

GB3D_042_053 DUAL semiHEXA DIODE BRIDGE

Green Power Easy Module

- ▶ Output bridge current up to 1525 A
- ▶ Line voltage range up to 930 V_{RMS}
- ▶ 3000 V_{RMS} insulation voltage
- ▶ Electrically insulated metal frame
- ▶ Extremely high power density
- ▶ High reliability
- ▶ Modularity
- ▶ Fully customizable
- ▶ Broad range of accessories
- ▶ Cost effective solution
- ▶ Suitable for heavy duty applications

This new family of high power modules brings to the high power applications the same compactness, ease of use and scalability of the lower power semiconductor modules. In addition to these typical features (i.e. standard dimensions, electrical insulation, various circuit types, etc.) the new Green Power Easy Module (GEM) family includes many features aimed to simplify their adoption allowing the end users to focus on their core business. These features include:

- embedded air cooling system (heatsink and fan)
- optimised snubber circuits
- ducted heat flow.

Maximum ratings of single diode

Part number Parameters	GB3D_053	GB3D_042			Conditions	Units
I _{F(AV)}	535	425			180° cond, half sine Ta = 40 °C Air velocity = 5 m/s	A
I _{F(RMS)}	840	667				A
I _{FSM}	16	11			50 Hz, T _j = T _{jmax} , V _R = 0 V	kA
I _{FSM}	16.9	11.6			60 Hz, T _j = T _{jmax} , V _R = 0 V	kA
I ² t	1280	605			50 Hz, T _j = T _{jmax} , V _R = 0 V	kA ² s
I ² t	1165	551			60 Hz, T _j = T _{jmax} , V _R = 0 V	kA ² s
V _{R(RM)}	800	2900			T _j = T _{jmax}	V
T _{jmax}	190	175				°C

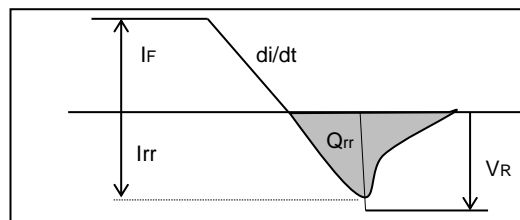
Part Number	V code	VRRM	IRRM	VL(RMS)
		max repetitive reverse blocking voltage	@ Tjmax	maximum suggested RMS line voltage
		[V]	[mA]	[V]
GB3D_053	04	400	50	50
	08	800	50	120
GB3D_042	22	2200	50	700
	29	2900	50	930

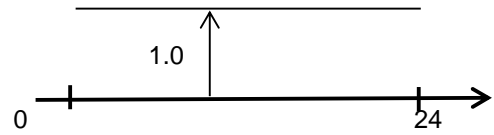
Forward Characteristics

Parameters	GB3D_053	GB3D_042			Conditions	Units
V _{F(T0)} Threshold voltage	0.75	0.87			T _j = T _{jmax}	V
r _F Forward slope resistance	0.25	0.33			T _j = T _{jmax}	mΩ
V _F Max forward voltage drop at I = 3 · I _{FAV}	1.2	1.3			T _j = T _{jmax}	V
P _{MAX} Max power losses (bridge)	2200	1567			T _A = 40°C	W

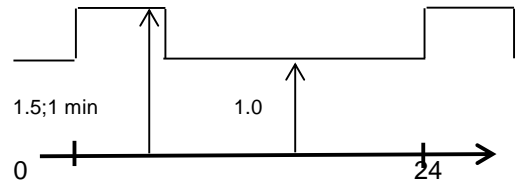
Reverse Recovery Characteristics

	GB3D_053	GB3D_042			Conditions	Units
Q _{rr} Reverse recovery charge, typ	1000	1200			T _j =T _{jmax} , I _F =500 A di/dt=- 2 A/μs V _R =100 V	μC




Maximum IEC class 1 currents for typical circuit type

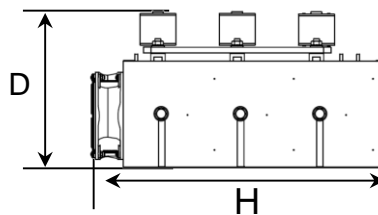
Circuit Type	GB3D_053	GB3D_042			Conditions	Units
Six pulse bridge	1525	1220			$T_A = 40\text{ }^\circ\text{C}$	A


Maximum IEC class 2 currents for typical circuit type

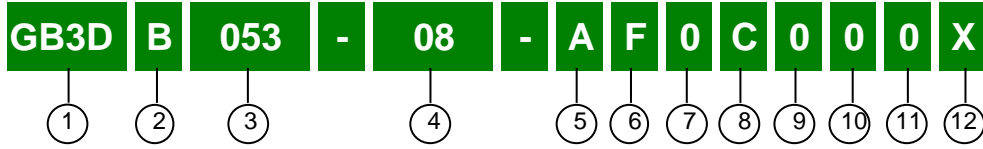
Circuit Type	GB3D_053	GB3D_042			Conditions	Units
Six pulse bridge	1150	920			$T_A = 40\text{ }^\circ\text{C}$	A

Thermal and mechanical characteristics

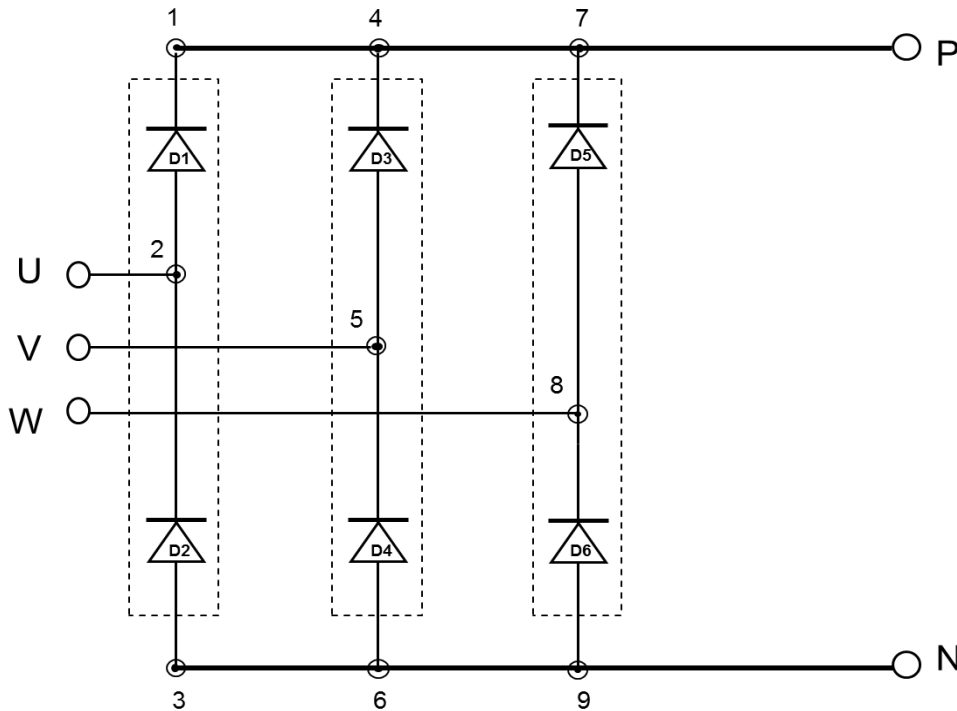
Parameters	GB3D_053	GB3D_042			Conditions	Units
T_{jmax} Max operating junction temperature	190	175				$^\circ\text{C}$
T_{stg} Storage temperature	-40 +70	-40 +70				$^\circ\text{C}$
R_{thJA} Thermal resistance (junction to ambient)	0.41	0.41			Air velocity = 5 m/s	$^\circ\text{C/W}$
F Mounting torque - GEM to panel (+/- 10%)	7	7			M6 mounting screw	N-m
	14	14			M8 mounting screw	N-m
MTTR Mean Time To Repair	12	12				minutes
Overall dimensions						
D Depth	213					mm
H Height	410					mm
W Width	410					mm
m Mass, typ	22					kg
Blower electrical characteristics (50/60Hz)						
V_L Line voltage-single phase	230					V_{RMS}
P Input power	20					W
A Current	0.13					A



PART-NUMBERING SYSTEM



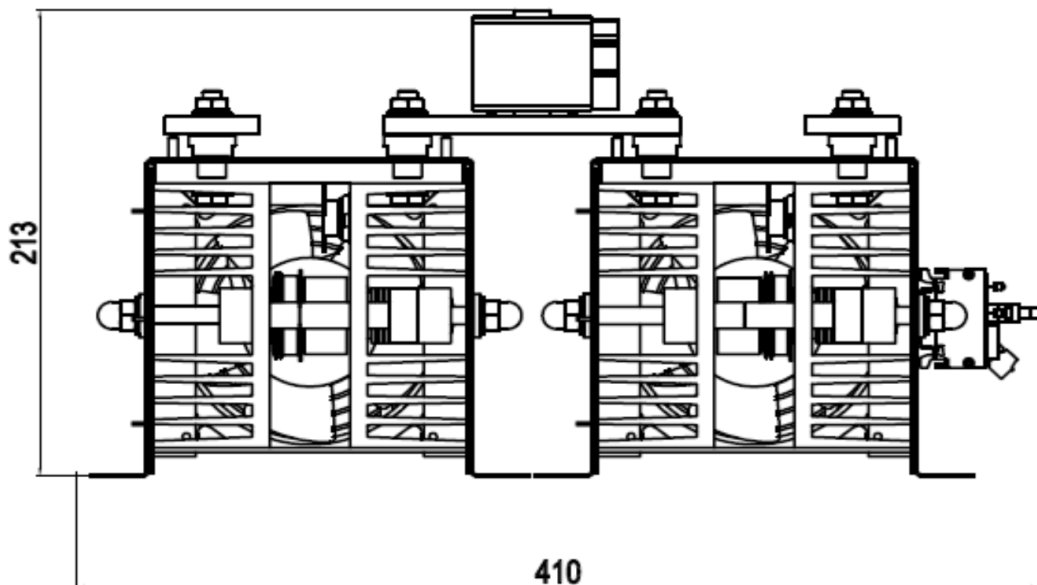
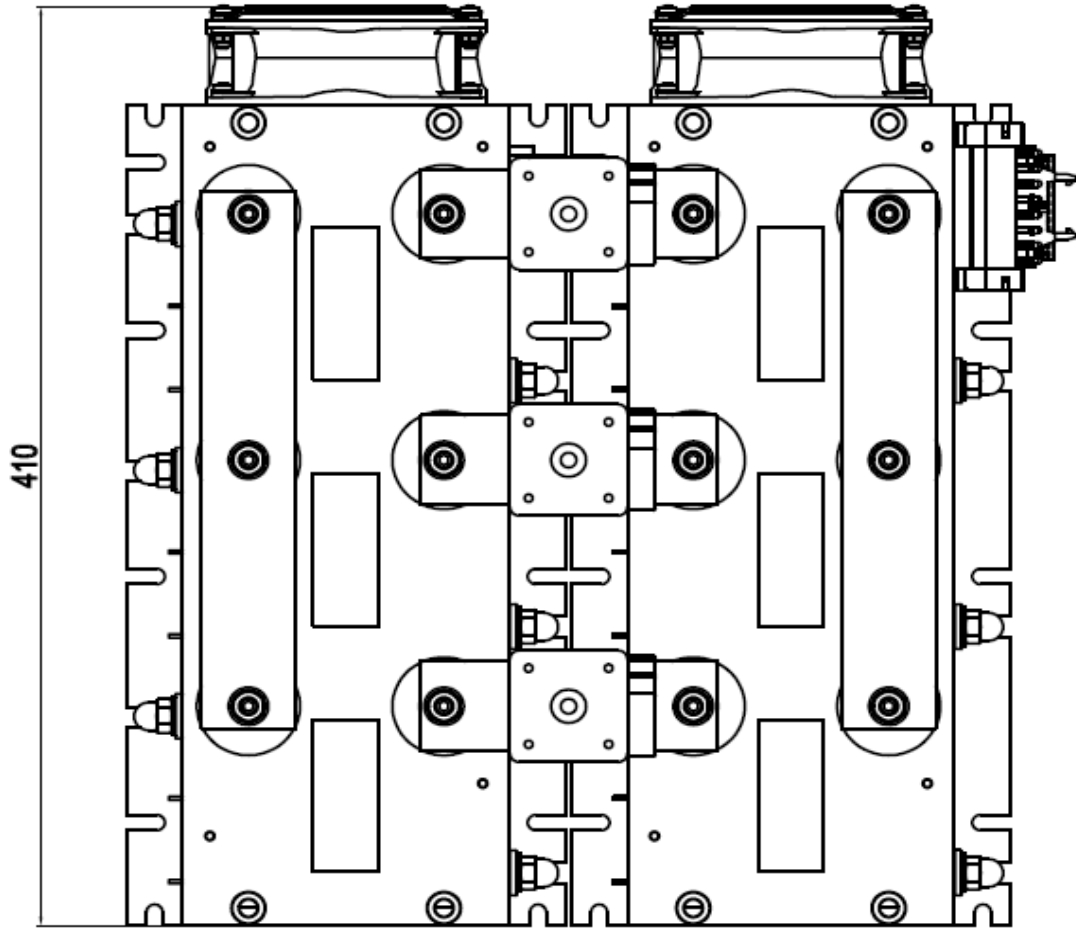
- ① Six pulse rectifier bridge
- ② 0 = No standard busbar B = bridge configuration
- ③ Diode average current / 10
- ④ Diode blocking voltage / 100
- ⑤ 0 = No fan A = 220 V axial fan V = 115 V axial fan
- ⑥ 0 = No fuse - F = Individual fuse - L = line fuse
- ⑦ 0 = No pulse transformer
- ⑧ 0 = No fan loss detection module - C = With fan loss detection module
- ⑨ 0 = No SCR fault detection module
- ⑩ 0 = No snubber - 3 = three snubber - 6 = six snubbers
- ⑪ 0 = No fan-on-demand thermo-switch - D = Fan-on-demand thermo-switch (trip point 50 °C)
- ⑫ 0 = Standard aluzinc frame - X = Stainless steel frame



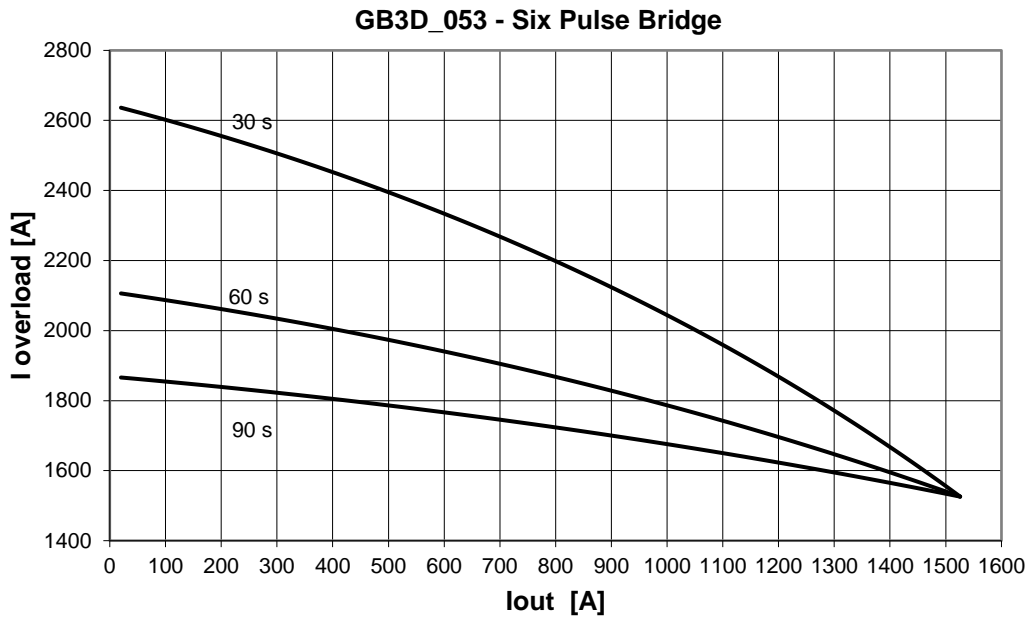
GEM modules are not covered by the Low Voltage Directive (LVD) 2014/35/EU because, according to LVD Guidelines, they are components "the safety of which can only, to a very large extent, be assessed taking into account how they are incorporated and for which a risk assessment cannot be undertaken".

In the interest of product improvement Green Power Solutions reserves the right to change any specification given in this data sheet without notice.

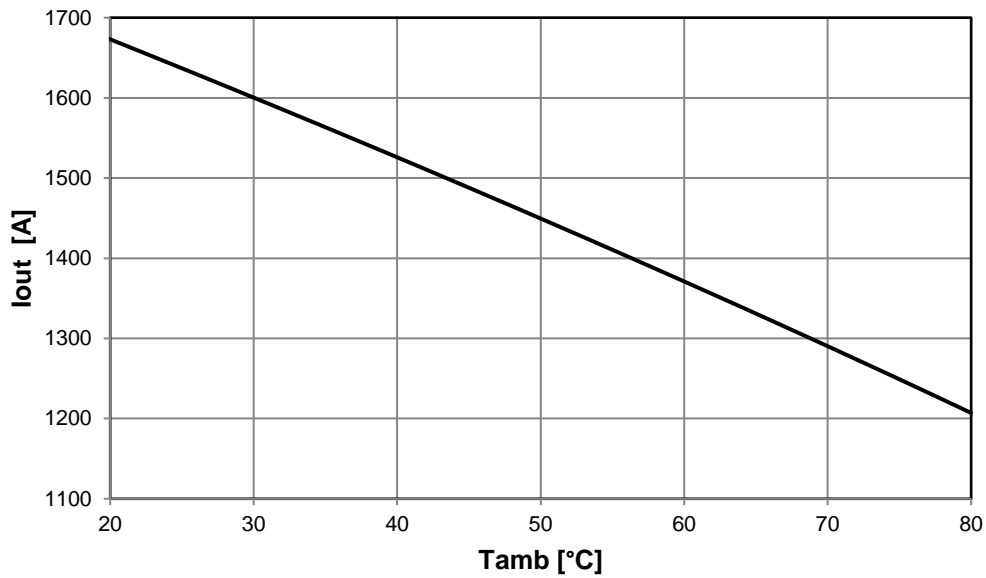
GB3DB_ Six pulse rectifier bridge Top and front views



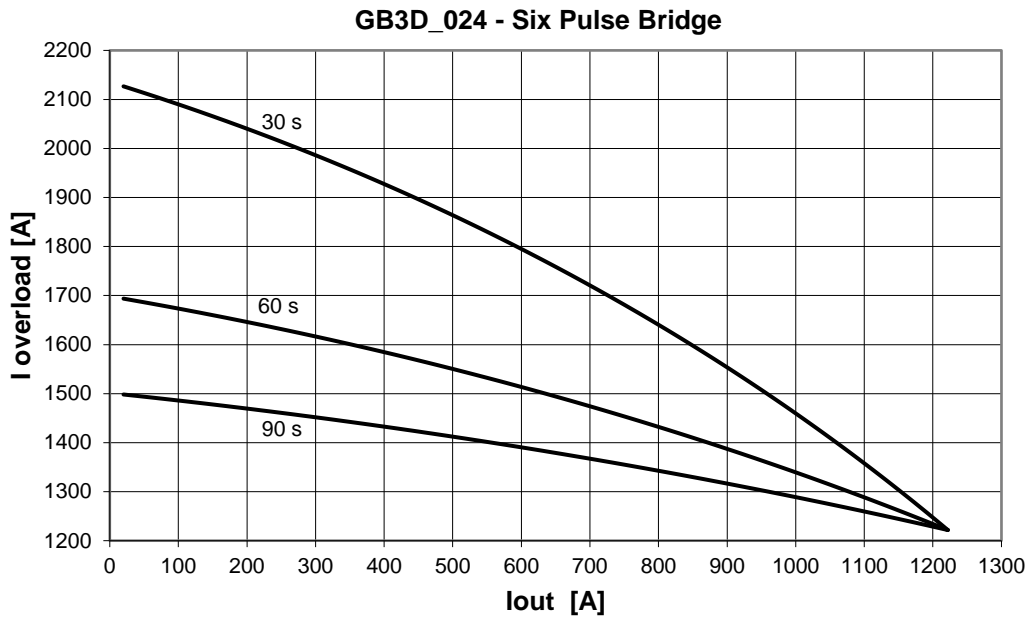
Overload capability at different overload time - Tamb = 40 °C



Max output vs Tamb



Overload capability at different overload time - Tamb = 40 °C



Max output vs Tamb

