

# Silicon Diode

## **BYD43U**

1200V/1.2A

# DATASHEET

OEM – Philips

Source: Philips Databook 1999

## Fast soft-recovery rectifiers

## BYD43 series

## FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Available in ammo-pack.

## DESCRIPTION

Cavity free cylindrical glass package through Implotec™<sup>(1)</sup> technology. This package is hermetically sealed

and fatigue free as coefficients of expansion of all used parts are matched.

(1) Implotec is a trademark of Philips.

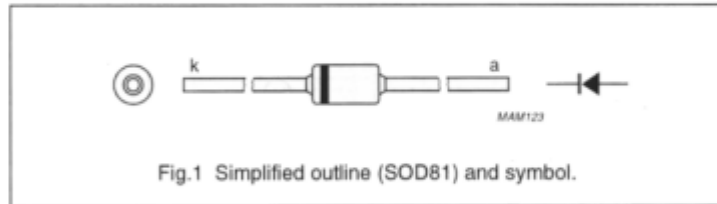


Fig.1 Simplified outline (SOD81) and symbol.

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{RSM}$	non-repetitive peak reverse voltage				
	BYD43U		–	1300	V
	BYD43V		–	1500	V
	BYD43-16		–	1700	V
	BYD43-18		–	1900	V
	BYD43-20		–	2100	V
$V_{RRM}$	repetitive peak reverse voltage				
	BYD43U		–	1200	V
	BYD43V		–	1400	V
	BYD43-16		–	1600	V
	BYD43-18		–	1800	V
	BYD43-20		–	2000	V
$I_{F(AV)}$	average forward current	$T_{ip} = 55\text{ °C}$ ; lead length = 10 mm; see Figs 2 and 3; averaged over any 20 ms period; see also Figs 10 and 11			
	BYD43U and V BYD43-16 to 20		–	1.20 0.68	A A
$I_{F(AV)}$	average forward current	$T_{amb} = 65\text{ °C}$ ; PCB mounting (see Fig.20); see Figs 4 and 5; averaged over any 20 ms period; see also Figs 10 and 11			
	BYD43U and V BYD43-16 to 20		–	0.65 0.30	A A
$I_{FRM}$	repetitive peak forward current	$T_{ip} = 55\text{ °C}$ ; see Figs 6 and 7			
	BYD43U and V BYD43-16 to 20		–	11 6	A A
$I_{FRM}$	repetitive peak forward current	$T_{amb} = 65\text{ °C}$ ; see Figs 8 and 9			
	BYD43U and V BYD43-16 to 20		–	6.0 3.2	A A

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{FSM}$	non-repetitive peak forward current	$t = 10$ ms half sinewave; $T_J = T_{Jmax}$ prior to surge; $V_R = V_{RRMmax}$	-	6	A
	BYD43U and V BYD43-16 to 20		-	6	A
$T_{stg}$	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; $T_J = T_{Jmax}$ ; see Figs 14 and 15	-	-	1.20	V
	BYD43U and V BYD43-16 to 20		-	-	2.05	V
$V_F$	forward voltage	$I_F = 1$ A; see Figs 14 and 15	-	-	1.5	V
	BYD43U and V BYD43-16 to 20		-	-	2.4	V
$I_R$	reverse current	$V_R = V_{RRMmax}$ ; see Figs 16 and 17	-	-	1	μA
	BYD43U and V BYD43-16 to 20		-	-	5	μA
$I_R$	reverse current	$V_R = V_{RRMmax}$ $T_J = 165$ °C; see Fig 16	-	-	100	μA
	BYD43U and V BYD43-16 to 20	$T_J = 125$ °C; see Fig 17	-	-	50	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 22	-	-	250	ns
	BYD43U and V BYD43-16 to 20		-	-	300	ns
$C_d$	diode capacitance	$f = 1$ MHz; $V_R = 0$ V; see Figs 18 and 19	-	20	-	pF
	BYD43U and V BYD43-16 to 20		-	15	-	pF
$\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	-	-	5	A/μs
	BYD43U and V BYD43-16 to 20		-	-	5	A/μs

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-p)}$	thermal resistance from junction to tie-point	lead length = 10 mm	60	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	120	K/W

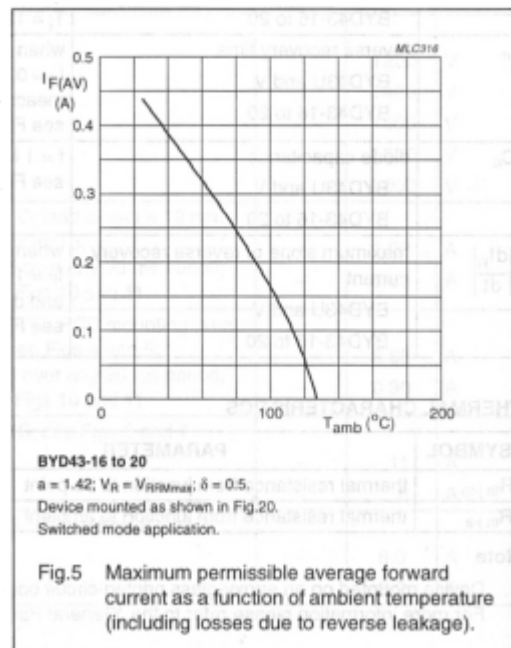
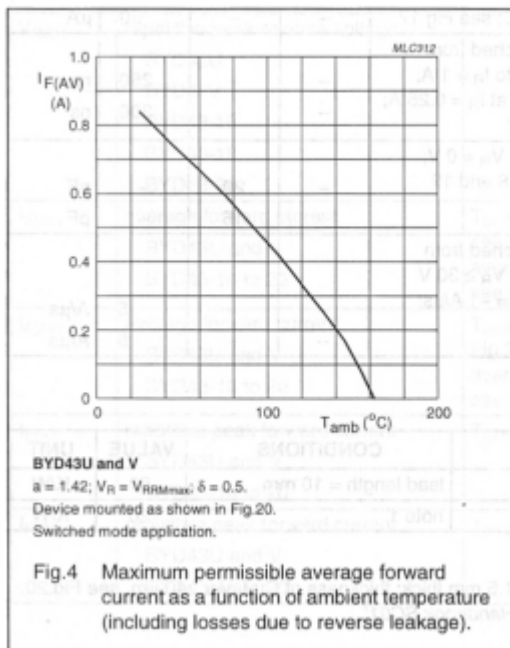
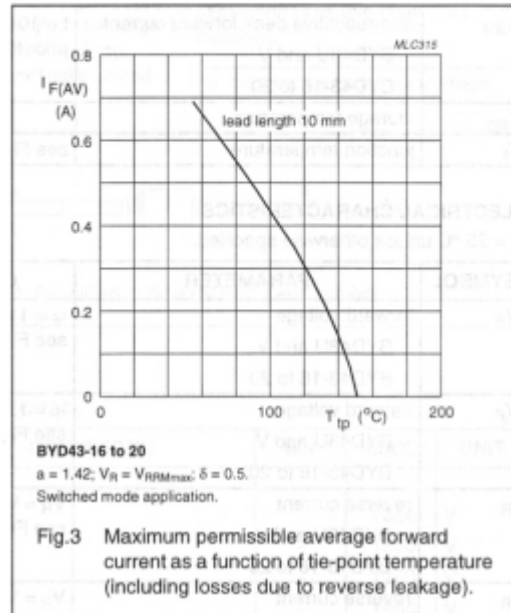
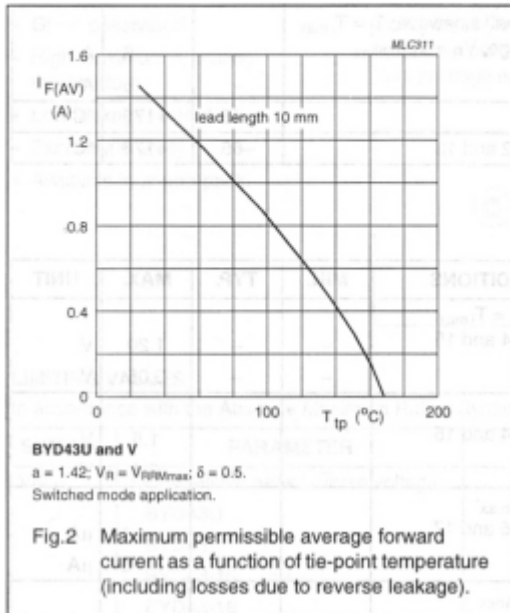
## Note

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer  $\geq 40$  μm, see Fig.20. For more information please refer to the 'General Part of Handbook SC01'.

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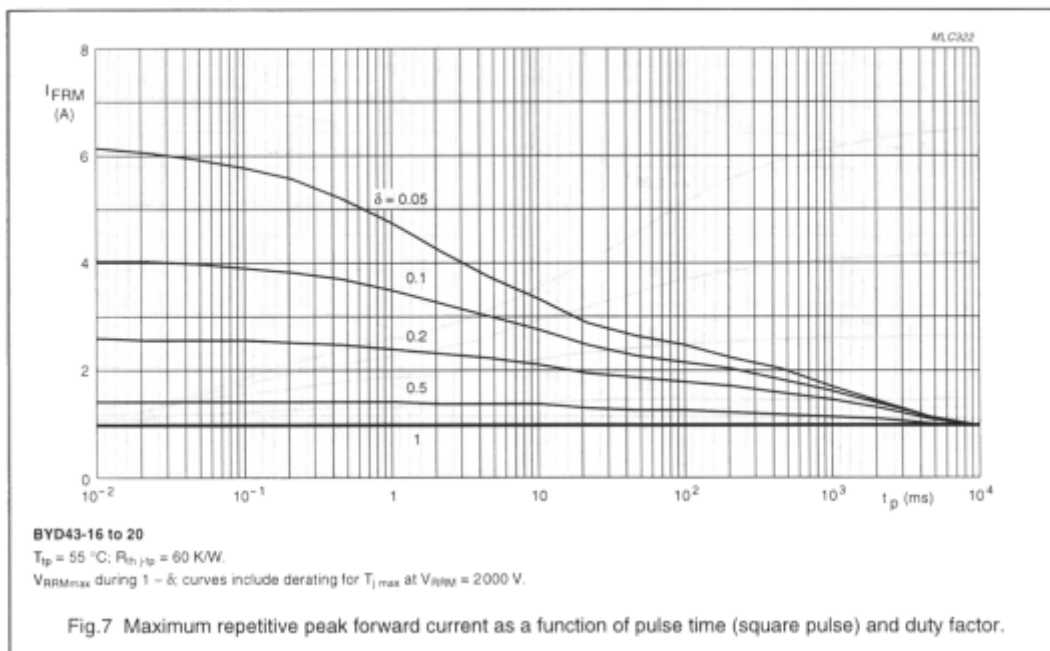
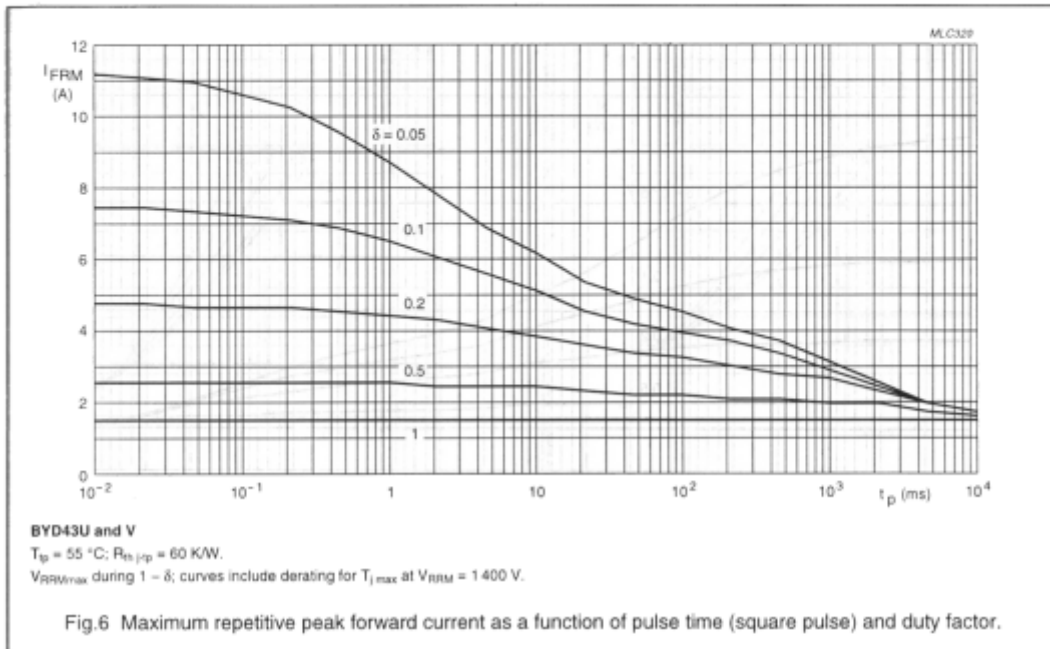
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## GRAPHICAL DATA



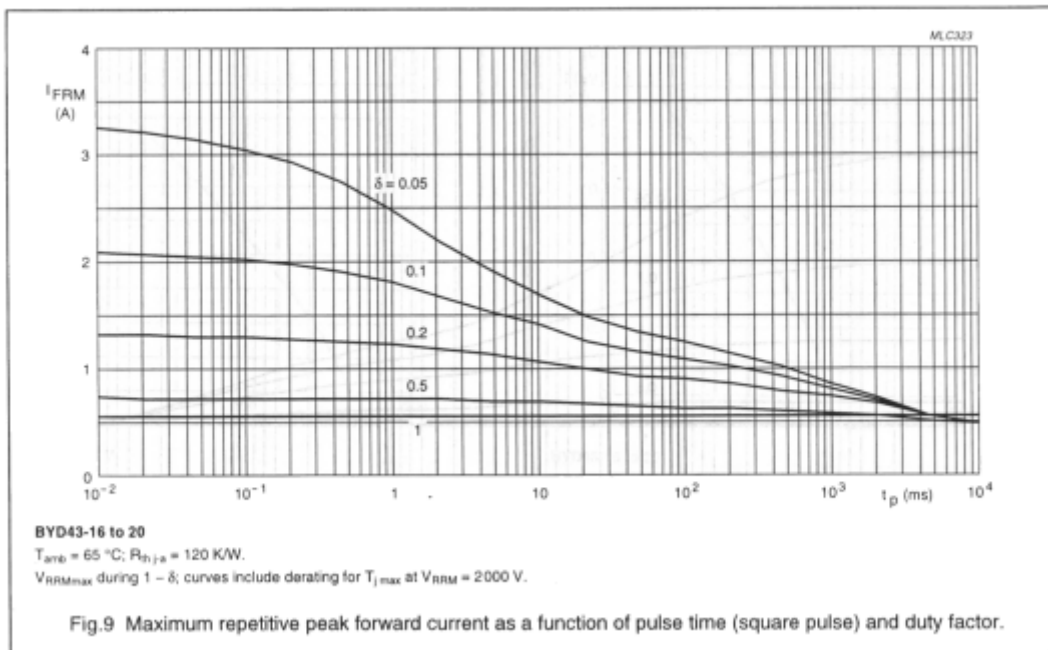
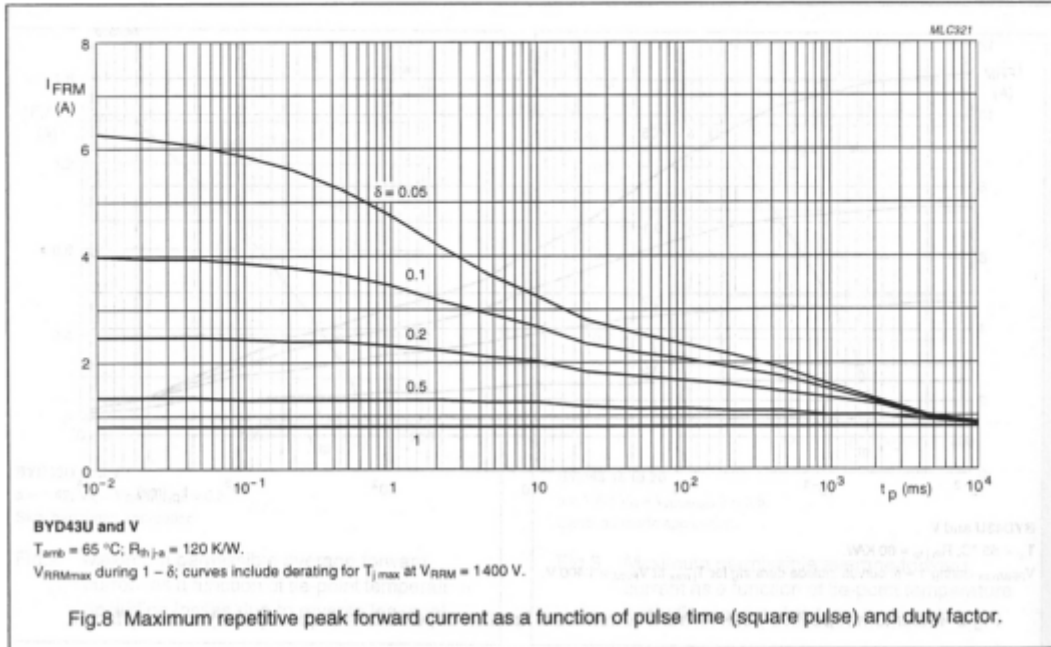
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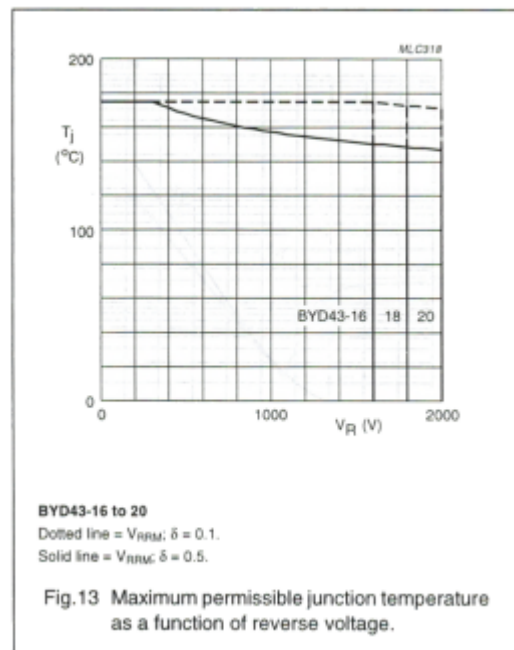
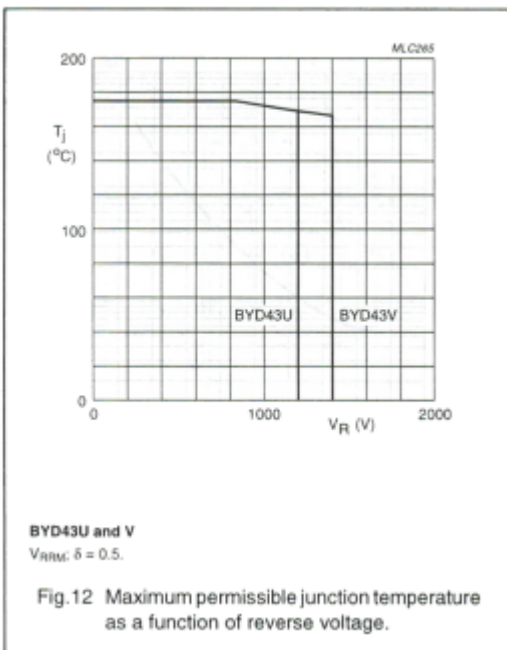
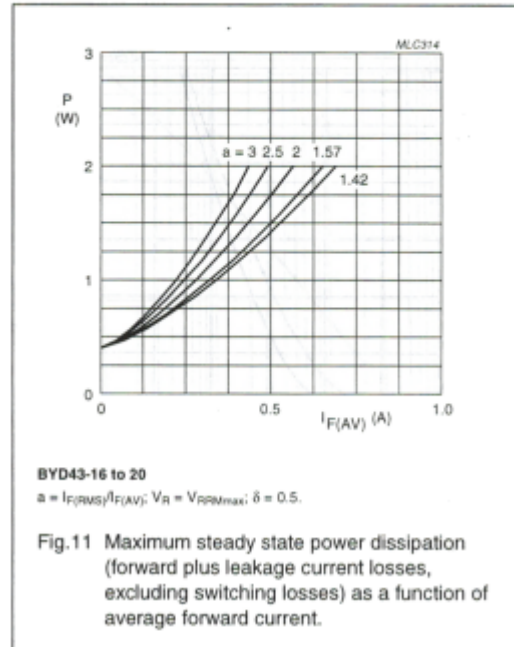
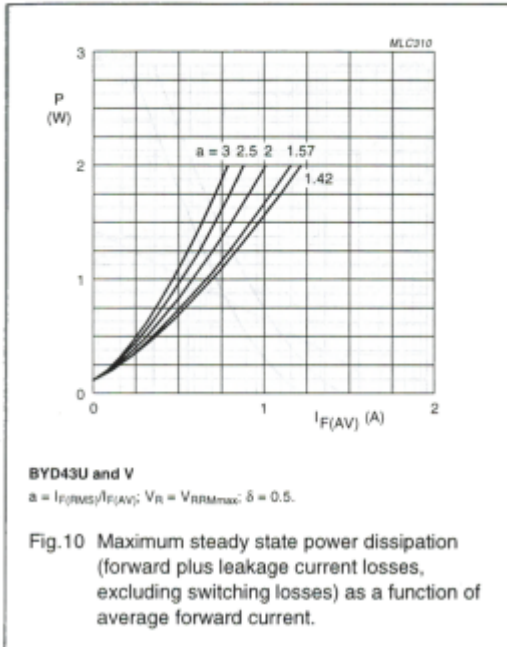
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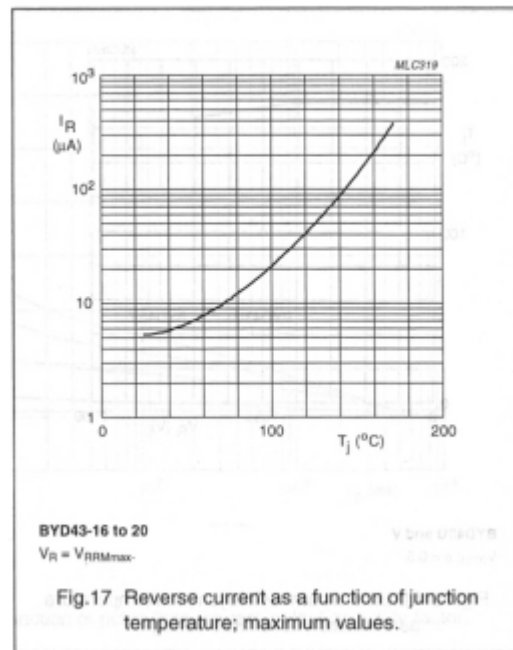
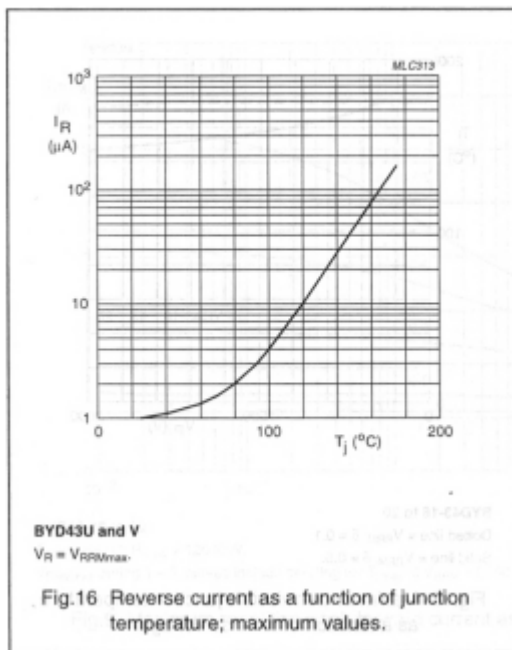
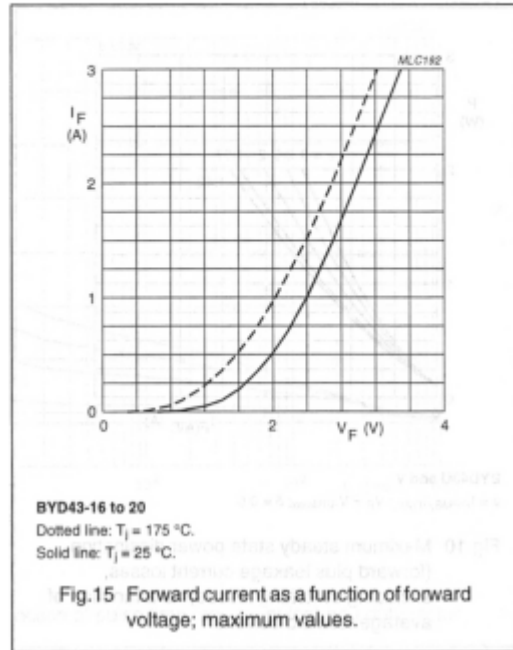
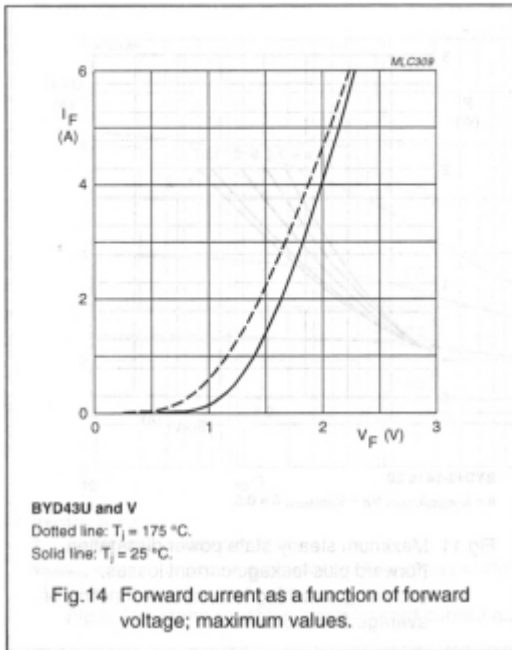
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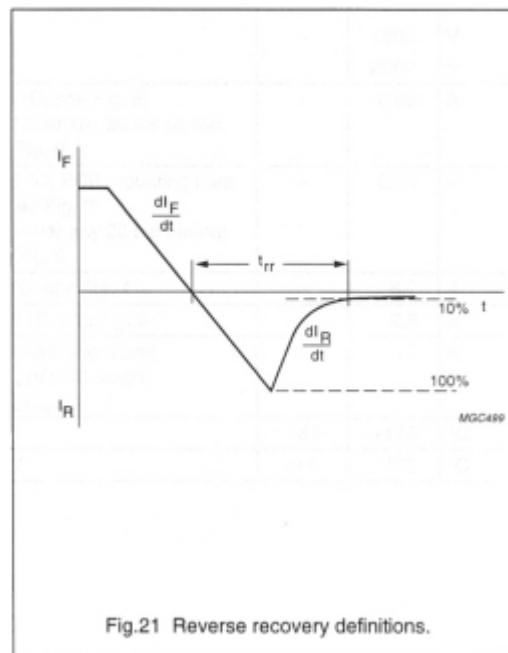
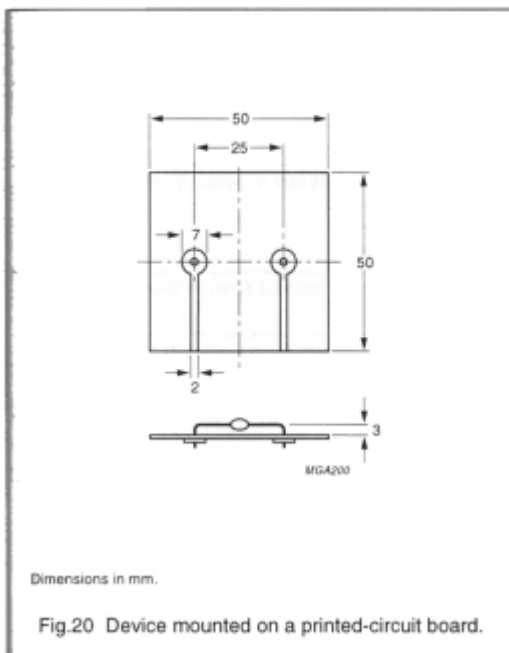
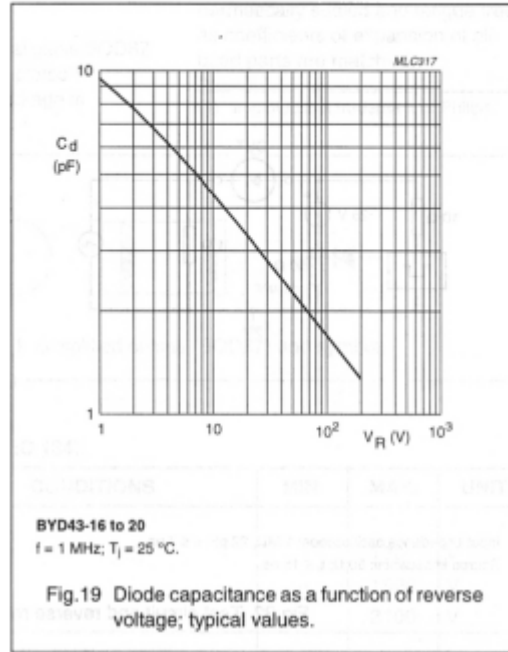
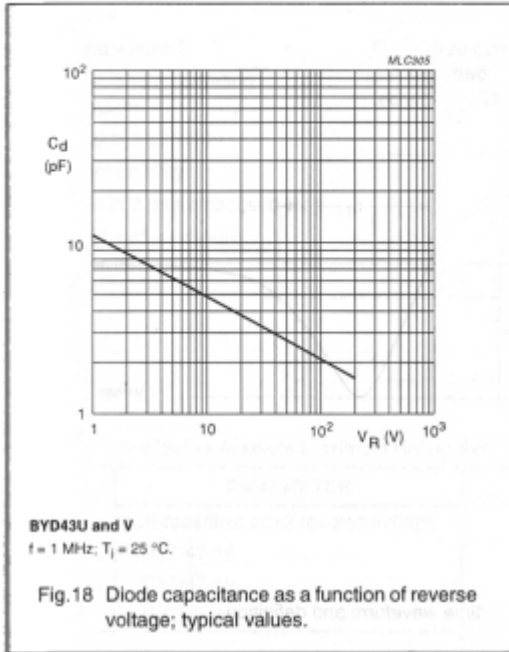
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