

**TAYCHIPST**

Controlled avalanche rectifiers

BYD13D THRU BYD13M

200V-1000V

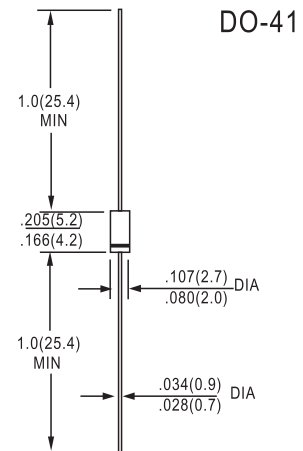
0.750A-1.4A

FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed avalanche energy absorption capability
- Available in ammo-pack.

MECHANICAL DATA

- Cavity free cylindrical glass package
- through Implotec^{TM(1)} technology.
- This package is hermetically sealed and fatigue free as coefficients of
- expansion of all used parts are matched.



Dimensions in inches and (millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{F(AV)}$	average forward current	$T_{tp} = 55\text{ }^{\circ}\text{C}$; lead length = 10 mm; averaged over any 20 ms period; see Figs 2 and 4	—	1.40	A
		$T_{amb} = 65\text{ }^{\circ}\text{C}$; PCB mounting (see Fig.9); averaged over any 20 ms period; see Figs 3 and 4	—	0.75	A
I_{FSM}	non-repetitive peak forward current	$t = 10\text{ ms}$ half sinewave; $T_j = T_{j\text{ max}}$ prior to surge; $V_R = V_{RRM\text{ max}}$	—	20	A
E_{RSM}	non-repetitive peak reverse avalanche energy	$L = 120\text{ mH}$; $T_j = T_{j\text{ max}}$ prior to surge; inductive load switched off	—	7	mJ
T_{stg}	storage temperature		-65	+175	$^{\circ}\text{C}$
T_j	junction temperature	see Fig.5	-65	+175	$^{\circ}\text{C}$

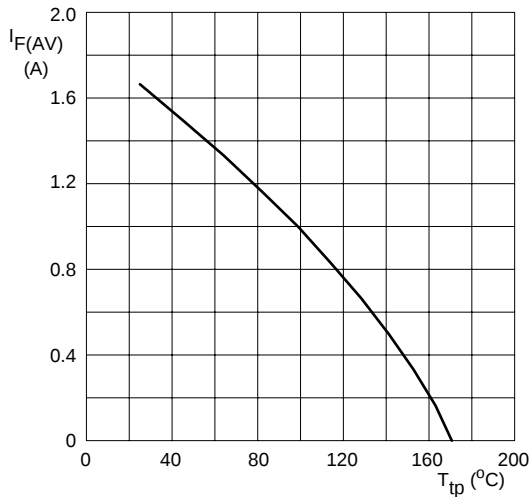
ELECTRICAL CHARACTERISTICS $T_j = 25\text{ }^{\circ}\text{C}$; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	forward voltage	$I_F = 1\text{ A}$; $T_j = T_{j\text{ max}}$; see Fig.6	—	—	0.93	V
		$I_F = 1\text{ A}$; see Fig.6	—	—	1.05	V
$V_{(BR)R}$	reverse avalanche breakdown voltage	$I_R = 0.1\text{ mA}$				
			225	—	—	V
			450	—	—	V
			650	—	—	V
			900	—	—	V
			1100	—	—	V
I_R	reverse current	$V_R = V_{RRM\text{ max}}$; see Fig.7	—	—	1	μA
		$V_R = V_{RRM\text{ max}}$; $T_j = 165\text{ }^{\circ}\text{C}$; see Fig.7	—	—	100	μA
t_{rr}	reverse recovery time	when switched from $I_F = 0.5\text{ A}$ to $I_R = 1\text{ A}$; measured at $I_R = 0.25\text{ A}$; see Fig.10	—	3	—	μs
C_d	diode capacitance	$V_R = 0\text{ V}$; $f = 1\text{ MHz}$; see Fig.8	—	21	—	pF



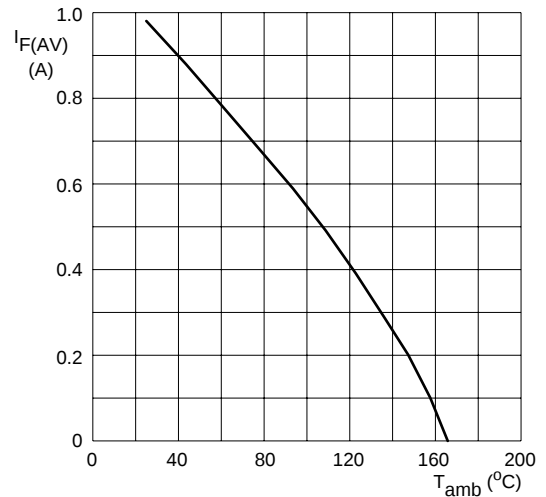
RATINGS AND CHARACTERISTIC CURVES

BYD13D THRU BYD13M



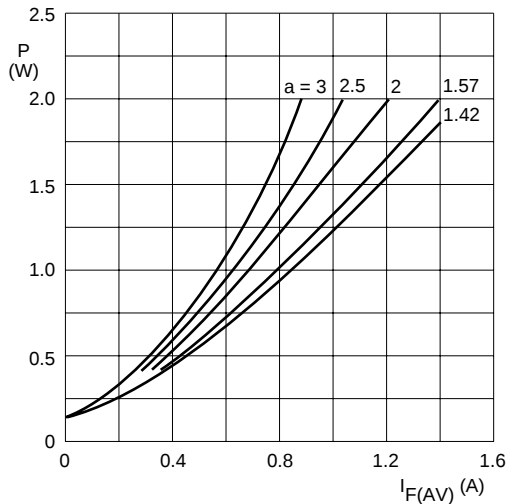
$a = 1.57$; $V_R = V_{RRMmax}$; $\delta = 0.5$.
Lead length 10 mm.

Fig.2 Maximum permissible average forward current as a function of tie-point temperature (including losses due to reverse leakage).



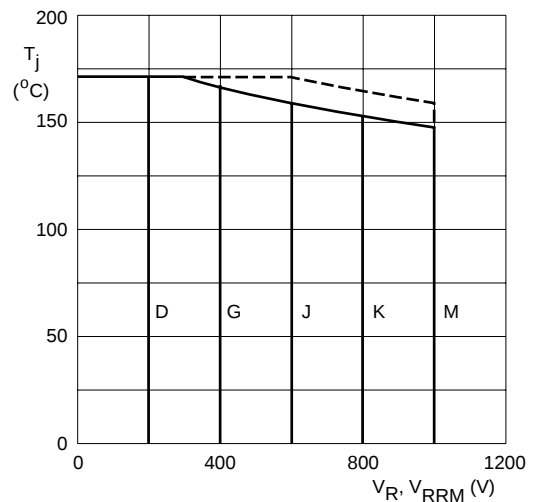
$a = 1.57$; $V_R = V_{RRMmax}$; $\delta = 0.5$.
Device mounted as shown in Fig.9.

Fig.3 Maximum permissible average forward current as a function of ambient temperature (including losses due to reverse leakage).



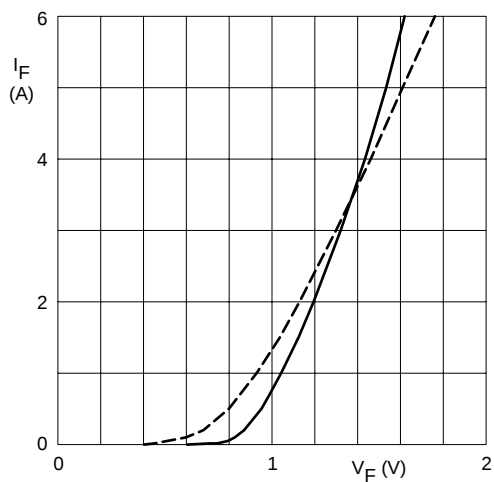
$a = I_{F(RMS)}/I_{F(AV)}$; $V_R = V_{RRMmax}$; $\delta = 0.5$.

Fig.4 Maximum steady state power dissipation (forward plus leakage current losses, excluding switching losses) as a function of average forward current.



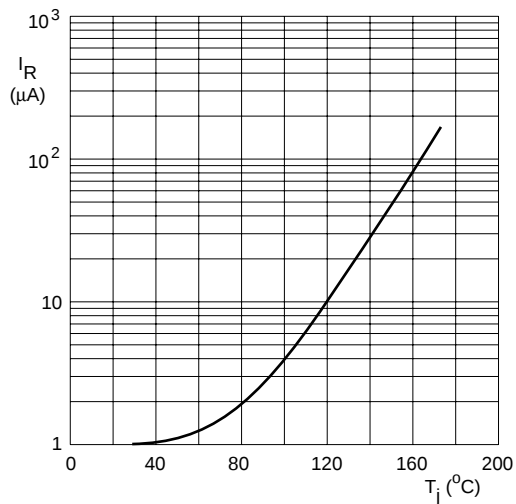
Solid line = V_R .
Dotted line = V_{RRM} ; $\delta = 0.5$.

Fig.5 Maximum permissible junction temperature as a function of reverse voltage.



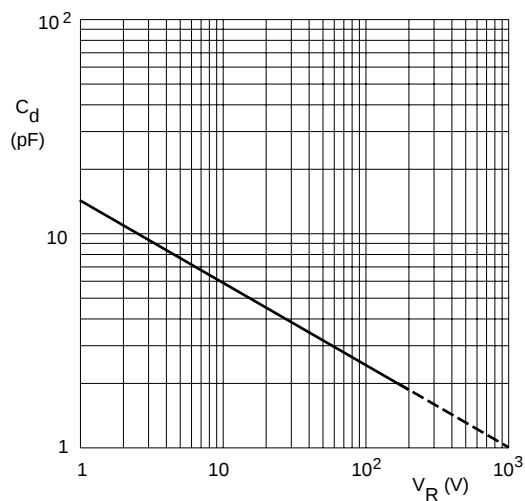
Solid line: $T_j = 25\text{ }^{\circ}\text{C}$.
Dotted line: $T_j = 175\text{ }^{\circ}\text{C}$.

Fig.6 Forward current as a function of forward voltage; maximum values.



$V_R = V_{RRMmax}$.

Fig.7 Reverse current as a function of junction temperature; maximum values.



$f = 1\text{ MHz}$; $T_j = 25\text{ }^{\circ}\text{C}$.

Fig.8 Diode capacitance as a function of reverse voltage; typical values.