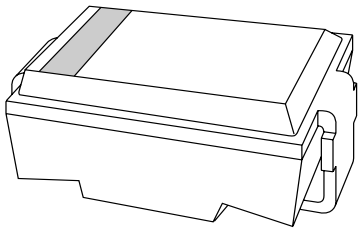
DATA SHEET



PSMA8.5A to PSMA78A
Transient voltage suppressor diodes

Product specification
1999 Jan 26
Supersedes data of 1998 Dec 04

Philips
Semiconductors

PHILIPS

Transient voltage suppressor diodes PSMA8.5A to PSMA78A

FEATURES

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- UL 94V-O classified plastic package
- Transient suppressor stand-off voltage range: 8.5 to 78 V for 26 types
- Supplied in 12 mm embossed tape.

DESCRIPTION

DO-214AC surface mountable package with glass passivated chip.

The well-defined void-free case is of a transfer-moulded thermo-setting plastic.

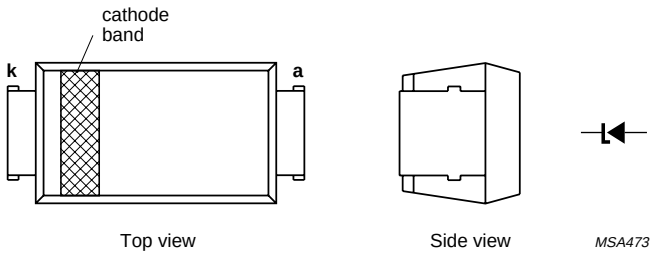


Fig.1 Simplified outline (DO-214AC; SOD106) and symbol.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
P_{RSM}	non-repetitive peak reverse power dissipation	10/1000 μs exponential pulse; T_j = 25 °C prior to surge; see Figs.3 and 5	400	W

ELECTRICAL CHARACTERISTICS

Total series

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_F	forward voltage	I_F = 0.5 A	–	1.2	V
T_{stg}	storage temperature		–65	+175	°C
T_j	junction temperature		–65	+175	°C

Per type

T_j = 25 °C unless otherwise specified.

DEVICE (note 1)	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE		REVERSE VOLTAGE (max) @ I_{RSM} (CLAMPING VOLTAGE)	REVERSE SURGE CURRENT (max)	REVERSE LEAKAGE CURRENT (max) @ V_{RWM}
	V_{RWM} (V)	V_{BR} min. (V)	I_T (mA)	V_{RSM} (V)	I_{RSM} (A)	I_R (μA)
PSMA8.5A	8.5	9.44	1	14.4	27.8	5.0
PSMA9.0A	9.0	10.0	1	15.4	26.0	2.5
PSMA10A	10	11.1	1	17.0	23.5	2.5
PSMA11A	11	12.2	1	18.2	22.0	2.5
PSMA12A	12	13.3	1	19.9	20.1	2.5
PSMA13A	13	14.4	1	21.5	18.6	2.5
PSMA14A	14	15.6	1	23.2	17.2	2.5
PSMA15A	15	16.7	1	24.4	16.4	2.5
PSMA16A	16	17.8	1	26.0	15.4	2.5
PSMA17A	17	18.9	1	27.6	14.5	2.5
PSMA18A	18	20.0	1	29.2	13.7	2.5
PSMA20A	20	22.2	1	32.4	12.3	2.5
PSMA22A	22	24.4	1	35.5	11.3	2.5
PSMA24A	24	26.7	1	38.9	10.3	2.5
PSMA26A	26	28.9	1	42.1	9.5	2.5
PSMA28A	28	31.1	1	45.4	8.8	2.5
PSMA30A	30	33.3	1	48.4	8.3	2.5
PSMA33A	33	36.7	1	53.3	7.5	2.5

DEVICE (note 1)	REVERSE STAND-OFF VOLTAGE	BREAKDOWN VOLTAGE		REVERSE VOLTAGE (max) @ I_{RSM} (CLAMPING VOLTAGE)	REVERSE SURGE CURRENT (max)	REVERSE LEAKAGE CURRENT (max) @ V_{RWM}
	V_{RWM} (V)	V_{BR} min. (V)	I_T (mA)	V_{RSM} (V)	I_{RSM} (A)	I_R (μA)
PSMA36A	36	40.0	1	58.1	6.9	2.5
PSMA40A	40	44.4	1	64.5	6.2	2.5
PSMA43A	43	47.8	1	69.4	5.8	2.5
PSMA45A	45	50.0	1	72.2	5.5	2.5
PSMA48A	48	53.3	1	77.4	5.2	2.5
PSMA51A	51	56.7	1	82.4	4.9	2.5
PSMA54A	54	60.0	1	87.1	4.6	2.5
PSMA58A	58	64.4	1	93.6	4.3	2.5
PSMA60A	60	66.7	1	96.8	4.1	2.5
PSMA64A	64	71.1	1	103.0	3.9	2.5
PSMA70A	70	77.8	1	113.0	3.5	2.5
PSMA75A	75	83.3	1	121.0	3.3	2.5
PSMA78A	78	86.7	1	126.0	3.2	2.5

Note

1. Tolerance and Voltage Designation: Tolerance designation - The type number listed indicates a tolerance of ±.5%

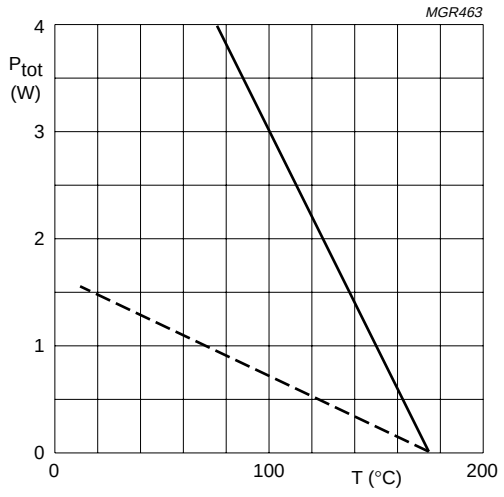
THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}tp}$	thermal resistance from junction to tie-point		25	K/W
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	100	K/W
		note 2	150	K/W

Notes

1. Device mounted on an Al_2O_3 printed-circuit board, 0.7 mm thick; thickness of Cu-layer ≥35 μm, see Fig.4.
2. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer ≥40 μm, see Fig.4.
   For more information please refer to the *'General part of the associated handbook'*.

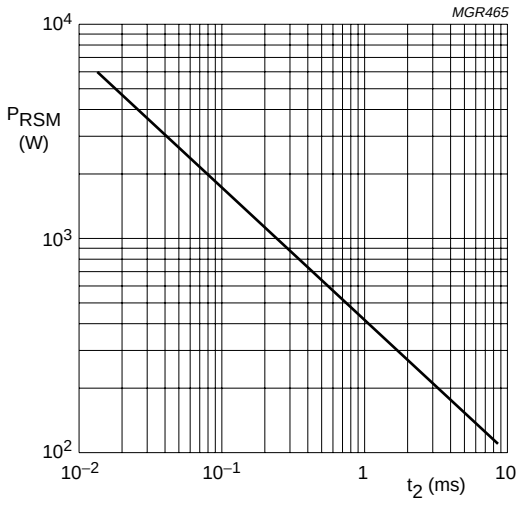
GRAPHICAL DATA



Solid line: tie-point temperature.

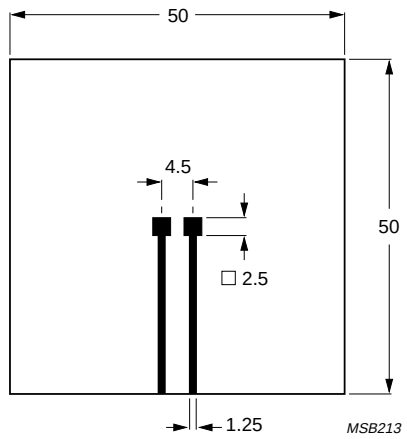
Dotted line: ambient temperature; device mounted on an Al_2O_3 printed-circuit board as shown in Fig.4.

Fig.2 Maximum total power dissipation as a function of temperature.



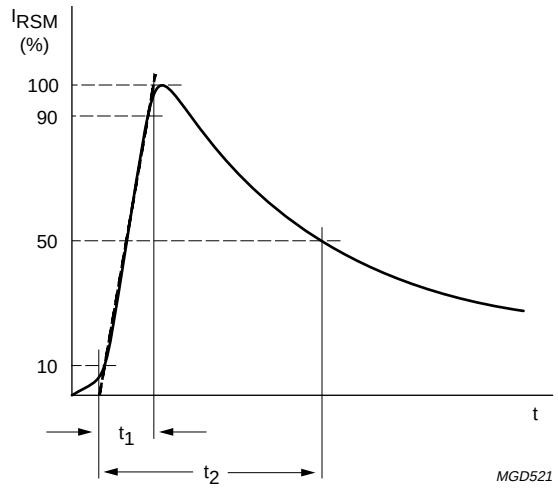
T_j = 25 °C prior to surge.

Fig.3 Maximum non-repetitive peak reverse power dissipation as a function of pulse duration (exponential pulse).



Dimensions in mm.

Fig.4 Printed-circuit board for surface mounting.



In accordance with *"IEC 60-1, Section 8"*.

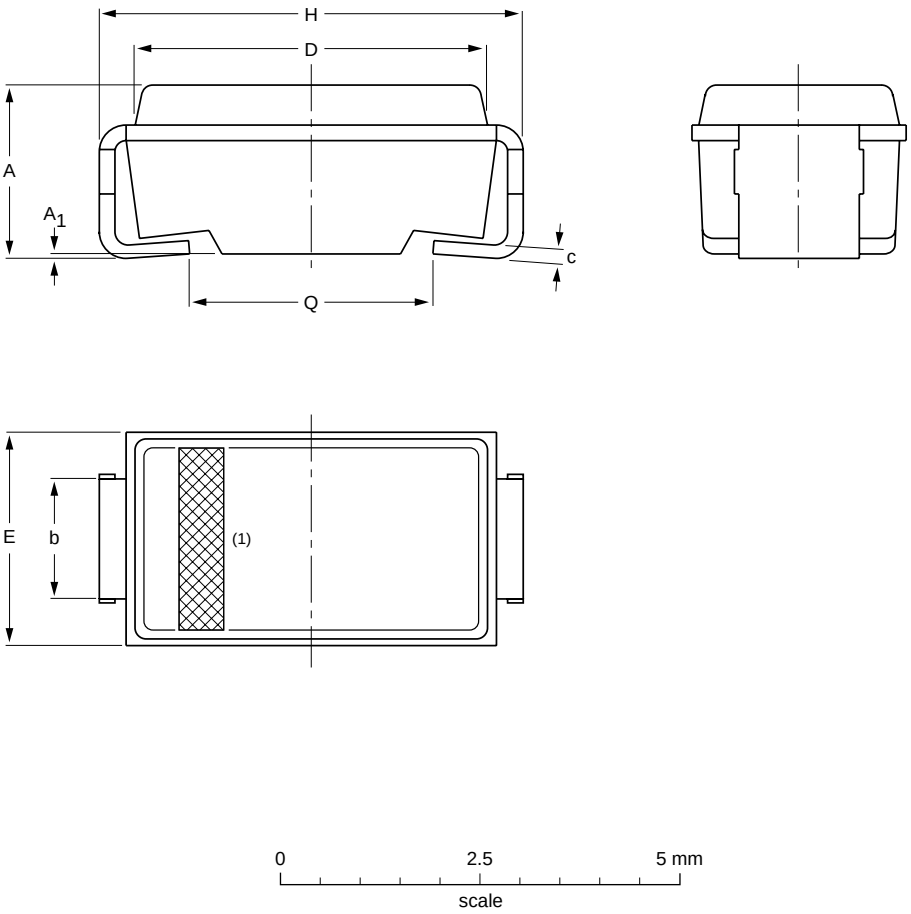
t_1 = 10 µs.

t_2 = 1000 µs.

Fig.5 Non-repetitive peak reverse current pulse definition.

PACKAGE OUTLINE

Transfer-moulded thermo-setting plastic small rectangular surface mounted package; 2 connectors **SOD106**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1	b	c	D	E	H	Q
mm	2.3 2.0	0.05	1.6 1.4	0.2	4.5 4.3	2.8 2.4	5.5 5.1	3.3 2.7

Note

1. The marking band indicates the cathode.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOD106		DO-214AC				97-06-09

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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