TOP ONE SEMI CONDUCTOR

Controlled avalanche rectifiers

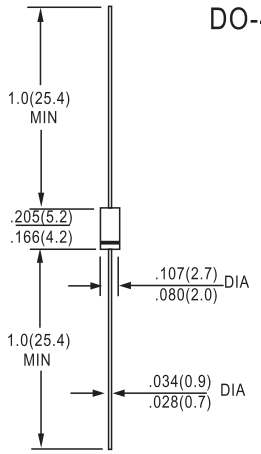
BYD13D THRU BYD13M

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.

DO-41



Dimensions in inches and (millimeters)

MECHANICAL DATA

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

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

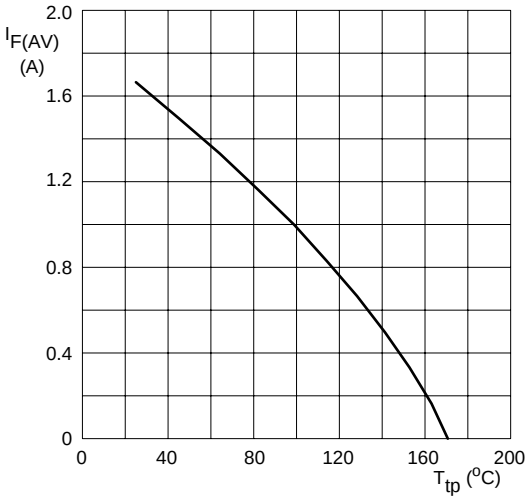
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{F(AV)}$	average forward current	T_{tp} = 55 °C; lead length = 10 mm; averaged over any 20 ms period; see Figs 2 and 4	–	1.40	A
		T_{amb} = 65 °C; PCB mounting (see Fig.9); averaged over any 20 ms period; see Figs 3 and 4	–	0.75	A
I_{FSM}	non-repetitive peak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

ELECTRICAL CHARACTERISTICS

T_j = 25 °C; unless otherwise specified.

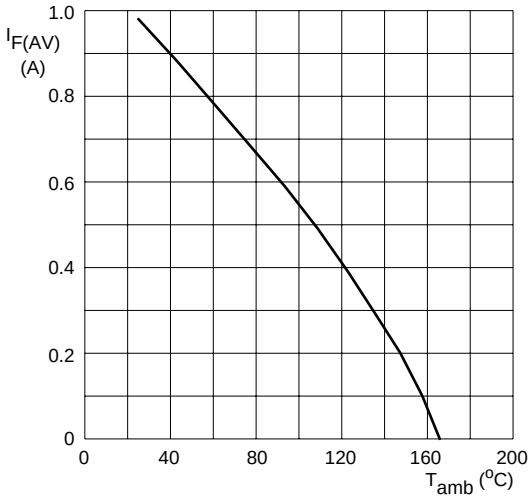
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	forward voltage	I_F = 1 A; $T_j = T_{j\,max}$; see Fig.6	–	–	0.93	V
		I_F = 1 A; see Fig.6	–	–	1.05	V
$V_{(BR)R}$	reverse avalanche breakdown voltage	I_R = 0.1 mA				
	BYD13D		225	–	–	V
	BYD13G		450	–	–	V
	BYD13J		650	–	–	V
	BYD13K		900	–	–	V
	BYD13M		1100	–	–	V
I_R	reverse current	$V_R = V_{RRMmax}$; see Fig.7	–	–	1	µA
		$V_R = V_{RRMmax}$; T_j = 165 °C; see Fig.7	–	–	100	µA
t_{rr}	reverse recovery time	when switched from I_F = 0.5 A to I_R = 1 A; measured at I_R = 0.25 A; see Fig.10	–	3	–	µs
C_d	diode capacitance	V_R = 0 V; f = 1 MHz; see Fig.8	–	21	–	pF

RATINGS AND CHARACTERISTIC CURVES BYD13D THRU BYD13M



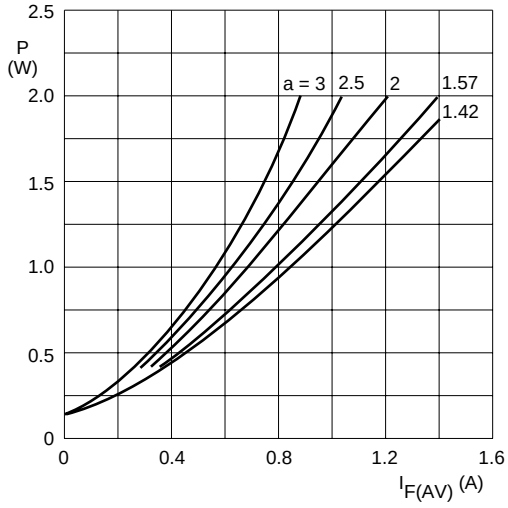
a = 1.57; $V_R = V_{RRMmax}$; δ = 0.5.
Lead length 10 mm.

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



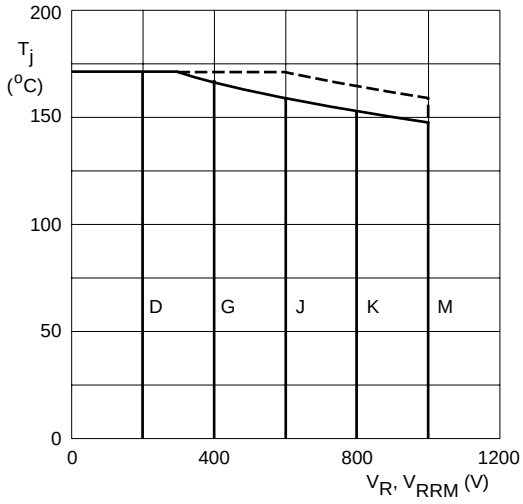
a = 1.57; $V_R = V_{RRMmax}$; δ = 0.5.
Device mounted as shown in Fig.9.

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



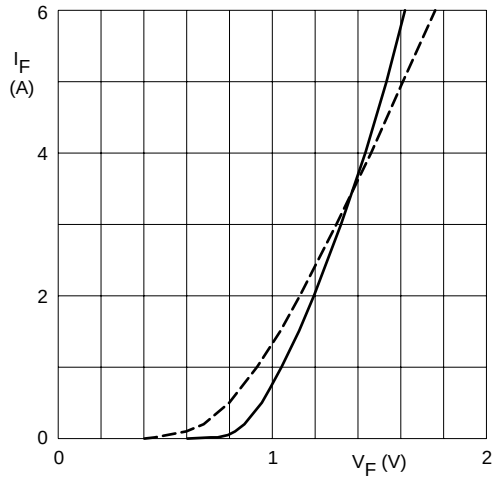
a = $I_{F(RMS)}/I_{F(AV)}$; $V_R = V_{RRMmax}$; δ = 0.5.

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



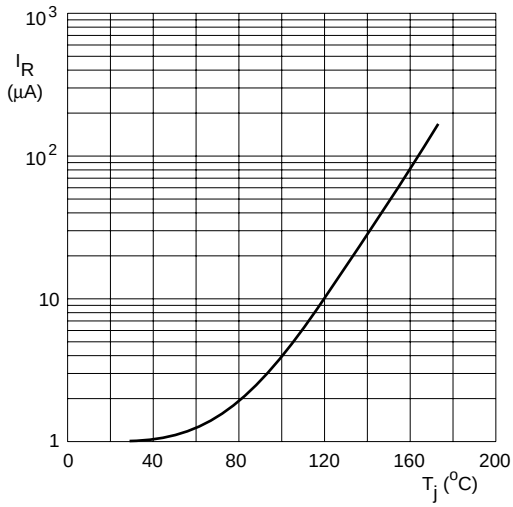
Solid line = V_R.
Dotted line = V_{RRM}; δ = 0.5.

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



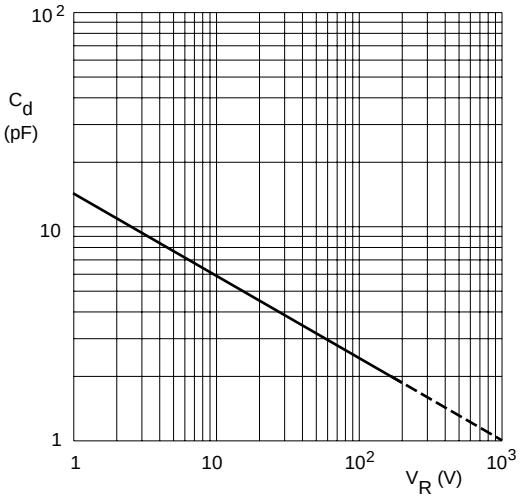
Solid line: T_j = 25 °C.
Dotted line: T_j = 175 °C.

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 MHz; T_j = 25 °C.

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