Lampiran 1. Pengukuran Tegangan Keluaran *Rectenna*

1. Pada Saat Radio ON

Jarak (cm)	TEGANGAN KELUARAN *RECTENNA* (mV)							
	RECTENNA KANAN				*RECTENNA* KIRI			
	KE-1	KE-2	KE-3	RERATA	KE-1	KE-2	KE-3	RERATA
1	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

Sumber : Pengukuran (2018).

2. Pada Saat Radio OFF

Jarak (cm)	TEGANGAN KELUARAN *RECTENNA* (mV)							
	RECTENNA KANAN				*RECTENNA* KIRI			
	KE-1	KE-2	KE-3	RERATA	KE-1	KE-2	KE-3	RERATA
1	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0

Sumber : Pengukuran (2018).

Lampiran 2. Pengukuran Daya Antena SOMRR dengan *Field Strength Analyzer*

1. Pada Saat Radio ON

Jarak (cm)	DAYA YANG DITERIMA ANTENA RADIO (dBM)							
	98 MHZ				90.3 MHZ (Tidar Sakti)			
	KE-1	KE-2	KE-3	RERATA	KE-1	KE-2	KE-3	RERATA
1	-65.33	-66.50	-65.00	-65.61	-67.50	-68.40	-68.80	-68.23
4	-61.50	-61.75	-62.00	-61.75	-71.14	-70.42	-69.80	-70.45
7	-62.00	-59.33	-60.50	-60.61	-68.60	-69.60	-69.00	-69.07
10	-60.00	-62.00	-60.75	-60.92	-69.00	-70.28	-69.40	-69.56
13	-60.25	-61.25	-60.00	-60.50	-67.33	-68.40	-68.20	-67.98
16	-60.50	-60.00	-61.50	-60.67	-69.80	-70.42	-69.60	-69.94
19	-61.28	-62.42	-68.60	-64.10	-67.33	-67.83	-68.00	-67.72
22	-62.00	-61.00	-61.50	-61.50	-67.66	-69.00	-69.00	-68.55
25	-60.25	-61.75	-60.50	-60.83	-68.80	-69.80	-69.20	-69.27
28	-60.00	-60.25	-60.00	-60.08	-68.00	-69.20	-69.00	-68.73
31	-61.50	-61.00	-61.00	-61.17	-71.71	-70.85	-71.14	-71.23

Sumber : Pengukuran (2018)

Jarak (cm)	DAYA YANG DITERIMA ANTENA RADIO (dBM)							
	94.6 MHz (RRI)				101.3 MHz (MFM)			
	KE-1	KE-2	KE-3	RERATA	KE-1	KE-2	KE-3	RERATA
1	-77.22	-77.22	-76.77	-77.07	-90.29	-89.42	-88.78	-89.50
4	-71.14	-70.57	-70.42	-70.71	-89.92	-89.23	-88.71	-89.29
7	-74.00	-75.00	-73.71	-74.24	-89.50	-89.00	-88.00	-88.83
10	-72.56	-72.71	-71.71	-72.33	-87.57	-87.64	-87.50	-87.57
13	-77.33	-77.33	-77.00	-77.22	-87.42	-87.35	-87.21	-87.33
16	-75.77	-76.44	-76.22	-76.14	-87.28	-85.20	-87.14	-86.54
19	-73.00	-73.57	-72.57	-73.05	-89.42	-88.78	-87.71	-88.64
22	-77.66	-77.33	-77.11	-77.37	-87.50	-87.50	-87.28	-87.43
25	-70.28	-69.80	-70.28	-70.12	-89.92	-89.28	-88.71	-89.30
28	-72.85	-73.14	-72.28	-72.76	-88.71	-88.42	-87.71	-88.28
31	-71.40	-72.14	-70.85	-71.46	-87.71	-88.35	-87.64	-87.90

Sumber : Pengukuran (2018)

2. Pada Saat Radio OFF

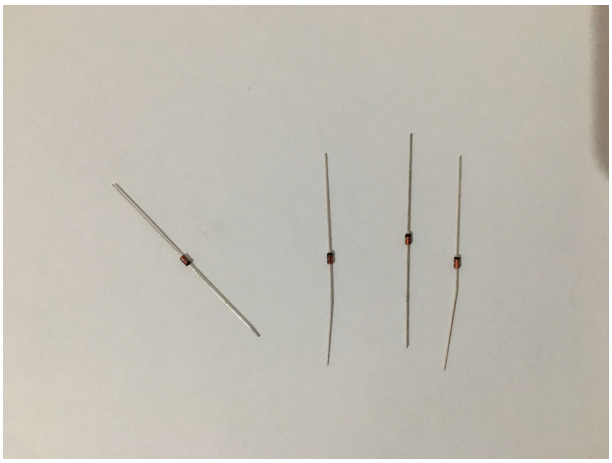
Jarak (cm)	DAYA YANG DITERIMA ANTENA RADIO (dBM)							
	98 MHZ				90.3 MHZ (Tidar Sakti)			
	KE-1	KE-2	KE-3	RERATA	KE-1	KE-2	KE-3	RERATA
1	-72.14	-73.71	-72.57	-72.81	-69.00	-69.20	-70.71	-69.64
4	-71.57	-73.00	-72.57	-72.38	-70.28	-70.28	-70.28	-70.28
7	-71.00	-72.42	-71.28	-71.57	-69.80	-69.60	-69.80	-69.73
10	-70.71	-72.00	-71.28	-71.33	-70.85	-70.42	-70.42	-70.56
13	-70.57	-71.71	-70.57	-70.95	-70.28	-70.00	-70.00	-70.09
16	-70.14	-71.71	-70.57	-70.81	-71.57	-72.50	-71.14	-71.74
19	-70.14	-71.57	-70.42	-70.71	-69.40	-69.60	-69.60	-69.53
22	-70.14	-71.57	-70.28	-70.66	-70.71	-70.42	-70.42	-70.52
25	-69.60	-70.57	-70.14	-70.10	-71.00	-70.85	-70.71	-70.85
28	-69.60	-69.40	-69.60	-69.53	-71.00	-70.57	-70.71	-70.76
31	-65.16	-67.83	-69.00	-67.33	-71.00	-71.14	-70.85	-71.00

Sumber : Pengukuran (2018)

Jarak (cm)	DAYA YANG DITERIMA ANTENA RADIO (dBM)							
	94.6 MHz (RRI)				101.3 MHz (MFM)			
	KE-1	KE-2	KE-3	RERATA	KE-1	KE-2	KE-3	RERATA
1	-68.80	-70.42	-69.00	-69.41	-87.71	-88.50	-88.41	-88.21
4	-70.71	-72.00	-70.42	-71.04	-87.50	-86.85	-87.00	-87.12
7	-68.20	-69.00	-67.83	-68.34	-87.92	-89.28	-88.78	-88.66
10	-70.00	-70.57	-70.00	-70.19	-87.07	-86.57	-86.64	-86.76
13	-70.57	-72.00	-70.28	-70.95	-85.13	-85.60	-84.80	-85.18
16	-68.60	-69.60	-68.00	-68.73	-87.86	-88.50	-88.42	-88.26
19	-67.33	-68.60	-66.00	-67.31	-88.71	-89.92	-89.21	-89.28
22	-71.28	-72.00	-71.57	-71.62	-86.92	-86.28	-86.50	-86.57
25	-67.66	-68.80	-67.16	-67.87	-87.57	-88.50	-88.14	-88.07
28	-71.71	-72.00	-71.71	-71.81	-88.50	-89.64	-88.92	-89.02
31	-70.42	-71.00	-70.14	-70.52	-89.21	-90.41	-89.64	-89.75

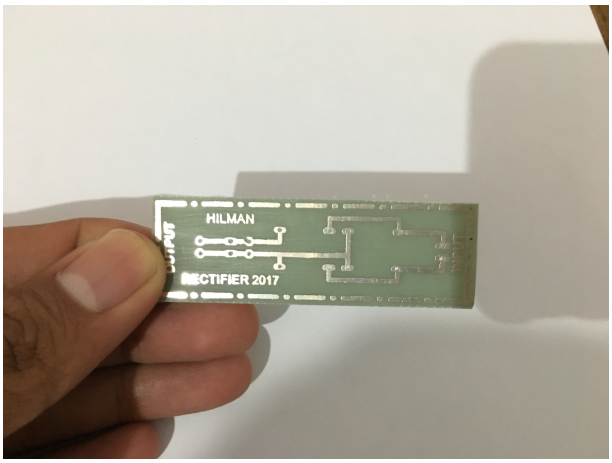
Sumber : Pengukuran (2018)

Lampiran 3. Foto Alat dan Bahan

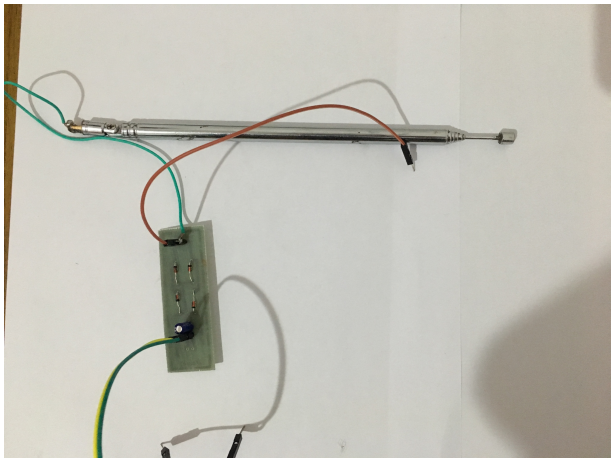


Dioda 1N4148

Gunting



Cetakan *Board Rectifier*

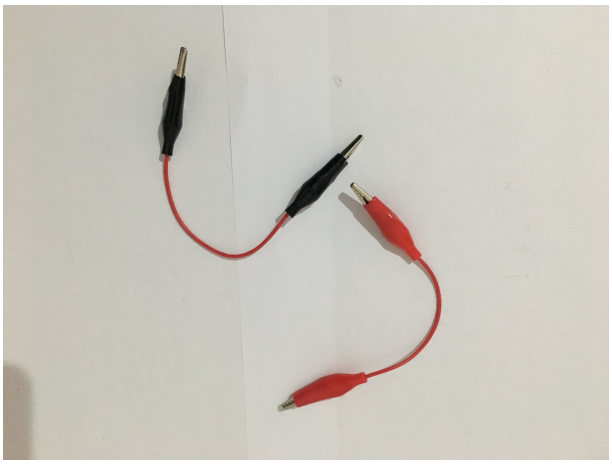


Rectifier Antenna

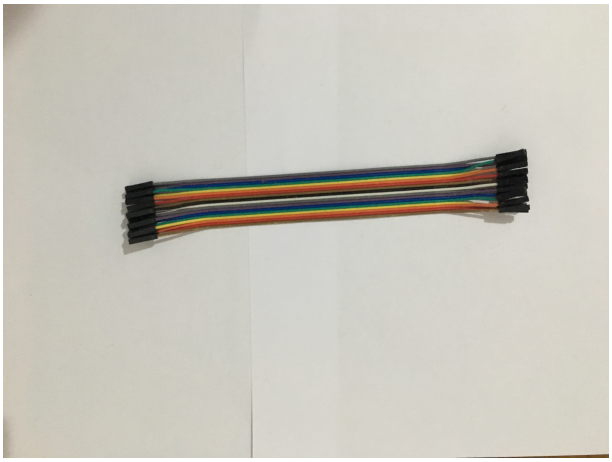
Solder

Timah

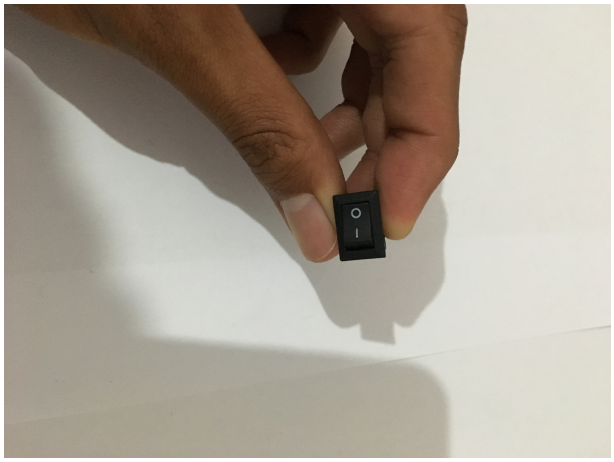
Radio



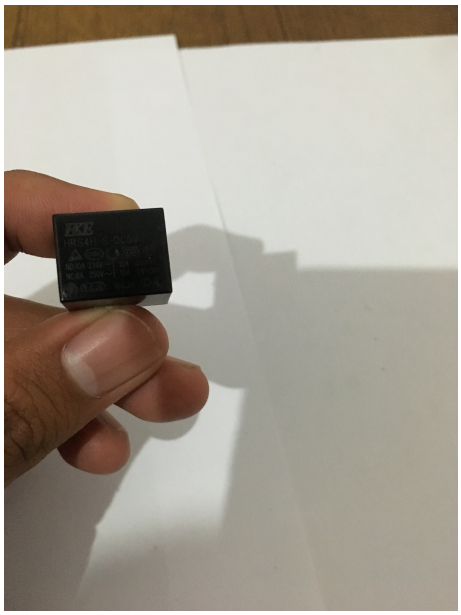
Kabel Capit Buaya



Kabel Jumper



Switch



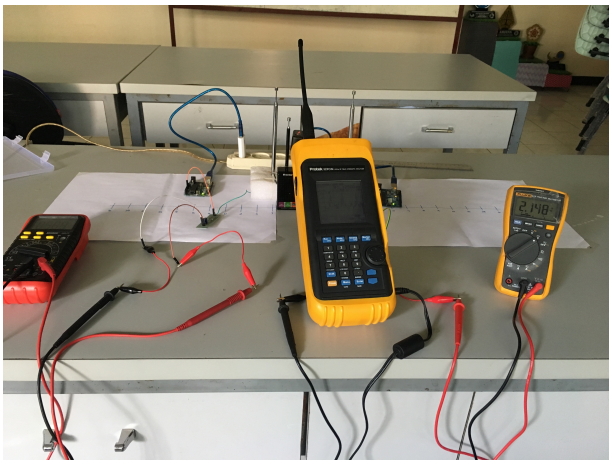
Relay 5V

Multimeter Fluke 117

Field Strength Analyzer

Lampiran 4. Foto Pengukuran

Pengaturan Jarak Radio dengan *Rectenna*



Pengukuran tegangan *rectenna* dan daya yang diterima antena radio dengan menggunakan *field strength analyzer*.

Hasil Pengukuran tegangan keluaran *rectenna*

Lampiran 5. *Datasheet* Komponen *Rectifier*

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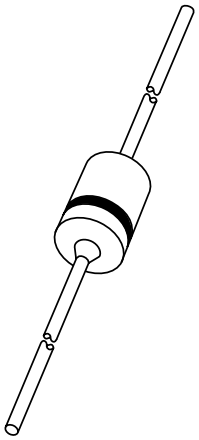
Team Nexperia

DATA SHEET



1N4148; 1N4448
High-speed diodes

Product data sheet
Supersedes data of 2002 Jan 23

2004 Aug 10

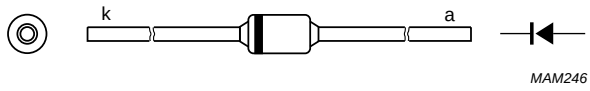
High-speed diodes 1N4148; 1N4448

FEATURES

- Hermetically sealed leaded glass SOD27 (DO-35) package
- High switching speed: max. 4 ns
- General application
- Continuous reverse voltage: max. 100 V
- Repetitive peak reverse voltage: max. 100 V
- Repetitive peak forward current: max. 450 mA.

APPLICATIONS

- High-speed switching.



The diodes are type branded.

Fig.1 Simplified outline (SOD27; DO-35) and symbol.

DESCRIPTION

The 1N4148 and 1N4448 are high-speed switching diodes fabricated in planar technology, and encapsulated in hermetically sealed leaded glass SOD27 (DO-35) packages.

MARKING

TYPE NUMBER	MARKING CODE
1N4148	1N4148PH or 4148PH
1N4448	1N4448

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
1N4148	–	hermetically sealed glass package; axial leaded; 2 leads	SOD27
1N4448			

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{RRM}	repetitive peak reverse voltage		–	100	V
V_R	continuous reverse voltage		–	100	V
I_F	continuous forward current	see Fig.2; note 1	–	200	mA
I_{FRM}	repetitive peak forward current		–	450	mA
I_{FSM}	non-repetitive peak forward current	square wave; T_j = 25 °C prior to surge; see Fig.4			
		t = 1 μs	–	4	A
		t = 1 ms	–	1	A
		t = 1 s	–	0.5	A
P_{tot}	total power dissipation	T_{amb} = 25 °C; note 1	–	500	mW
T_{stg}	storage temperature		−65	+200	°C
T_j	junction temperature		–	200	°C

Note

1. Device mounted on an FR4 printed-circuit board; lead length 10 mm.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_F	forward voltage	see Fig.3			
	1N4148	I_F = 10 mA	–	1	V
	1N4448	I_F = 5 mA	0.62	0.72	V
		I_F = 100 mA	–	1	V
I_R	reverse current	V_R = 20 V; see Fig.5		25	nA
		V_R = 20 V; T_j = 150 °C; see Fig.5	–	50	μA
I_R	reverse current; 1N4448	V_R = 20 V; T_j = 100 °C; see Fig.5	–	3	μA
C_d	diode capacitance	f = 1 MHz; V_R = 0 V; see Fig.6	–	4	pF
t_{rr}	reverse recovery time	when switched from I_F = 10 mA to I_R = 60 mA; R_L = 100 Ω; measured at I_R = 1 mA; see Fig.7	–	4	ns
V_{fr}	forward recovery voltage	when switched from I_F = 50 mA; t_r = 20 ns; see Fig.8	–	2.5	V

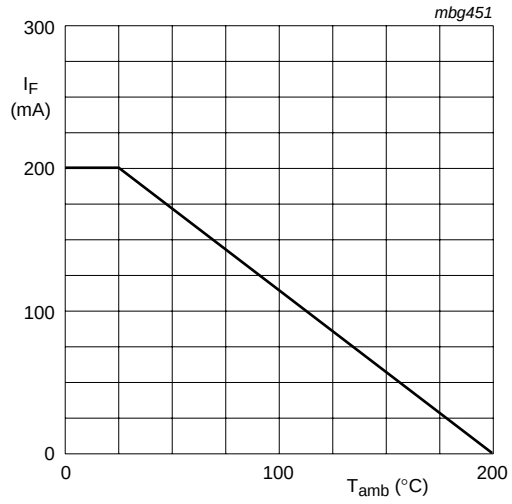
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j\text{-}tp)}$	thermal resistance from junction to tie-point	lead length 10 mm	240	K/W
$R_{th(j\text{-}a)}$	thermal resistance from junction to ambient	lead length 10 mm; note 1	350	K/W

Note

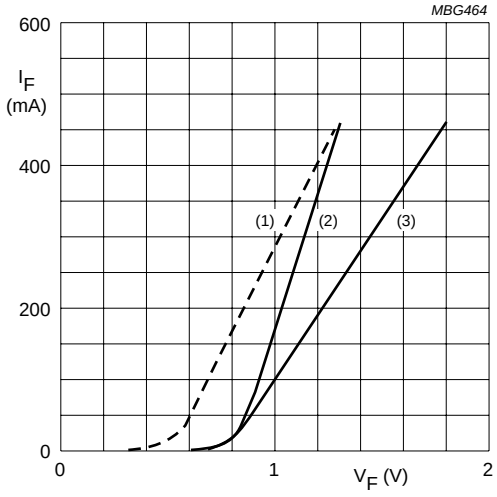
1. Device mounted on a printed-circuit board without metallization pad.

GRAPHICAL DATA



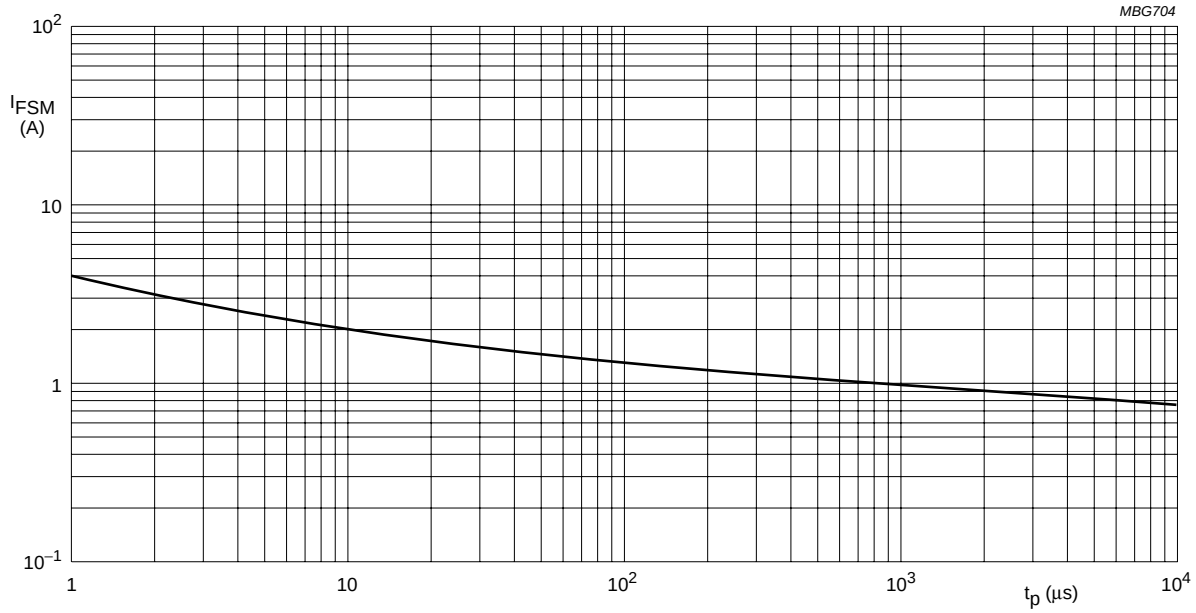
Device mounted on an FR4 printed-circuit board; lead length 10 mm.

Fig.2 Maximum permissible continuous forward current as a function of ambient temperature.



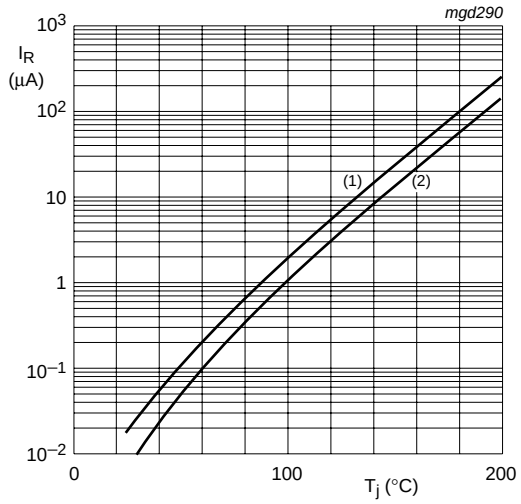
(1) T_j = 175 °C; typical values.
(2) T_j = 25 °C; typical values.
(3) T_j = 25 °C; maximum values.

Fig.3 Forward current as a function of forward voltage.



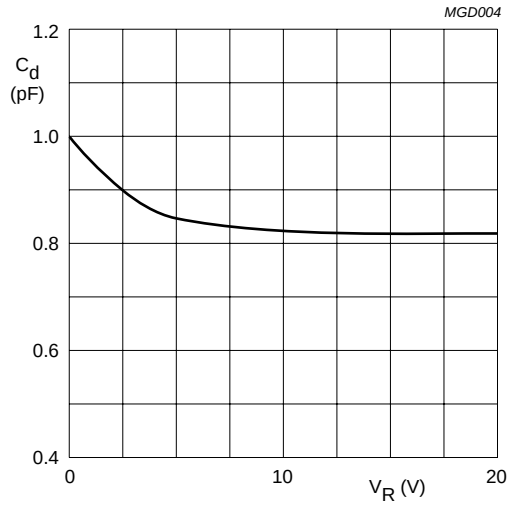
Based on square wave currents.
T_j = 25 °C prior to surge.

Fig.4 Maximum permissible non-repetitive peak forward current as a function of pulse duration.



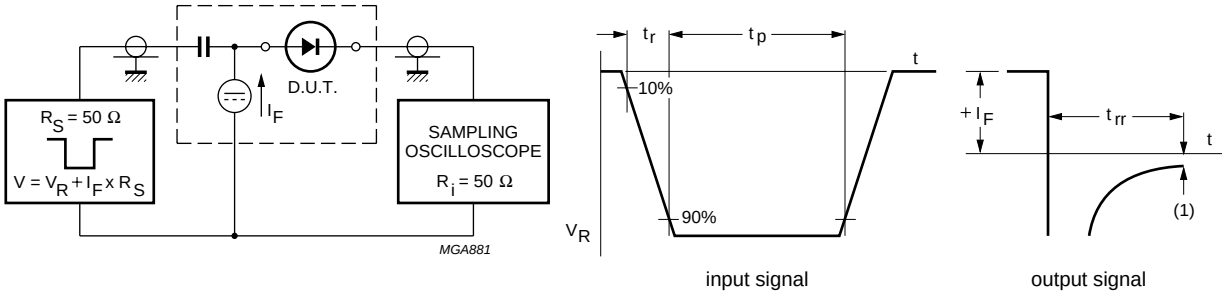
(1) V_R = 75 V; typical values.
(2) V_R = 20 V; typical values.

Fig.5 Reverse current as a function of junction temperature.



f = 1 MHz; T_j = 25 °C.

Fig.6 Diode capacitance as a function of reverse voltage; typical values.



(1) I_R = 1 mA.

Fig.7 Reverse recovery voltage test circuit and waveforms.

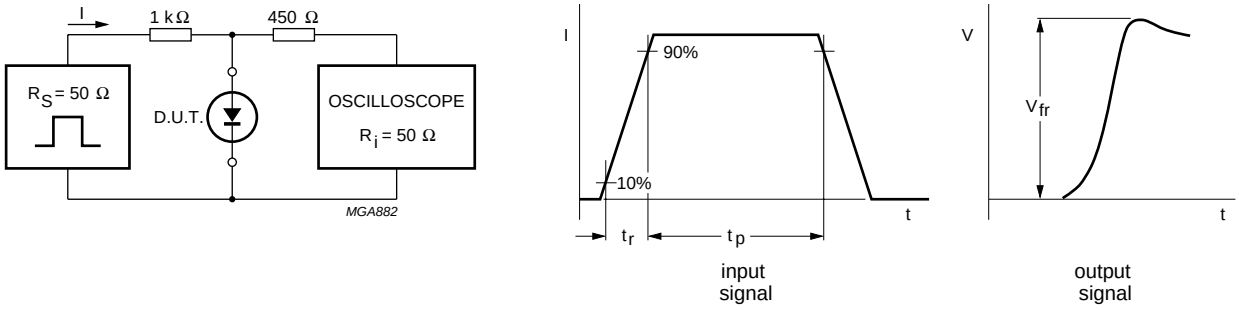
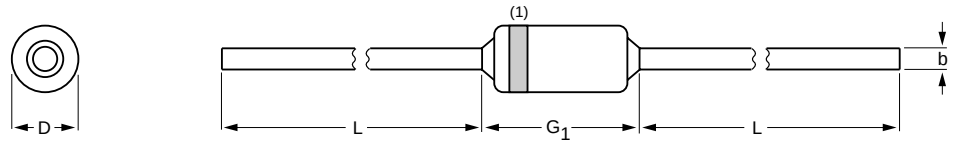


Fig.8 Forward recovery voltage test circuit and waveforms.

PACKAGE OUTLINE

Hermetically sealed glass package; axial leaded; 2 leads **SOD27**



DIMENSIONS (mm are the original dimensions)

UNIT	b max.	D max.	G_1 max.	L min.
mm	0.56	1.85	4.25	25.4

0 1 2 mm
scale

Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD27	A24	DO-35	SC-40			~~97-06-09~~ 05-12-22

DATA SHEET STATUS

DOCUMENT STATUS[1]	PRODUCT STATUS[2]	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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