

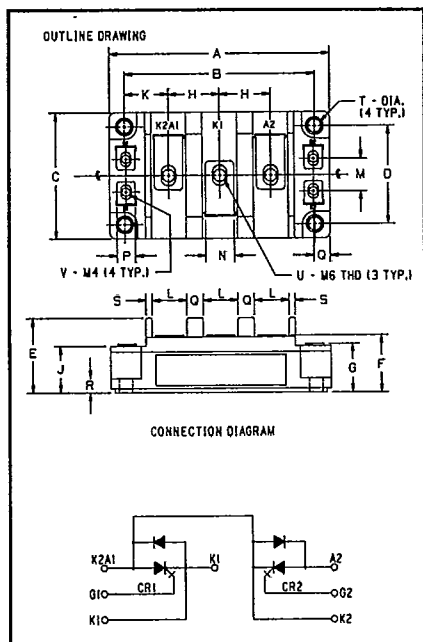


Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
 Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 72.75.15

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 _{DRM} Volts (x100)	Current Rating Amperes (x10)
GDM2	08	30
	10	
	12	



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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 ①	$V_{D(DC)}$	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 ² sec
Critical Rate-of-Rise of On-State Current ②	di/dt	300	300	300	Amperes/ μs
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 $T_J = 125^\circ C$, $I_{GM} = 10A$, $V_D = \frac{1}{2} V_{DRM}$



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

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

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This specification is tentative;
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further information.



T-91-01

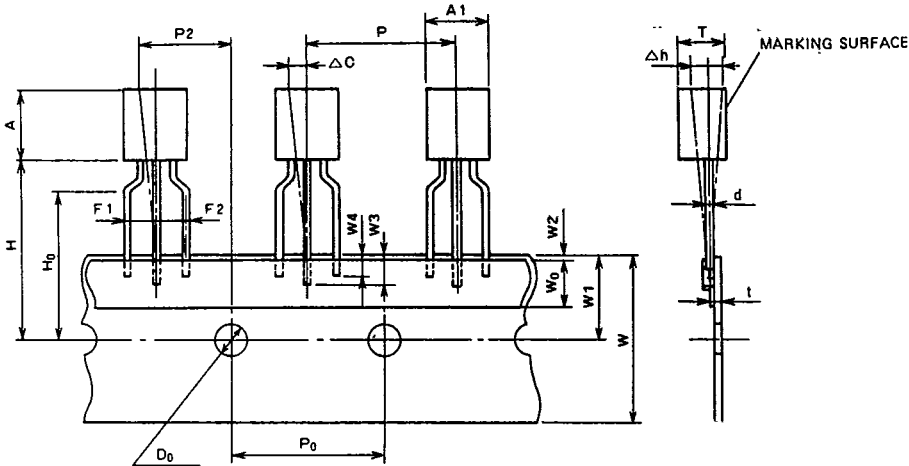
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Taping

STANDARD SPECIFICATIONS
FOR TAPING OF MOLDED
PACKAGE THYRISTORS AND
TRIACS

TO-92 Package

Thyristor
CR02AM, CR03AM, CR04AM
Triac
BCR1AM



Taping dimensions

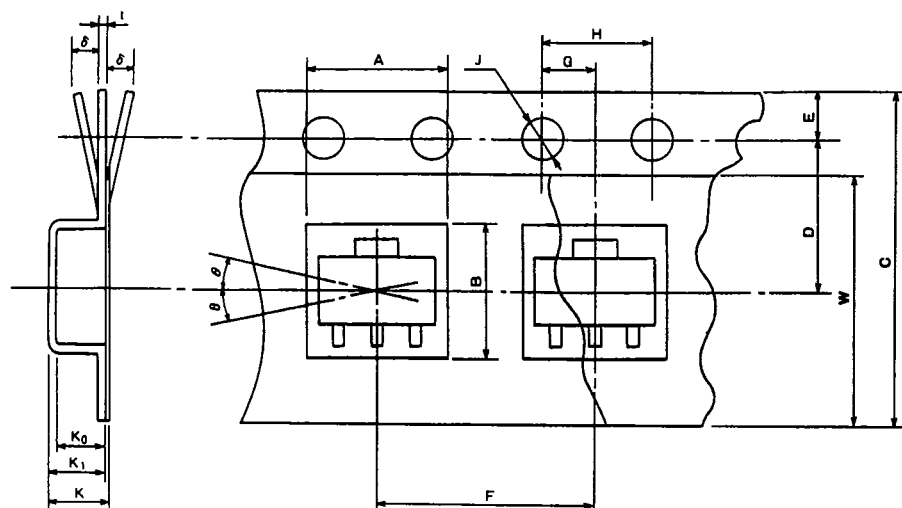
Description of symbol	Symbol	Dimensions (Unit:mm)	Remark
Product width	A1	5.0 MAX	
Product height	A	5.0 MAX	
Product thickness	T	3.7 MAX	
Lead wire diameter	d	0.6 MAX	
Sticker lead wire length (1)	W3	2.5 MIN	
Sticker lead wire length (2)	W4	2.0 MIN	
Pitch between products	P	12.7 ± 1.0	
Feed hole pitch	P ₀	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 ± ^{1.0} _{0.5}	
Sticker tape width	W ₀	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 ₀	16.0 ± 0.5	
Feed hole diameter	D ₀	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 ± 0.1	Cross-section of the surface 0.5mm above the inner bottom
	Width	B	4.6 ± 0.1	Cross-section of the surface 0.5mm above the inner bottom
Concave square hole	Depth	K ₀	1.8 ± 0.1	Inner space
	Pitch	F	8.0 ± 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 ± 0.1	Cumulative error +0.1/-0.3 MAX/10 pitches
	Position	E	1.5 ± 0.1	Distance between the tape edge and the hole center
Distance between center lines	Vertical	G	2.0 ± 0.5	Center line of concave square hole and round feed hole
	Horizontal	D	5.65 ± 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 ± 0.2	Warp ± 0.3 MAX
	Thickness	t	0.3 ± 0.05	
	Package hole depth	K ₁	2.1 ± 0.1	
Device	Package dimensions	—	—	As shown in (e)
	Inclination	θ	30° MAX.	
Total Thickness		K	2.3 ± 0.1	Total thickness including cover and carrier tapes