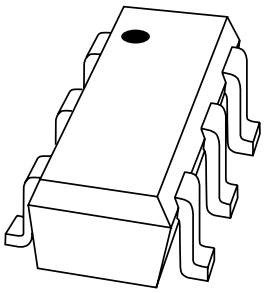
DATA SHEET



BAW56S
High-speed double diode array

Product specification
Supersedes data of 1997 Aug 27
File under Discrete Semiconductors, SC01

1997 Oct 21

Philips
Semiconductors

PHILIPS

High-speed double diode array BAW56S

FEATURES

- Small plastic SMD package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 75 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 450 mA.

APPLICATIONS

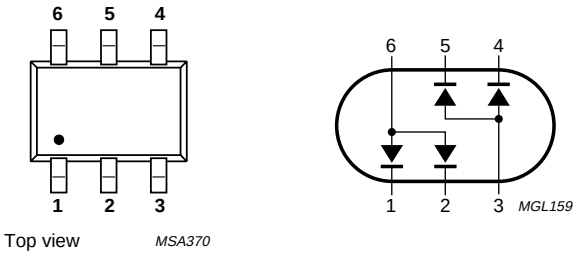
- General purpose switching in e.g. surface mounted circuits.

DESCRIPTION

The BAW56S consists of two dual high-speed switching diodes with common anodes, fabricated in planar technology, and encapsulated in the small SMD SOT363 plastic package.

PINNING

PIN	DESCRIPTION
1	cathode (k1)
2	cathode (k2)
3	common anode (a1)
4	cathode (k3)
5	cathode (k4)
6	common anode (a2)



Marking code: A1t.

Fig.1 Simplified outline (SOT363) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_{RRM}	repetitive peak reverse voltage		–	85	V
V_R	continuous reverse voltage		–	75	V
I_F	continuous forward current	single diode loaded; see Fig.2	–	250	mA
		all diodes loaded; see Fig.2	–	100	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_s = 60 °C; note 1	–	350	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–65	+150	°C

Note

1. One or more diodes loaded.

ELECTRICAL CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
Per diode				
V_F	forward voltage	see Fig.3		
		I_F = 1 mA	715	mV
		I_F = 10 mA	855	mV
		I_F = 50 mA	1	V
		I_F = 150 mA	1.25	V
I_R	reverse current	see Fig.5		
		V_R = 25 V	30	nA
		V_R = 75 V	1	µA
		V_R = 25 V; T_j = 150 °C	30	µA
		V_R = 75 V; T_j = 150 °C	50	µA
C_d	diode capacitance	V_R = 0; f = 1 MHz; see Fig.6	2	pF
t_{rr}	reverse recovery time	when switched from I_F = 10 mA to I_R = 10 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 = 10 mA; t_r = 20 ns; see Fig.8	1.75	V

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	note 1	255	K/W

Note

1. One or more diodes loaded.

GRAPHICAL DATA

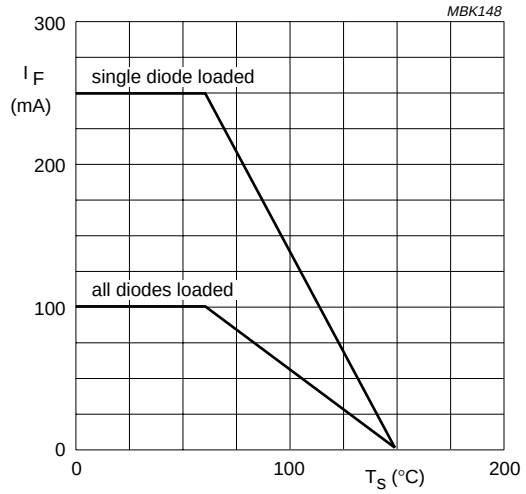
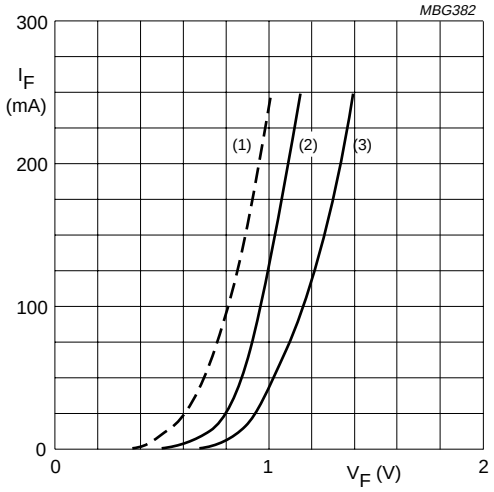
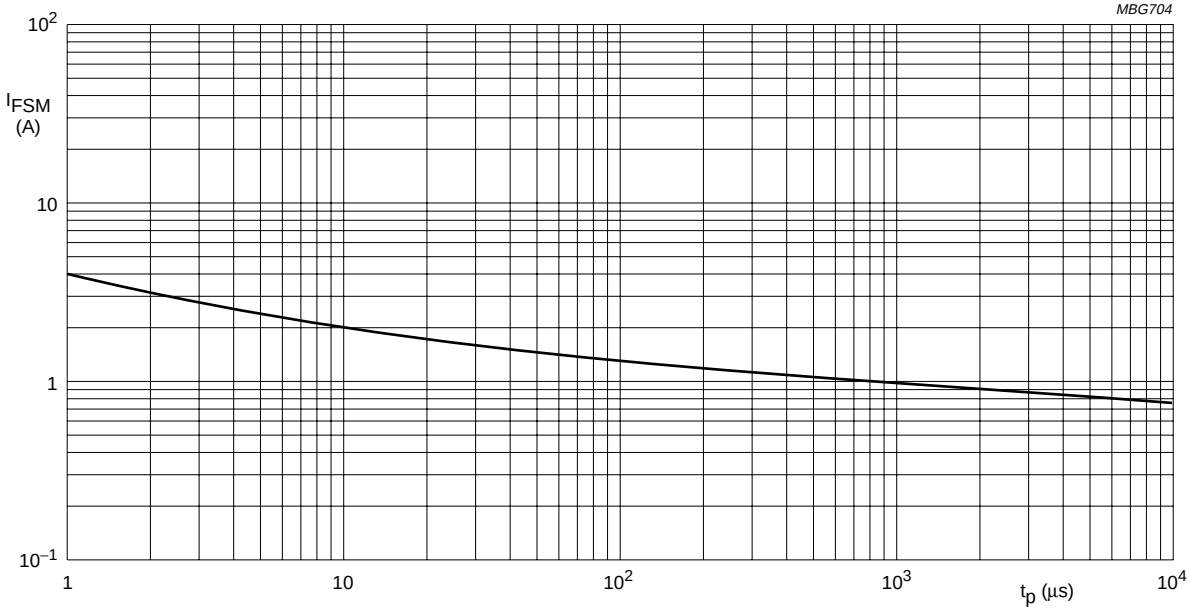


Fig.2 Maximum permissible continuous forward current as a function of soldering point temperature.



(1) T_j = 150 °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.

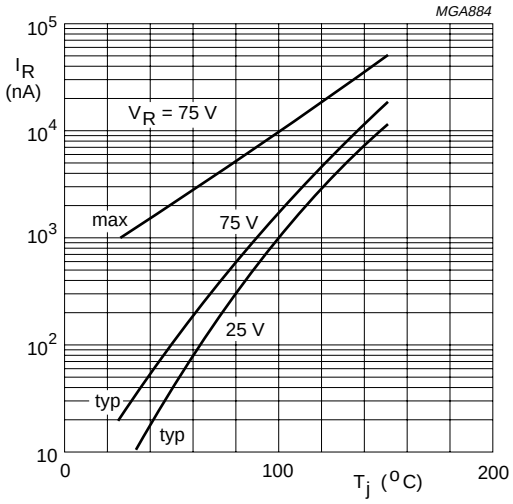
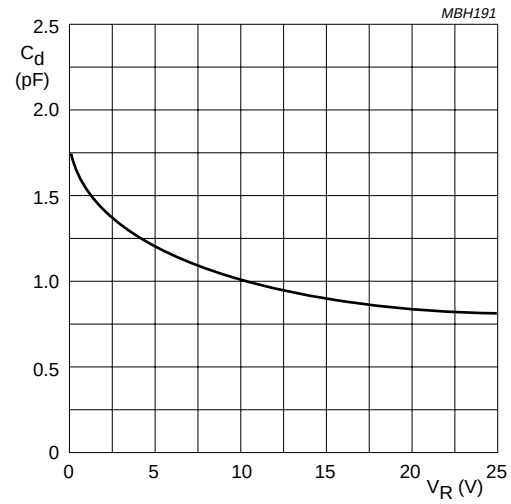
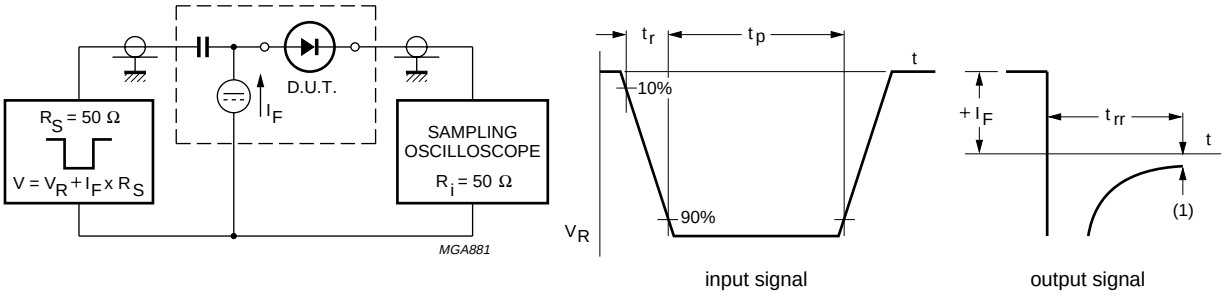


Fig.5 Reverse current as a function of junction temperature.



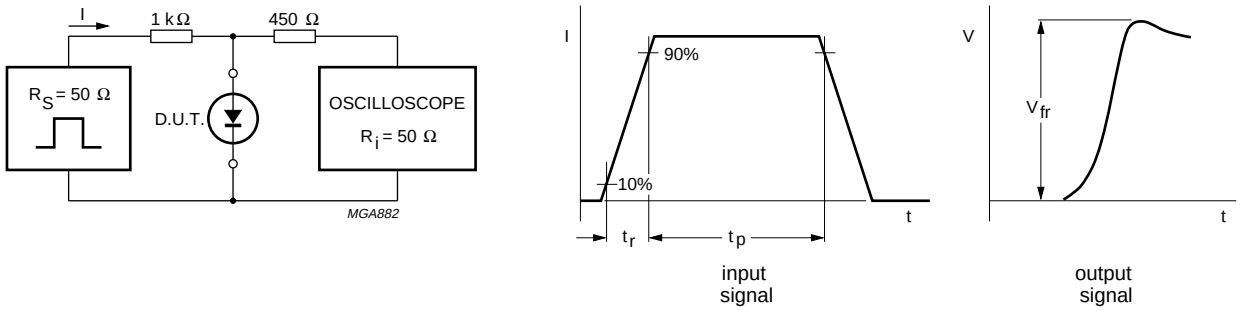
f = 1 MHz; T_j = 25 °C.

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



(1) I_R = 1 mA.
Input signal: reverse pulse rise time t_r = 0.6 ns; reverse voltage pulse duration t_p = 100 ns; duty factor δ = 0.05.
Oscilloscope: rise time t_r = 0.35 ns.

Fig.7 Reverse recovery voltage test circuit and waveforms.

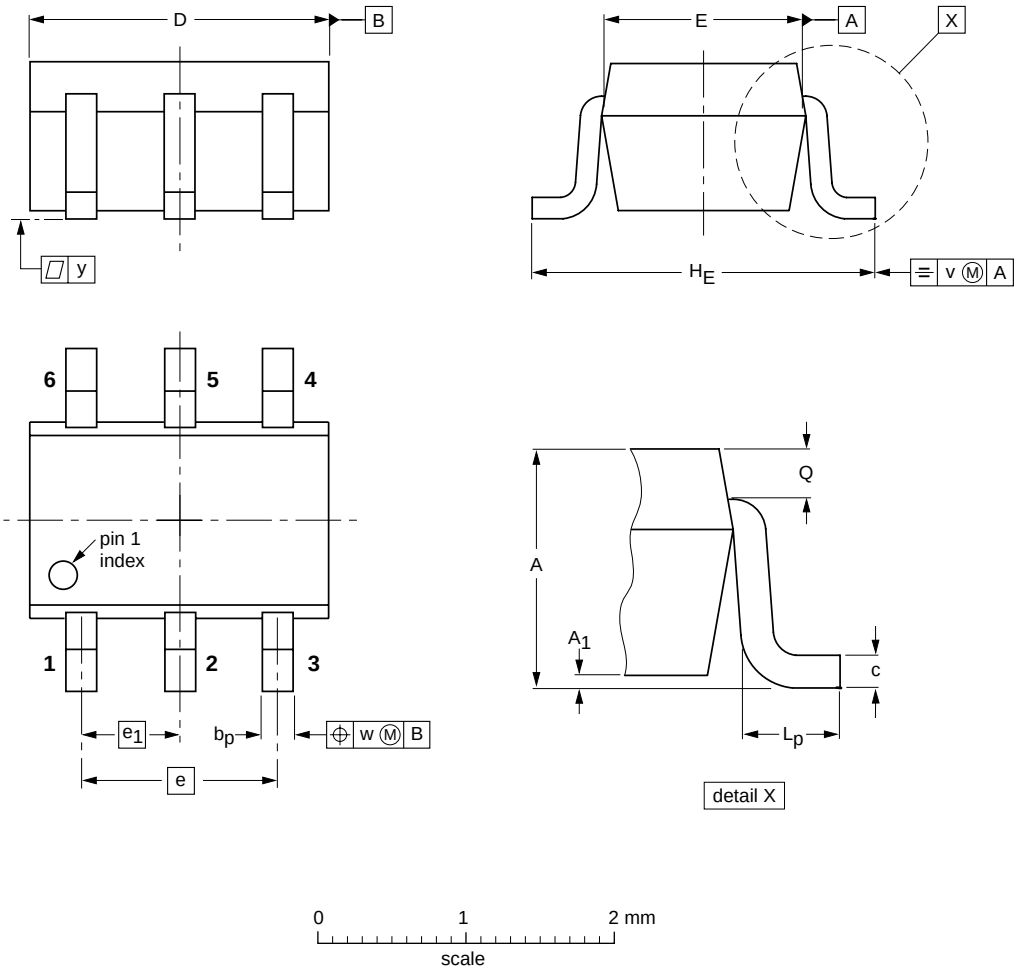


Input signal: forward pulse rise time t_r = 20 ns; forward current pulse duration $t_p \geq$ 100 ns; duty factor δ ≤ 0.005.

Fig.8 Forward recovery voltage test circuit and waveforms.

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads **SOT363**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.1 0.8	0.1	0.30 0.20	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.25 0.15	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT363			SC-88			97-02-28

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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