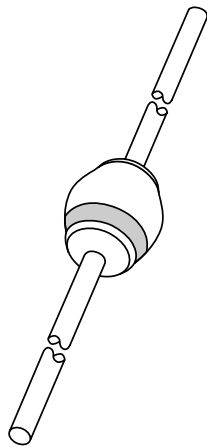


# DATA SHEET



## **BYV28 series** Ultra fast low-loss controlled avalanche rectifiers

Product specification  
Supersedes data of 1996 Oct 02

1997 Nov 24

## Ultra fast low-loss controlled avalanche rectifiers

## BYV28 series

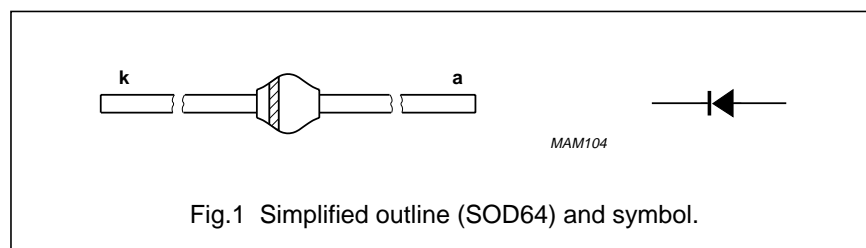
### FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed avalanche energy absorption capability
- Available in ammo-pack
- Also available with preformed leads for easy insertion.

### DESCRIPTION

Rugged glass SOD64 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
$V_{RRM}$	repetitive peak reverse voltage				
	BYV28-50		–	50	V
	BYV28-100		–	100	V
	BYV28-150		–	150	V
	BYV28-200		–	200	V
	BYV28-300		–	300	V
	BYV28-400		–	400	V
	BYV28-500 BYV28-600		–	500 600	V
$V_R$	continuous reverse voltage				
	BYV28-50		–	50	V
	BYV28-100		–	100	V
	BYV28-150		–	150	V
	BYV28-200		–	200	V
	BYV28-300		–	300	V
	BYV28-400		–	400	V
	BYV28-500 BYV28-600		–	500 600	V
$I_{F(AV)}$	average forward current	$T_{tp} = 85\text{ °C}$ ; lead length = 10 mm; see Figs 2 and 3;			
	BYV28-50 to 400 BYV28-500 and 600	averaged over any 20 ms period; see also Figs 10 and 11	– –	3.5 3.1	A A
$I_{F(AV)}$	average forward current	$T_{amb} = 60\text{ °C}$ ; printed-circuit board mounting (see Fig.20);			
	BYV28-50 to 400 BYV28-500 and 600	see Figs 4 and 5; averaged over any 20 ms period; see also Figs 10 and 11	– –	1.9 1.5	A A

## Ultra fast low-loss controlled avalanche rectifiers

## BYV28 series

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{FRM}$	repetitive peak forward current	$T_{tp} = 85\text{ °C}$ ; see Figs 6 and 7	–	32	A
	BYV28-50 to 400			31	A
$I_{FRM}$	repetitive peak forward current	$T_{amb} = 60\text{ °C}$ ; see Figs 8 and 9	–	17	A
	BYV28-50 to 400			16	A
$I_{FSM}$	non-repetitive peak forward current	$t = 10\text{ ms}$ half sine wave; $T_j = T_{j\max}$ prior to surge; $V_R = V_{RRM\max}$	–	90	A
$E_{RSM}$	non-repetitive peak reverse avalanche energy	$L = 120\text{ mH}$ ; $T_j = T_{j\max}$ prior to surge; inductive load switched off	–	20	mJ
$T_{stg}$	storage temperature		–65	+175	°C
$T_j$	junction temperature	see Fig.12	–65	+175	°C

### ELECTRICAL CHARACTERISTICS

$T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT			
$V_F$	forward voltage	$I_F = 3.5\text{ A}$ ; $T_j = T_{j\max}$ ; see Figs 13, 14 and 15	–	–	0.80	V			
	BYV28-50 to 200				0.83	V			
	BYV28-300 and 400				0.98	V			
$V_F$	forward voltage	$I_F = 3.5\text{ A}$ ; see Figs 13, 14 and 15	–	–	1.02	V			
	BYV28-50 to 200				1.05	V			
	BYV28-300 and 400				1.25	V			
$V_{(BR)R}$	reverse avalanche breakdown voltage	$I_R = 0.1\text{ mA}$							
	BYV28-50					55	–	–	V
	BYV28-100					110	–	–	V
	BYV28-150					165	–	–	V
	BYV28-200					220	–	–	V
	BYV28-300					330	–	–	V
	BYV28-400					440	–	–	V
	BYV28-500					560	–	–	V
BYV28-600	675	–	–	V					
$I_R$	reverse current	$V_R = V_{RRM\max}$ ; see Fig.16	–	–	5	μA			
		$V_R = V_{RRM\max}$ ; $T_j = 165\text{ °C}$ ; see Fig.16	–	–	150	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.22	–	–	25	ns			
					50	ns			

# Ultra fast low-loss controlled avalanche rectifiers

## BYV28 series

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
C <sub>d</sub>	diode capacitance	f = 1 MHz; V <sub>R</sub> = 0; see Figs 17, 18 and 19	–	190	–	pF
	BYV28-50 to 200		–	150	–	pF
	BYV28-300 and 400 BYV28-500 and 600		–	125	–	pF
$\left  \frac{dI_R}{dt} \right $	maximum slope of reverse recovery current	when switched from I <sub>F</sub> = 1 A to V <sub>R</sub> ≥ 30 V and dI <sub>F</sub> /dt = –1 A/μs; see Fig.21	–	–	4	A/μs

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-tp</sub>	thermal resistance from junction to tie-point	lead length = 10 mm	25	K/W
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	75	K/W

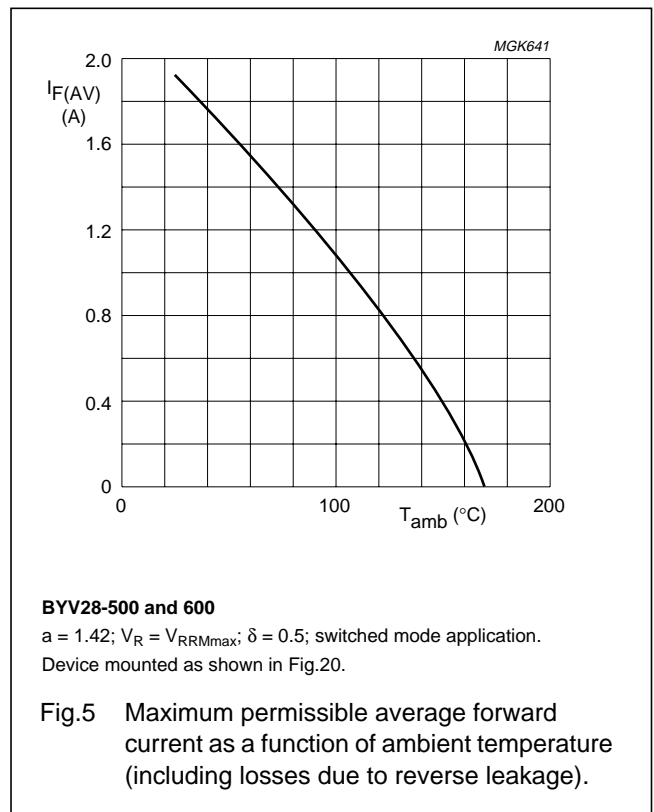
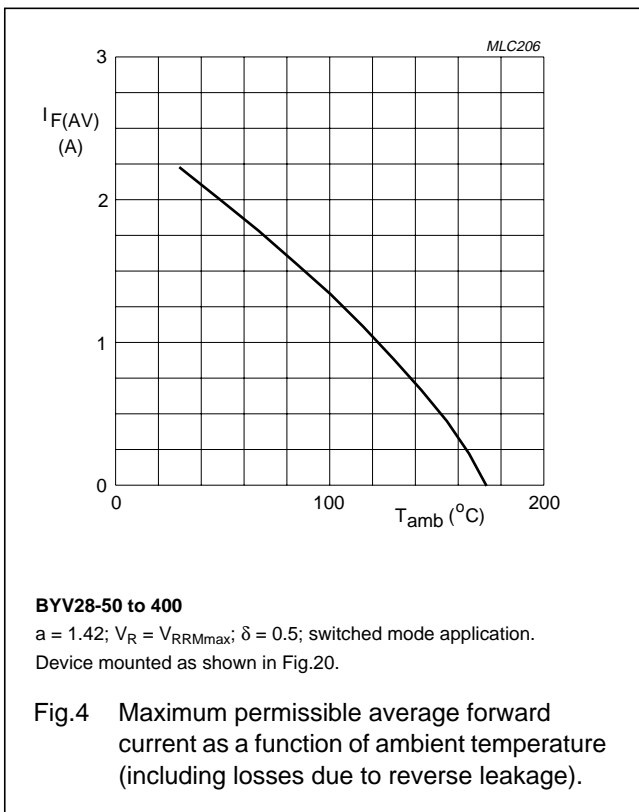
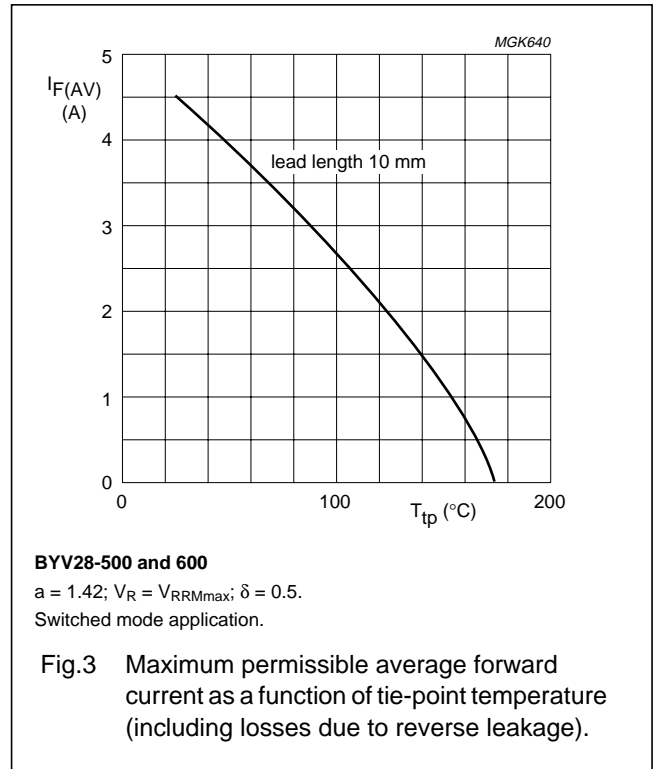
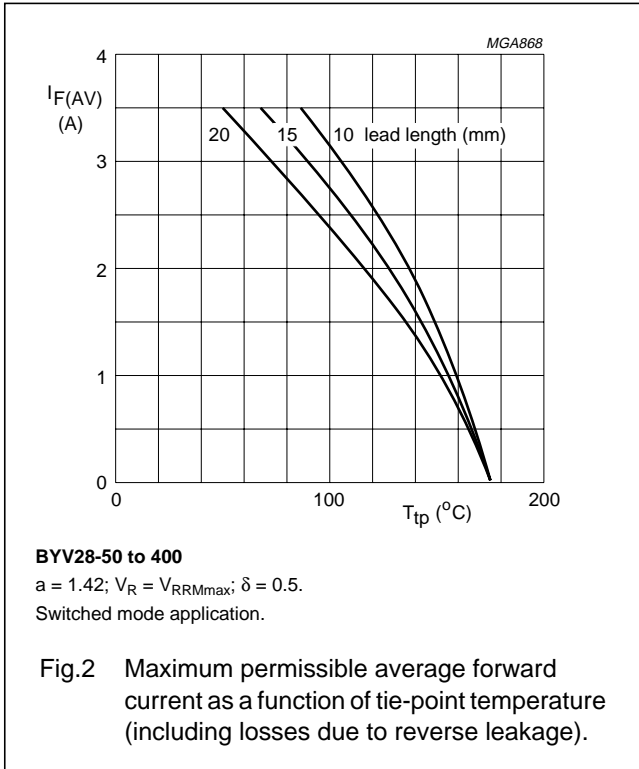
#### Note

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

Ultra fast low-loss  
controlled avalanche rectifiers

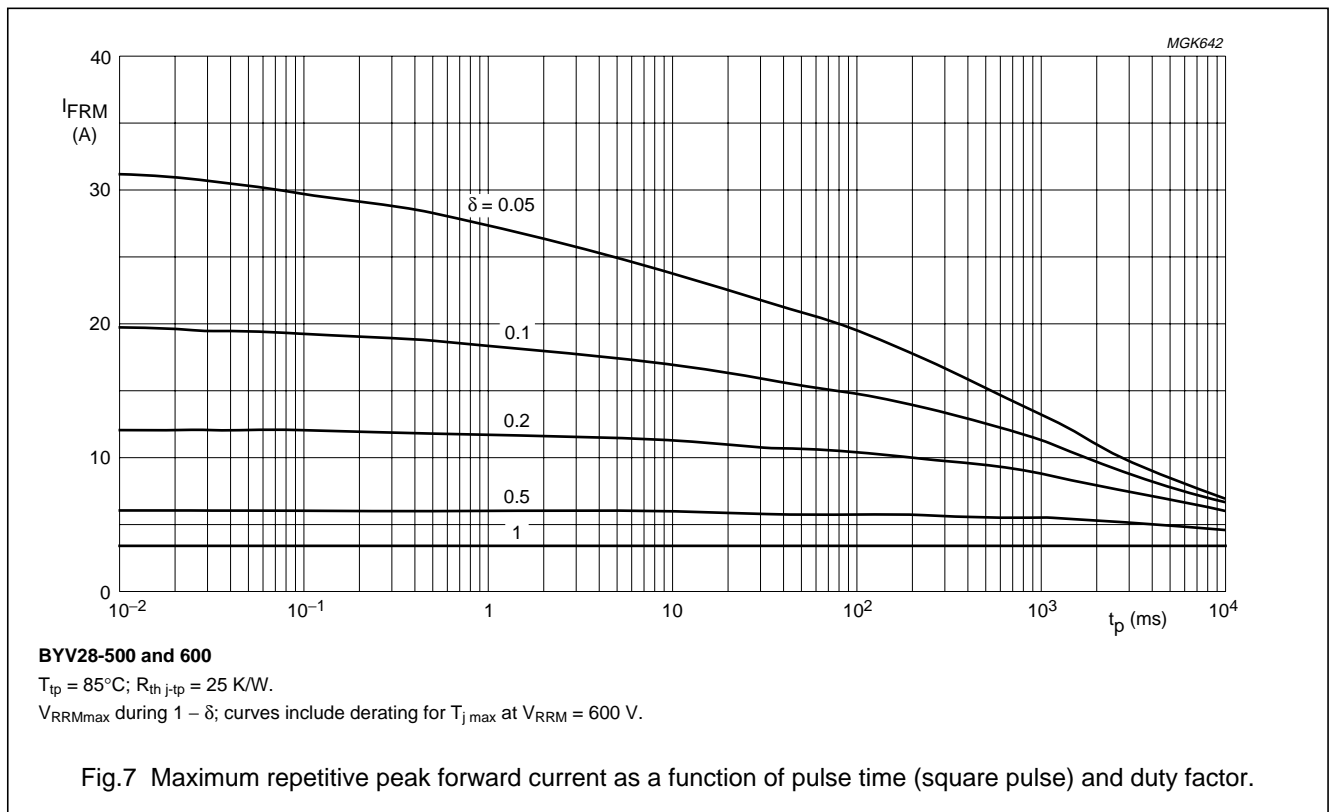
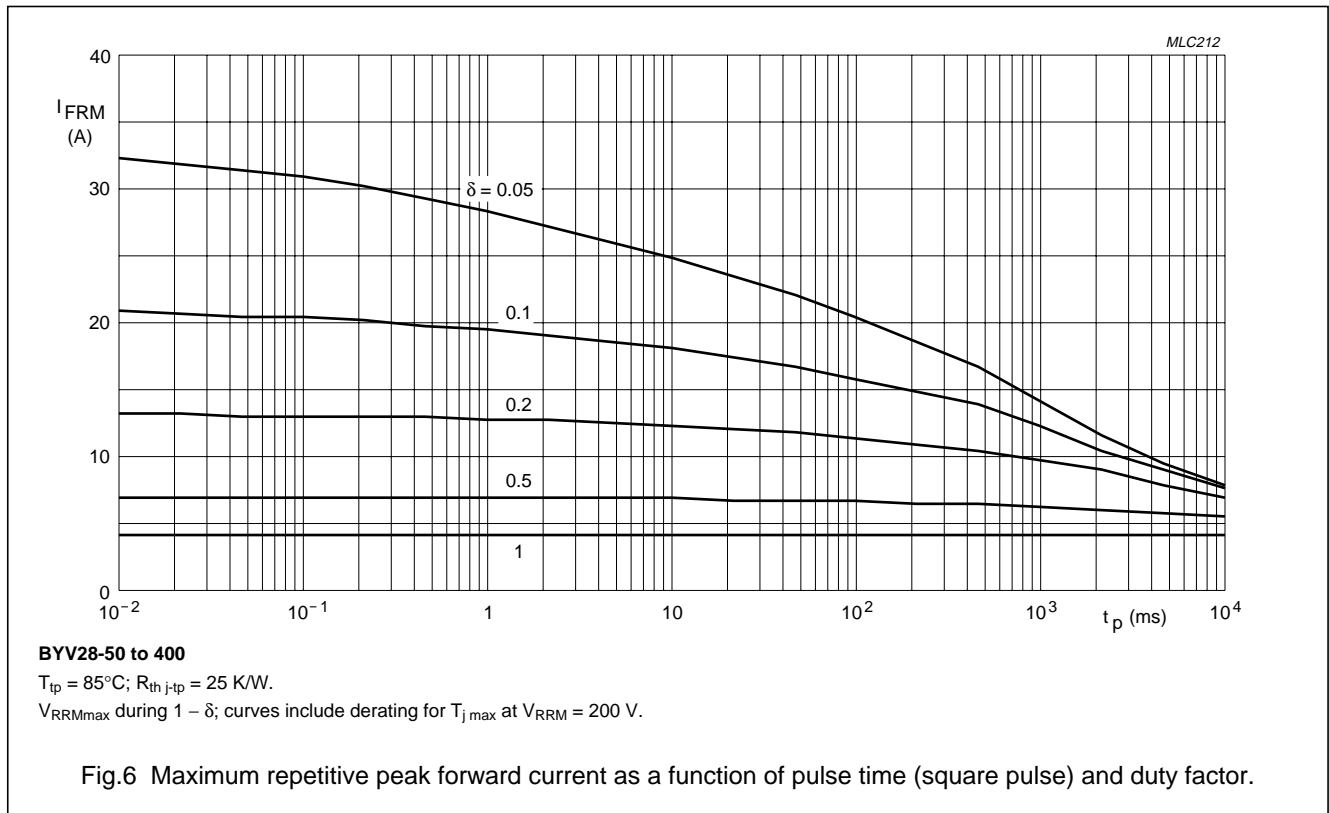
BYV28 series

GRAPHICAL DATA



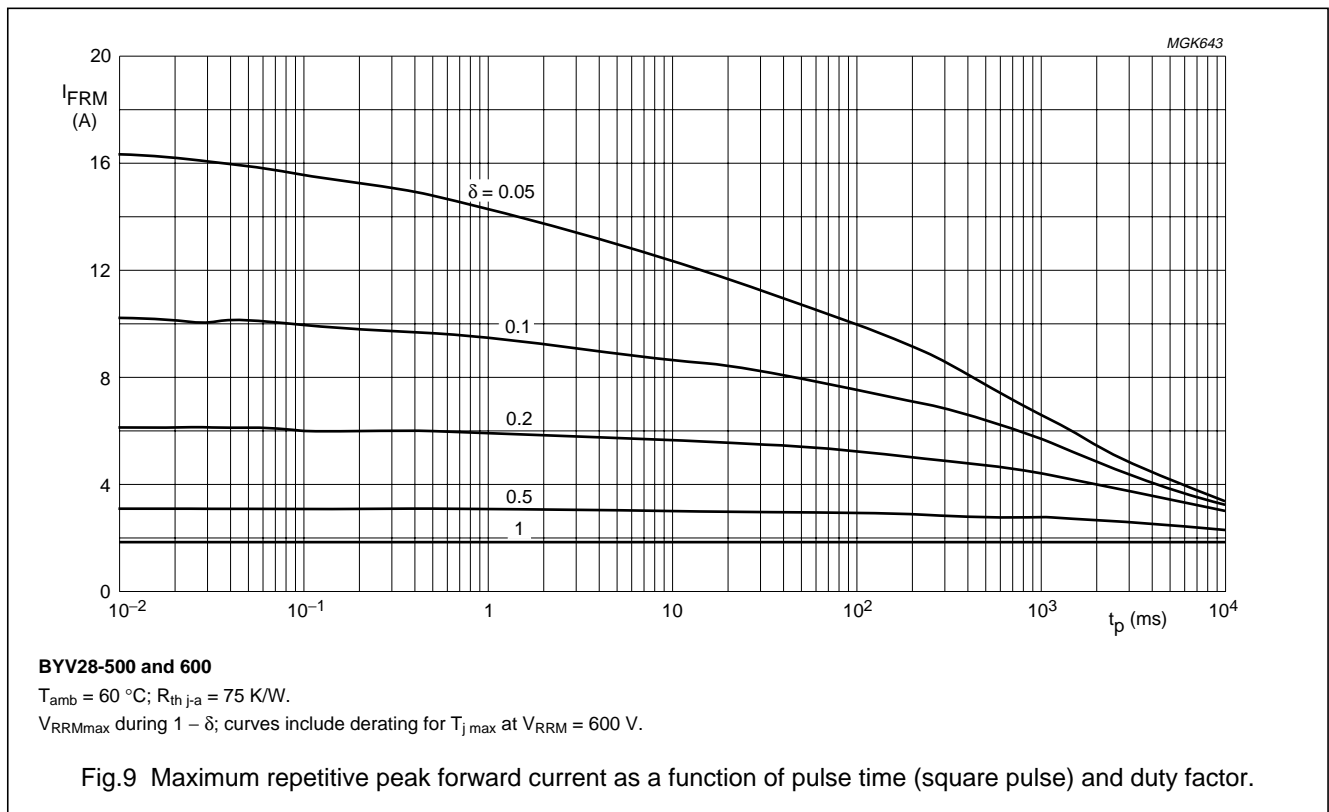
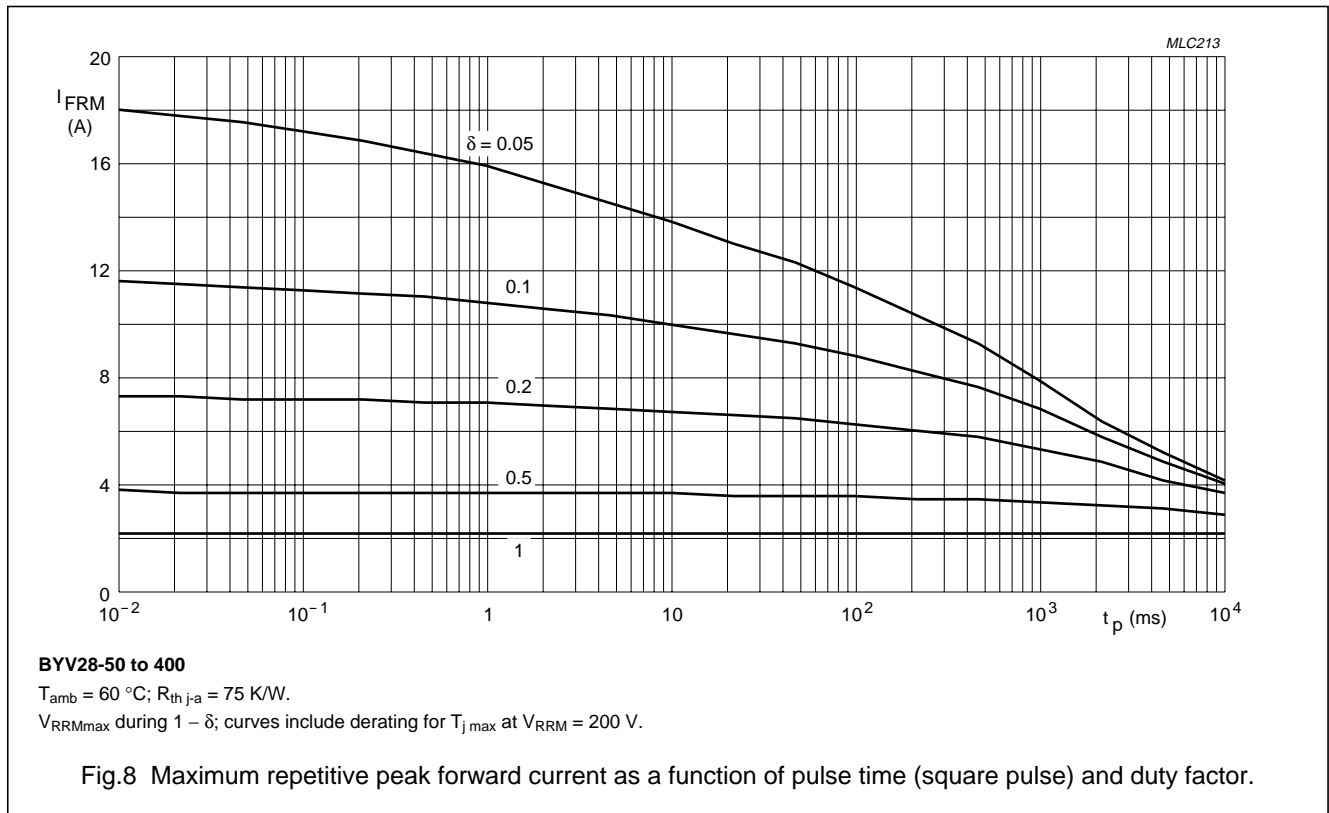
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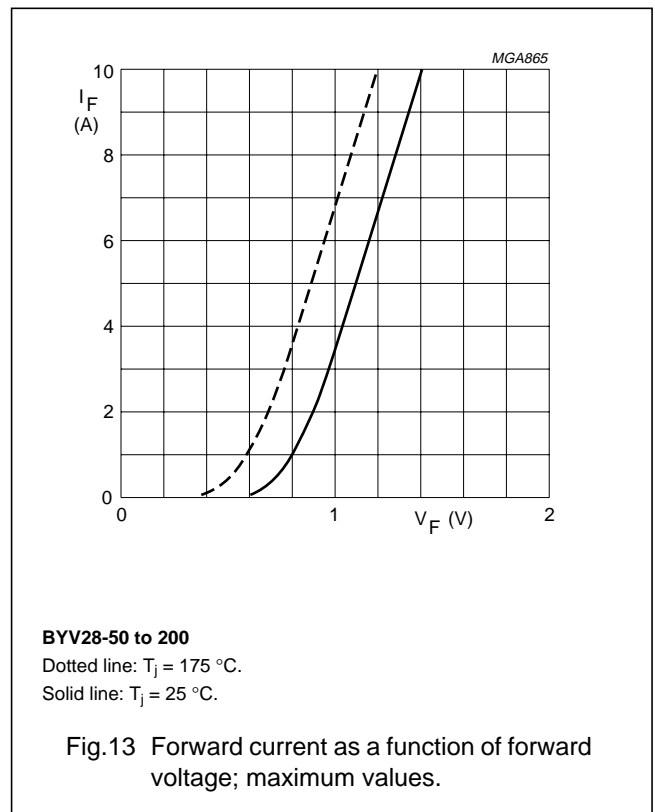
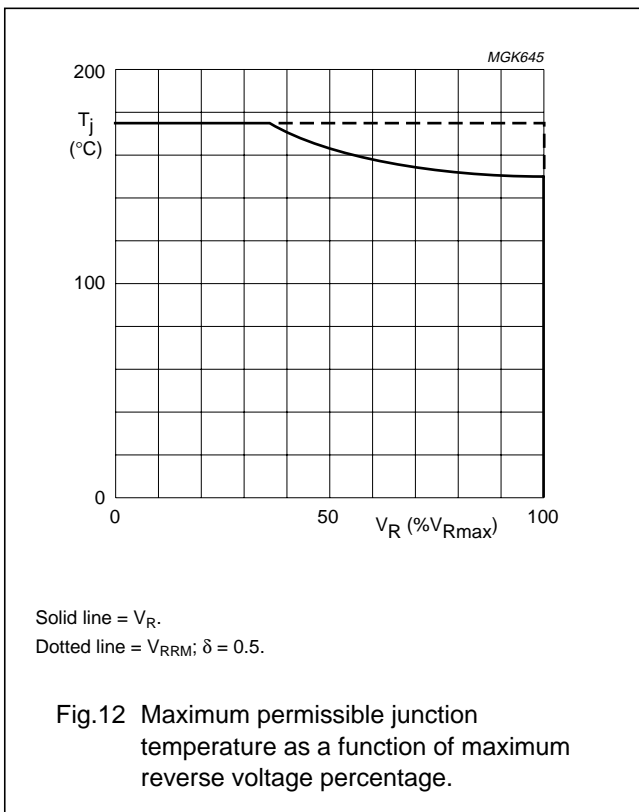
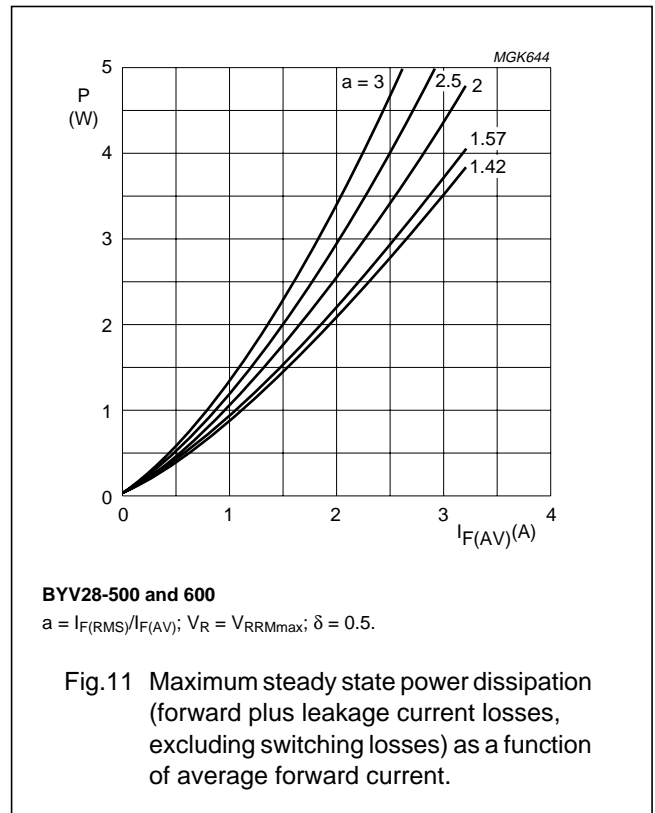
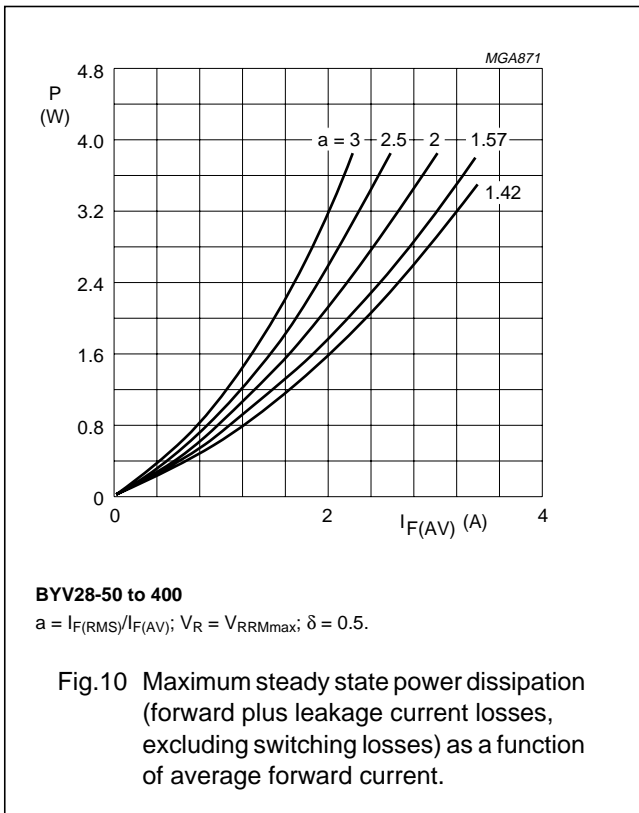
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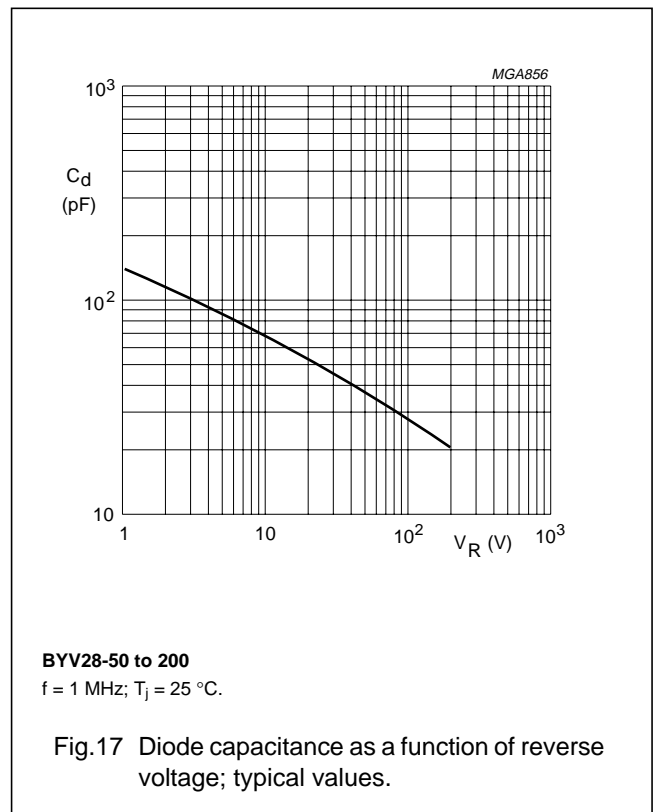
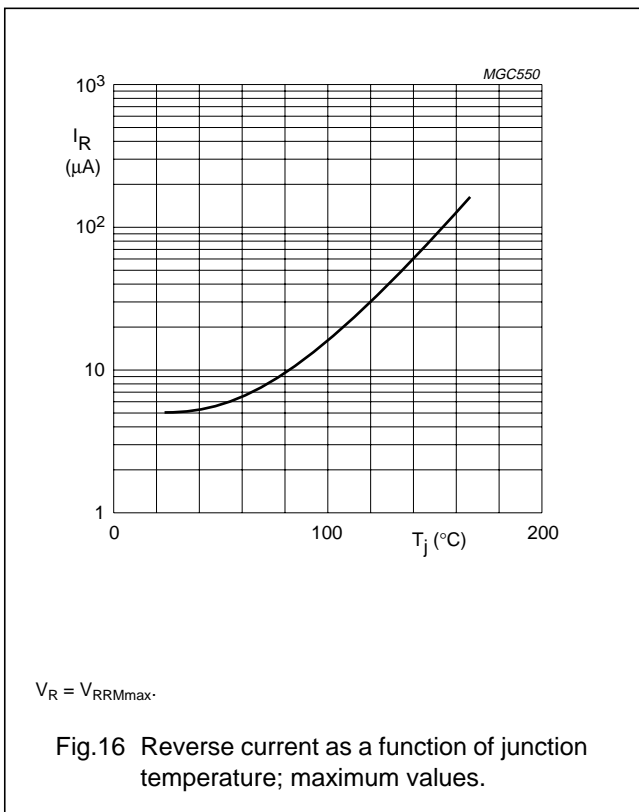
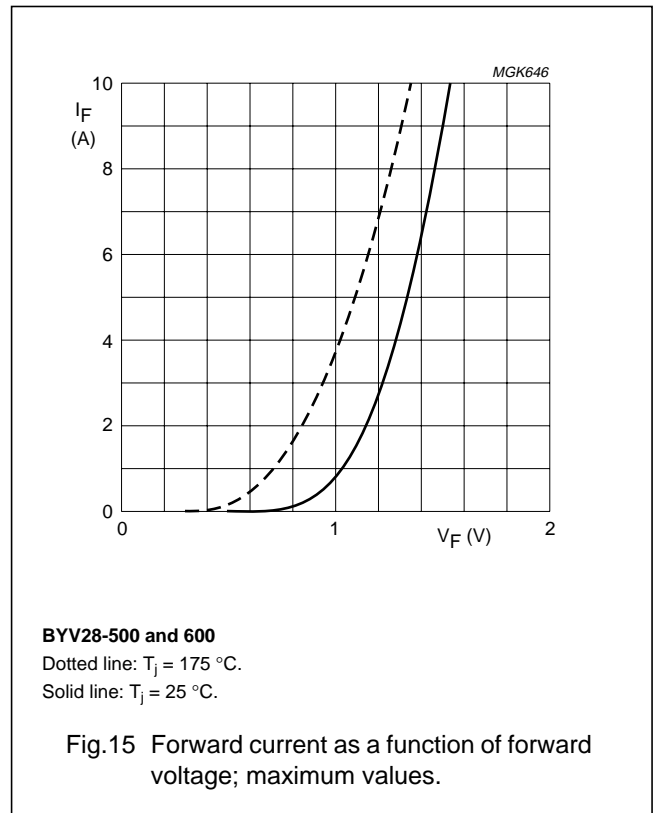
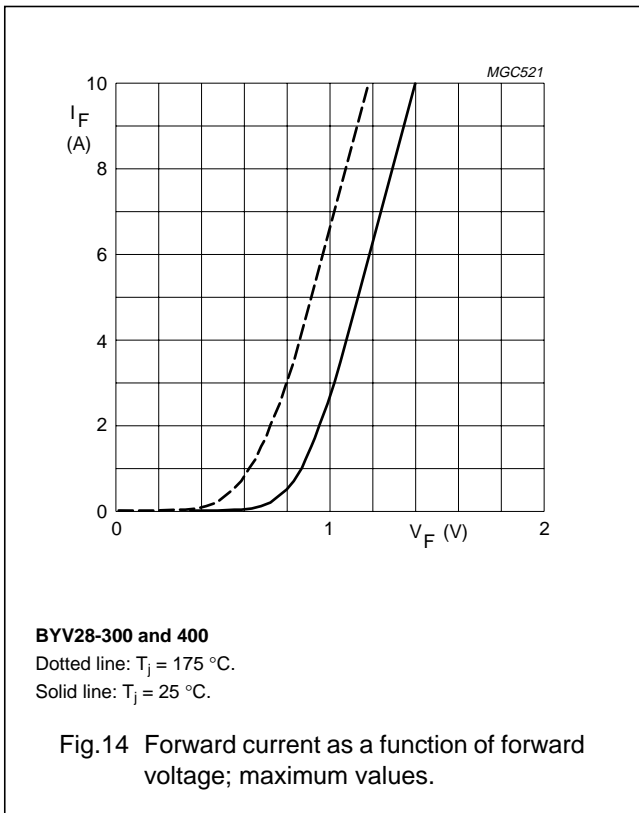
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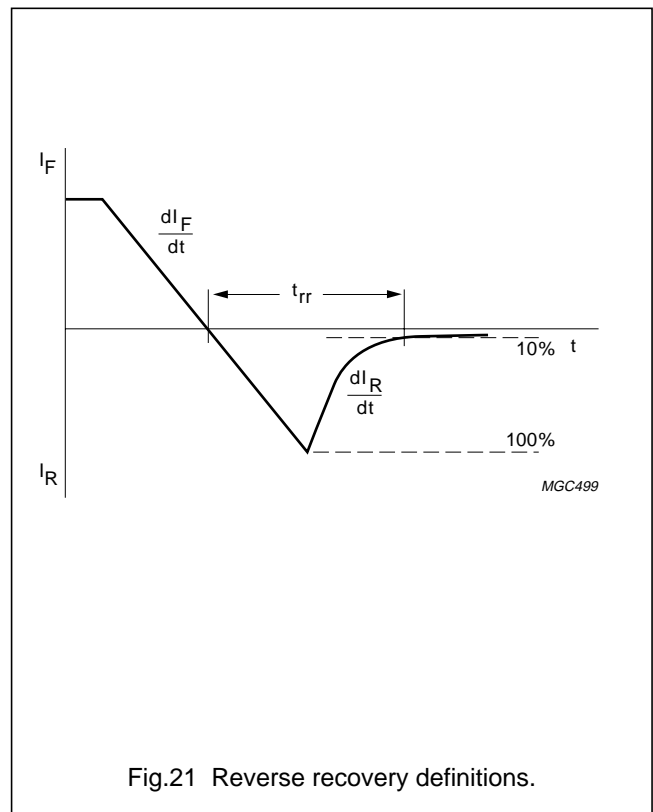
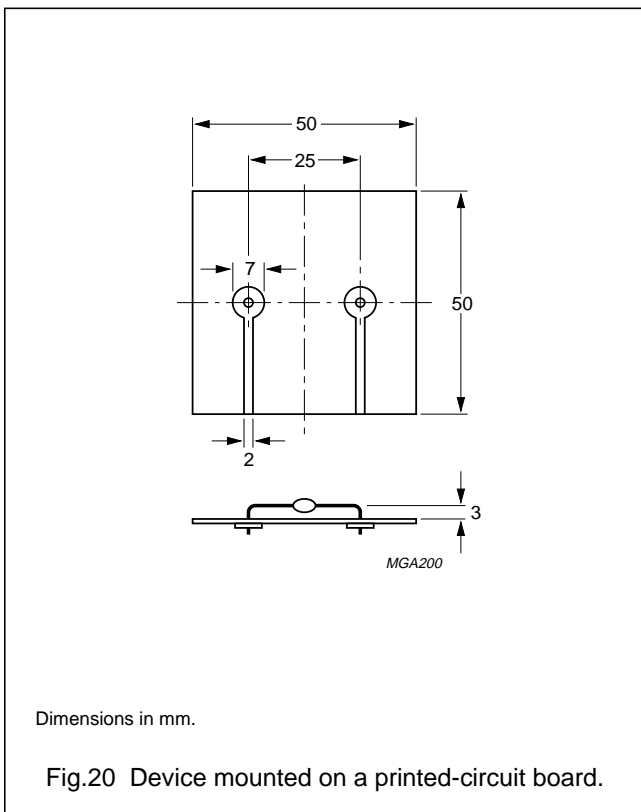
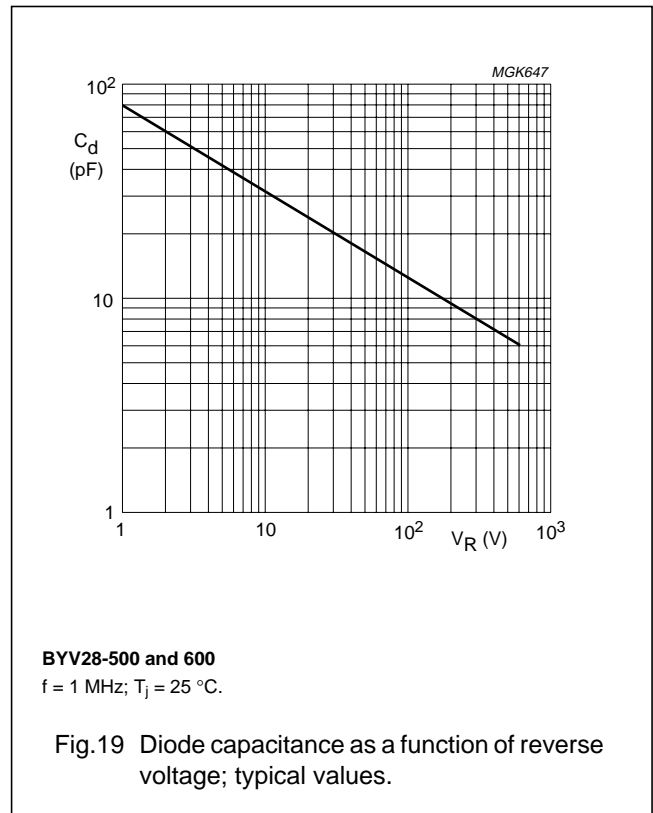
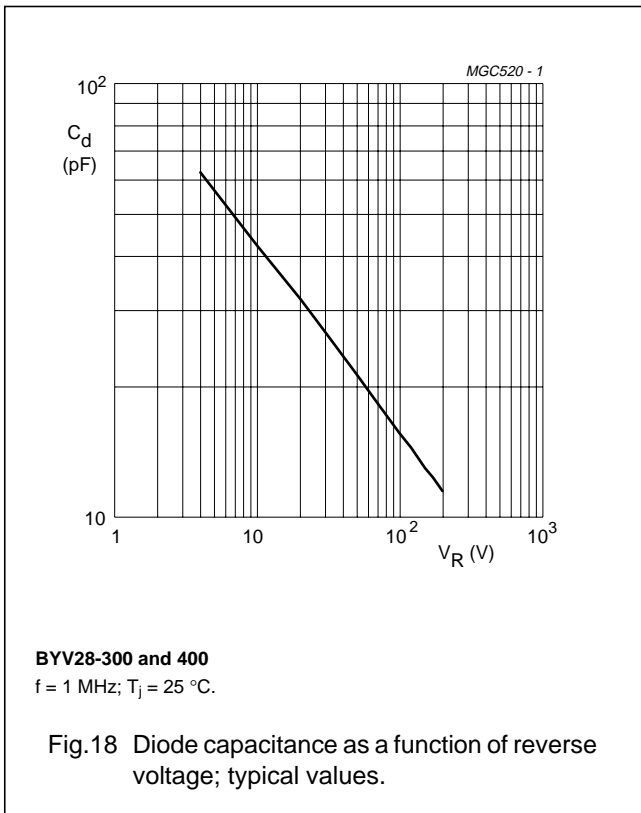
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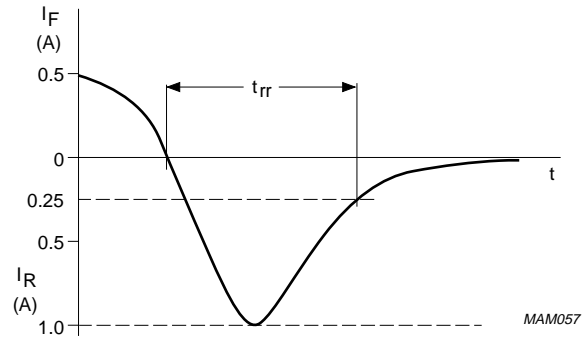
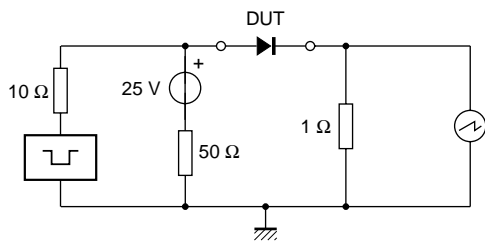
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BYV28 series



# Ultra fast low-loss controlled avalanche rectifiers

## BYV28 series



Input impedance oscilloscope: 1 M $\Omega$ , 22 pF;  $t_r \leq 7$  ns.  
Source impedance: 50  $\Omega$ ;  $t_r \leq 15$  ns.

Fig.22 Test circuit and reverse recovery time waveform and definition.

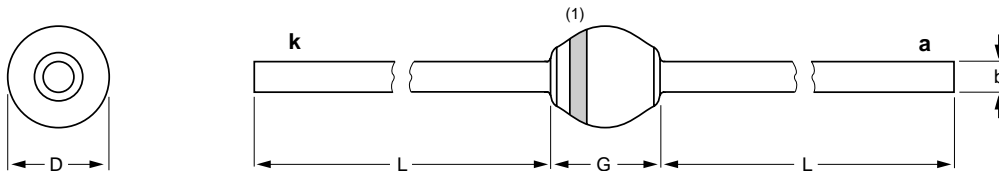
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PACKAGE OUTLINE

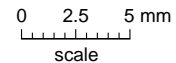
Hermetically sealed glass package; axial leaded; 2 leads

SOD64



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G max.	L min.
mm	1.35	4.5	5.0	28



Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD64						97-10-14

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	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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NOTES

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NOTES

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## BYV28 series; Ultra fast low-loss controlled avalanche rectifiers

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- [Features](#)
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### Description

Rugged glass SOD64 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.

- Cross reference
- Models
- Packages
- Application notes
- Selection guides
- Other technical documentation
- End of Life information
- Datahandbook system

### Features

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Guaranteed avalanche energy absorption capability
- Available in ammo-pack
- Also available with preformed leads for easy insertion.

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### Datasheet

Type nr.	Title	Publication release date	Datasheet status	Page count	File size (kB)	Datasheet
BYV28 series	Ultra fast low-loss controlled avalanche rectifiers	24-Nov-97	Product Specification	16	100	<input type="checkbox"/> <a href="#">Download</a>



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<u>Partnumber</u>	<u>North American Partnumber</u>	<u>Order code (12nc)</u>	<u>marking/packing</u>	<u>package</u>	<u>device status</u>	<u>buy online</u>
BYV28-100	BYV28-100 T/R	9335 535 90113	Standard Marking * Reel Pack, Axial, Standard	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>
		9335 535 90133	Standard Marking * Ammopack, Axial, 52mm	<a href="#">SOD64</a>	Full production	-
BYV28-100/20		9340 189 00112	Standard Marking * Bulk Pack	<a href="#">SOD64</a>	Full production	-
BYV28-150	BYV28-150 T/R	9335 536 00113	Standard Marking * Reel Pack, Axial, Standard	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>
	BYV28-150 AMO	9335 536 00133	Standard Marking * Ammopack, Axial, 52mm	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>
BYV28-150/20		9338 300 90112	Standard Marking * Bulk Pack	<a href="#">SOD64</a>	Full production	-
BYV28-200	BYV28-200 T/R	9335 536 10113	Standard Marking * Reel Pack, Axial, Standard	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>
	BYV28-200 AMO	9335 536 10133	Standard Marking * Ammopack, Axial, 52mm	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>
BYV28-200/20		9339 104 40112	Standard Marking * Bulk Pack	<a href="#">SOD64</a>	Full production	-
BYV28-200/24		9340 550 66112	Standard Marking * Bulk Pack	<a href="#">SOD64</a>	Full production	-
BYV28-400	BYV28-400 T/R	9340 367 20113	Standard Marking * Reel Pack, Axial, Standard	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>
		9340 367 20133	Standard Marking * Ammopack, Axial, 52mm	<a href="#">SOD64</a>	Full production	-
BYV28-400/20		9340 549 39112	Standard Marking * Bulk Pack	<a href="#">SOD64</a>	Full production	-
BYV28-400/40		9340 554 22112	Standard Marking * Bulk Pack	<a href="#">SOD64</a>	Full production	-
BYV28-50	BYV28-50 T/R	9335 535 80113	Standard Marking * Reel Pack, Axial, Standard	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>
	BYV28-50 AMO	9335 535 80133	Standard Marking * Ammopack, Axial, 52mm	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>
BYV28-600	BYV28-600 T/R	9340 418 60113	Standard Marking * Reel Pack, Axial, Standard	<a href="#">SOD64</a>	Full production	-
	BYV28-600 AMO	9340 418 60133	Standard Marking * Ammopack, Axial, 52mm	<a href="#">SOD64</a>	Full production	<input type="checkbox"/>

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