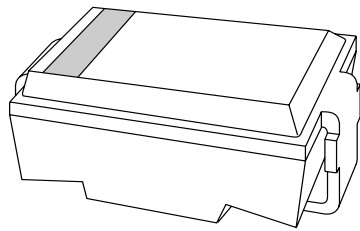


# DATA SHEET



## **PSMA8.5A to PSMA78A** Transient voltage suppressor diodes

Product specification  
Supersedes data of 1998 Dec 04

1999 Jan 26

**Transient voltage suppressor diodes**

**PSMA8.5A to PSMA78A**

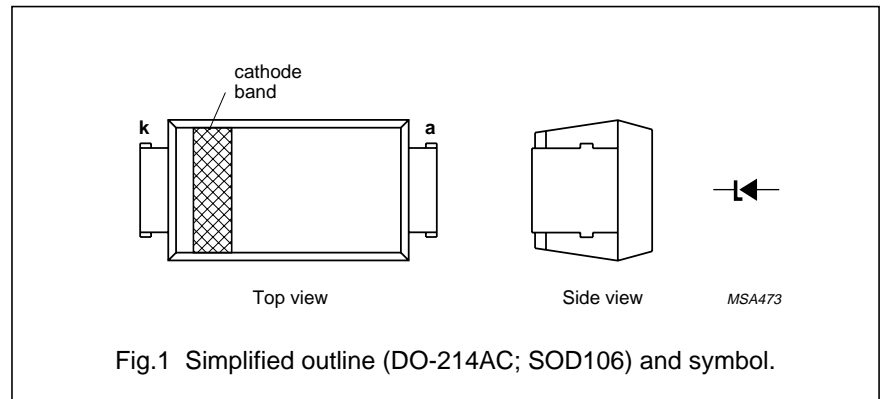
**FEATURES**

- 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.



**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 $\mu$ s exponential pulse;<br>$T_j = 25\text{ }^\circ\text{C}$ prior to surge;<br>see Figs.3 and 5 | 400   | W    |

## Transient voltage suppressor diodes

## PSMA8.5A to PSMA78A

## ELECTRICAL CHARACTERISTICS

## Total series

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

| SYMBOL           | PARAMETER            | CONDITIONS           | MIN. | MAX. | UNIT             |
|------------------|----------------------|----------------------|------|------|------------------|
| $V_F$            | forward voltage      | $I_F = 0.5\text{ A}$ | –    | 1.2  | V                |
| $T_{\text{stg}}$ | storage temperature  |                      | –65  | +175 | $^\circ\text{C}$ |
| $T_j$            | junction temperature |                      | –65  | +175 | $^\circ\text{C}$ |

## Per type

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

| DEVICE<br>(note 1) | REVERSE<br>STAND-OFF<br>VOLTAGE | BREAKDOWN<br>VOLTAGE           |                        | REVERSE<br>VOLTAGE<br>(max)<br>@ $I_{\text{RSM}}$<br>(CLAMPING<br>VOLTAGE) | REVERSE<br>SURGE<br>CURRENT<br>(max) | REVERSE<br>LEAKAGE<br>CURRENT<br>(max)<br>@ $V_{\text{RWM}}$ |
|--------------------|---------------------------------|--------------------------------|------------------------|----------------------------------------------------------------------------|--------------------------------------|--------------------------------------------------------------|
|                    | $V_{\text{RWM}}$<br>(V)         | $V_{\text{BR}}$<br>min.<br>(V) | $I_{\text{T}}$<br>(mA) | $V_{\text{RSM}}$<br>(V)                                                    | $I_{\text{RSM}}$<br>(A)              | $I_{\text{R}}$<br>( $\mu\text{A}$ )                          |
| 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                                                          |

## Transient voltage suppressor diodes

## PSMA8.5A to PSMA78A

| DEVICE<br>(note 1) | REVERSE<br>STAND-OFF<br>VOLTAGE | BREAKDOWN<br>VOLTAGE    |               | REVERSE<br>VOLTAGE<br>(max)<br>@ $I_{RSM}$<br>(CLAMPING<br>VOLTAGE) | REVERSE<br>SURGE<br>CURRENT<br>(max) | REVERSE<br>LEAKAGE<br>CURRENT<br>(max)<br>@ $V_{RWM}$ |
|--------------------|---------------------------------|-------------------------|---------------|---------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------|
|                    | $V_{RWM}$<br>(V)                | $V_{BR}$<br>min.<br>(V) | $I_T$<br>(mA) | $V_{RSM}$<br>(V)                                                    | $I_{RSM}$<br>(A)                     | $I_R$<br>( $\mu$ A)                                   |
| 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  $\pm 5\%$

**THERMAL CHARACTERISTICS**

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

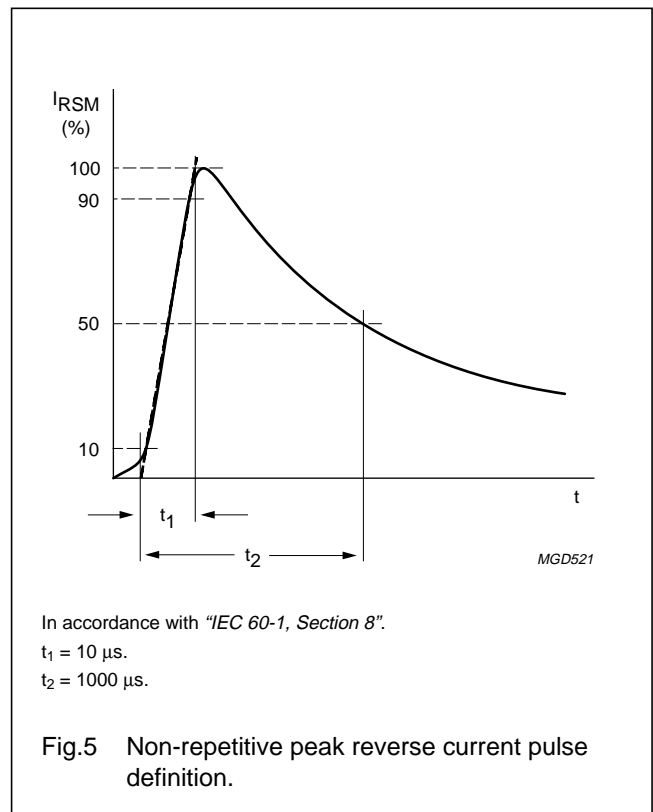
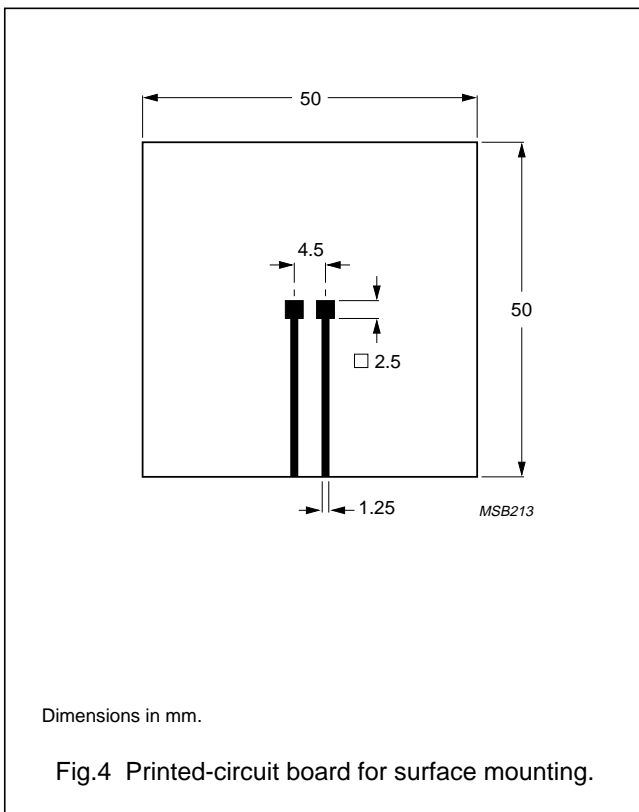
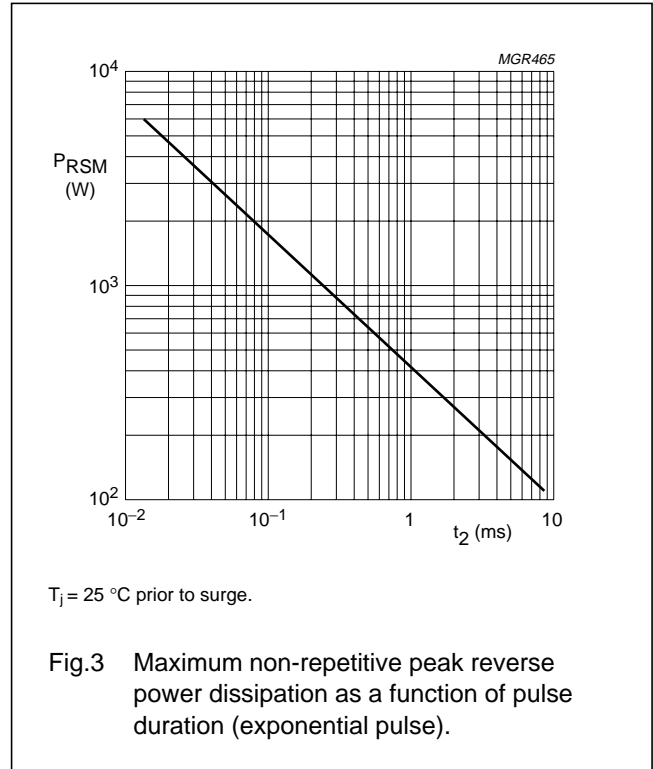
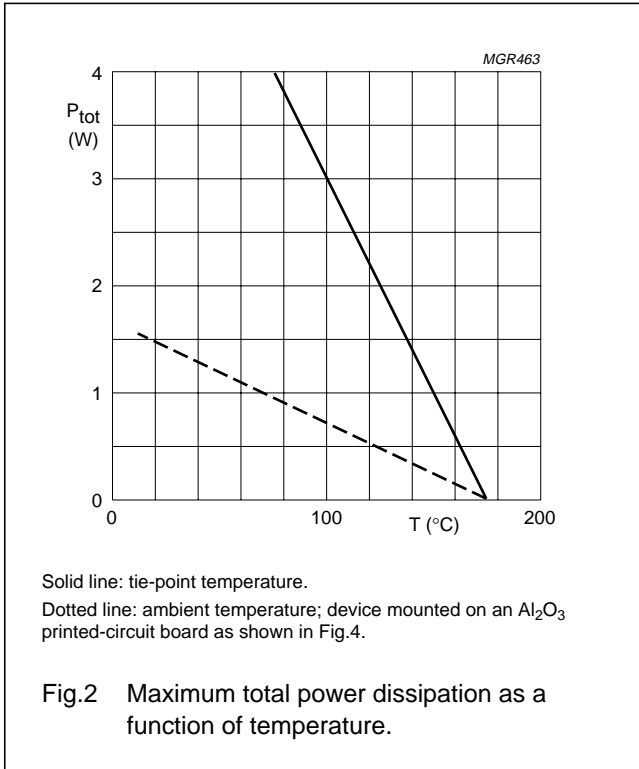
**Notes**

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

Transient voltage suppressor diodes

PSMA8.5A to PSMA78A

GRAPHICAL DATA



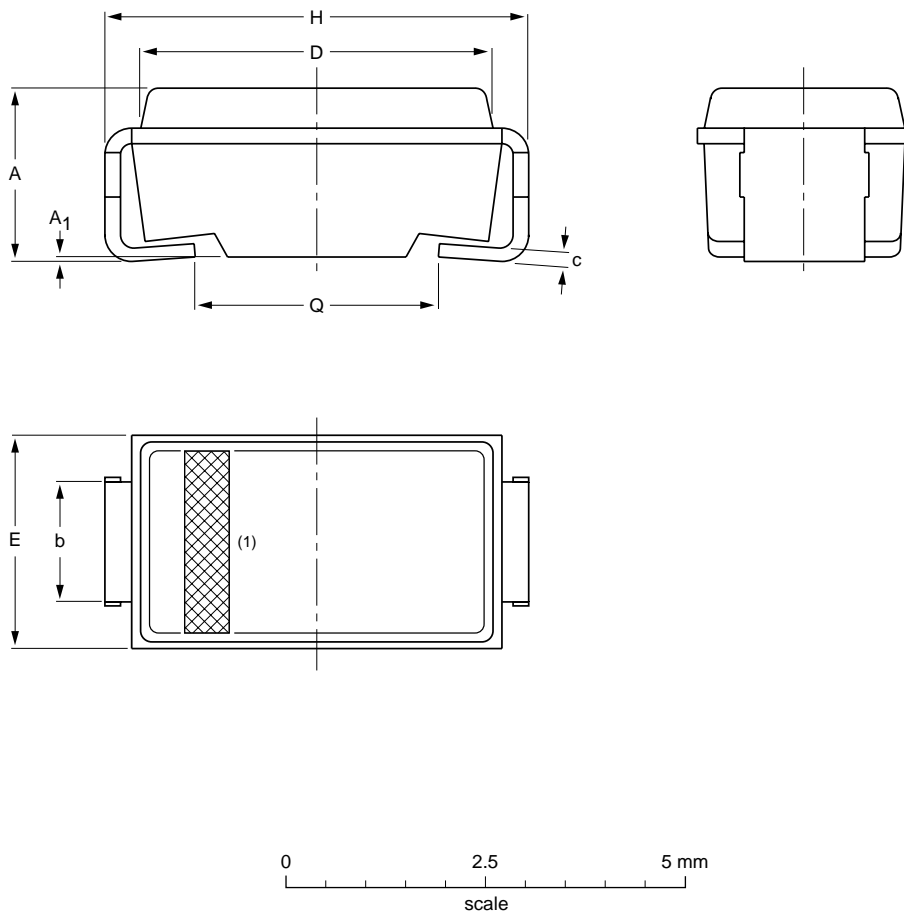
Transient voltage suppressor diodes

PSMA8.5A to PSMA78A

PACKAGE OUTLINE

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

SOD106



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub> | b          | c   | D          | E          | H          | Q          |
|------|------------|----------------|------------|-----|------------|------------|------------|------------|
| mm   | 2.3<br>2.0 | 0.05           | 1.6<br>1.4 | 0.2 | 4.5<br>4.3 | 2.8<br>2.4 | 5.5<br>5.1 | 3.3<br>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   |

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 Transient voltage suppressor diodes

## PSMA8.5A to PSMA78A

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**DEFINITIONS**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Data sheet status</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                       |
| 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.                                |
| <b>Limiting values</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       |
| 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. |                                                                                       |
| <b>Application information</b>                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       |
| Where application information is given, it is advisory and does not form part of the specification.                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |

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