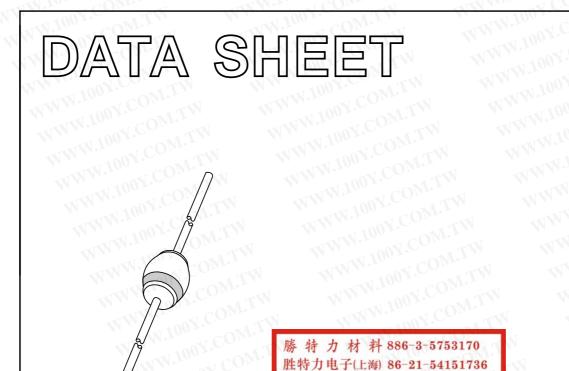
## DISCRETE SEMICONDUCTORS

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HILIP



## **BYV96 series** Fast soft-recovery controlled avalanche rectifiers

Product specification Supersedes data of April 1982 1996 Jun 07



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**BYV96** series

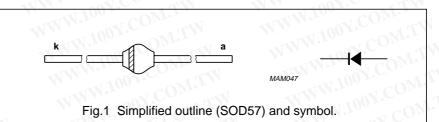
## Fast soft-recovery controlled avalanche rectifiers

### FEATURES

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

#### DESCRIPTION

Rugged glass package, using a high temperature alloyed construction. This package is hermetically sealed and fatigue free as coefficients of expansion of all used parts are matched.



#### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>RRM</sub>	repetitive peak reverse voltage	WWW.LOOX.COM	1	MM	N.100Y
	BYV96D	NWWW.	-177	800	V
	BYV96E	N WWW.ICCOM	- N	1000	V
V <sub>R</sub>	continuous reverse voltage	TWW.100 Y CON	1.1		WW.IC
	BYV96D	.F. W. 100 CO	V. –	800	V.
	BYV96E	ITW WWW. 100X.CO	W.F.M.	1000	V
I <sub>F(AV)</sub>	average forward current	$T_{tp} = 55 \text{ °C}$ ; lead length = 10 mm see Fig 2; averaged over any 20 ms period; see also Fig 6	OM.TY COM.T	1.5	A
	WWW.100X.C	$T_{amb}$ = 55 °C; PCB mounting (see Fig.11); see Fig 3; averaged over any 20 ms period; see also Fig 6	I.COM	0.8	A
I <sub>FRM</sub>	repetitive peak forward current	T <sub>tp</sub> = 55 °C; see Fig 4	-T C	17	A
	N 10	T <sub>amb</sub> = 55 °C; see Fig 5	100 <u>7</u> . C	9	А
I <sub>FSM</sub>	non-repetitive peak forward current	t = 10 ms half sine wave; $T_j = T_{j max}$ prior to surge; $V_R = V_{RRMmax}$	.1007.	35	A
E <sub>RSM</sub>	non-repetitive peak reverse avalanche energy	L = 120 mH; $T_j = T_{j max}$ prior to surge; inductive load switched off	W. <u>1</u> 00	10	mJ
T <sub>stg</sub>	storage temperature	W W.COM.	-65	+175	°C
T <sub>i</sub>	junction temperature	see Fig 7	-65	+175	°C

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**BYV96** series

I.WWW

## Fast soft-recovery controlled avalanche rectifiers

## **ELECTRICAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V <sub>F</sub>	forward voltage	$I_F = 3 \text{ A}; T_j = T_{j \text{ max}}; \text{ see Fig 8}$	_	WW	1.35	V
	N 100Y. COM.TW	I <sub>F</sub> = 3 A; see Fig 8	_	-	1.60	V
V <sub>(BR)R</sub>	reverse avalanche breakdown voltage	I <sub>R</sub> = 0.1 mA	TW	WW	W.100X.	COM.
	BYV96D	NWW.IOCON.CON	900	- 11	111-2	V
	BYV96E	N. IOU TO CO	1100	- 1	WWL10	V CO
I <sub>R</sub>	reverse current	V <sub>R</sub> = V <sub>RRMmax</sub> ; see Fig 9	WTW N	- "	VWN.10	μA
	WWW.100X.COM	V <sub>R</sub> = V <sub>RRMmax</sub> ; T <sub>j</sub> = 165 °C; see Fig 9	COWLL	N -	150	μA
t <sub>rr</sub>	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 12	Y.COM	LAN -	300	ns
C <sub>d</sub>	diode capacitance	$f = 1 \text{ MHz}; V_R = 0 \text{ V}; \text{ see Fig } 10$	107	40	_	pF
$\frac{dI_R}{dt}$	maximum slope of reverse recovery current	when switched from $I_F = 1$ A to $V_R \ge 30$ V and $dI_F/dt = -1$ A/µs; see Fig.13	001 <u>:</u> 1007.CO	M.T.M M.T.W	6	A/µs

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## THERMAL CHARACTERISTICS

HERMAL	CHARACTERISTICS			
SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-tp</sub>	thermal resistance from junction to tie-point	lead length = 10 mm	46	K/W
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	100	K/W

#### Note

WWW.100 1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer ≥40 μm, see Fig.11. WWW.100Y.COM.TW W.100X.C For more information please refer to the "General Part of associated Handbook".

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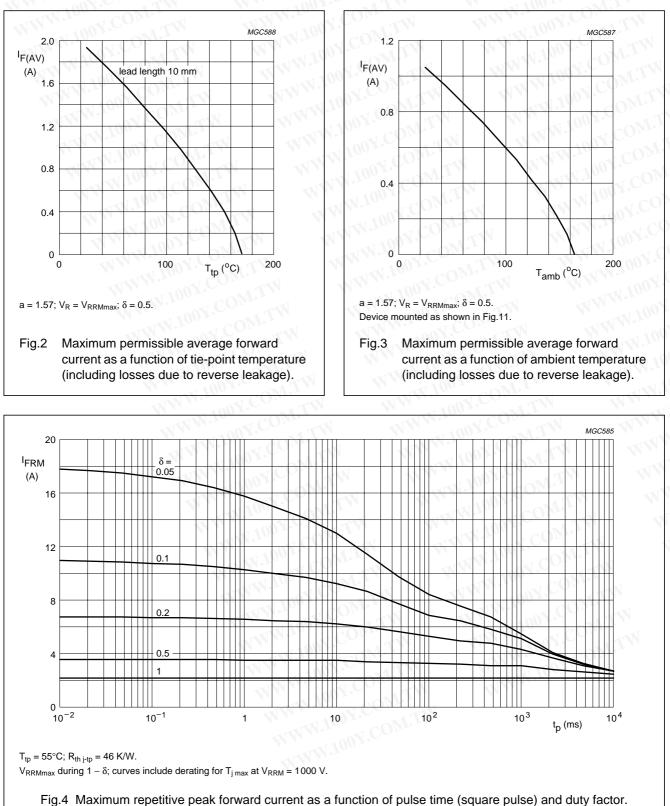
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Product specification

# Fast soft-recovery controlled avalanche rectifiers

## **BYV96** series



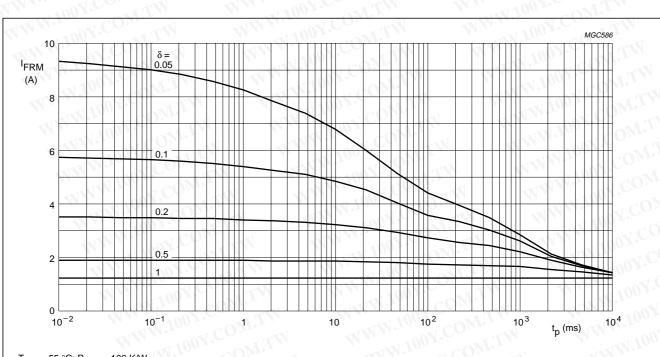


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Product specification

## **BYV96** series

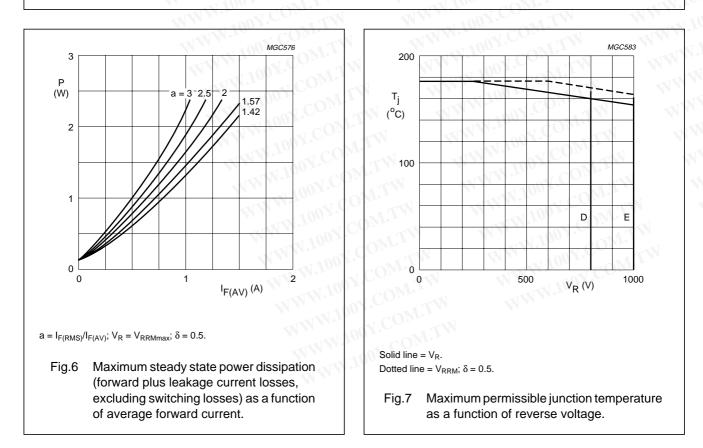
Fast soft-recovery controlled avalanche rectifiers



 $T_{amb} = 55 \ ^{\circ}C; \ R_{th \ j\text{-}a} = 100 \ \text{K/W}.$ 

 $V_{RRMmax}$  during 1 –  $\delta$ ; curves include derating for T<sub>j max</sub> at V<sub>RRM</sub> = 1000 V.

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



8

6

4

2

0

Dotted line:  $T_j = 175 \circ C$ . Solid line:  $T_i = 25 \circ C$ .

 $^{I}F$ 

(A)

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**Product specification** 

# Fast soft-recovery controlled avalanche rectifiers

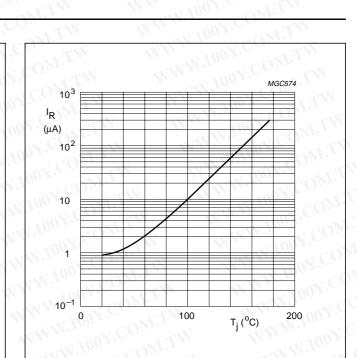
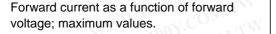


Fig.8 Forward current as a function of forward

1



2

MGC577

3

V<sub>F</sub> (V)

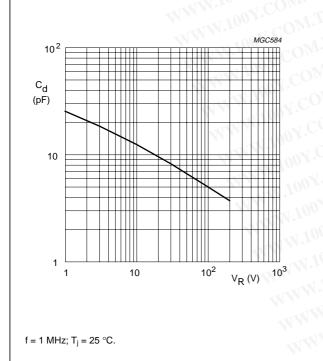
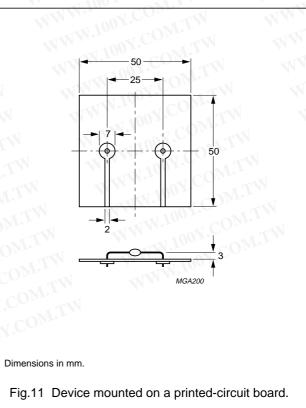


Fig.10 Diode capacitance as a function of reverse voltage; typical values.

#### $V_R = V_{RRMmax}$

Fig.9 Reverse current as a function of junction temperature; maximum values.



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**Product specification** 

## **BYV96** series

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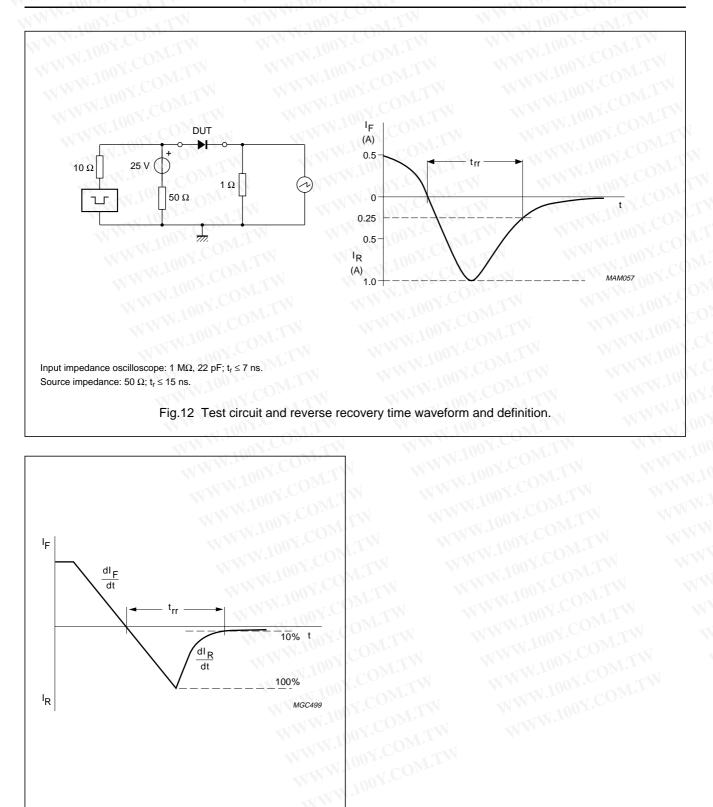
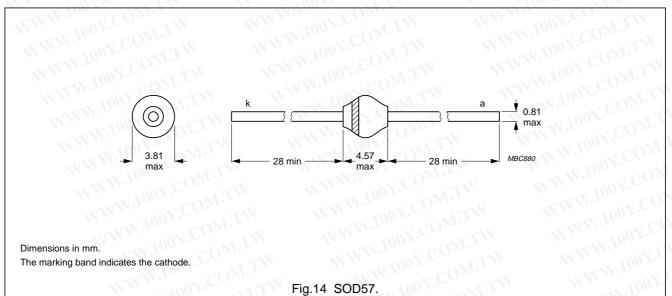


Fig.13 Reverse recovery definitions.

## Fast soft-recovery controlled avalanche rectifiers

## **BYV96** series

## PACKAGE OUTLINE



#### DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later
Product specification	This data sheet contains final product specifications.
Limiting values	WWW.100X.CO.T.W WWWW.100X.CO.T.W WW
more of the limiting values of the device at these or at	accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or may cause permanent damage to the device. These are stress ratings only and operation any other conditions above those given in the Characteristics sections of the specification limiting values for extended periods may affect device reliability.
Application information	WWW.LOON.COM. TW WWW.LOON.COM
Where application informat	ion is given, it is advisory and does not form part of the specification

Where application information is given, it is advisory and does not form part of the specification.

#### LIFE SUPPORT APPLICATIONS

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