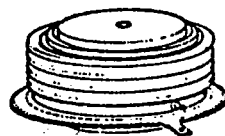


5.2 Condensed Electrical And Thermal Characteristics And Ratings

276
277INVERTER SCRs
1100 TO 1550 AMPERES

276.1



GE TYPE	C444/C445	C648	C612	C712	C713
CONSTRUCTION	AMPLIFYING GATE	AMPLIFYING GATE	AMPLIFYING GATE	AMPLIFYING GATE	AMPLIFYING GATE

SPECIFICATIONS

Voltage Range		100-700	500-1200	1500-2100	1500-2100	1500-2100	
Forward Conduction							
$I_{(RMS)}$	Max. forward conduction sinusoidal: @ $T_C = 65^{\circ}\text{C}$, 50% duty (A)	—	—	—	—	—	
	@ 60 Hz.	1000	1150	1000	1500	1900	
	@ 600 Hz.	1000	1150	1000	1500	1900	
	@ 1000 Hz.	1000	1150	1000	1500	1850	
	@ 1200 Hz.	1000	1150	1000	1500	1800	
	@ 2500 Hz.	1000	1100	1000	1500	1600	
	@ 5000 Hz.	850	950	—	1000	1350(4khz)	
	@ 10,000 Hz.	—	—	—	—	—	
I_{TSM}	Max. peak one-cycle, non-repetitive surge current (A)	50 Hz. 11,000 60 Hz. 13,000	9,500 10,000	8,500 9,000	16,000 18,000	13,500 15,000	
I^2t	Max. I^2t for fusing 1.5 msec ($A^2\text{sec}$)	190,000	190,000	160,000			
$R_{\theta JC}$	Max. thermal impedance ($^{\circ}\text{C}/\text{w}$)	.04	.04	.0375	.023	.023	
t_q	Turn-off time @ 0.8 V_{DRM} and T_J $V_R \geq 50\text{V}$ (μsec) @ 20V/ μsec reapplied	—	—	—	—	—	
	@ 100V/ μsec reapplied	—	—	—	—	—	
	@ 200V/ μsec reapplied	10/20	60	—	50	40	
	@ 400V/ μsec reapplied	15	65	60	55	45	
Q_{RR}	Max. reverse recovered charge(μC), $T_J = 25^{\circ}\text{C}$	30	250	350	700	375	
di/dt	Critical rate-of-rise of on-state current ($\text{A}/\mu\text{s}$)	800	800	800	800	200	
T_J	Junction operating temperature range ($^{\circ}\text{C}$)	-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 0.8 V_{DRM} @ Max. T_J ($\text{V}/\mu\text{s}$)	200	400	300	500	500	
I_{GT}	Max. required gate current to trigger (mA) @ -40°C	400	350	—	—	—	
	@ +25°C	200	150	180	200	200	
V_{GT}	Max. required voltage to trigger (V) from -40°C to +125°C	5	5	5	5	5	
V_{TM}	Max. forward voltage ¹ drop for the current range:	$I_{\text{MIN}}(\text{A})$	300	300	300	200	1000
		$I_{\text{MAX}}(\text{A})$	10000	10000	10000	2000	10000
		A	2.8934	245.4928	.3114	.1369	4.2493
		B	-3989	-62.5173	.1889	.2268	-.6009
		C	-.00001	-.0379	.0007	.0004	.0002
$R_{\theta JC}$	Transient thermal ² resistance for time:	D	.0482	7.1375	-.0213	-.0189	.0477
		$T_{\text{MIN}}(\text{S})$	.001	.001	.001	.01	.01
		$T_{\text{MAX}}(\text{S})$	.01	.01	.01	.1	.1
		F	.07	.08	.08	.018	.018
		G	.45	.477	.3	.428	.428
Package Outline No.		276	276	277	276.1	276.1	
Max. Mounting Force	Lbs	3000	3000	4200	6000	6000	
	KN	13.3	13.3	18.7	26.7	26.7	
Expanded Electrical Characterization, see page:		220	241	240	243	244	

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



T-91-01

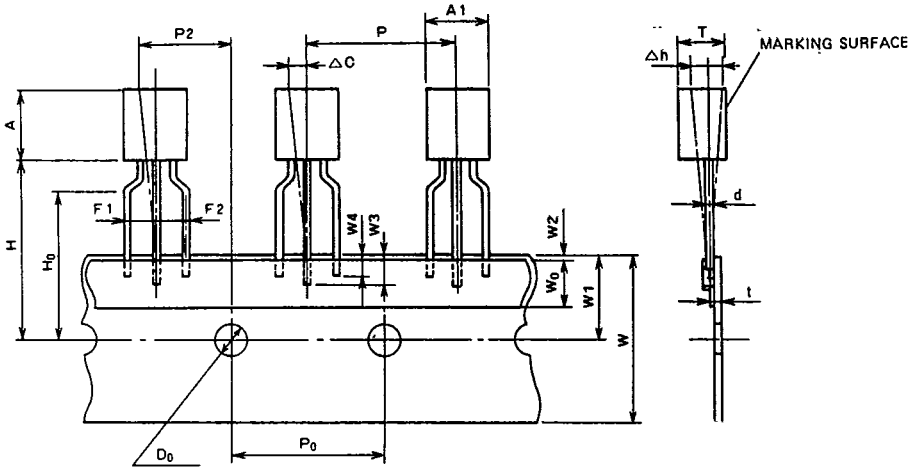
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Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Taping

STANDARD SPECIFICATIONS
FOR TAPING OF MOLDED
PACKAGE THYRISTORS AND
TRIACS

TO-92 Package

Thyristor
CR02AM, CR03AM, CR04AM
Triac
BCR1AM



Taping dimensions

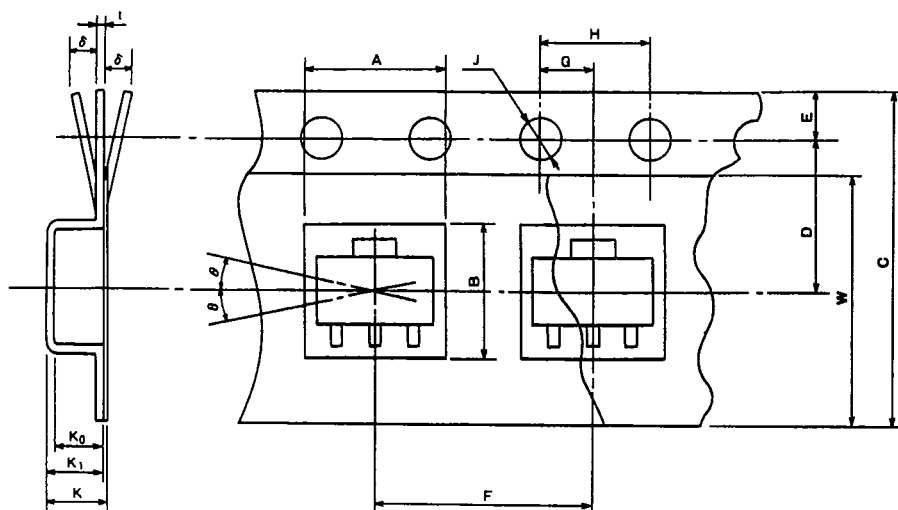
Description of symbol	Symbol	Dimensions (Unit:mm)	Remark
Product width	A1	5.0 MAX	
Product height	A	5.0 MAX	
Product thickness	T	3.7 MAX	
Lead wire diameter	d	0.6 MAX	
Sticker lead wire length (1)	W3	2.5 MIN	
Sticker lead wire length (2)	W4	2.0 MIN	
Pitch between products	P	12.7 ± 1.0	
Feed hole pitch	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