-66H CM800E6C-66H	
900/ 1000	QIS1790001	CM1000HC-66R	CM900HB-90H CM900HC-90H CM900HG-90H						CM1000E4C-66R	
1200	CM1200HA-34H	CM1200HC-66H CM1200HG-66H	CM1200HC-90R CM1200HG-90R		CM1200DB-34N CM1200DC-34S				CM1200E4C-34N	
1500/ 1800	CM1800HC-34N	CM1500HC-66R CM1500HG-66R								
2400	CM2400HC-34N									

CM = Mitsubishi manufactured modules

Q = Powerex manufactured modules
Complementary devices

Package code for CM modules:

HB = Single, copper baseplate
HC = Single, AlSiC baseplate
HG = Single, high isolation,
AlSiC base
DB = Dual, copper baseplate
DC = Dual, AlSiC baseplate

Suffix for CM modules:

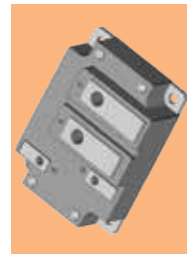
H = Standard type
N = CSTBT™ type
R = LPT
S = CSTBT™ type



7.48 x 5.51 (190 x 140)



5.11 x 5.51 (130 x 140)



3.15 x 4.33 (80 x 110)



2.87 x 5.51 (73 x 140)

Footprint in. (mm)



Powerex Military-AERO Expertise

Product Advantages when Engaging with Powerex

- USA based manufacturing
- AS9100 certified (aviation supplier for 30+ years)
- MIL-PRF-38534 Class D (hybrid microcircuits)
- Full custom design capability to meet your requirements including:
 - Lighter weight packaging
 - High isolation voltage
 - Space constraints
 - Low inductance
- 100% visual inspected to military standards
- 100% screened to customer specifications with in house testing for:
 - Burn in
 - Gate burn in Vibration Mechanical Shock
 - Air to air temperature cycling
 - Dynamic testing
 - Moisture resistance
 - HAST
 - Salt spray
- Full analytical capabilities include:
 - X-ray
 - Acoustic microscopy (sonoscan)
 - X-ray fluorescence
 - SEM (scanning electron microscopy)
 - EDS (energy dispersive spectroscopy)

Overview

When looking for demanding applications, and customer specific power modules, Powerex Military-Aero experience leads to next generation proven technology. Reliability and qualification testing meet rigid, military qualifications. Powerex experience covers many long-running aviation applications, including the F-16, C-130, F-18 Super Hornet, AH-64 Apache Helicopter, F-35 Lightning II, and commercial applications including the Dreamliner. When power dissipation demands solid state power, Powerex engineers can select the correct chip technology and screening of module capabilities and parameters, such as hermeticity; T_j ; to optimize the design. SiC advantages can include increased operating temperatures or lower weight modules.

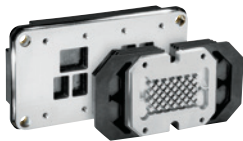
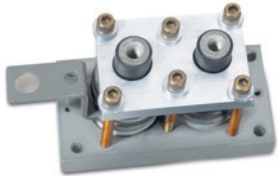
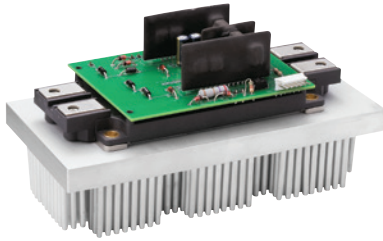
Applications

- Solid state circuit breakers
- Generator systems
 - 3-PAC SCR modules for military jet generators, hermetic and near hermetic
 - 6-PAC SCR modules for military jet generators
 - Reliable supplier of power modules used in 270V DC electric power generation, conversion and distribution systems
 - Rotating diodes Si and SiC, including planar diodes
- Flight control systems
 - 7-PAC IGBT modules with brake and "soft-start" SCR
 - Brake modules
 - Dual IGBT flight surface control modules using two IGBT transistors in a half-bridge with each IGBT connected to a superfast free-wheel diode
- High energy power pulse
 - Light triggered diode for high energy pulse applications
- Turret rotation and targeting systems
 - Darlington and MOSFET modules for aviation applications
 - IFV (infantry fighting vehicle) power devices
- Traditional systems
 - 3-level power modules
 - Aviation module next level assembly capability
 - Devices that require MIL-PRF-19500 qualifications
 - Full SiC and hybrid SiC IGBT modules for R&D to reduce switching losses and high temperature operation
 - GCV (ground combat vehicle) power devices, including water cooled heatsinks
 - High voltage SiC power modules up to 15kV
 - Munition and missile systems, including the Aegis and Patriot Missile
 - Naval ships and submarine power systems
 - SCR based SABT (Static Automatic Bus Transfer) switches using large area phase control SCRs



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Commercial / Moisture Resistant / Hermetic Custom Modules

Reliability / Qualification Testing

Reliability and qualification testing can be performed in-house in accordance to military specifications, including Group A, B, C and D and specific customer requirements.

Capabilities

Customers looking for application specific custom power modules benefit from Powerex's years of experience in chip manufacturing and design / engineering. Powerex custom power modules employ performance proven features.

Soldered-down and wire bonding fabrication and compression bonded encapsulation (CBE) of SCR / Diode elements offer increased switching speeds, lower losses, more efficient cooling and higher power handling capabilities.

Features

- Different circuit configurations (i.e. common emitter, chopper)
- Different termination styles (i.e. thicker bus bars, D-sub connectors, press-on pins, etc.)
- Extended temperature range, -55°C to 200°C
- Hermetic modules
- High voltage isolation
- Integrated heatsinks – both air and liquid cooled by eliminating the baseplate
- Larger, free-wheel diodes
- Low module weight
- Moisture resistance
- Over-current shutdown
- Package height, width and length
- Temperature and current sense

Substrates:

- Alumina
- Aluminum Nitride
- BeO
- IMS

Die Technology:

- Diode
- FR Diode
- GTO
- HVIGBT
- IGBT
- JBS Schottky Diode
- MOSFET
- Planar Diode
- SCR
- SiC Diode
- SiC MOSFET

Packages:

- Custom development for both plastic and hermetic packages
- Picture frame
- Standard IGBT cases



Registered Directorate of Defense Trade Controls (DDTC)
Certified MIL-PRF-38534 Class D (Hybrid Microcircuits)

For more information:

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