

### GQ, GS, GS-T, GZ, GT, GD, GS-L ACCESSORIES

#### HEATSINKS

#### DESCRIPTION

Different models of heatsinks have been designed and tested to meet size and dimension needs.

#### How to choose a heatsink

- Set max. air temperature inside the panelboard ( $T_{max_a}$ )
- Set max. operating current:  $I_{max} = I_{nom. load} + 10\%$

- Draw on the “graphs”  $T_{max_a}$ ,  $I_{max}$  points.
- Choose the smallest heatsink (starting from upwards), which point  $[T_{max_a} I_{max}]$  is in the gray working area of dissipation curves
- Respect installation distances

#### INSTALLATION

In order to obtain best reliability, it is important to install a heatsink correctly inside the panel, to reach an adequate thermal exchange between the device and the surrounding air in natural convection conditions.

#### How to install it correctly:

Mount it vertically ( max.  $10^\circ$  inclination from the vertical axis)

- Vertical distance between a heatsink and the panel wall: 100 mm at least.
- Horizontal distance between a heatsink and the panel wall: 20 mm at least.
- Vertical distance between two heatsinks: 300 mm at least.
- Horizontal distance between two heatsinks: 40 mm at least.

Check that cable channels do not reduce these distances; should it happen, mount the relays overhanging from the panel, so that the air can flow vertically on the heatsink without obstacles (see Fig.1).

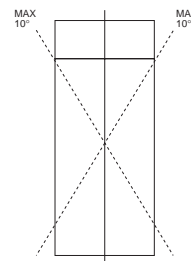
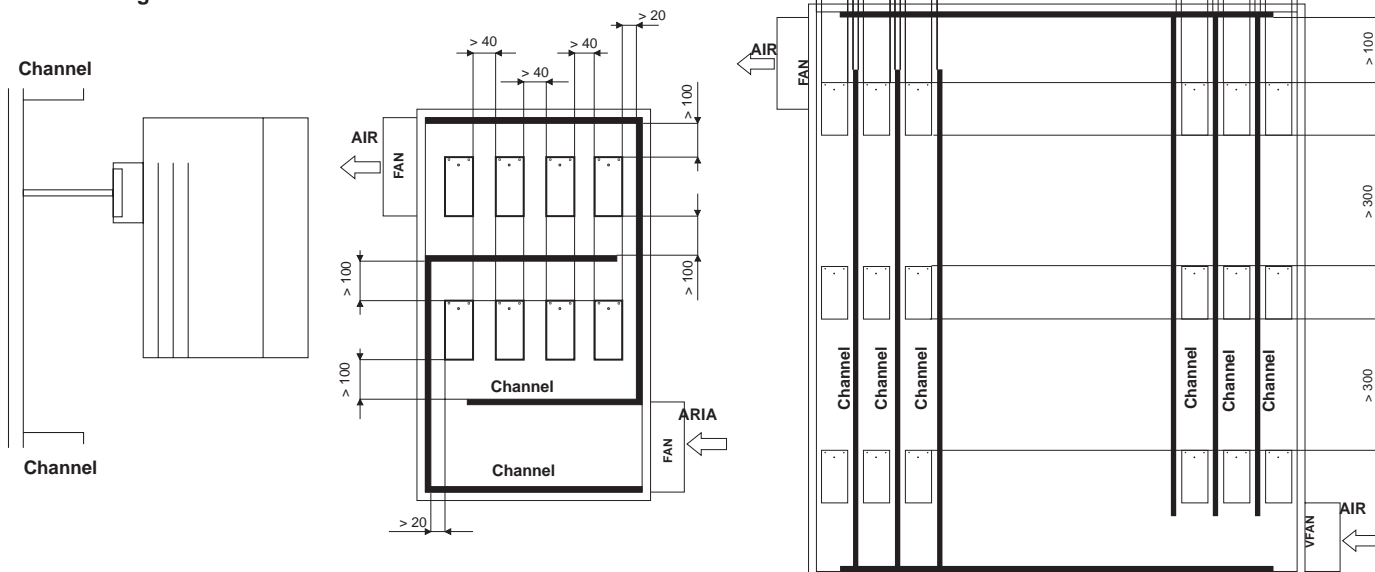


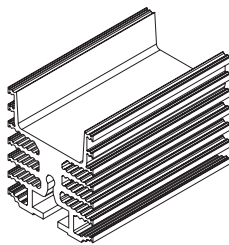
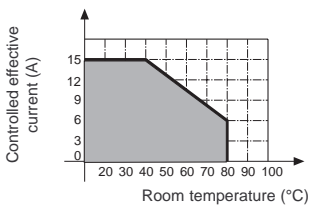
Fig. 1



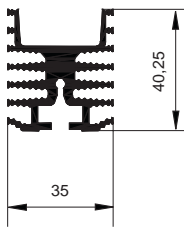
# DISSIPATION CURVES

Effective current controllable based on room temperature

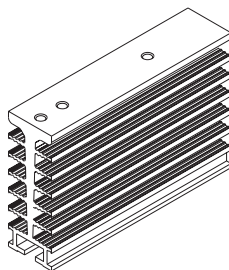
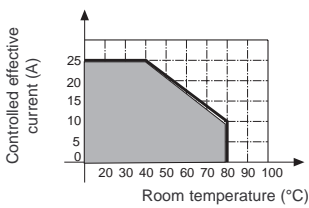
DIS 15G



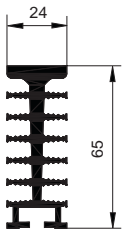
$h = 57\text{mm}$   
 $R_{th} = 4,1^{\circ}\text{C/W}$   
(\*)



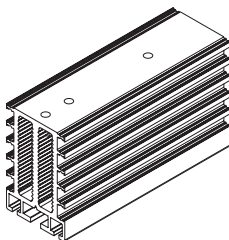
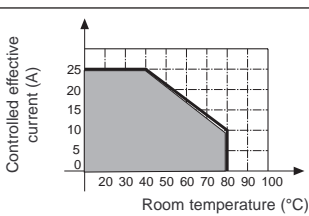
DIS 25G



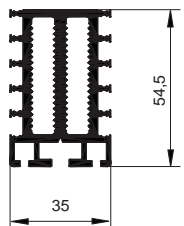
$h = 100\text{mm}$   
 $R_{th} = 3,12^{\circ}\text{C/W}$   
(\*)



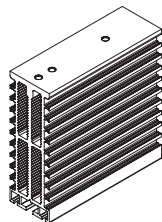
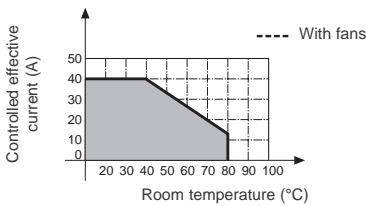
DIS 25GD



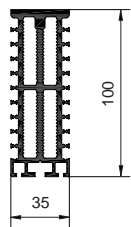
$h = 100\text{mm}$   
 $R_{th} = 2,8^{\circ}\text{C/W}$   
(\*)



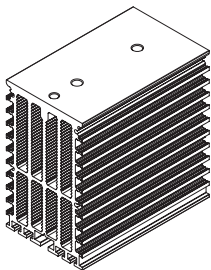
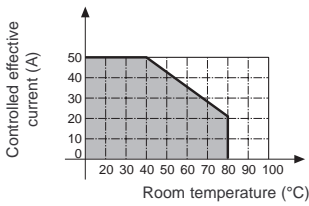
DIS 40G



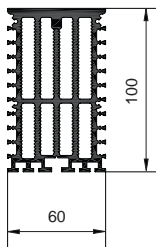
$h = 100\text{mm}$   
 $R_{th} = 1,90^{\circ}\text{C/W}$   
(\*)



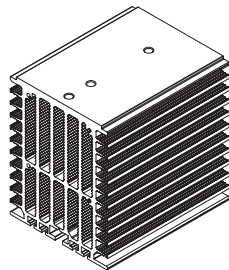
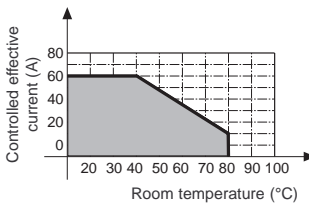
DIS 50G



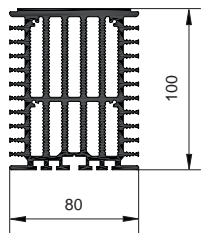
$h = 100\text{mm}$   
 $R_{th} = 0,83^{\circ}\text{C/W}$   
(\*)

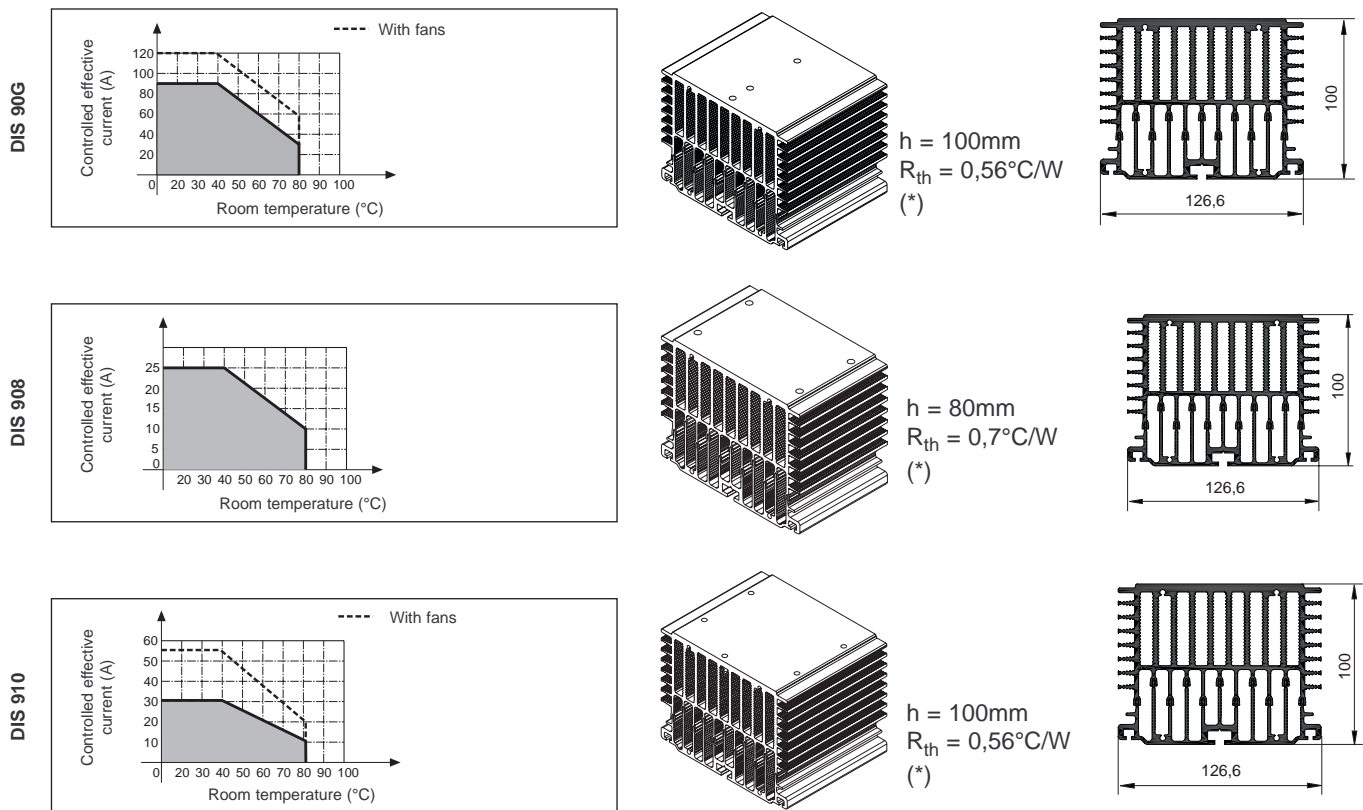


DIS 60G



$h = 100\text{mm}$   
 $R_{th} = 0,66^{\circ}\text{C/W}$   
(\*)





Should the stated point  $[T_{max}, I_{max}]$  be outside the working area, it is necessary to equip the heatsink with a fan and a safety thermostat.

**N.B.** The operating point has not to be outside the delimited area.

- DIS908/910 heatsinks are suitable for three-phase solid state relays of GZ series.

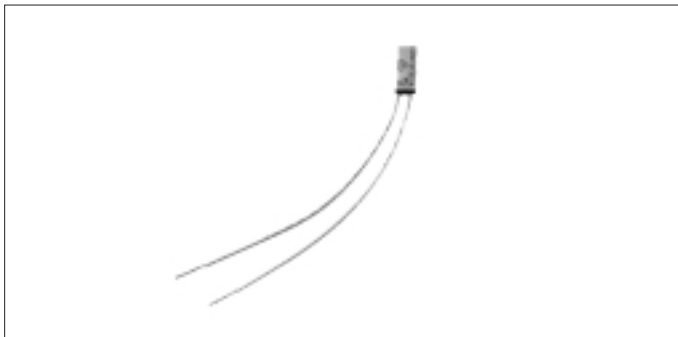
- Controlled three-phase effective current refers to the used line current of three-phase load.

- Heatsinks used with a cooling fan should be equipped with safety thermostat, so that the solid state relay can be switched off in case of fan failure.

(\*) Data surveyed with 40°C ambient temperature and heatsink in vertical position surrounded by 15 cm free space; natural convection; contact surface with the heating element = ~ 8cm<sup>2</sup> [38mmx 20mm]

## HEAT SINKS - ORDER CODE - AVAILABLE MODELS

CODE	DESCRIPTION (dimensions HxLxP)	for SSR type	equipment
DIS-15G	heatsink in extruded aluminium 57x35x40	GS-L 10/15A	M4 screws for relay fixing DIN rail mounting
DIS-25G	heatsink in extruded aluminium 100x24x65	GS-L 10/15A GS-T 10/20A GS 15/20/25A	
DIS-25GD	heatsink in extruded aluminium 100x35x54	GS ≤ 40A GD GS-L / GS-T	
DIS-40G	heatsink in extruded aluminium 100x35x100	GS ≤ 40A GS-T 10/20/25A GD 40A	
DIS-50G	heatsink in extruded aluminium 100x60x100	GS ≤ 50A GT GQ	M5 screws for relay fixing DIN rail mounting
DIS-60G	heatsink in extruded aluminium 100x80x100	GS ≥ 50A GT GQ	
DIS-90G	heatsink in extruded aluminium 100x126x100	GS ≥ 50A GT GQ	
DIS-908	heatsink in extruded aluminium 80x126x100	GZ	
DIS-910	heatsink in extruded aluminium 100x126x100	GZ	
DIS-25G-1M	heatsink in extruded aluminium for group mounting SSR, with DIS-25G profile		
DIS-40G-1M	heatsink in extruded aluminium for group mounting SSR, with DIS-40G profile		
DIS-50G-1M	heatsink in extruded aluminium for group mounting SSR, with DIS-50G profile		
DIS-60G-1M	heatsink in extruded aluminium for group mounting SSR, with DIS-60G profile		
DIS-90G-1M	heatsink in extruded aluminium for group mounting SSR, with DIS-90G profile		



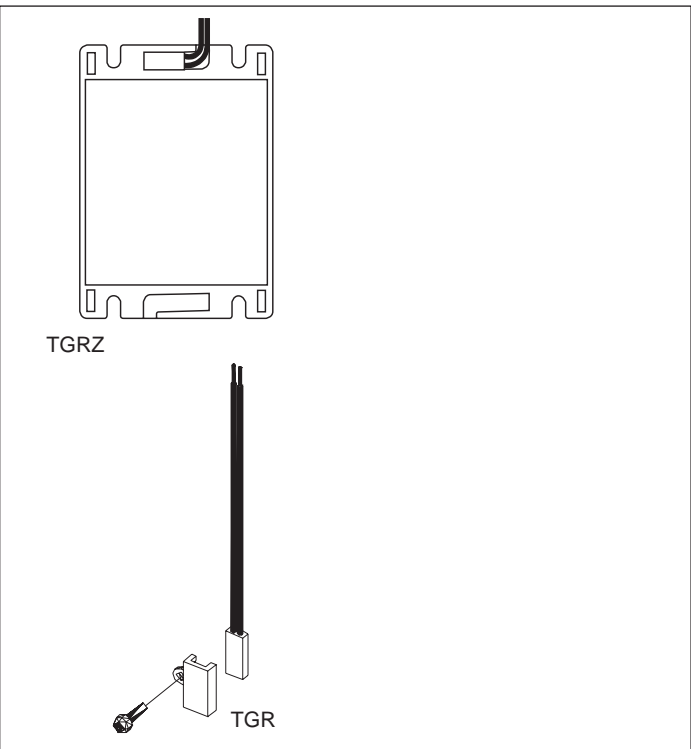
#### DESCRIPTION

Safety thermostat is expressly designed to prevent overtemperature.  
 Thanks to the miniaturized case the thermal answer is excellent. Furtheron, the thermostat is a very good thermal protection, as it can be mounted very near to the critical point which has to be controlled.  
 When it is connected in series to control voltage, the thermostat disenergises the relay as soon as the critical operating temperature is reached. Relay is energised again when temperature drops underneath the critical value (about 90°C).  
 The thermostat is normally closed and opens when temperature exceeds 90°C (with automatic reset).  
 Connection in series with the input control is suggested.  
 TGRZ is installed in one of the two slots of the GZ three-phase solid state relay case.  
 TGR is fixed by means of a small bracket and of a screw (enclosed).  
 The VIR-1 thermostat is supplied as a spare part for: W21x ≥ 150A solid state power units.

## POWER SOLID STATE RELAYS ACCESSORIES

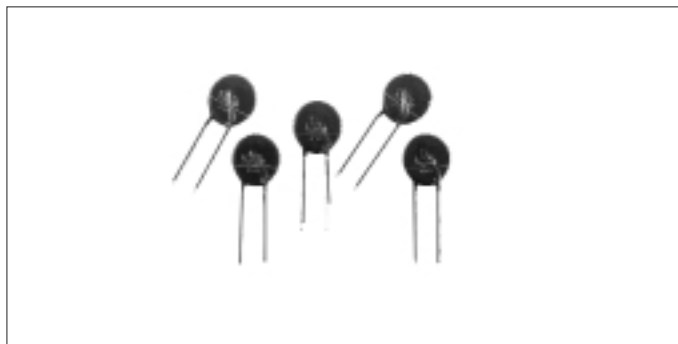
### THERMOSTAT

#### INSTALLATION



#### ORDER CODE - AVAILABLE MODELS

T-GR (includes fastening bracket)  
 T-GRZ (for GZ)  
 VIR-1 (for W21x ≥ 150A)



## SOLID STATE RELAY ACCESSORIES

### VARISTORS (MOV)

### Spark Suppressors for Solid State Relay Protection

#### DESCRIPTION

MOV (metal-oxide-varistor) is an overvoltage protection device which improves the reliability of solid state relays when functioning

ORDER CODE	WORKING VOLTAGE (V)
RV03	120-290 Vac
RV04	291-400 Vac
RV05	401-500 Vac



## HEATSINKS ACCESSORIES

### FANS

#### DESCRIPTION

An additional fan, applied to the heatsink of a solid state relay, improves its dissipation performance and allows the solid state relay to work at higher ambient temperatures with the same current. Fan installation benefits are shown (dashed) by the dissipation curves of the different heatsinks.

#### ORDER CODE - AVAILABLE MODELS

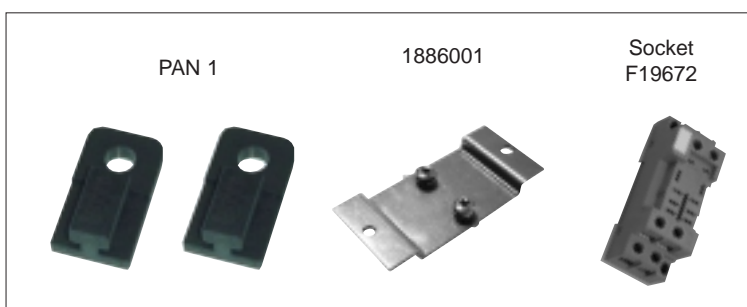
CODE	DESCRIPTION	mechanical predisp. for heatsink type	Equipment	For SSR type
VEN-60	fan kit 24Vdc, 4W 60x60x25	DIS-50G DIS-60G	hand guard nr. 4 screws nr. 4 plastic fastening rivets for direct attachment to heatsink	
VEN-90	fan kit 230Vac, 14W, 50Hz 80x80x40	DIS-90G DIS-910 DIS-908	hand guard nr. 4 screws M4 nr. 4 notched washers nr. 4 plastic fastening rivets for direct attachment to heatsink	GTS 120A GTT 120A GTZ $\geq$ 40A
VEN-91	fan kit 115Vac, 14W, 50Hz 80x80x40	DIS-90G DIS-910 DIS-908	hand guard nr. 4 screws M4 nr. 4 notched washers nr. 4 plastic fastening rivets for direct attachment to heatsink	GTS 120A GTT 120A GTZ $\geq$ 40A
VEN-92	fan kit 24Vdc, 4W 80x80x25	DIS-90G DIS-910 DIS-908	hand guard nr. 4 screws M4 nr. 4 notched washers nr. 4 plastic fastening rivets for direct attachment to heatsink	GTS 120A GTT 120A GTZ $\geq$ 40A

## ACCESSORIES

### SUPPORT FOR DIN BAR



### PANEL ATTACHMENT SUPPORT



#### ORDER CODE - AVAILABLE MODELS

CODE	DESCRIPTION	For SSR / Heatsink type	Equipment
DIN-2	support for attachment to DIN bar	GTS-L 5/10/15A GTS-T 10/20A GTS 15/25A DIS15G, DIS25G	fastening screws
DIN-4	support for attachment to DIN bar with spring	W211 25/40/75/100/150A W212 25/40/75/100/150A	
DIN-5	support for attachment to DIN bar with spring	GTS-L 10/15A GTS-T, GTS, GTD, GTT, GTZ DIS15G, DIS25GD, DIS25G, DIS40G, DIS50G, DIS60G, DIS90G, DIS908, DIS910	
F19672	socket for relays with attachment to DIN bar	GTS-L 5/10/15A	
PAN-1	kit attachment to panel	GTS-T, GTS, GTT, GTS-L	nr. 2 plastic supports nr. 2 screws nr. 4 washers
1886001	kit attachment to panel	Wattcor series	

(\*\*) Models GTS, GTT 90 A, GRZ are supplied (standard) with supports for attachment to panel



## SOLID STATE RELAY ACCESSORIES

### COVERS FOR SOLID STATE RELAYS

#### ORDER CODE - AVAILABLE MODELS

CODE	DESCRIPTION
<b>COP-GS-0</b>	Pad-printed cover for GS-T 10A, 20A and GS 15A, 25A.
<b>COP-GS-1</b>	Pad-printed cover for GS-T 25A and GS40A.
<b>COP-GS-2</b>	Pad-printed cover for GS 50A, GS 60A, GS 75A, GS 90A, GS 120A.
<b>COP-GD-0</b>	Pad-printed cover for GD40.
<b>COP-GTS-0</b>	Pad-printed cover for GTS-T 10A, 20A and GTS 15A, 25A.
<b>COP-GTS-1</b>	Pad-printed cover for GTS-T 25A and GTS 40A.
<b>COP-GTS-2</b>	Pad-printed cover for GTS 50A, 60A, 75A, 90A, 120A.
<b>COP-GTD-0</b>	Pad-printed cover for GTD-25
<b>COP-GTD-1</b>	Pad-printed cover for GTD-40
<b>COP-GT-0</b>	Pad-printed cover for GT 25A, 40A, 50A, 60A, 75A, 90A, 120A.
<b>COP-GTT-0</b>	Pad-printed cover for GTT 25A, 40A, 50A, 60A, 75A, 90A, 120A.
<b>COP-GTS-L-0</b>	Cover for GTS-L5
<b>COP-GTS-L-1</b>	Cover for GTS-L10 / GTS-L15
<b>BBR</b>	Protective cover for RA single-phase solid state relays



## SOLID STATE RELAY ACCESSORIES

### FUSES AND FUSE HOLDERS

#### DESCRIPTION

These fuses ensure the maximum safety in solid state relay applications.  
Fuses with a very high cutoff power are used for this kind of applications.

#### MODEL SELECTION

Relay	i <sup>Δ</sup> t	Nominal voltage	Fuse	Dimensions (mm)	Fuse order code	Fuse holder order code	Notes
<b>GS-L / GTS-L / GTS-T / GTS / GS / GS-T / GTD / GTT (single-phase with antiparallel thyristor or Triac)</b>							
GS-L5 / GTS-L5 / GTS-L4-5	45	230 440	5A	10x38	FUS-06-L	PF-10x38	plug-in
GS-L10 / GTS-L10 / GTS-L4-10	100	230 440	10A	10x38	FUS-10-L	PF-10x38	plug-in
GS-L15 / GTS-L15 / GTS-L4-15	180	230 440	15A	10x38	FUS-16-L	PF-10x38	plug-in
GS-T 10 / GTS-T 10	72	230	10A	10x38	FUS-010	PF-10x38	plug-in
GS-T 20 / GTS-T 20	315	230	25A	10x38	FUS-025	PF-10x38	plug-in
GS-T 25 / GTS-T 25	315	230	25A	10x38	FUS-025	PF-10x38	plug-in



**MODEL SELECTION**

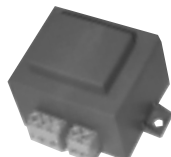
Relay	i <sup>Δ</sup> 2t	Nominal voltage	Fuse	Dimensions (mm)	Fuse order code	Fuse holder order code	Notes
<b>GQ / GS-L / GTS-L / GTS-T / GTS / GS / GTD / GTT (single-phase with antiparallel thyristor or Triac)</b>							
GQ / GTS / GS 15	450	230 480	16A	10x38	FUS-016	PF-10x38	plug-in
GTS / GS / GTT / GQ / GT / GTD 25	645	230 480	25A	10x38	FUS-025	PF-10x38	plug-in
GTS / GS / GTT / GT / GTD 40	1010	230 480	40A	14x51	FUS-040	PF-14x51	plug-in
GTS / GS / GTT / GQ / GT 50	6600	230 480	63A	22x58	FUS-063	PF-22x58	plug-in
GTS / GS / GTT / GT 60	6600	230 480	80A	22x58	FUS-080	PF-22x58	plug-in
GTS / GS / GTT / GT 75	8000	230 480	80A	22x58	FUS-080	PF-22x58	plug-in
GTS / GS / GTT / GQ / GT 90	11200	230 480	100A	22x58	FUS-100	PF-22x58	plug-in
GTS / GS / GTT / GT 120	11200	230 480	125A	size 0-0-0-TN/80 100x51x30	FUS-125N	PF-DIN	no plug-in
<b>GTZ, GZ (three-phase with antiparallel thyristor)</b>							
GZ 10A	100	400	10A	10x38	FUS-10-L	PF-10x38	plug-in
	450	400					
GTZ, GZ 25A	645	480	25A	12x32	FUS-025	PF-10x38	plug-in
		480					
GTZ, GZ 40A	1010	600	40A	14x51	FUS-040	PF-14x51	plug-in
		480					
GTZ, GZ 55A	6600	600	63A	22x58	FUS-063	PF-22x58	plug-in
<b>W21X / W312 / W401 (single-phase with antiparallel thyristor)</b>							
W21x / W312 25A	1800	660	50A	22x58	FUS-050	-	plug-in
W21x / W312 40A	11200	660	63A	22x58	FUS-063	-	plug-in
W21x 75A	14450	660	100A	22x58	FUS-100	-	plug-in
W21x 100A	86200	660	250A	27x60	FUS-250	-	plug-in
W21x 150A	86200	660	250A	27x60	FUS-250	-	plug-in
W21x 250A	200000	660	450A	-	FUS-450N	-	no plug-in
W21x 400A	1125000	660	630A	-	FUS-630N	-	no plug-in
W21x 600A	1125000	660	900A	-	FUS-900N	-	no plug-in
W401 40A	11200	460	63A	22x58	FUS-063	-	plug-in
W401 100A	86200	460	250A	27x60	FUS-250	-	plug-in

**ORDER CODE - AVAILABLE MODELS**

<b>FUSES</b>		<b>FUSE HOLDERS</b>
FUS-06-L	FUS-050	PF 10x38
FUS-10-L	FUS-063	PF 14x51
FUS-16-L	FUS-080	PF 22x58
FUS-010	FUS-100	PF DIN
FUS-016	FUS-125N	PF 27x60
FUS-015	FUS-250	
FUS-025	FUS-450N	
FUS-030	FUS-630N	
FUS-040	FUS-900N	



TRAFO - 1  
TRAFO - 1B



TRAFO - 5  
TRAFO - 5B

## • Power transformer and isolation

Transformer for galvanic isolation of power supply.

*Dimensions TRAFO - 1 / TRAFO - 1B*

L: 58mm B: 47mm H: 36mm

*Dimensions TRAFO - 5 / TRAFO - 5B*

L: 67mm B: 52mm H: 45mm

*Order code*

TRAFO - 1: 3VA transformer, 230/24Vac

TRAFO - 1B: 3VA transformer, 24/24Vac

TRAFO - 5: 10VA transformer, 230/24Vac

TRAFO - 5B: 10VA transformer, 24/24Vac

## • Current transformer

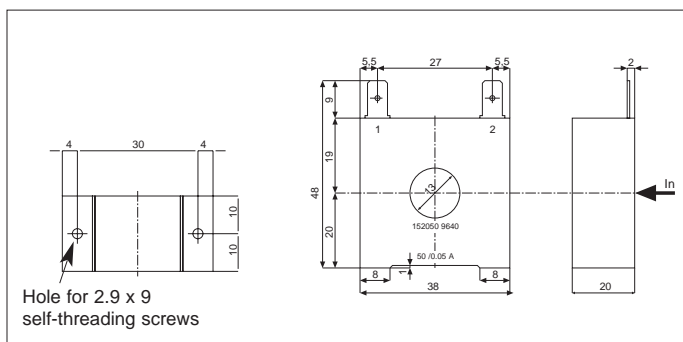
These transformers are used for currents of 50/60 Hz. The main characteristic of these transformers is the high number of turns in the secondary. This provides a very low secondary current, suitable for an electronic measurement circuit.

The secondary current can be measured as a voltage on a resistor.

*Order code*

330200 IN = 50Aac OUT = 50mAac

330201 IN = 25Aac OUT = 50mAac



## • Ground terminal for heat sinks

The ground terminals attached to GEFRAN heat sinks allow connection of the ground terminal with the screws supplied in the kit.

Type	Ground terminal Contact area (WxD) * Screw type	Screw type on heat sink side	Heat sink
TERM-25	9x12 M5	M4	DIS-25G
TERM-40	11,5x12 M5	M4	DIS-40G DIS-25GD
TERM-60	14x16 M5	M5	DIS-50G DIS-60G DIS-90G

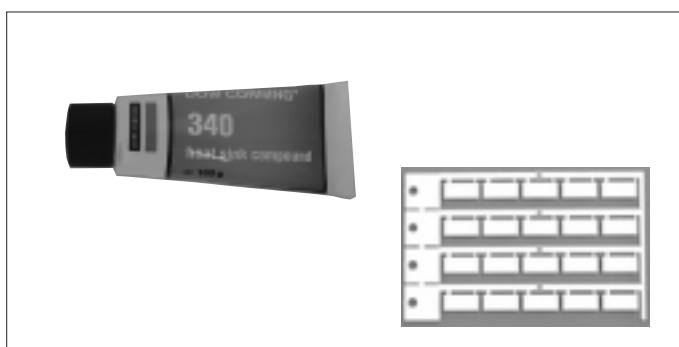
\* (WxD) = Width (mm) x Depth (mm)

## SOLID STATE RELAYS ACCESSORIES

## THERMOCONDUCTIVE PASTE

## THERMOCONDUCTIVE ADHESIVES

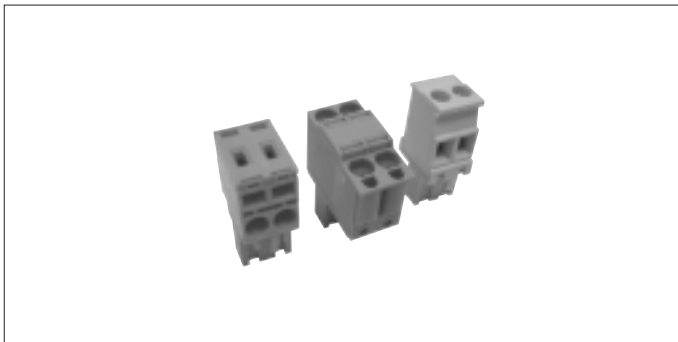
## IDENTIFICATION LABELS



## ORDER CODE

CODE	DESCRIPTION
SIL-1	Silicone thermoconductive paste for coupling the power module to the heat sink. 100 g tube.
SIL-GQ	Silicone rubber 30x40mm for solid state relays GQ series. Thickness 0,2mm. 2,1W (m*K). 200x240mm sheet with n° 25 adhesives.
SIL-GS40	Silicone rubber 20x40mm for solid state relays GS ≤ 40A series. Thickness 0,2mm. 2,1W (m*K). 200x240mm sheet with n° 35 adhesives.
SIL-GS50	Silicone rubber 30x35mm for solid state relays GS ≥ 50A series. Thickness 0,2mm. 2,1W (m*K). 200x240mm sheet with n° 30 adhesives.
LAB-1	Kit with 20 plastic identification labels for GS / GS-T / GTS / GTS-T / GTT / GT / GD / GTD power solid state relays





## **SOLID STATE RELAYS ACCESSORIES**

### **CONNECTORS**

#### **ORDER CODE**

<b>CODE</b>	<b>DESCRIPTION</b>
<b>MORS1</b>	Two-pin spring connector, plug-in, for GQ control signal
<b>MORS2</b>	Two-pin double spring connector, plug-in, for GQ control signal
<b>MORS3</b>	Two-pin screw connector, plug-in, for GQ control signal