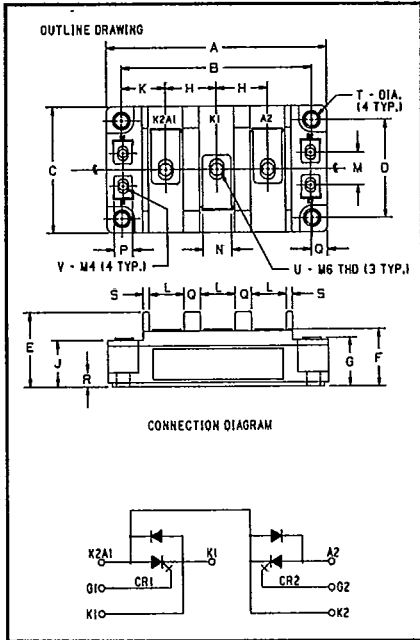




Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272  
 Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 72.75.15

**GDM2 \_ \_ 30 Tentative**

**Gate Turn-Off (GTO)  
 Thyristor Module  
 300 Amperes/800-1200 Volts**



**800-1200 Volts GDM2 \_ \_ 30  
 Outline Drawing**

Dimension	Inches	Millimeters
A	4.25 Max	108 Max
B	3.661 ± .010	93 ± 0.25
C	2.44 Max	62 Max
D	1.890 ± .010	48 ± 0.25
E	1.46	37
F	1.18 Max	30 Max
G	.98 Max	25 Max
H	.98	25
J	.91	23
K	.85	21.5
L	.67	17
M	.63	16
N	.55	14
P	.35	9
Q	.315	8
R	.28	7
S	.12	3
T	.256 Dia.	Dia. 6.5
U	M6 Metric	M6
V	M4 Metric	M4

**Description**

Powerex GTO modules are medium powered devices designed for switching applications. The modules consist of two gate turn-off thyristors with reverse parallel connected high speed diodes, all with isolation to the base plate.

**Features:**

- Isolated Mounting
- Glass Passivated Chips
- Fast Recovery Diodes
- High Repetitive Turn-Off Current

**Applications:**

- Inverters
- DC Motor Control
- Switching Power Supplies
- AC Motor Control

**Ordering Information**

Example: Select the complete eight digit module part number you desire from the table — i.e. GDM21230 is a 1200 Volt, 300 Ampere Gate Turn-Off (GTO) Thyristor Module.

Type	V <sub>DRM</sub> Volts (x100)	Current Rating Amperes (x10)
GDM2	08	30
	10	
	12	



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GDM2 — — 30

Gate Turn-Off (GTO) Thyristor Module

300 Amperes/800-1200 Volts

## Absolute Maximum Ratings

Characteristics	Symbol	GDM20830	GDM21030	GDM21230	Units
Peak Forward Blocking Voltage (Repetitive) ①	$V_{DRM}$	800	1000	1200	Volts
Transient Peak Forward Blocking Voltage (Non-Repetitive) $t < 5ms$ ①	$V_{DSM}$	800	1000	1200	Volts
DC Forward Blocking Voltage ②	$V_{D(DC)}$	640	800	960	Volts
Gate Controlled Turn-off Current (Repetitive)	$I_{TGO}$	300	300	300	Amperes
RMS On-State Current	$I_{T(RMS)}$	100	100	100	Amperes
Average On-State Current	$I_{T(AV)}$	60	60	60	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60 Hz)	$I_{TSM}$	1200	1200	1200	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50 Hz)	$I_{TSM}$	1095	1095	1095	Amperes
$I^2t$ (for Fusing), 8.3 milliseconds	$I^2t$	6000	6000	6000	A <sup>2</sup> sec
Critical Rate-of-Rise of On-State Current ②	$di/dt$	300	300	300	Amperes/ $\mu s$
Peak Gate Forward Power Dissipation	$P_{GFM}$	60	60	60	Watts
Peak Gate Reverse Power Dissipation	$P_{GRM}$	1800	1800	1800	Watts
Average Gate Forward Power Dissipation	$P_{GF(AV)}$	18	18	18	Watts
Average Gate Reverse Power Dissipation	$P_{GR(AV)}$	25	25	25	Watts
Peak Forward Gate Voltage	$V_{GFM}$	10	10	10	Volts
Peak Reverse Gate Voltage	$V_{GRM}$	15	15	15	Volts
Peak Forward Gate Current	$I_{GFM}$	18	18	18	Amperes
Peak Reverse Gate Current	$I_{GRM}$	120	120	120	Amperes
Storage Temperature	$T_{STG}$	-40 to 150	-40 to 150	-40 to 150	°C
Operating Temperature	$T_J$	-40 to 125	-40 to 125	-40 to 125	°C
Maximum Mounting Torque M6 Mounting Screw	—	26	26	26	in.-lb.
Maximum Terminal Torque M5 Terminal Screw	—	17	17	17	in.-lb.
Module Weight (Typical)	—	460	460	460	Grams
V Isolation	$V_{RMS}$	2500	2500	2500	Volts

①  $V_{GK} = -2V$ ②  $T_J = 125^\circ C$ ,  $I_{GM} = 10A$ ,  $V_D = 1/2 V_{DRM}$



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GDM2 — — 30

Gate Turn-Off (GTO) Thyristor Module

300 Amperes/800-1200 Volts

Electrical and Thermal Characteristics,  $T_J = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Test Conditions	GDM2 — — 30	Units
<b>Blocking State Maximums</b>				
Forward Leakage Current, Peak	$I_{DRM}$	$T_J = 125^\circ\text{C}$ , $V_{DRM} = \text{rated}$ , $V_{GK} = -2\text{V}$	30	mA
Reverse Gate Leakage Current	$I_{GRM}$	$T_J = 125^\circ\text{C}$ , $V_{GR} = 15\text{V}$	30	mA
<b>Conducting State Maximums</b>				
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 300\text{A}$	4.0	Volts
Peak On-State Voltage	$V_{FM}$	$I_{FM} = 180\text{A}$	2.5	Volts
<b>Switching Minimums</b>				
Critical Rate of Rise of Off-State Voltage	dv/dt	$T_J = 125^\circ\text{C}$ , $V_D = \frac{1}{2}V_{DRM}$ , $V_{GK} = -2\text{V}$	1000	Volts/ $\mu\text{sec}$
<b>Switching Maximums</b>				
Turn-on Time	$t_{gt}$	$I_{TM} = 300\text{A}$ , $I_{GM} = 10\text{A}$ , $V_D = \frac{1}{2}V_{DRM}$ , $T_J = 125^\circ\text{C}$	4.0	$\mu\text{sec}$
Turn-off Time	$t_{gq}$	$I_{TM} = 300\text{A}$ , $-di_G/dt = 15\text{A}/\mu\text{sec}$ , $V_D = \frac{1}{2}V_{DRM}$ , $T_J = 125^\circ\text{C}$ , $V_{GR} = -15\text{V}$ , $C_S = 0.3\mu\text{F}$ , $L_S = 0.2\mu\text{H}$	10	$\mu\text{sec}$
<b>Thermal Maximums</b>				
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per GTO	0.3	$^\circ\text{C}/\text{Watt}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per Diode	0.5	$^\circ\text{C}/\text{Watt}$
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	Per Device	0.1	$^\circ\text{C}/\text{Watt}$
<b>Gate Parameters Maximums</b>				
Gate Current to Trigger	$I_{GT}$	$V_D = 24\text{V}$ , $R_L = 1\Omega$	1000	mA
Gate Voltage to Trigger	$V_{GT}$	$V_D = 24\text{V}$ , $R_L = 1\Omega$	1.5	Volts

**Tentative**

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This specification is tentative;  
therefore, performance curves are not  
included. Please contact the Powerex  
sales representative nearest you for  
further information.



T-91-01

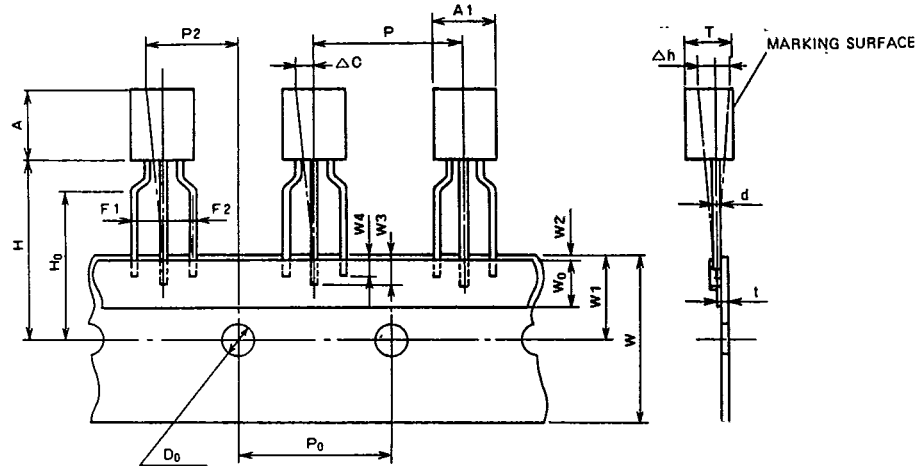
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## Taping

### STANDARD SPECIFICATIONS FOR TAPING OF MOLDED PACKAGE THYRISTORS AND TRIACS

#### TO-92 Package

Thyristor  
CR02AM, CR03AM, CR04AM  
Triac  
BCR1AM



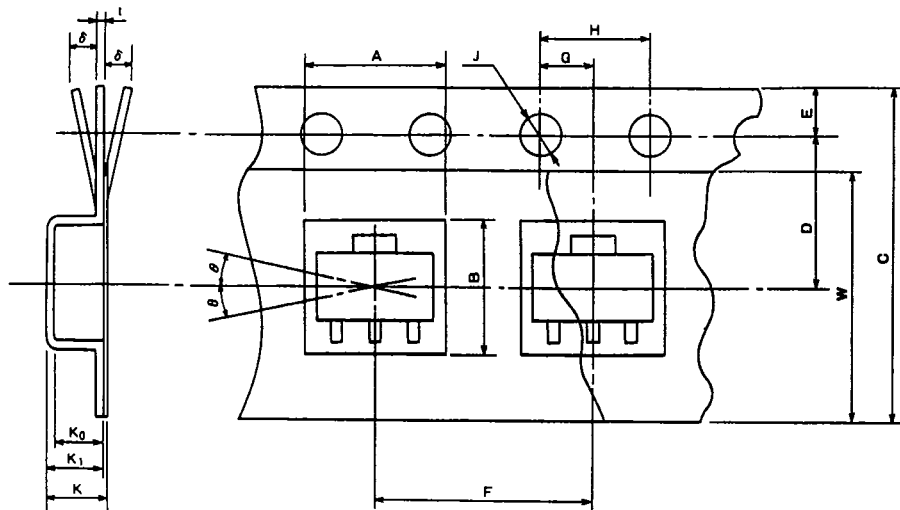
Taping dimensions

Description of symbol	Symbol	Dimensions (Unit:mm)	Remark
Product width	A1	5.0 MAX	
Product height	A	5.0 MAX	
Product thickness	T	3.7 MAX	
Lead wire diameter	d	0.6 MAX	
Sticker lead wire length (1)	W3	2.5 MIN	
Sticker lead wire length (2)	W4	2.0 MIN	
Pitch between products	P	12.7 ± 1.0	
Feed hole pitch	P <sub>0</sub>	12.7 ± 0.3	The cumulative pitch error is ± 1mm per 20 pitches.
Feed hole deviation (1)	P2	6.35 ± 1.3	
Distance between lead wires	F1, F2	2.5 ± 0.4	
Defective product (1)	Δh	0 ± 2.0	
Tape width	W	18.0 ± $\begin{smallmatrix} 1.0 \\ 0.5 \end{smallmatrix}$	
Sticker tape width	W <sub>0</sub>	6.0 ± 0.5	
Feed hole deviation (2)	W1	9.0 ± 0.5	
Sticker tape deviation	W2	0.5 MAX	
Position of product bottom surface	H	17.5 MIN	
Lynch height of lead wire	H <sub>0</sub>	16.0 ± 0.5	
Feed hole diameter	D <sub>0</sub>	4.0 ± 0.2	
Tape thickness	t	0.7 ± 0.2	
Defective product (2)	ΔC	0 ± 1.0	



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Powerex Semiconductor Data Book  
 Taping



SOT-89 Package

Thyristor  
 CR08AS

Taping dimensions

Description of symbol		Symbol	Dimensions/angles Unit:mm	Remark
Parts Insertion	Height	A	$5.0 \pm 0.1$	Cross-section of the surface 0.5mm above the Inner bottom
	Width	B	$4.6 \pm 0.1$	Cross-section of the surface 0.5mm above the inner bottom
Concave square hole	Depth	K <sub>0</sub>	$1.8 \pm 0.1$	Inner space
	Pitch	F	$8.0 \pm 0.1$	Cumulative error +0.1/-0.3 MAX/10 pitches
Round feed hole	Diameter	J	$\phi 1.5 \pm 0.05$	
	Pitch	H	$4.0 \pm 0.1$	Cumulative error +0.1/-0.3 MAX/10 pitches
	Position	E	$1.5 \pm 0.1$	Distance between the tape edge and the hole center
Distance between center lines	Vertical	G	$2.0 \pm 0.5$	Center line of concave square hole and round feed hole
	Horizontal	D	$5.65 \pm 0.05$	Center line of concave square hole and round feed hole
Cover tape	Width	W	$9.5 + 0.3/-0$	Thickness: 0.1 MAX
Carrier tape	Width	C	$12 \pm 0.2$	Warp $\pm 0.3$ MAX
	Thickness	t	$0.3 \pm 0.05$	
	Package hole depth	K <sub>1</sub>	$2.1 \pm 0.1$	
Device	Package dimensions	—	—	As shown in (e)
	Inclination	$\theta$	30° MAX.	
Total Thickness		K	$2.3 \pm 0.1$	Total thickness including cover and carrier tapes