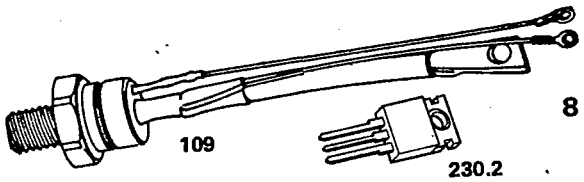
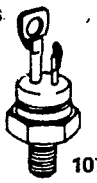
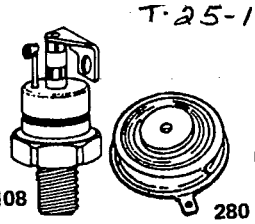
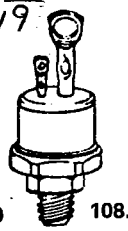
5.2 Condensed Electrical And Thermal Characteristics And Ratings



INVERTER SCRs
8 TO 275 AMPERES







GE TYPE	C124	C140	C141	C49/C149	C148	C158/C159	C164/C165	C335
JEDEC TYPE	—	2N3649-50	2N3654-50	—	—	—	—	—

SPECIFICATIONS

Voltage Range			50-600	50-400	50-400	100-600	600-1200	500-1200	600-800	500-1200
Forward Conduction										
$I_{(RMS)}$	Max. forward conduction sinusoidal: @T_C = 65°C, 50% duty (A)		8	35	35	—	—	—	—	—
	@ 60 Hz.		—	—	—	110/63	63	110	110	225
	@ 600 Hz.		—	—	—	110/63	63	110	110	225
	@ 1000 Hz.		—	26	26	110/63	63	110	110	225
	@ 1200 Hz.		—	—	—	110/63	63	110	110	225
	@ 2500 Hz.		—	—	—	110/63	60	110	110	175
	@ 5000 Hz.		—	26	26	63/63	55	90	110	100
	@ 10,000 Hz.		—	20	20	—	—	—	—	—
I_{TSM}	Max. peak one-cycle, non-repetitive surge current (A)	50 Hz.				920	670	1500	1700	1500
		60 Hz.				1000	700	1600	1800	1800
I^2t	Max. I^2t for fusing 1.5 msec (A^2sec)		27	165	165	4150	3160	15,200	9500	5200
$R_{\Theta JC}$	Max. thermal impedance (°C/w)		1.8	1.7	1.7	.35	.35	.3	.3	.135
t_q	Turn-off time @ rated voltage and T_J $V_R \geq 50V$ (μsec) @ 20V/μsec reapplied		20	—	—	10/20	30,40	30	—	30
	@ 100V/μsec reapplied		—		—	—		35	—	35
	@ 200V/μsec reapplied		—	15	10	—		40	10/20	40
	@ 400V/μsec reapplied		—	—	—	—		—	—	—
Q_{RR}	Max. reverse recovered charge(μc), T_J = 25°C		—	—	—	4	1	25	15	25
di/dt	Critical rate-of-rise of on-state voltage, current (A/μs)		100	400	400	200	100	500	500	500
T_J	Junction operating temperature range (°C)		−40 to +100°	−65 to +125°	−65 to +125°	−40 to +125°	−40 to +125°	−40 to +125°	−40 to +125°	−40 to +125°
dV/dt	Min. critical rate-of-rise of off-state voltage, exponential to rated V_{DRM} @ Max. T_J (V/μs)		—	200	200	200	200	200	200	200
I_{GT}	Max. required gate current to trigger (mA) @ −65°C		—	500	500	—	—	—	—	
	@ −40°C		40	—	—	300	300	300	400	300
	@ +25°C		25	180	180	150	150	150	200	150
V_{GT}	Max. required voltage to trigger (V) @ −65°C		—	4.5	4.5	—	—	—	—	
	@ −40°C		2.0	—	—	3.5	5	5	5	
	@ +25°C		1.5	3.0	3.0	3.0	3.5	.15	.15	
V_{TM}	Max. forward voltage[1] drop for the current range:	I_{MIN}(A)	.1	—	—	30	40	20	100	20
		I_{MAX}(A)	100	—	—	1000	1000	2000	3000	2000
		A	.58	—	—	1.34	.08	2.2	1.89	2.24
		B	−.05	—	—	.24	.67			
		C	.004	—	—	.004	.008	.003	.002	.003
		D	.317	—	—	−.086	−.18	.08	−.02	.08
$R_{\Theta JC}$	Transient thermal[2] resistance for time:	T_{MIN}(S)	.001	—	—	.001	.001	.001	.001	.001
		T_{MAX}(S)	.01	—	—	.01	.01	.01	.01	.01
		F	10.8	—	—	.68	.68	.31	.31	.152
		G	.477	—	—	.45	.45	.4	.4	.35
Package Outline No.			230.2	107	107	109/108.1	108.1	109	109	280
Max. Stud Torque (In-Lbs/N-M)				30/3.39	30/3.39	30/3.39	30/3.39	150/17	150/17	
Max. Mounting Force		Lbs								880
		KN								3.36
Expanded Electrical Characterization, see page:			N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		N.A.

1. Voltage Drop Model: $V_F = A + B \cdot L_N(I) + CI + D\sqrt{I}$.
2. Transient Resistance Model: $R_{\Theta JC} = F \cdot t^G$

POWEREX

T-91-01

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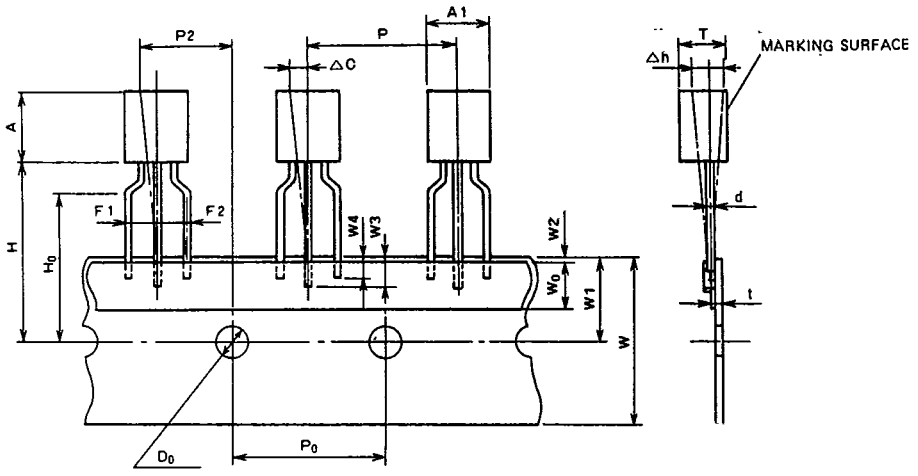
Taping

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	$18.0 \pm^{1.0}_{0.5}$	
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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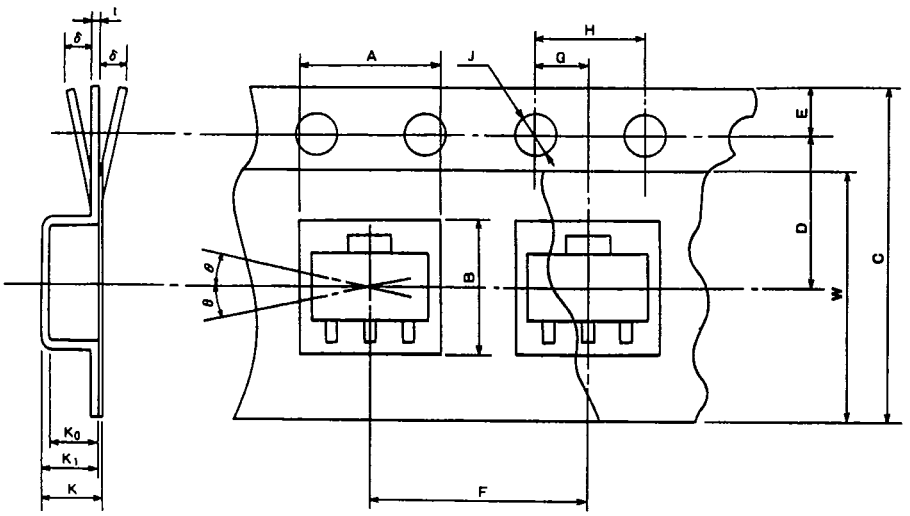
Powerex Semiconductor Data Book
Taping



SOT-89 Package

Thyristor
CR08AS

Taping dimensions

Description of symbol		Symbol	Dimensions/angles Unit:mm	Remark
Parts insertion Concave square hole	Height	A	$5.0 \pm^{0.1}_{0.1}$	Cross-section of the surface 0.5mm above the inner bottom
	Width	B	$4.6 \pm^{0.1}_{0.1}$	Cross-section of the surface 0.5mm above the inner bottom
	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	$\phi 1.5 \pm^{0.1}_{0.05}$	
	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 δ0.3 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