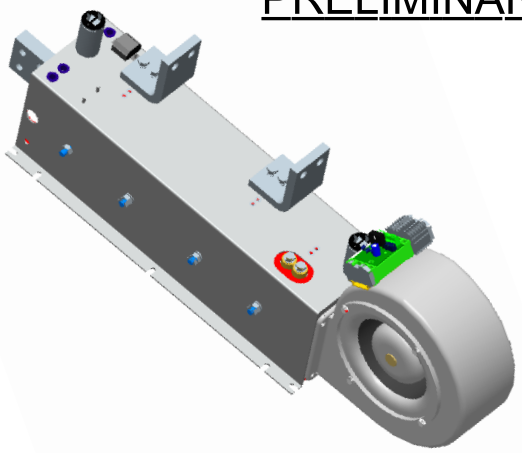
Green Power Solutions S.r.l.
Via Greto di Cornigliano, 6R - 16152
Genova - Italy

Tel: +39 010 659 1869
Fax: +39 010 659 1870
e-mail: info@gpsemi.it
web: www.gpsemi.it

PRELIMINARY



GEMD133

Green Power Easy Module®

Features:

- ► Electrically insulated metal frame
- ► 1000 V_{RMS} Insulation
- ► High reliability
- ► Modular approach
- ► Fully customizable
- ► Cost effective solution
- ► Suitable for heavy duty applications
- ► Line voltage range up to 65V_{RMS}

Description

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 that 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.

The GEM family can be used for most of the converter cicuits like single and three phase bridges, AC-switches, motor brakes, double wye rectifiers, current source inverters, etc.. Their application range covers all low and high line voltage applications (up to 690V_{RMS}) such as: electroplating, motor drive, induction heating, welding, temperature control, electrolysis, UPS, etc.

Maximum Ratings

Parameters					GEMD133	Conditions	Units
$I_{T(AV)}$					1330	120° cond., T_A=40°C	A
$I_{T(RMS)}$					2320	as double star conv. with IPT, T_A=40°C	A
I_{TSM}					55	50Hz, T_J=$T_{J(MAX)}$, V_R=0V	kA
I_{TSM}					57.5	60Hz, T_J=$T_{J(MAX)}$, V_R=0V	kA
I^2t					15120	50Hz, T_J=$T_{J(MAX)}$, V_R=0V	kA^2s
I^2t					13750	60Hz, T_J=$T_{J(MAX)}$, V_R=0V	kA^2s
V_{RRM} V_{DRM}					up to 200	T_J=$T_{J(MAX)}$	V
$T_{J(MAX)}$					170		°C

Green Power Solutions

GEMD133

Voltage Ratings

Part Number	Voltage Code	V_{RRM} V_{DRM} maximum repetitive reverse and off–state blocking voltage V	I_{DRM} I_{RRM} max @125°C mA	$V_{L(RMS)}$ maximum suggested line RMS voltage V
GEMD133	02	200	50	65

Voltage Ratings

Parameters					GEMD133	Conditions	Units
$V_{T(TO)}$ - Threshold voltage					0.74	$T_J=T_{JMAX}$	V
r_t - Slope resistance					0.026	$T_J=T_{JMAX}$	mΩ
P_{MAX} - Maximum power losses					2400	T_A=40°C	W

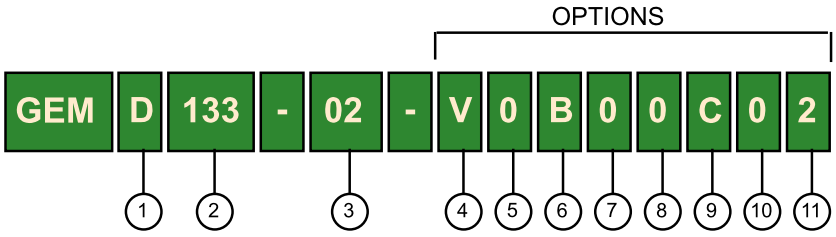
Maximum IEC class 1 currents for typical circuit types

Circuit Type					GEMD133	Conditions	Units
Double star with I.P. transformer					8000	T_A=40°C	A

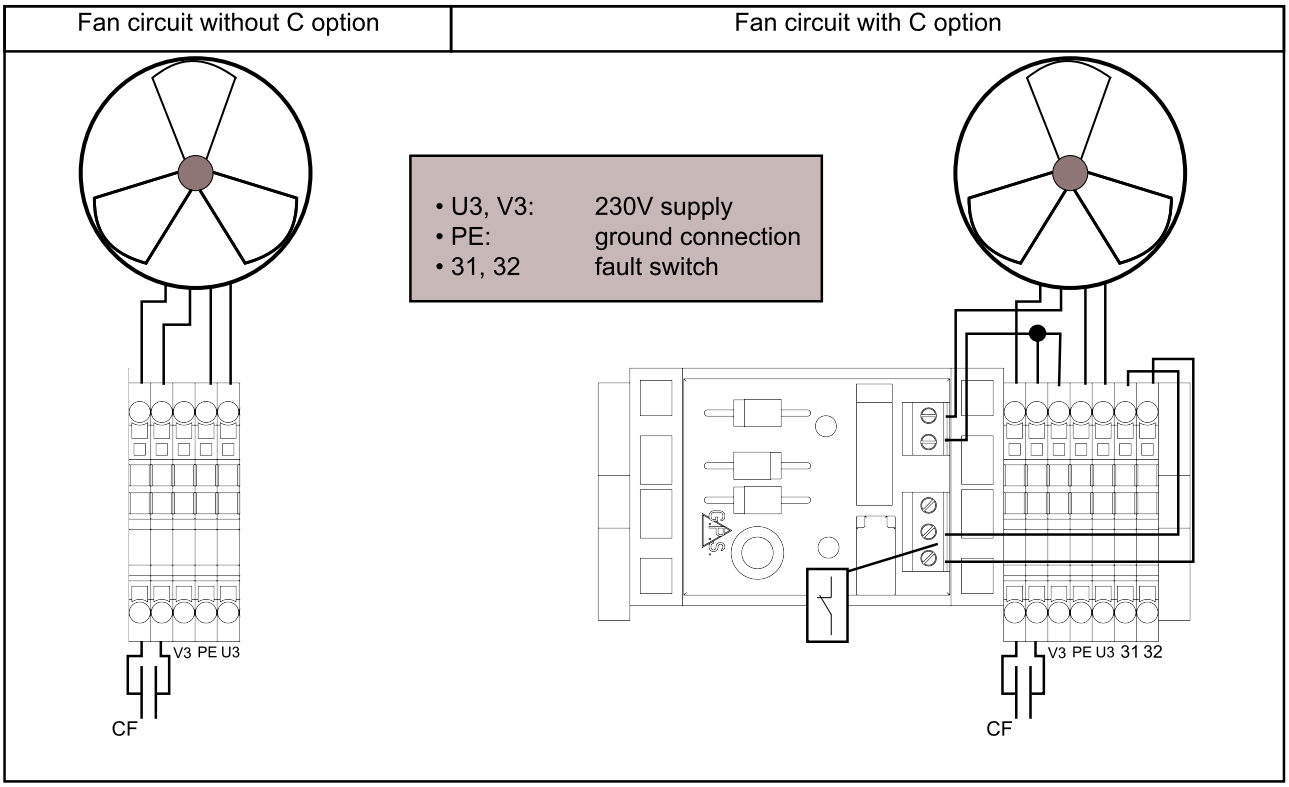
Mechanical Characteristics

Parameters					GEMD133	Conditions	Units
T_J - Junction operating temp.					170		°C
T_{STG} - Storage temperature					-40 - +70		°C
R_{thJA} - Maximum thermal resistance junction to ambient					0.079	DC operation	°C/W
T Mounting torque ± 10% — GEM to panel					7	M6 mounting screws	Nm
T Mounting torque ± 10% — Busbar to GEM					24	M10 mounting screws	Nm
wt - approximate weight					27		kg

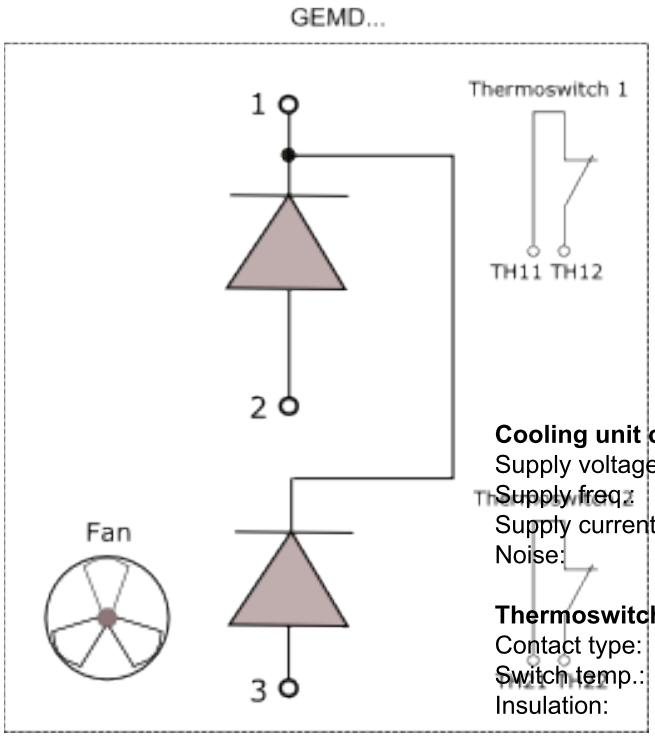
Ordering Information



1. Circuit configuration
2. GEM average current / 10
3. GEM bloking voltage/ 100
4. 0= No Fan; V= With fan
5. 0= No fuses;
6. 0= No busbar; B= With standard copper busbars (see drawings)
7. 0= No anti-parallel busbar;
8. 0= No pulse transformer;
9. 0= No cooling alarm; C=With cooling alarm
10. 0= No device short alarm;
11. 0= No snubber, 2= Two snubbers



Circuit Configurations



Cooling unit characteristics

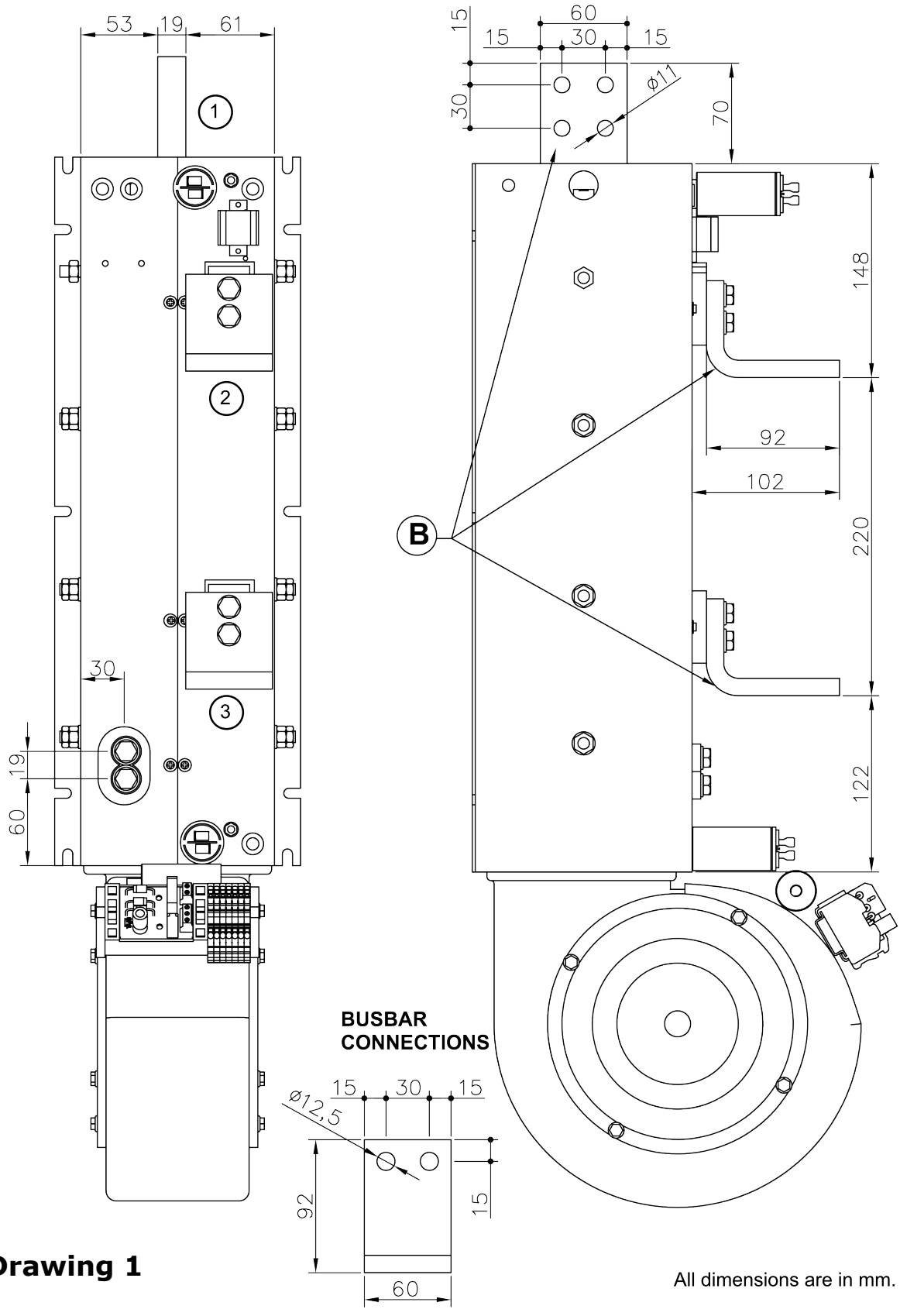
Supply voltage:	230V
Supply freq.:	50-60 Hz
Supply current:	0.67 A
Noise:	61dB

Thermoswitch characteristics

Contact type:	normally closed
Switch temp.:	90°C
Insulation:	2500 V_{DC}

Mechanical Drawings

The drawing shows the version with option V (fan) and C (cooling alarm).



Drawing 1

All dimensions are in mm.

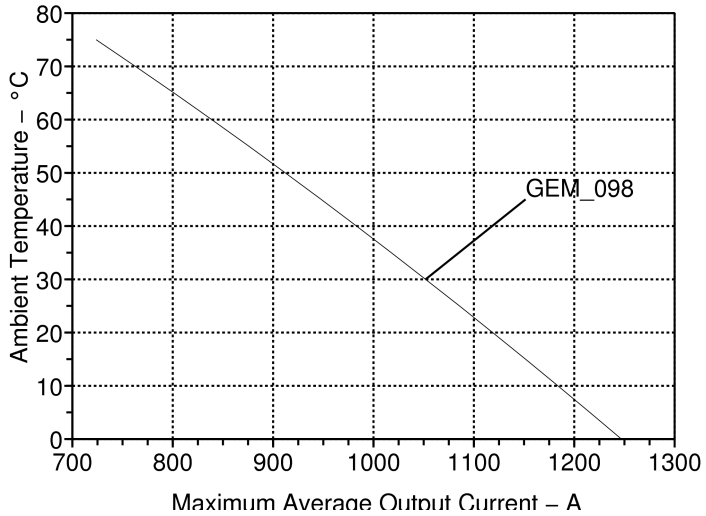


Fig.1: Maximum module output vs. ambient temperature half sine 180° conduction.

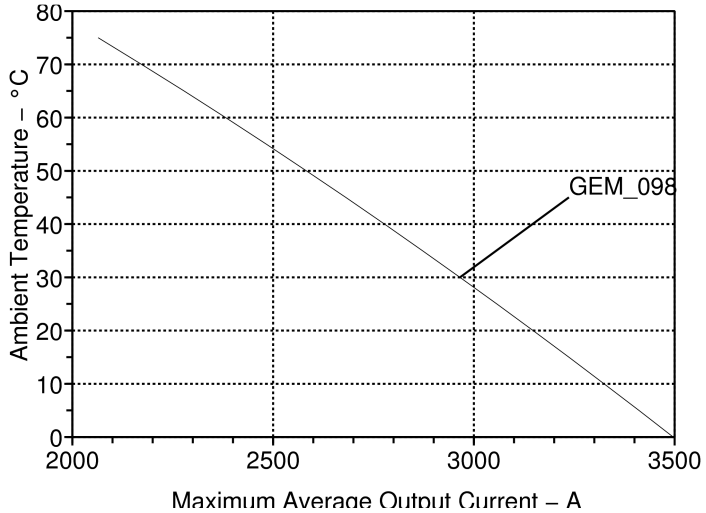


Fig.2: Maximum output vs. ambient temperature for three phase bridge circuit.

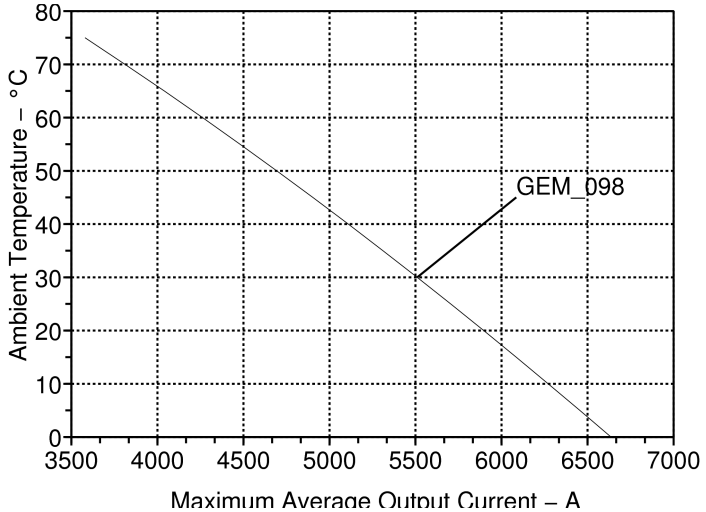


Fig.3: Maximum output vs. ambient temperature for Double star coverter circuit.