

GB3_028,_048 DUAL semiHEXA BRIDGE

Green Power Easy Module

- ▶ Electrically insulated metal frame
- ▶ Extremely high power density
- ▶ 3000 V_{RMS} insulation voltage
- ▶ Line voltage range up to 700 V_{RMS}
- ▶ 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
- pulse transformer modules
- ducted heat flow.

Maximum ratings of single thyristor

Part number	GB3_048	GB3_030	GB3_028	Conditions	Units
$I_{T(AV)}$	480	300	280	180° cond, half sine Ta = 40 °C Air velocity = 5 m/s	A
$I_{T(RMS)}$	754	471	440		A
I_{TSM}	13	9	7.5	50 Hz, Tj = Tjmax, VR = 0 V	kA
I_{TSM}	13.7	9.5	7.9	60 Hz, Tj = Tjmax, VR = 0 V	kA
I^2t	845	405	281	50 Hz, Tj = Tjmax, VR = 0 V	kA ² s
I^2t	769	369	256	60 Hz, Tj = Tjmax, VR = 0 V	kA ² s
V _{DRM} /V _{RPM}	400	1600	2200	Tj = Tjmax	V
Tjmax	125	125	125		°C

Part Number	V code	V _{DRM} V _{R_{RM}} max repetitive reverse and off-state blocking voltage [V]	I _{DRM} I _{R_{RM}} @ T _{jmax} [mA]	V _{L(RMS)} maximum suggested RMS line voltage [V]
G_048	04	400	100	115
G_030	16	1600	50	500
G_028	24	2200	50	700

On-State Characteristics

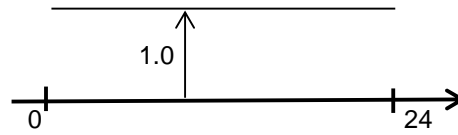
Parameters		G_048	G_030	G_028		Conditions	Units
V _{T(TO)}	Threshold voltage	0.9	0.9	1.0		T _j = T _{jmax}	V
r _T	On-state slope resistance	0.24	0.65	0.72		T _j = T _{jmax}	mΩ
I _H	Holding current, max	600	600	300		T _j = 25°C	mA
I _L	Latching current, typ	1000	1000	1000		T _j = 25°C	mA
P _{MAX}	Max power losses	2020	1996	1973		T _A = 40°C	W

Triggering Characteristics

Parameters		G_048	G_030	G_028		Conditions	Units
V _{GT}	Gate trigger voltage	2.5	3	3.5		T _j = 25°C, V _D = 5V	V
I _{GT}	Gate trigger current	190	200	300		T _j = 25°C, V _D = 5V	mA
P _{GM}	Peak gate power dissipation	10	10	10		Pulse width 1 ms	W
P _{G(AV)}	Average gate power dissipation	2	2	2			W
I _{FGM}	Peak gate current	3	3	3			A
V _{FGM}	Peak gate voltage (forward)	20	20	20			V
V _{RGM}	Peak gate voltage (reverse)	5	5	5			V

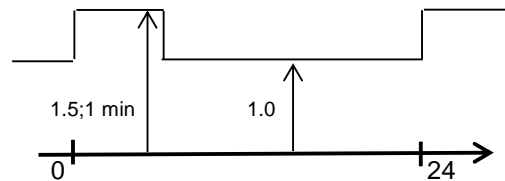
Switching Characteristics

Parameters		G_048	G_030	G_028		Conditions	Units
di/dt	Critical rate of rise of on-state current	200	200	200		T _j = T _{jmax}	A/μs
dV/dt	Critical rate of rise of off-state voltage	500	500	500		T _j = T _{jmax}	V/μs
t _q	Turn-off time, typ	200	200	350		T _j =T _{jmax} , I _T =300A di/dt=-5A/μs V _R =50V dV/dt=10V/μs	μs



Maximum IEC class 1 currents for typical circuit type

Circuit Type	G_048	G_030	G_028	Conditions	Units
Six pulse bridge	1380	858	806	T _A = 40 °C delay angle = 0°	A

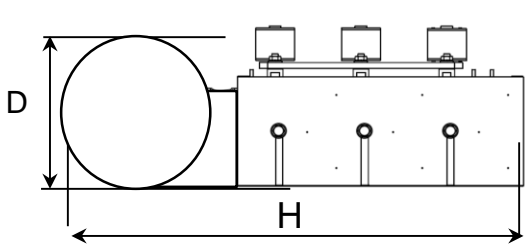


Maximum IEC class 2 currents for typical circuit type

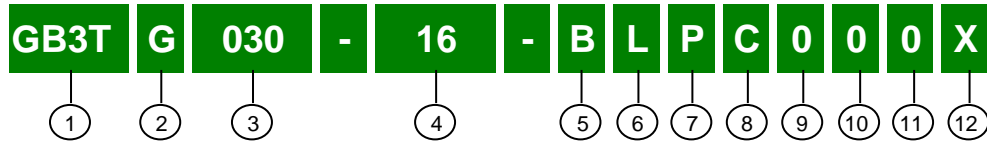
Circuit Type	G_048	G_030	G_028	Conditions	Units
Six pulse bridge	1040	648	597	T _A = 40 °C delay angle = 0°	A

Thermal and mechanical characteristics

Parameters	G_048	G_030	G_028	Conditions	Units
T _{jmax} Max operating junction temperature	125	125	125		°C
T _{stg} Storage temperature	-40 +70	-40 +70	-40 +70		°C
R _{thJA} Thermal resistance (junction to ambient)	0.199	0.202	0.205	Air velocity = 5 m/s	°C/W
F Mounting torque - GEM to panel (+/- 10%) Mounting torque - busbar to GEM (+/- 10%)	7	7	7	M6 mounting screw	N-m
	14	14	14	M8 mounting screw	N-m
MTTR Mean Time To Repair	12	12	12		minutes

Overall dimensions					
D Depth	263				mm
H Height	599				mm
W Width	410				mm
m Mass (with FPC options)	24				kg
Blower electrical characteristics (50/60Hz)					
V _L Line voltage-single phase	230				V _{RMS}
P Input power	174				W
A Current	0.78				A

PART-NUMBERING SYSTEM



- ① Circuit configuration - see table below (*)
- ② 0 = No standard busbar - G = bridge configuration (2 half bridge connected)
- ③ Average current / 10
- ④ Blocking voltage / 100
- ⑤ 0 = No fan B = 220 V blower (other fans available on request)
- ⑥ 0 = No fuse - L = line fuse
- ⑦ 0 = No pulse transformer - P = With 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 - 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

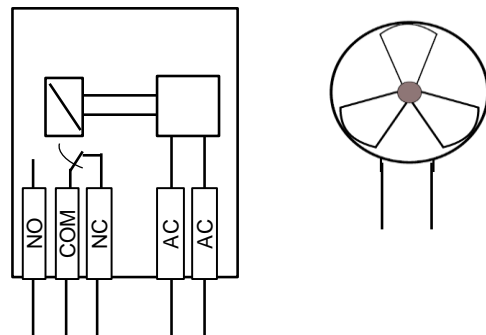
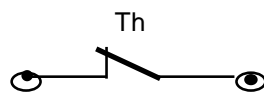
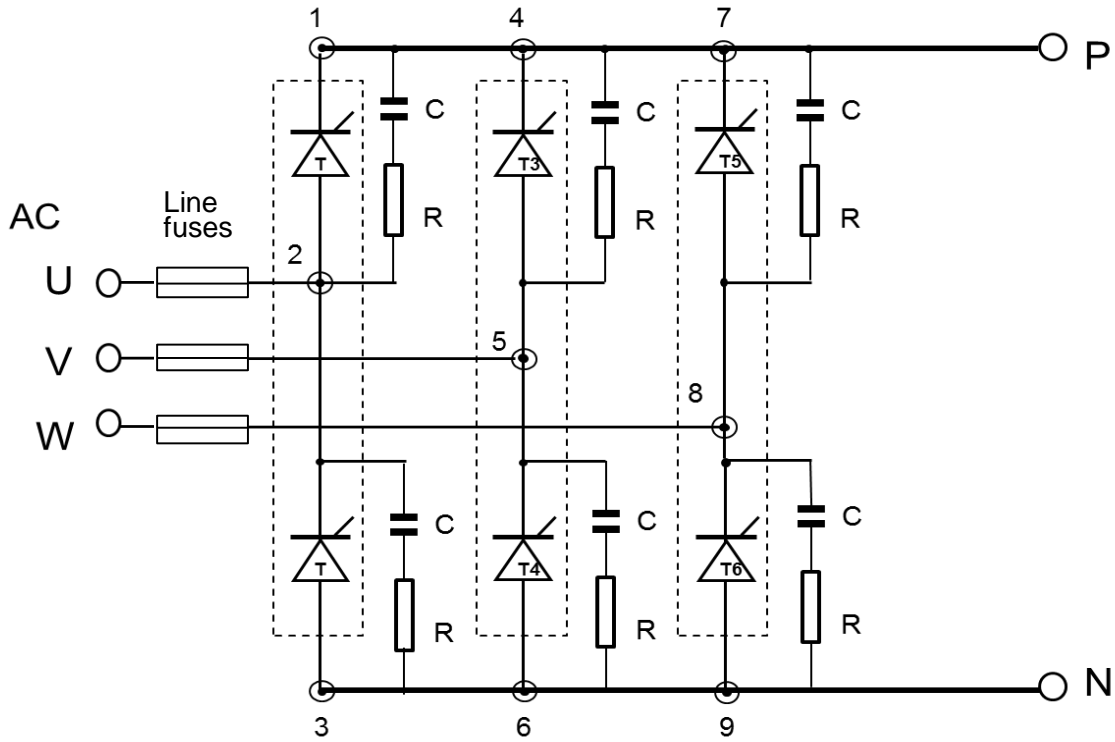
(*) Circuit configuration table	
GB3T	six pulse bridge fully controlled
GB3H	six pulse bridge half controlled - SCR high side
GB3L	six pulse bridge half controlled - SCR low side

(**) Pulse transformer GT001 (dual) or GT002 (single) depending on the circuit configuration.
For pulse transformer characteristics see their specific datasheets.

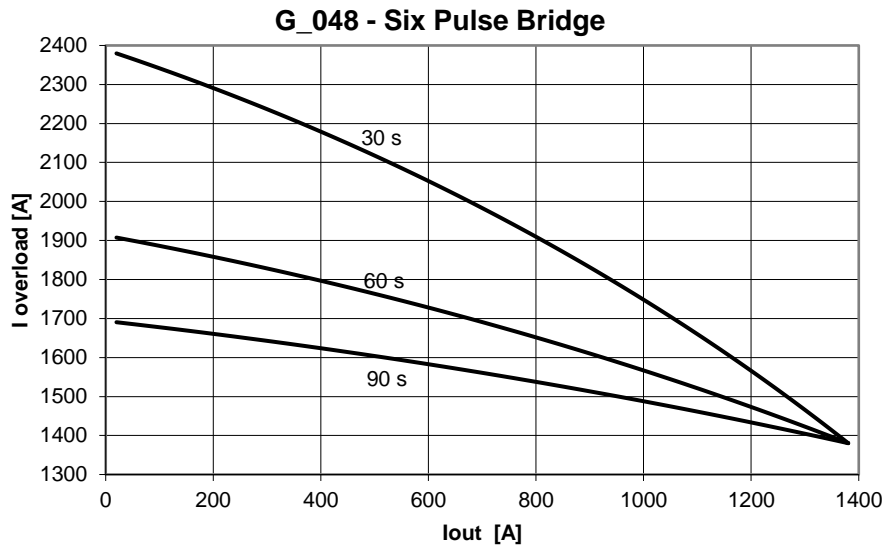
GEM modules are not covered by the Low Voltage Directive (LVD) 2014/35/EU because, according to LVD Guidelines, they are components "the safety of which can only, to a very large extent, be assessed taking into account how they are incorporated and for which a risk assessment cannot be undertaken".

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

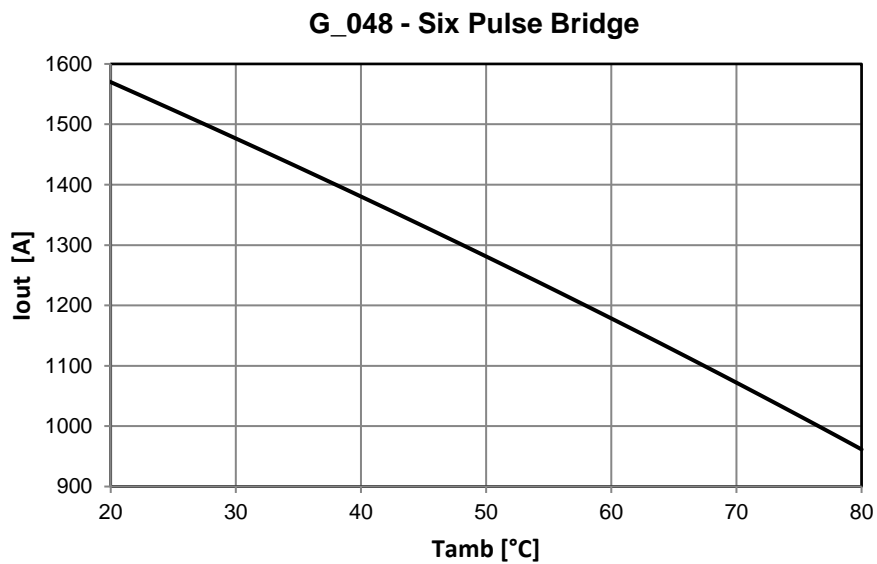
GB3T - Six pulse rectifier bridge



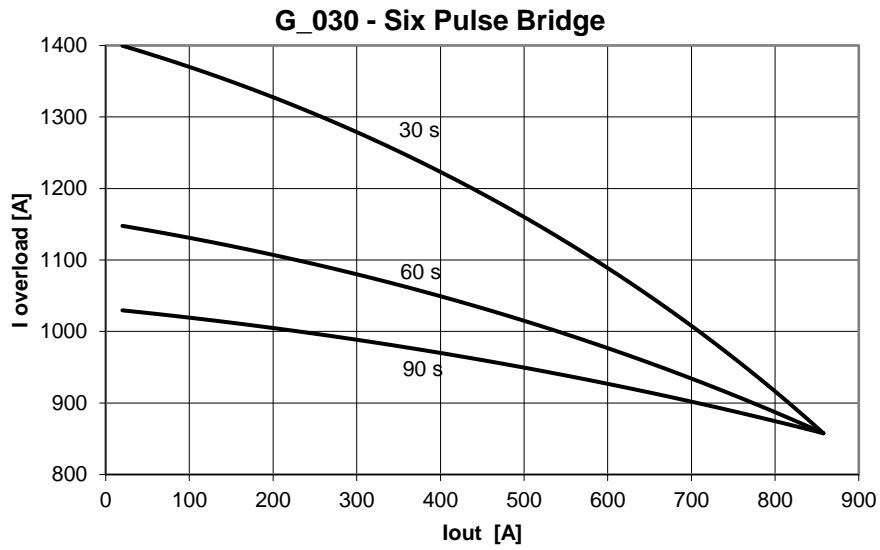
Overload capability at different overload time - Tamb = 40 °C



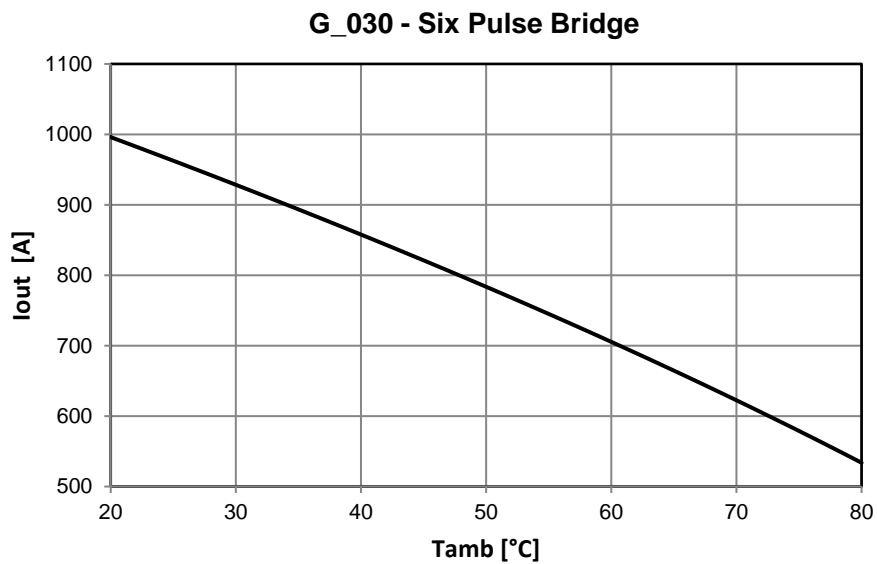
Max output vs Tamb



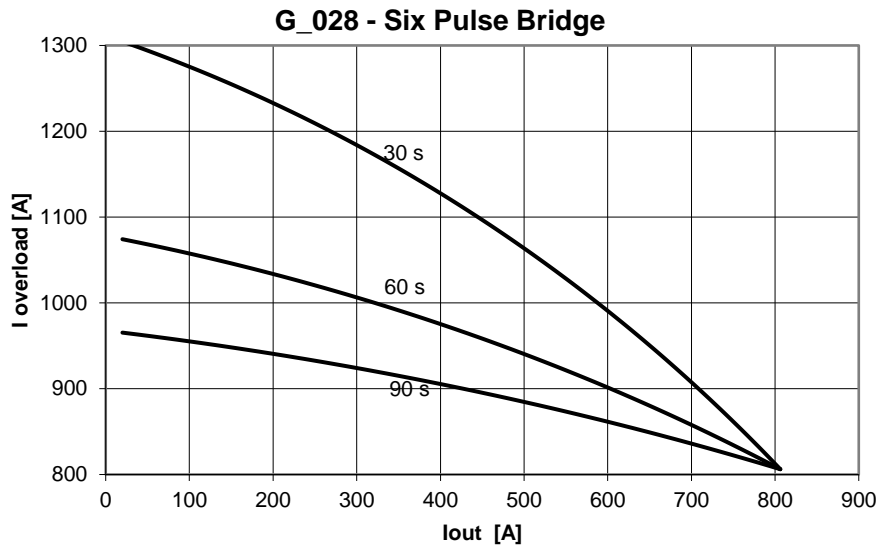
Overload capability at different overload time - Tamb = 40 °C



Max output vs Tamb



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



Max output vs Tamb

