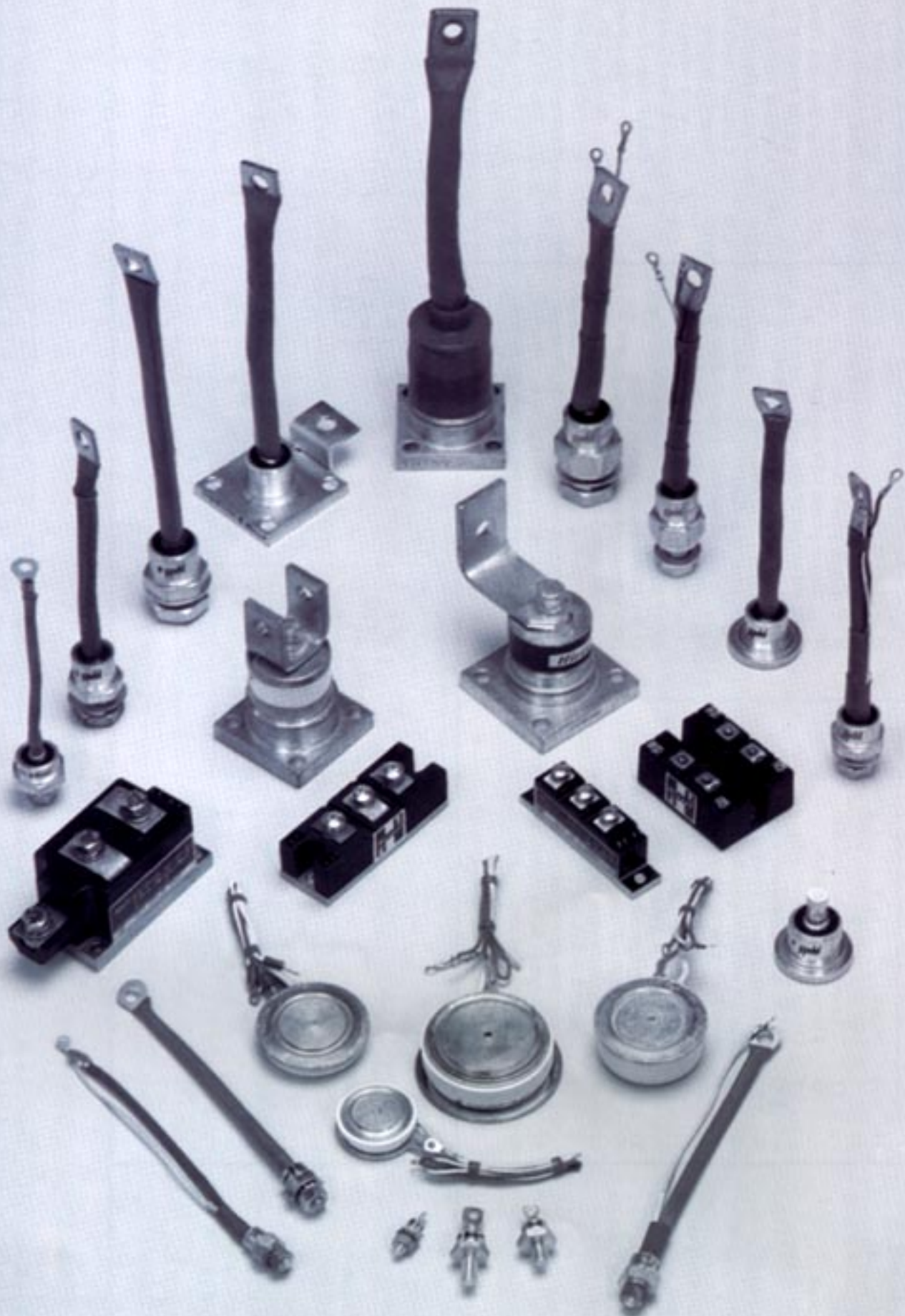


Hind Rectifiers Limited



Semiconductor DESIGN GUIDE



Ordering Information

Diodes

S	12	H	N	41
1	2	3	4	5

- 1) Rectifier diode
Fast recovery diode
e.g SF 12 HN 20
- 2) Limiting repetitive peak reverse voltage in 100V, i.e. 12=1200V
- 3) H or B Top hat diode with pigtail
A Top hat diode without pigtail
C Capsule diode
- 4) N Normal polarity (baseCathode)
R Reverse polarity (base anode)
In case of capsule N or R is not used e.g. S12C450
- 5) 41 Limiting average forward Current

Modules

H	TT	250	N	1200	K	0	F	AA/KK
1	2	3	4	5	6	7	8	9

- 1) H Direct
- 2) TT Circuit Code
Thyristor - thyristor module
Thyristor diode module
Diode -Thyristors module
DD Diode -Diode module
- 3) 250 Limiting average forward current
- 4) N Converter thyristors/Rectifier diode
F Fast thyristors (Center gate)
S Fast recovery diode
S Fast thyristors (Distributed gate)/
Fast recover diode
- 5) 1200 Limiting repetitive peak forward or reverse off state voltage in volts
- 6) K Mechanical construction.: Module.
- 7) 0 Turn off time code :
Refer thyristor chart.
- 8) F dv/dt code : Refer thyristors chart.
- 9) AA Common Anode.
KK Common cathode.

Isopack Bridges

H	BT	26	16
1	2	3	4

- 1) H : Direct
- 2) Bridge Configuration Code
B : Single phase diode bridge
BT : Single phase fully controlled thyristors bridge
CT : Single phase fully controlled thyristors bridge with free wheeling diode
BH : Single phase half controlled bridge
CH : Single phase half controlled bridge with free wheeling diode
BZ : Single phase half controlled bridge
D : Three phase diode bridge
DT : Three phase fully controlled thyristors bridge
DH : Three phase half controlled bridge
26 : Limiting bridge output DC current
16 : Limiting repetitive peak forward off state voltage/reverse voltage in 100V i.e. 16 = 1600V

Thyristors

HS	1100	CH	20	F	2J	O
1	2	3	4	5	6	7

- 1)H Converter thyristor
HF :Fast thyristor Center gate.
e.g. HF 120TB 12FJO
HS :Fast thyristor Distributed gate
e.g HS 1100 CH20 FFO
- 2)1100 :Limiting average forward current
- 3)TB :Top hat thyristors
CH :Capsule thyristors
12 :Limiting repetitive peak forward off --state voltage/reverse voltage in 100V i.e. 12 = 1200V
- 5) Critical rate of rise forward voltage (dv/dt)
Code : (Volts / μ sec)
D.....50 F.....200 H.....400 J.....500
K.....750 L.....1000
Maximum turn off time (μ S)
N.....10 C.....12 L.....15 S.....18 K.....20
J.....25 H.....30 G.....35 2K...40 2J.....50
2H...60 0.....No Guaranteed maximum Value.
Extra code for any special application.
- 6)
- 7)

FORMULAE

1. The power loss of the device :-

$$P_g = V_o \times I_{T(AV)} + (I_{RMS})^2 \times r$$

$$V_o = \text{Threshold Voltage}$$

$$I_{T(AV)} \text{ or } I_{T(AV)} = \text{Average Forward Current}$$

$$I_{RMS} = I_{T(AV)} \times \text{Form Factor}$$

$$r = \text{Slope resistance in Ohms}$$

Form Factor for :-

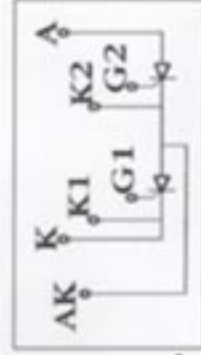
- Half Sine Wave 180° Conduction = 1.57
- 3 Phase 120° Conduction = 1.74
- 6 Phase 60° Conduction = 2.44

2. Heat Sink Thermal Resistance R_{qh} H-A:-

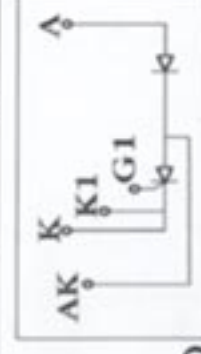
$$T_j = T_A + P_g [R_{th(j-c)} + R_{th(c-h)} + R_{th(h-a)}]$$

$$T_A = \text{Ambient Temperature}$$

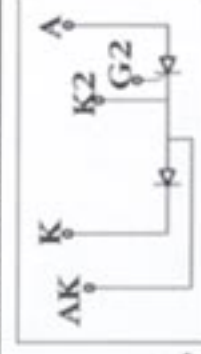
Electrical Circuits of Modules:-



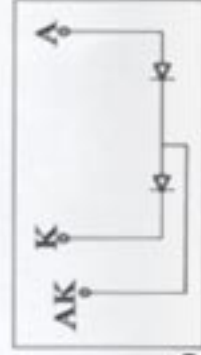
HTT



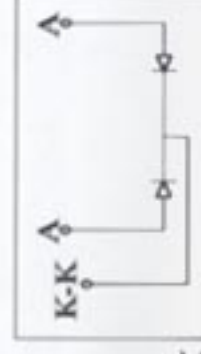
HTD



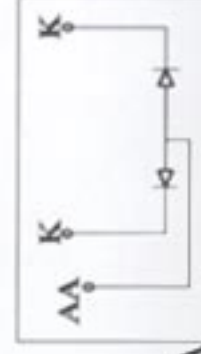
HDT



HDD



HDD-KK



HDD-AA

Electrical Configurations of Isopack :-

