TAYCHIPST

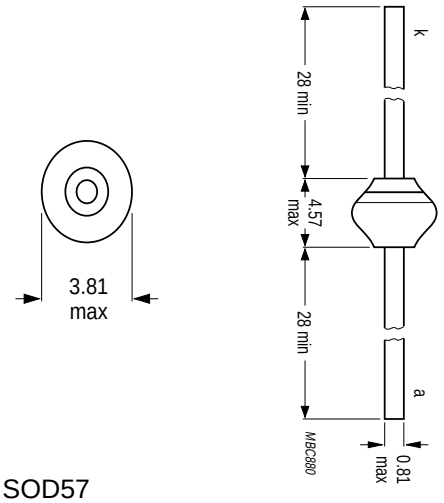
Fast soft-recovery controlled avalanche rectifiers

BYV26 series

200V-1400V 0.65A-1.05

FEATURES

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



SOD57

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

LIMITING VALUES

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{RRM} = V_R$	repetitive peak reverse voltage				
	BYV26A		–	200	V
	BYV26B		–	400	V
	BYV26C		–	600	V
	BYV26D		–	800	V
	BYV26E		–	1000	V
	BYV26F		–	1200	V
	BYV26G		–	1400	V
$I_{F(AV)}$	average forward current	T_{tp} = 85 °C; lead length = 10 mm; see Figs 2 and 3; averaged over any 20 ms period; see also Figs 10 and 11			
	BYV26A to E		–	1.00	A
	BYV26F and G		–	1.05	A
$I_{F(AV)}$	average forward current	T_{amb} = 60 °C; PCB mounting (see Fig.19); see Figs 4 and 5; averaged over any 20 ms period; see also Figs 10 and 11			
	BYV26A to E		–	0.65	A
	BYV26F and G		–	0.68	A
I_{FRM}	repetitive peak forward current	T_{tp} = 85 °C; see Figs 6 and 7			
	BYV26A to E		–	10.0	A
	BYV26F and G		–	9.6	A

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{FRM}	repetitive peak forward current	T_{amb} = 60 °C; see Figs 8 and 9			
	BYV26A to E		–	6.0	A
	BYV26F and G		–	6.4	A
I_{FSM}	non-repetitive peak forward current	t = 10 ms half sine wave; $T_j = T_{j\,max}$ prior to surge; $V_R = V_{RRMmax}$	–	30	A
E_{RSM}	non-repetitive peak reverse avalanche energy	I_R = 400 mA; $T_j = T_{j\,max}$ prior to surge; inductive load switched off	–	10	mJ
T_{stg}	storage temperature		–65	+175	°C
T_j	junction temperature	see Figs 12 and 13	–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 Figs 14 and 15				
	BYV26A to E		–	–	1.3	V
	BYV26F and G		–	–	1.3	V
V_F	forward voltage	I_F = 1 A; see Figs 14 and 15				
	BYV26A to E		–	–	2.50	V
	BYV26F and G		–	–	2.15	V
$V_{(BR)R}$	reverse avalanche breakdown voltage	I_R = 0.1 mA				
	BYV26A		300	–	–	V
	BYV26B		500	–	–	V
	BYV26C		700	–	–	V
	BYV26D		900	–	–	V
	BYV26E		1100	–	–	V
	BYV26F		1300	–	–	V
	BYV26G		1500	–	–	V
I_R	reverse current	$V_R = V_{RRMmax}$; see Fig.16	–	–	5	µA
		$V_R = V_{RRMmax}$; T_j = 165 °C; see Fig.16	–	–	150	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.20				
	BYV26A to C		–	–	30	ns
	BYV26D and E		–	–	75	ns
	BYV26F and G		–	–	150	ns
C_d	diode capacitance	f = 1 MHz; V_R = 0 V; see Figs 17 and 18				
	BYV26A to C		–	45	–	pF
	BYV26D and E		–	40	–	pF
	BYV26F and G		–	35	–	pF

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$\left\|\frac{dI_R}{dt}\right\|$	maximum slope of reverse recovery current	when switched from I_F = 1 A to $V_R \geq$ 30 V and dI_F/dt = –1 A/µs; see Fig.21				
	BYV26A to C		–	–	7	A/µs
	BYV26D and E		–	–	6	A/µs
	BYV26F and G		–	–	5	A/µs

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\,j\text{-}tp}$	thermal resistance from junction to tie-point	lead length = 10 mm	46	K/W
$R_{th\,j\text{-}a}$	thermal resistance from junction to ambient	note 1	100	K/W

Note

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer ≥40 µm, see Fig.19. For more information please refer to the *"General Part of associated Handbook"*.

RATINGS AND CHARACTERISTIC CURVES BYV26 series

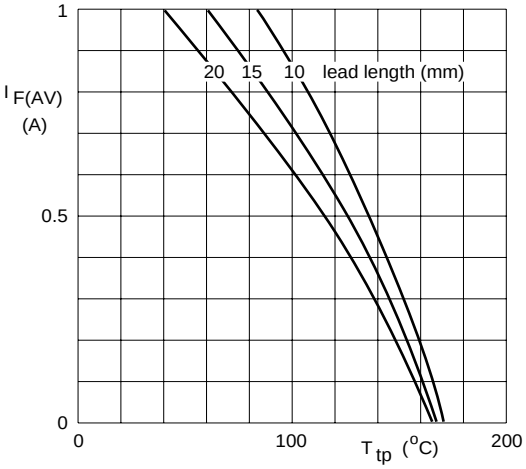


Fig.1 Maximum average forward current as a function of tie-point temperature (including losses due to reverse leakage).

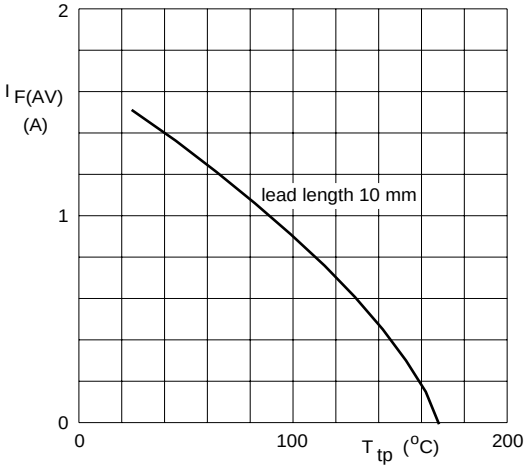


Fig.2 Maximum average forward current as a function of tie-point temperature (including losses due to reverse leakage).

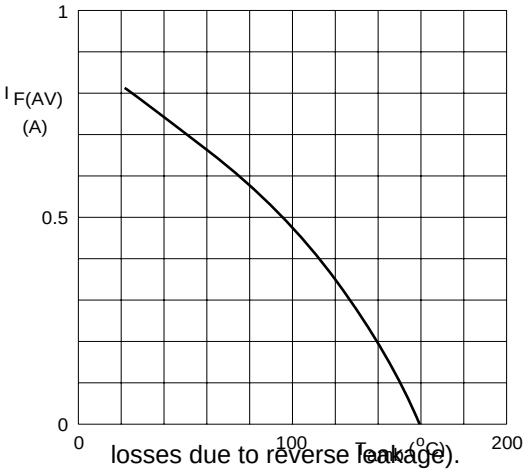


Fig.3 Maximum average forward current as a function of ambient temperature (including losses due to reverse leakage).

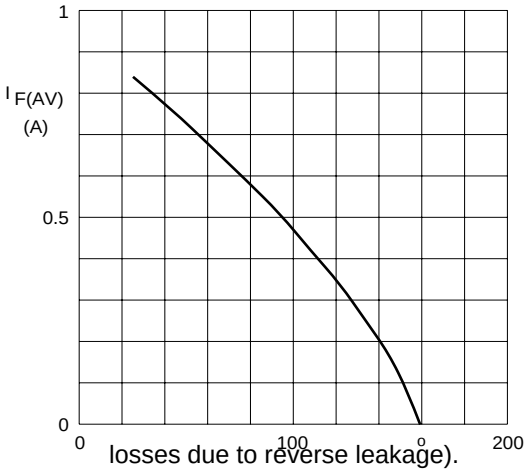
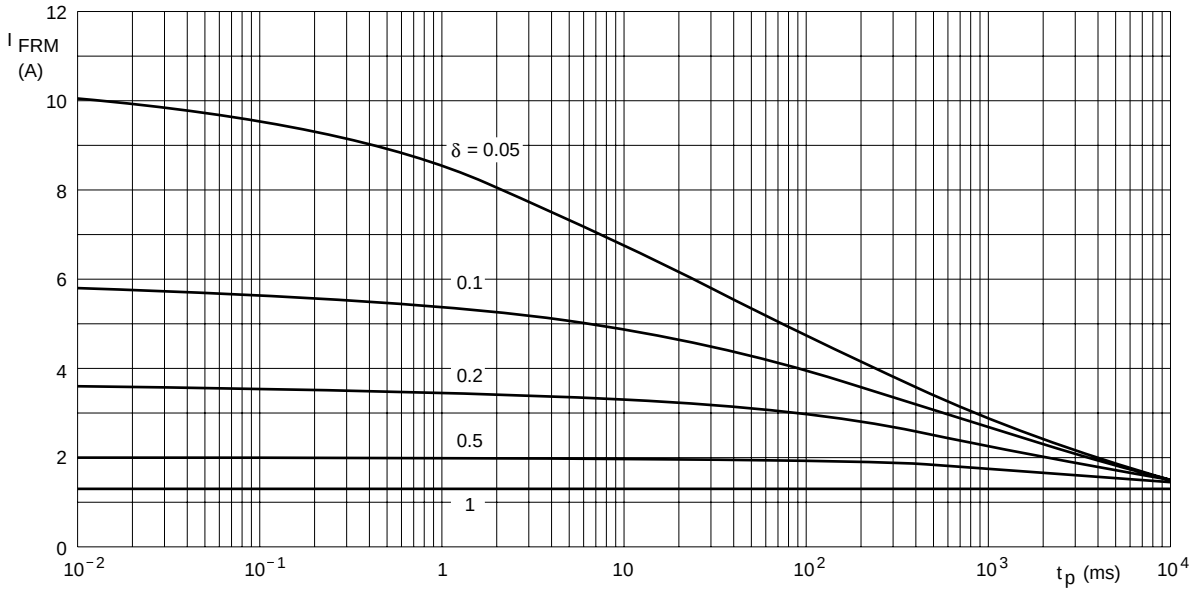


Fig.4 Maximum average forward current as a function of ambient temperature (including losses due to reverse leakage).

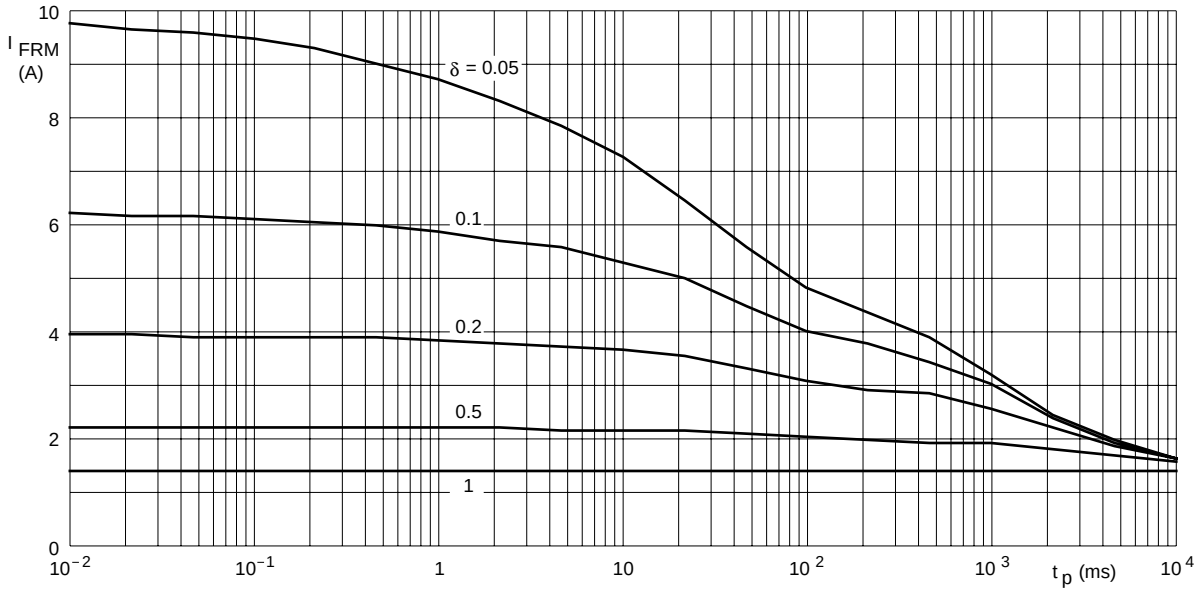


BYV26A to E.

T_{tp} = 85°C; $R_{th\ j\text{-}tp}$ = 46 K/W.

V_{RRMmax} during 1 – δ; curves include derating for $T_{j\ max}$ at V_{RRM} = 1000 V.

Fig.5 Maximum repetitive peak forward current as a function of pulse time (square pulse) and duty factor.

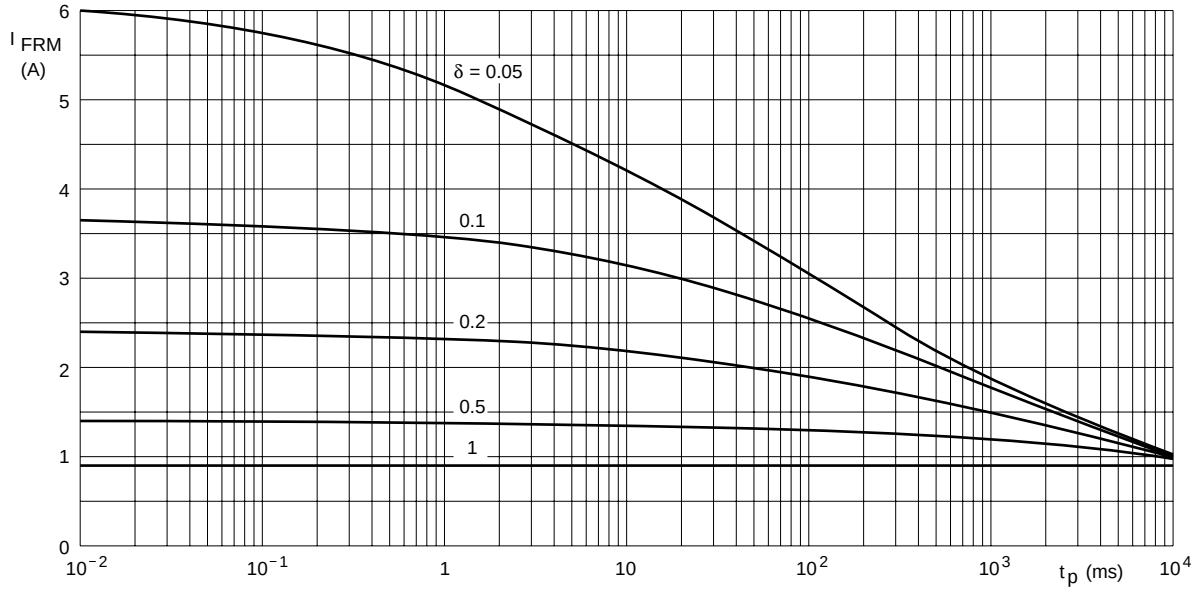


BYV26F and G.

T_{tp} = 85°C; $R_{th\ j\text{-}tp}$ = 46 K/W.

V_{RRMmax} during 1 – δ; curves include derating for $T_{j\ max}$ at V_{RRM} = 1400 V.

Fig.6 Maximum repetitive peak forward current as a function of pulse time (square pulse) and duty factor.

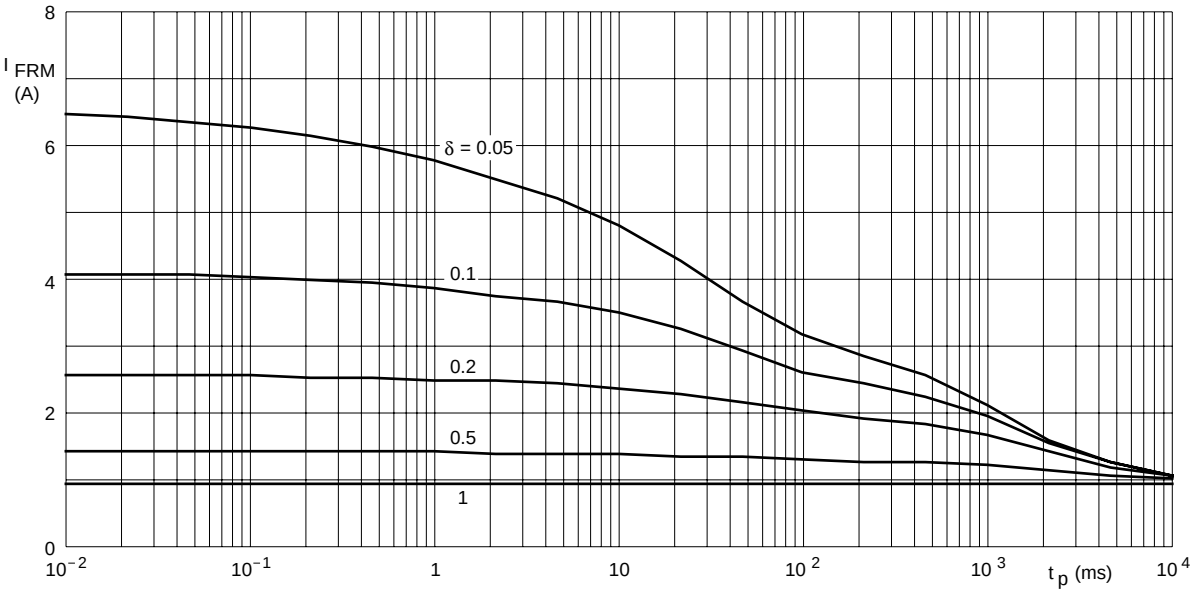


BYV26A to E

T_{amb} = 60 °C; $R_{th\ j\text{-}a}$ = 100 K/W.

V_{RRMmax} during 1 – δ; curves include derating for $T_{j\ max}$ at V_{RRM} = 1000 V.

Fig.7 Maximum repetitive peak forward current as a function of pulse time (square pulse) and duty factor.

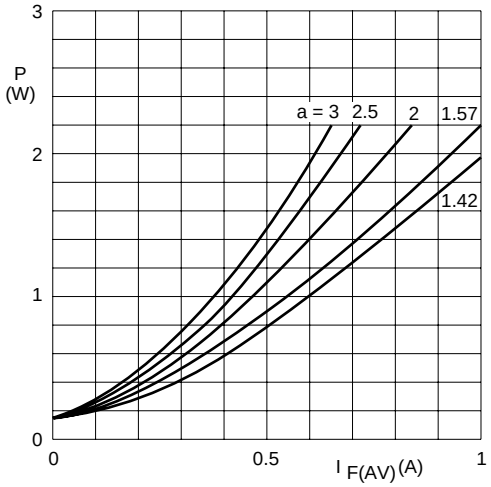


BYV26F and G

T_{amb} = 60 °C; $R_{th\ j\text{-}a}$ = 100 K/W.

V_{RRMmax} during 1 – δ; curves include derating for $T_{j\ max}$ at V_{RRM} = 1400 V.

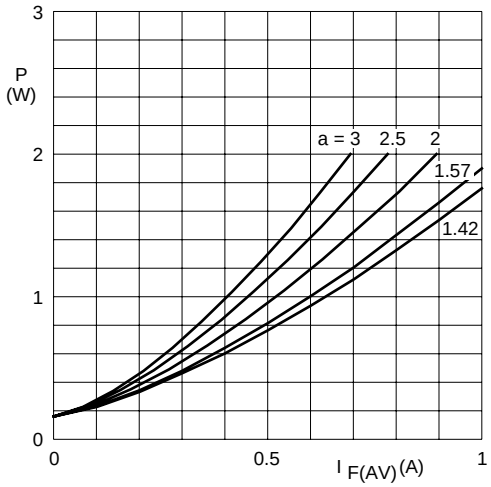
Fig.8 Maximum repetitive peak forward current as a function of pulse time (square pulse) and duty factor.



BYV26A to E

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

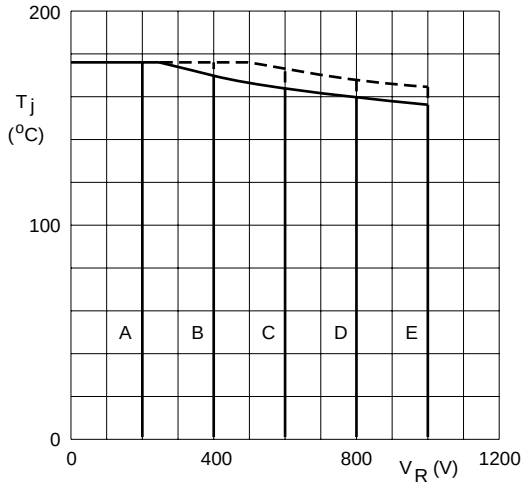
Fig.9 Maximum steady state power dissipation (forward plus leakage current losses, excluding switching losses) as a function of average forward current.



BYV26F and G

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

Fig.10 Maximum steady state power dissipation (forward plus leakage current losses, excluding switching losses) as a function of average forward current.

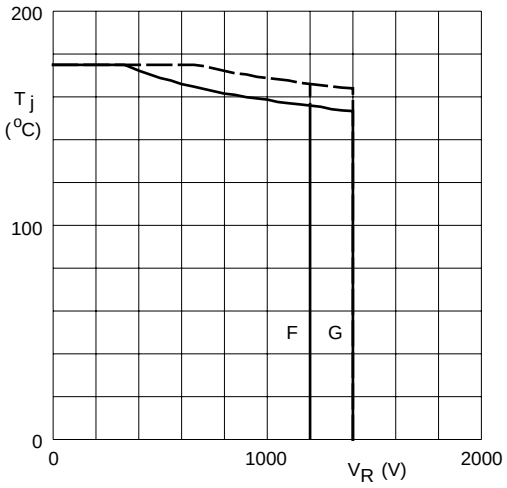


BYV26A to E

Solid line = V_R.

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

Fig.11 Maximum permissible junction temperature as a function of reverse voltage.

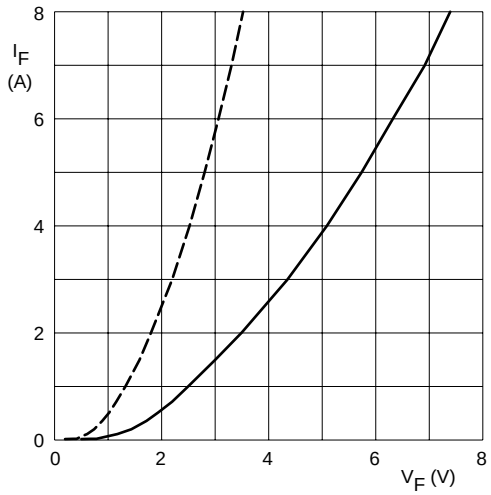


BYV26F and G

Solid line = V_R.

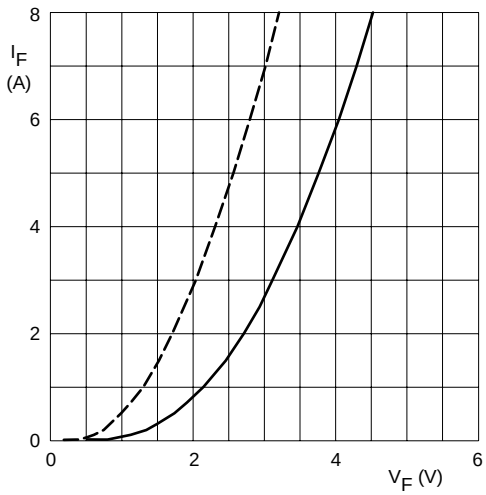
Dotted line = V_{RRM}; $\delta = 0.5$.

Fig.12 Maximum permissible junction temperature as a function of reverse voltage.



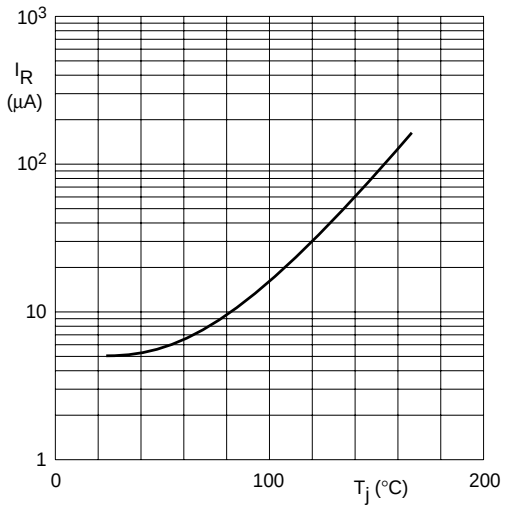
BYV26A to E
Dotted line: T_j = 175 °C.
Solid line: T_j = 25 °C.

Fig.13 Forward current as a function of forward voltage; maximum values.



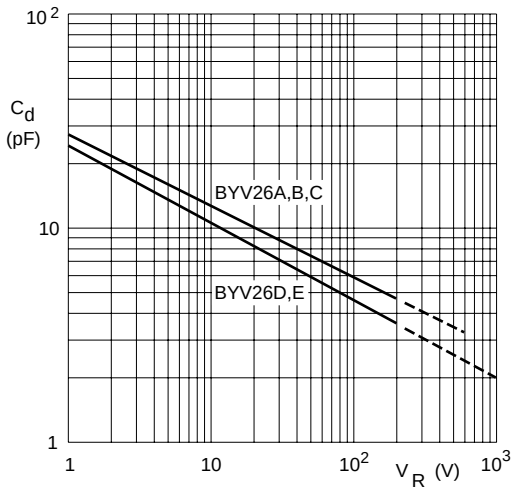
BYV26F and G
Dotted line: T_j = 175 °C.
Solid line: T_j = 25 °C.

Fig.14 Forward current as a function of forward voltage; maximum values.



$V_R = V_{RRMmax}$.

Fig.15 Reverse current as a function of junction temperature; maximum values.



BYV26A to E
f = 1 MHz; T_j = 25 °C.

Fig.16 Diode capacitance as a function of reverse voltage, typical values.