

GO_011,_014 OCTAL SCR MODULES

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	GO_011	GO_014	GO_013			Conditions	Units
$I_{T(AV)}$	118	146	137			180° cond, half sine Ta = 40 °C Air velocity = 5 m/s	A
$I_{T(RMS)}$	185	229	215				A
I_{TSM}	6	9	8			50 Hz, Tj = Tjmax, VR = 0 V	kA
I_{TSM}	6.3	9.5	8.4			60 Hz, Tj = Tjmax, VR = 0 V	kA
I^2t	180	405	320			50 Hz, Tj = Tjmax, VR = 0 V	kA ² s
I^2t	164	369	291			60 Hz, Tj = Tjmax, VR = 0 V	kA ² s
V _{DRM} /V _{RSM}	1600	1600	2200			Tj = Tjmax	V
Tjmax	125	125	125				°C

Part Number	V code	V _{DRM} V _{RRM} max repetitive reverse and off-state blocking voltage [V]	I _{DRM} I _{RRM} @ T _{jmax} [mA]	V _{L(RMS)} maximum suggested RMS line voltage [V]
GO_011	12	1200	50	400
	16	1600	50	500
GO_014	12	1200	50	400
	16	1600	50	500
GO_013	22	2200	100	700

On-State Characteristics

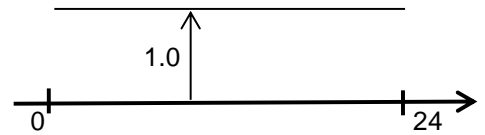
Parameters	GO_011	GO_014	GO_013			Conditions	Units
V _{T(RO)} Threshold voltage	1.0	0.9	1.0			T _j = T _{jmax}	V
r _T On-state slope resistance	0.80	0.65	0.72			T _j = T _{jmax}	mΩ
I _H Holding current, max	600	600	300			T _j = 25°C	mA
I _L Latching current, typ	1000	1000	1000			T _j = 25°C	mA
P _{MAX} Max power losses	875	997	986			T _A = 40°C	W

Triggering Characteristics

Parameters	GO_011	GO_014	GO_013			Conditions	Units
V _{GT} Gate trigger voltage	3.5	3	3.5			T _j = 25°C, V _D = 5V	V
I _{GT} Gate trigger current	150	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

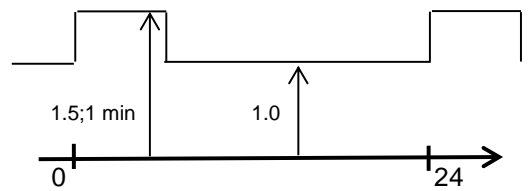
Switching Characteristics

Parameters	GO_011	GO_014	GO_013			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	200			T _j =T _{jmax} , I _T =1000A di/dt=-20A/μs V _R =50V dV/dt=20V/μs	μs



Maximum IEC class 1 currents for typical circuit type

Circuit Type	GO_011	GO_014	GO_013			Conditions	Units
Six pulse bridge	343	423	398			TA = 40 °C delay angle = 0°	A
							A
							A

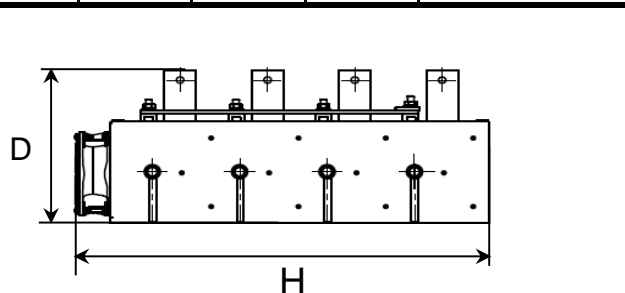


Maximum IEC class 2 currents for typical circuit type

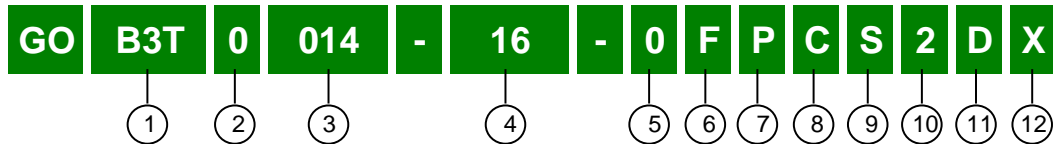
Circuit Type	GO_011	GO_014	GO_013			Conditions	Units
Six pulse bridge	251	316	297			TA = 40 °C delay angle = 0°	A
							A
							A

Thermal and mechanical characteristics

Parameters	GO_011	GO_014	GO_013			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)	0.583	0.512	0.517			Air velocity = 5 m/s	°C/W
F Mounting torque - GEM to panel (+/- 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	218						mm
H Height	521						mm
W Width	215						mm
m Mass (with FPC options)	10						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 Circuit configuration = six pulse bridge fully controlled + crowbar
- ② 0 = No standard busbar B = bridge configuration
- ③ Average current / 10
- ④ Blocking voltage / 100
- ⑤ 0 = No fan A = 220 V axial fan V = 115 V axial fan
- ⑥ 0 = No fuse - F = Individual fuse - R = individual fuse suitable for regen bridge - 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 - 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

(*) Pulse transformer GT001 (dual) or GT002 (single) depending on the circuit configuration.

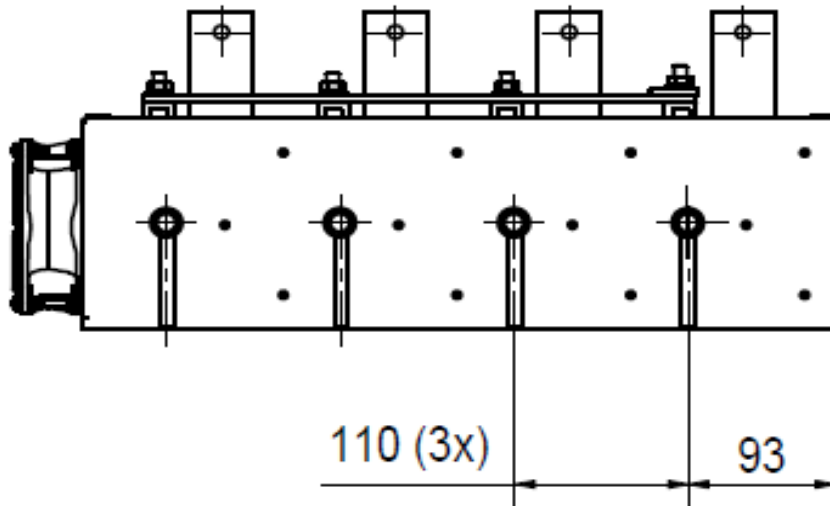
For pulse transformer characteristics see their specific datasheets.

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".

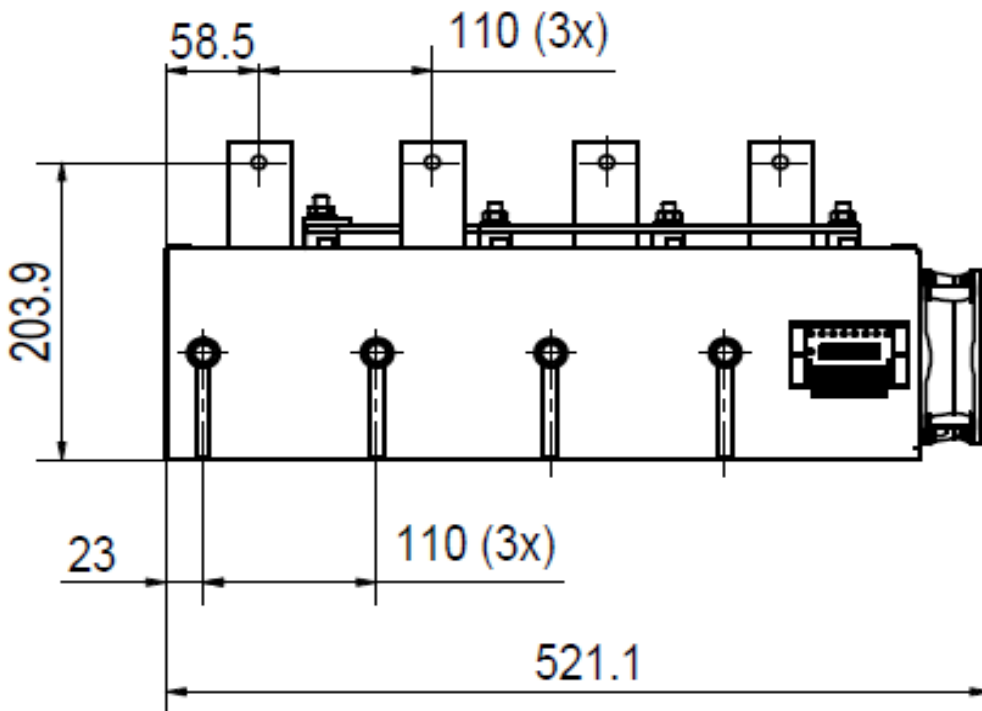
In the interest of product improvement Green Power Solutions reserves the right to change any specification given in this data sheet without notice.

GOB3T Six pulse SCR bridge + AC crowbar

Right side view

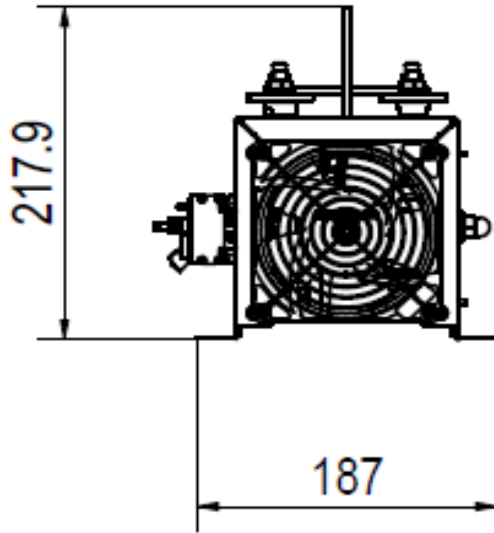


Left side view

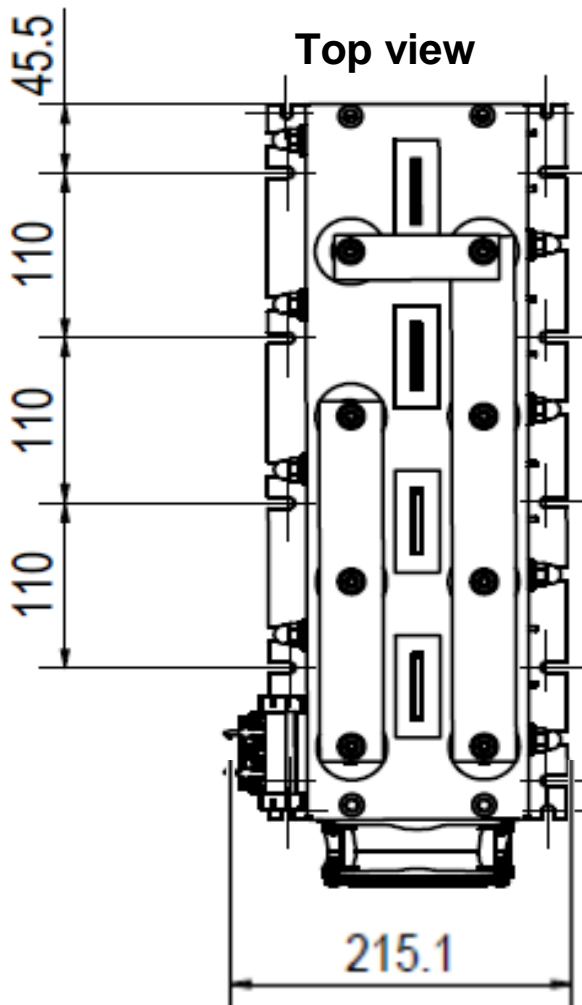


GOB3T Six pulse SCR bridge + AC crowbar

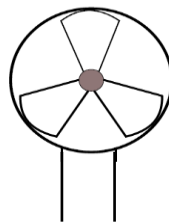
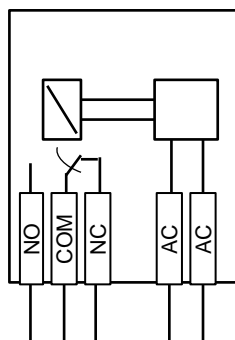
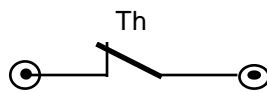
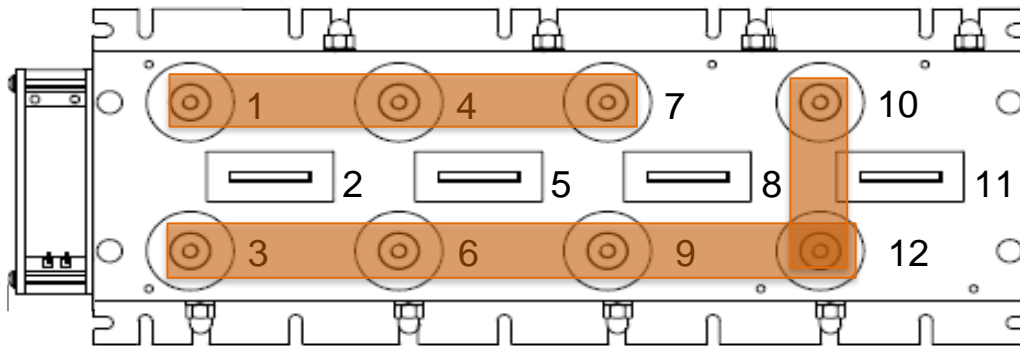
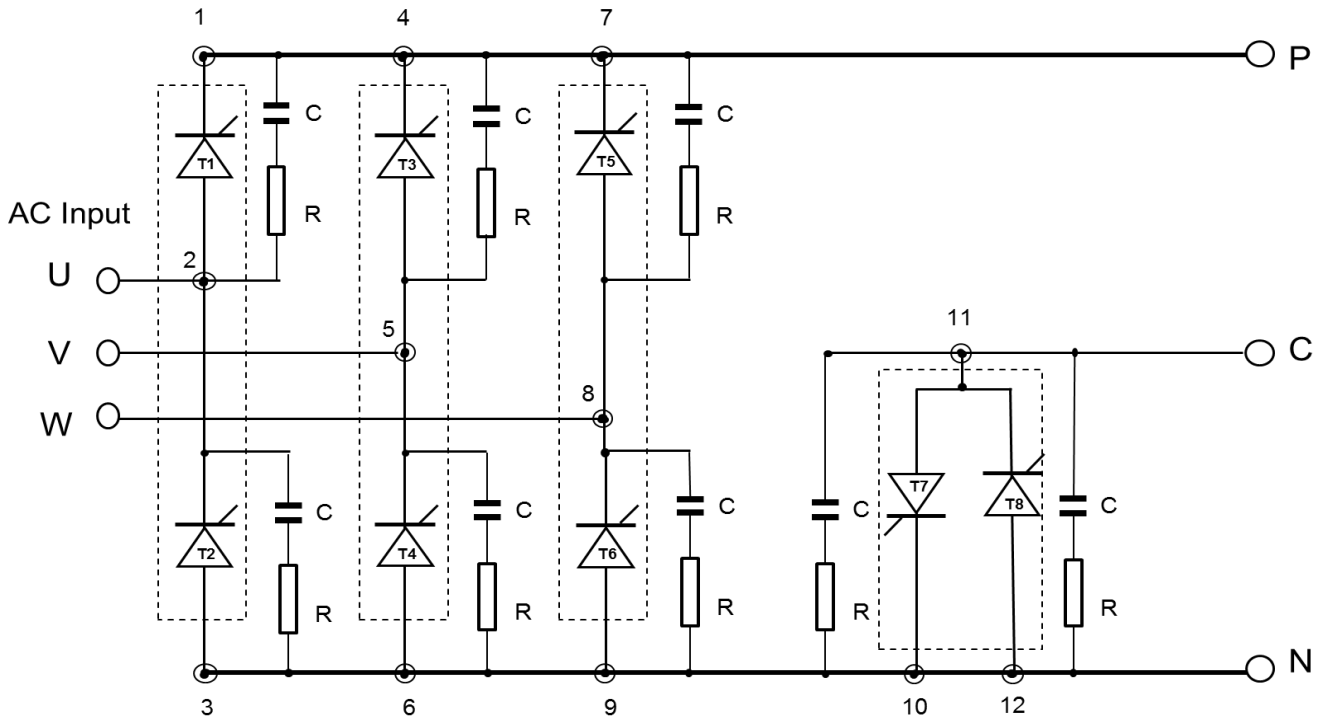
Front view



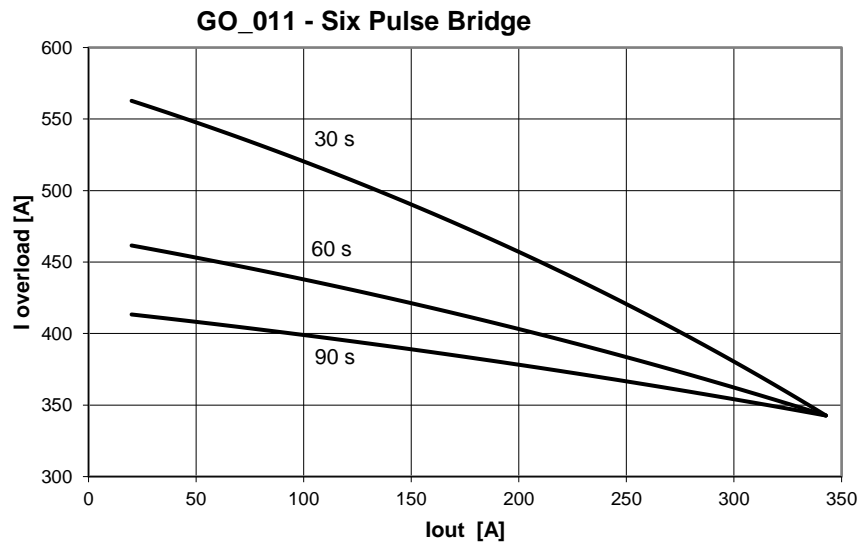
Top view



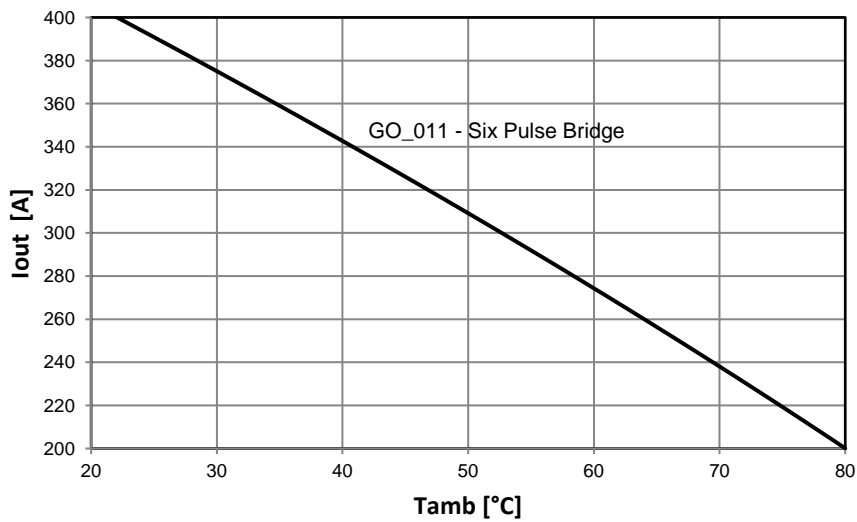
GOB3T Six pulse SCR bridge + AC crowbar



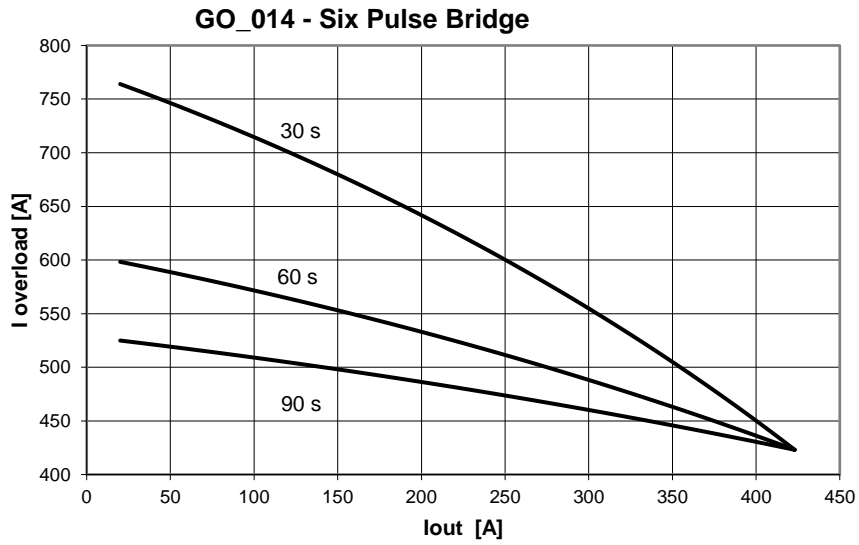
Overload capability at different overload time - Tamb = 40 °C



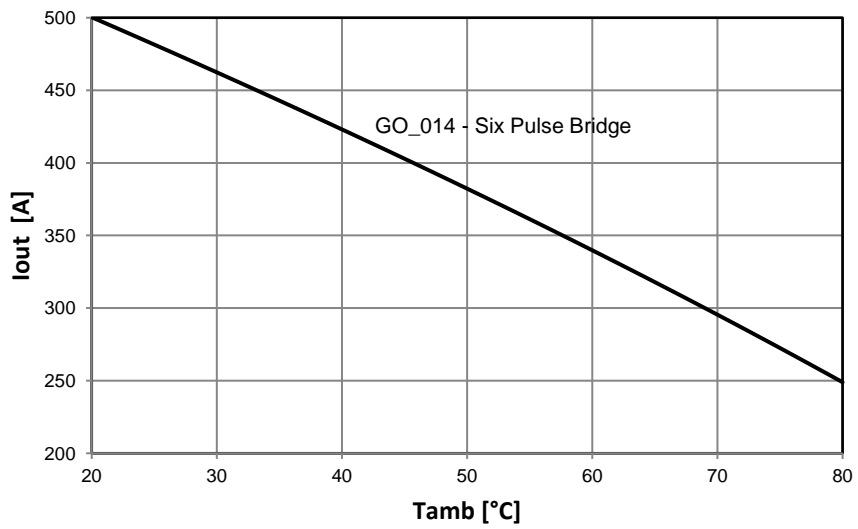
Max output vs Tamb



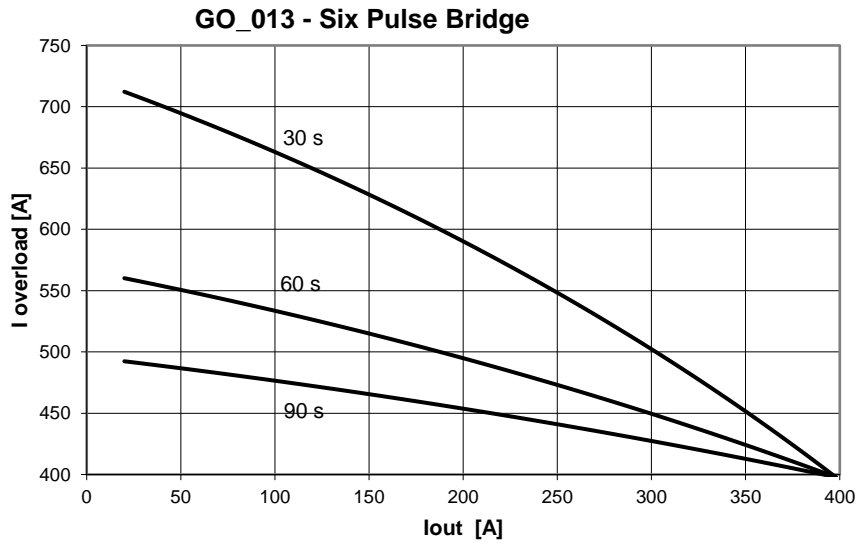
Overload capability at different overload time - Tamb = 40 °C



Max output vs Tamb



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



Max output vs Tamb

