

ORDERING :

Example :

H 500 TB 12 J00

H-Converter Grade SCR

500-Maximum Average Current Ratings

TB- Tophat Type with Flexible Cathode lead

TL- Tophat Type lug termination (Without lead)

CH-Capsule Type

12-Figure derived by dividing required V_{DRM}/V_{RRM} grade by 100

Thus 12 indicates $V_{DRM}/V_{RRM} = 1200$ Volts

J-dv/dt code. Refer table no. 1

O-Turn off code. No guaranteed figure for converter grade SCR's

O-Extra. For any special application

TABLE No. 1

Code	dv / dt
	Volt / μ S
D	50
F	200
H	400
J	500
K	750
L	1000

EXAMPLE FOR DEVICE & HEAT SINK SELECTION :

Consider a single phase full wave bridge having a DC output of 1200 Amps.

The current per device = $\frac{1200}{2} = 600$ Amps.

You may, therefore, choose a capsule S.C.R. with a suitable I_T (av), with some safety margin. Say type H955CH. Ensure that the I_T^2 of the device meets the circuit fusing requirements.

The power loss P_w of the device :

$$P_w = V_o \times I_T \text{ (av)} + I_T^2 \text{ (RMS)} \times r$$

Where .

V_o = Threshold Voltage (taken from catalogue)

I_T (av) = Average Forward Current

I_T (RMS) = I_F (av) $\times$ Form factor (For 1 ϕ System & Resistive Load Form Factor = 1.57)

r = Forward conduction slope resistance in ohms

$$\begin{aligned} P_w &= 0.85 \times 600 + (600 \times 1.57)^2 \times .00035 \\ &= 510 + 310.57 \text{ say } 311 \\ &= 821 \text{ Watts} \end{aligned}$$

To evaluate maximum permissible thermal resistance of the Heat Sink use following formula.

$$T_j = T_{amb} + P_w [R_{th} (j-c) + R_{th} (c-h/s) + R_{th} (hs-amb)]$$

Where :

T_j = Maximum allowable junction temperature

P_w = Calculated Power Loss

T_{amb} = Ambient Temperature (To be taken worst = 55°C)

$R_{th} (j-c)$ = Thermal resistance junction to case (taken from catalogue)

$R_{th} (c-h/s)$ = Thermal resistance case to heat sink (taken from catalogue)

$R_{th} (hs-amb)$ = Thermal resistance heat sink to ambient

Taking a safety of 3°C, for device type H955 CH, maximum allowable $T_j = 122^\circ\text{C}$

$$\therefore 122 = 55 + 821 [0.038 + 0.005 + R_{th} \text{ hs-amb}]$$

$$\therefore R_{th} \text{ (hs-amb)} = 0.038^\circ\text{C/W}$$

Therefore the Heat Sink should have R_{th} less than 0.038°C/W

Device Type	Voltage Range	I_T (av) at T_{case}		$I_{T(RMS)}$	I_{TSM} at $T_{j max}$	I^2_t 10mS	V_{peak} at I_{peak} $T_{j max}$		$R_{th (j-c)}$ °C/W Sinewave		$R_{th (c-h/s)}$	V_o	r	m
		Volts	Amp °C				Volts	Amp	DC/ 180°	120°				
H16TL/B	200-1500	16	85	27	350	0.612	2.05	53	1.4	1.5	0.1	1.10	16	1
H20TL/B	200-1500	20	85	31	350	0.612	2.05	63	1.115	1.2	0.1	1.05	14	1
H25TL/B	200-1500	25	85	40	510	1.30	1.94	75	0.926	1.03	0.1	1.05	11	1
H30TL/B	200-1500	30	85	50	680	2.3	1.72	100	0.93	0.95	0.1	0.95	6.4	1
H 45 TB	200-1500	45	85	70	860	3.72	1.72	150	0.6	0.7	0.1	0.95	4.5	1
H 55 TB	200-1500	55	75	80	1000	5.0	1.82	175	0.6	0.7	0.1	0.90	4.35	1
H 65 TB	200-1500	65	75	100	1100	6.05	1.87	200	0.5	0.6	0.1	0.87	4.1	1
H 85 TB	200-1600	85	85	135	1850	17	2.15	265	0.22	0.26	0.08	1.57	2.29	1
H 110 TB	200-1600	110	75	175	2000	20	2.15	390	0.238	0.26	0.08	1.35	2.05	1
H 125 TB	200-1600	125	70	195	2500	31	2.0	400	0.245	0.26	0.08	1.2	1.9	1
H 150 TB	200-1600	150	70	235	3000	45	1.8	470	0.234	0.26	0.08	0.9	1.8	1
H 175 TB	200-1800	175	85	275	4600	106	1.76	550	0.135	0.14	0.04	1.08	1.3	2
H 200 TB	200-1800	200	82	314	4600	106	1.72	628	0.13	0.14	0.04	1.0	1.1	2
H 210 TB	2000-2600	210	85	330	4500	100	2.25	650	0.095	0.1	0.02	1.1	1.6	2
H 250 TB	200-1800	250	78	392	4600	106	1.75	785	0.12	0.14	0.04	0.92	0.99	2
H 300 TB	200-1600	300	85 *	470	10120	512	1.65	1000	0.077	0.08	0.01	1.04	0.61	2
H 350 TB	200-1600	350	85 *	550	12500	781	1.51	1090	0.07	0.08	0.01	1.0	0.5	2
H 400 TB	200-1600	400	75 *	628	12500	781	1.56	1260	0.073	0.08	0.01	1.08	0.4	2
H 450 TB	200-1600	450	75 *	706	12500	781	1.50	1420	0.07	0.08	0.01	1.0	0.35	2
H 500 TB	200-1600	500	65 *	785	12500	781	1.55	1570	0.07	0.08	0.01	1.06	0.31	2

Device Type	Voltage Range	I_T (av) at T_{case}		I_{TRMS}	I_{TSM} at $T_{j max}$	I^2_t 10 mS $T_{j max}$	V_{peak} at I_{peak} $T_{j max}$		$R_{th (i-c)}$ °C/W Sinewave		$R_{th (c-h/s)}$ Double side cooling	V_o	r	m
		A	°C				Volts	A	180°	120°				
H 190 CH	200-1600	190 158	68 85	300	2.0	20	2.55	600	0.18	0.187	0.015	0.9	2.6	1
H 255 CH	200-1600	255 208	72 85	400	3.2	51.2	2.15	800	0.117	0.122	0.015	0.85	1.5	1
H 350 CH	2000-2600	350 308	76 85	550	4.5	100	2.8	1100	0.056	0.06	0.015	1.1	1.6	2
H 445 CH	200-1600	445 358	69 85	700	4.6	106	2.07	1200	0.068	0.071	0.015	0.85	0.9	2
H 507 CH	200-1400	507	85	800	8.0	320	1.92	1600	0.053	0.057	0.01	0.8	0.6	2
H 509 CH	200-1800	509	85	800	6.9	238	1.92	1600	0.053	0.057	0.015	0.8	0.6	2
H 635 CH	2000-2600	635 459	58 85	1000	6.75	228	2.75	2000	0.0455	0.051	0.005	1.0	0.84	2
H 785 CH	200-1600	785 529	55 85	1250	9.0	405	2.4	2600	0.0465	0.0480	0.008	1.0	0.51	3
H 955 CH	200-1600	955 718	64 85	1500	12.5	781	1.90	3000	0.038	0.045	0.005	0.85	0.35	2
H 1275 CH	2000-3600	1275 860	53 85	2000	17.0	1455	2.75	3000	0.0215	0.023	0.004	1.08	0.5	2
H 1400 CH	2000-2800	1400 1050	64 85	2200	19.0	1805	2.1	3000	0.021	0.0235	0.004	1.05	0.3	2
H 1500 CH	200-1600	1500 1100	63 85	2350	20.0	2000	1.55	3000	0.0265	0.033	0.0025	0.84	0.195	2
H 1800 CH	200-1800	1800 1200	54 85	2800	24.0	2880	1.68	3000	0.021	0.0235	0.004	1.05	0.185	2

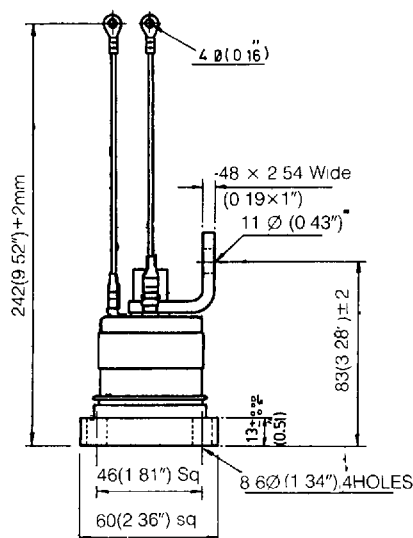


Figure No.8

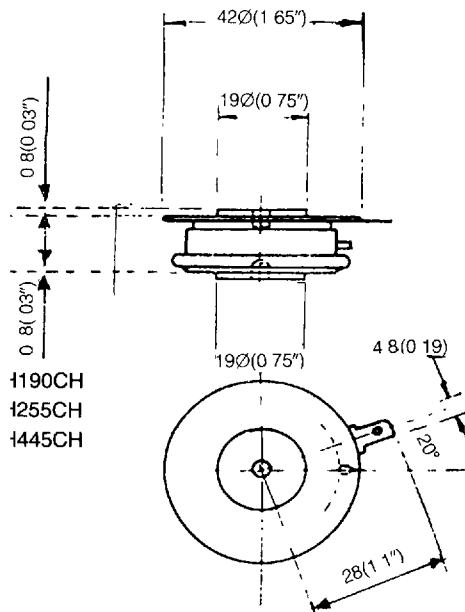


Figure No.9

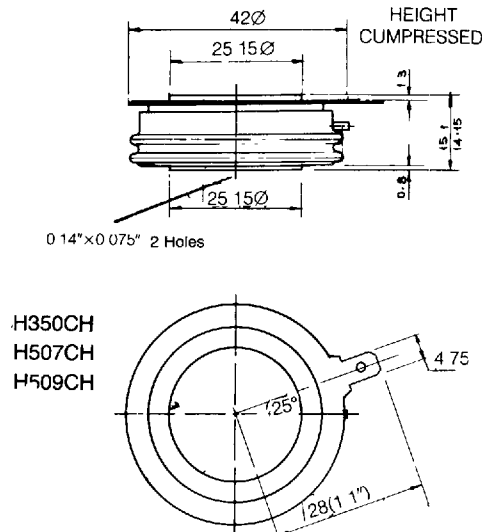


Figure No. 10

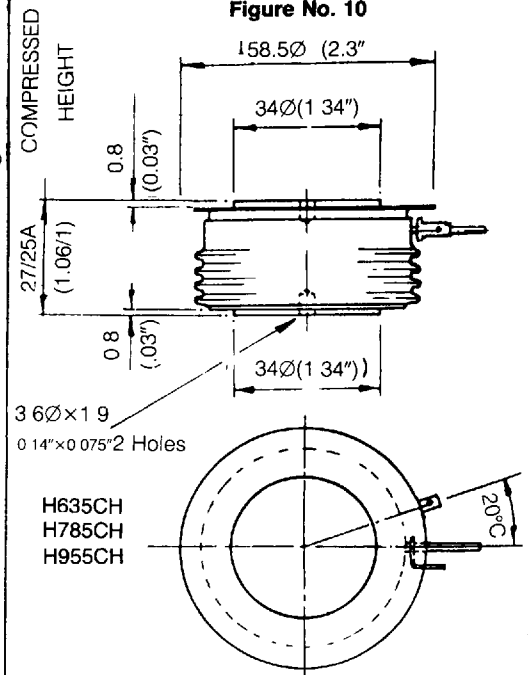


Figure No.11

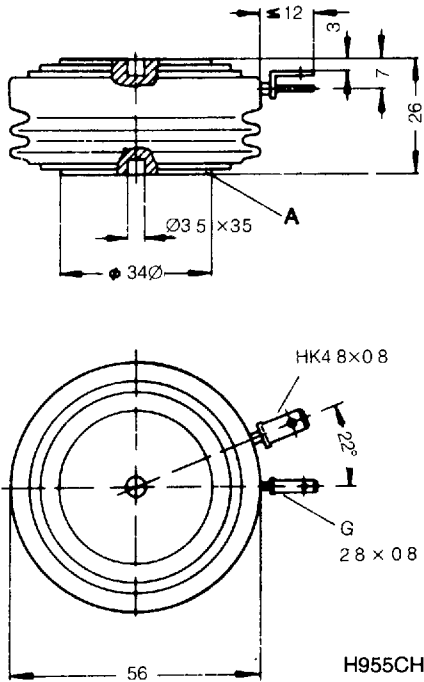


Figure No.12

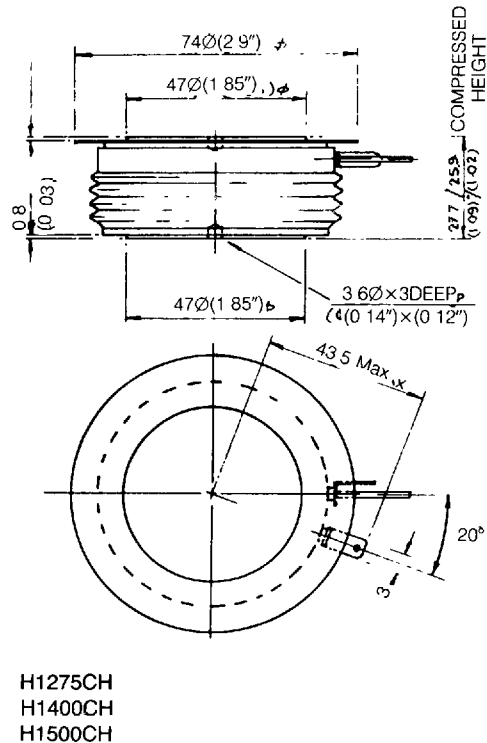
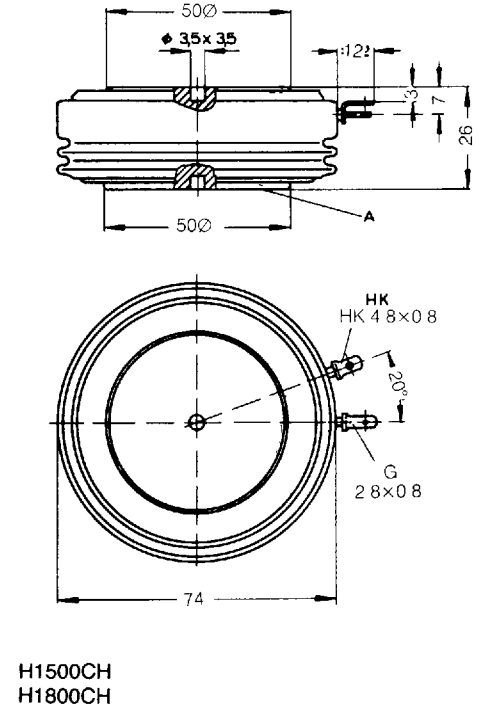


Figure No.13



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