

High-speed double diode**1PS300****FEATURES**

- Very small plastic SMD package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 80 V
- Repetitive peak reverse voltage: max. 85 V
- Repetitive peak forward current: max. 500 mA.

DESCRIPTION

The 1PS300 consists of two high-speed switching diodes with common anodes, fabricated in planar technology, and encapsulated in the very small rectangular plastic SMD SC70-3 package.

PINNING

PIN	DESCRIPTION
1	cathode (k1)
2	cathode (k2)
3	common anode

APPLICATIONS

- High-speed switching in e.g. surface mounted circuits.

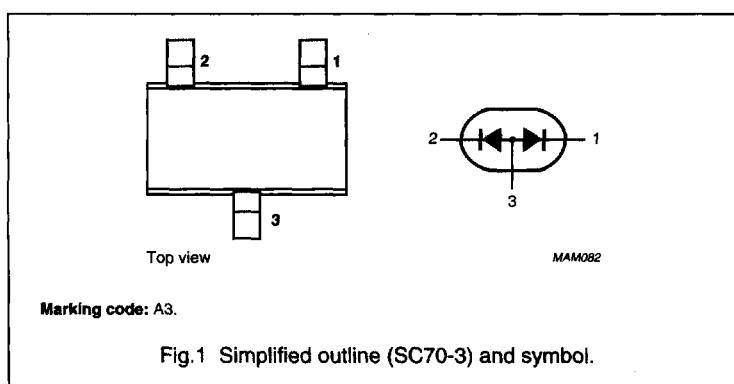


Fig.1 Simplified outline (SC70-3) and symbol.

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		–	80	V
I_F	continuous forward current	single diode loaded; see Fig.2; note 1	–	200	mA
		double diode loaded; see Fig.2; note 1	–	170	mA
I_{FRM}	repetitive peak forward current		–	500	mA
I_{FSM}	non-repetitive peak forward current	square wave; $T_j = 25^\circ\text{C}$ prior to surge $t = 1 \mu\text{s}$	–	4	A
				0.5	A
P_{tot}	total power dissipation	$T_{amb} = 25^\circ\text{C}$; note 1	–	300	mW
T_{stg}	storage temperature		-65	+150	°C
T_j	junction temperature		–	150	°C

Note

1. Device mounted on an FR4 printed-circuit board.

High-speed double diode

1PS300

ELECTRICAL CHARACTERISTICS

 $T_j = 25^\circ\text{C}$; unless otherwise specified.

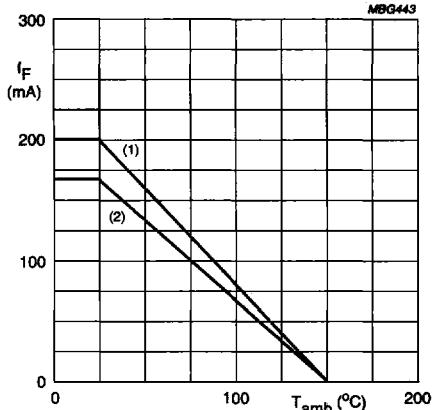
SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
Per diode					
V_F	forward voltage	see Fig.3 $I_F = 1 \text{ mA}$ $I_F = 10 \text{ mA}$ $I_F = 50 \text{ mA}$ $I_F = 100 \text{ mA}$	610 740 — —	— — 1.0 1.2	mV mV V V
I_R	reverse current	see Fig.4 $V_R = 25 \text{ V}$ $V_R = 80 \text{ V}$ $V_R = 25 \text{ V}; T_j = 150^\circ\text{C}$ $V_R = 80 \text{ V}; T_j = 150^\circ\text{C}$	— — — —	30 0.5 30 100	nA μA μA μA
C_d	diode capacitance	$f = 1 \text{ MHz}; V_R = 0$; see Fig.5	—	2	pF
t_{rr}	reverse recovery time	when switched from $I_F = 10 \text{ mA}$ to $I_R = 10 \text{ mA}; R_L = 100 \Omega$; measured at $I_R = 1 \text{ mA}$; see Fig.6	—	4	ns
V_{fr}	forward recovery voltage	when switched from $I_F = 10 \text{ mA}$; $t_r = 20 \text{ ns}$; see Fig.7	—	1.75	V

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th,j-tp}$	thermal resistance from junction to tie-point		200	K/W
$R_{th,j-a}$	thermal resistance from junction to ambient	note 1	415	K/W

Note

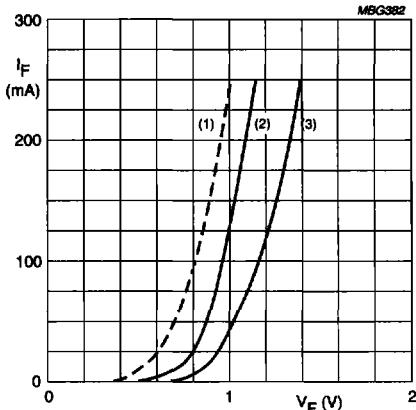
1. Device mounted on an FR4 printed-circuit board.

High-speed double diode**1PS300****GRAPHICAL DATA**

Device mounted on an FR4 printed-circuit board.

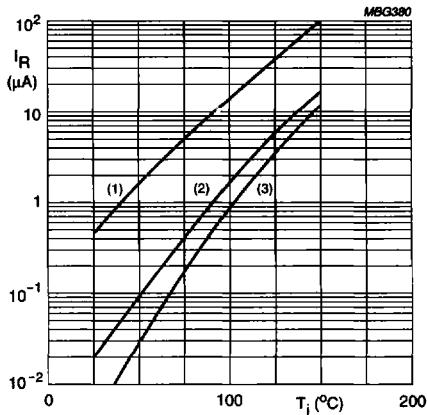
- (1) Single diode loaded.
- (2) Double diode loaded.

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



- (1) $T_j = 150^\circ\text{C}$; typical values.
- (2) $T_j = 25^\circ\text{C}$; typical values.
- (3) $T_j = 25^\circ\text{C}$; maximum values.

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



- (1) $V_R = 80\text{ V}$; maximum values.
- (2) $V_R = 80\text{ V}$; typical values.
- (3) $V_R = 25\text{ V}$; typical values.

Fig.4 Reverse current as a function of junction temperature.

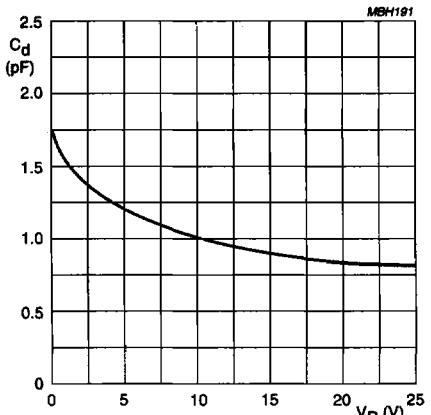
 $f = 1\text{ MHz}; T_j = 25^\circ\text{C}.$

Fig.5 Diode capacitance as a function of reverse voltage; typical values.

High-speed double diode

1PS300

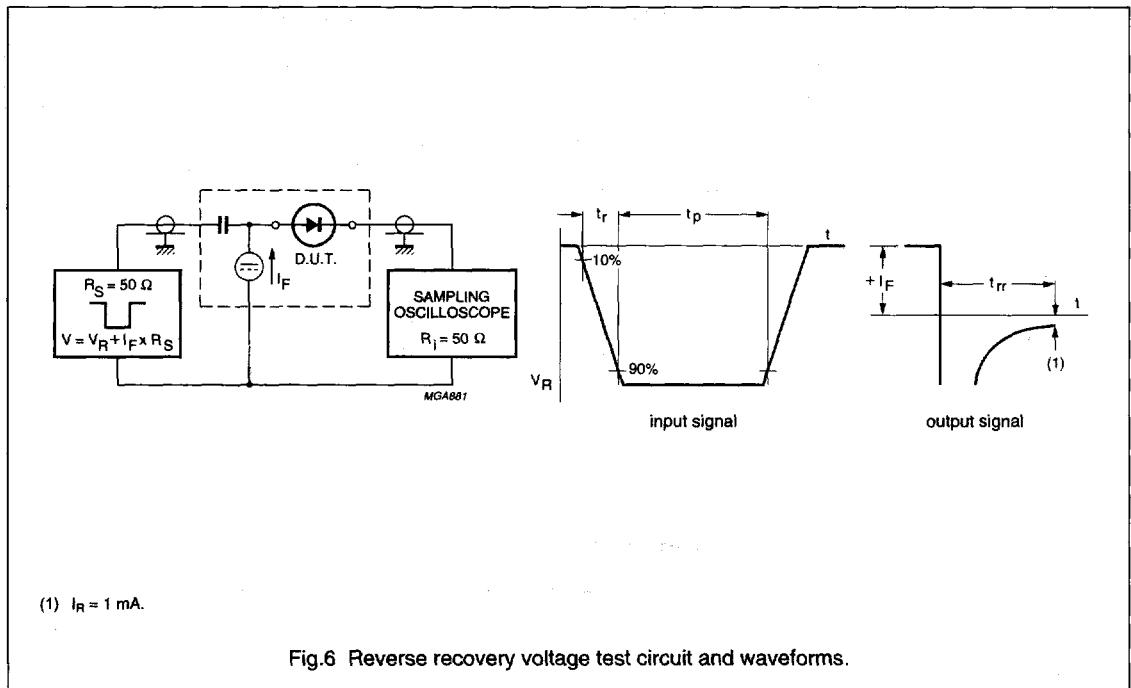


Fig.6 Reverse recovery voltage test circuit and waveforms.

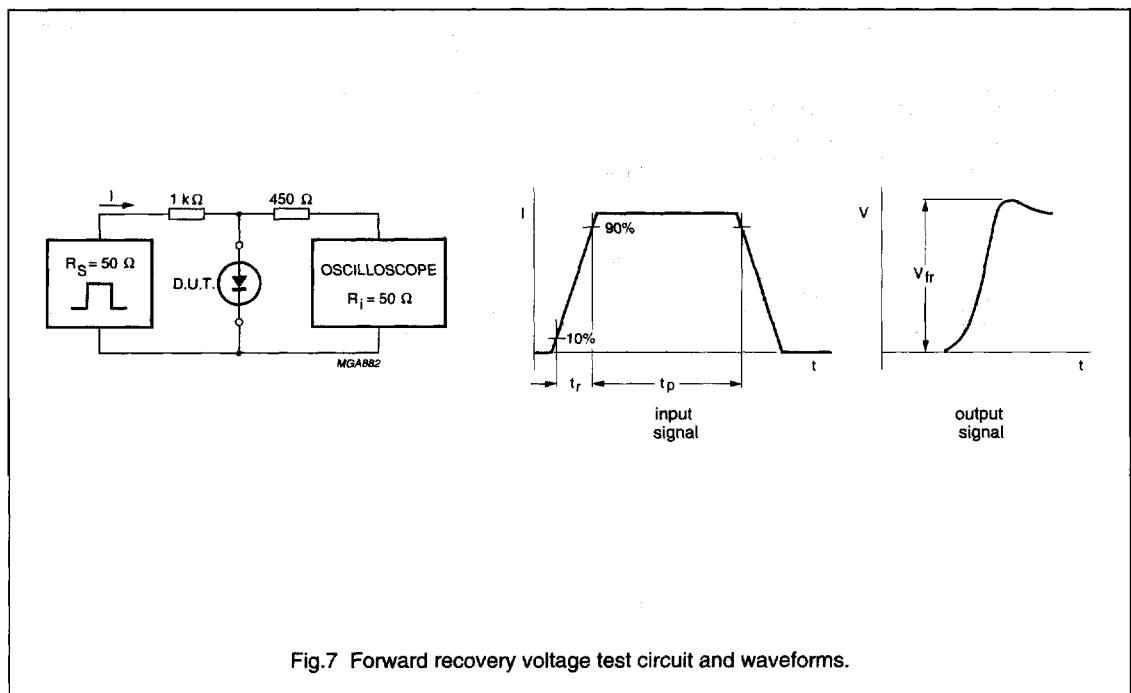


Fig.7 Forward recovery voltage test circuit and waveforms.