

Silicon Diode

BY278

1.65kV/5A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

Damper diode**BY278****FEATURES**

- Glass passivated
- High maximum operating temperature
- Low leakage current
- Excellent stability
- Available in ammo-pack
- Also available with preformed leads for easy insertion.

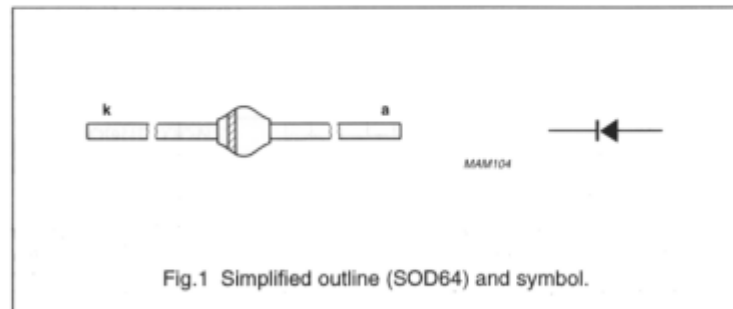
APPLICATIONS

- Damper diode in high frequency horizontal deflection circuits up to 16 kHz.

DESCRIPTION

Rugged glass package, using a high temperature alloyed construction.

This package is hermetically sealed and fatigue free as coefficients of expansion of all used parts are matched.

**LIMITING VALUES**

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|-------------------------------------|---|------|------|------|
| V_{RSM} | non-repetitive peak reverse voltage | | – | 1700 | V |
| V_{RRM} | repetitive peak reverse voltage | | – | 1700 | V |
| V_R | continuous reverse voltage | | – | 1650 | V |
| I_{FWM} | working peak forward current | $T_{amb} = 75\text{ °C}$; PCB mounting (see Fig.4); see Fig.2 | – | 5 | A |
| I_{FRM} | repetitive peak forward current | | – | 10 | A |
| I_{FSM} | non-repetitive peak forward current | $t = 10\text{ ms}$ half sinewave; $T_j = T_{j,max}$ prior to surge; $V_R = V_{RRM,max}$ | – | 50 | A |
| T_{stg} | storage temperature | | –65 | +175 | °C |
| T_j | junction temperature | | –65 | +150 | °C |

ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MAX. | UNIT |
|----------|-----------------------|--|------|---------------|
| V_F | forward voltage | $I_F = 5\text{ A}$; $T_j = T_{j,max}$; see Fig.3 | 1.4 | V |
| | | $I_F = 5\text{ A}$; see Fig.3 | 1.5 | V |
| I_R | reverse current | $V_R = V_{R,max}$; $T_j = 150\text{ °C}$ | 150 | μA |
| t_{rr} | reverse recovery time | when switched from $I_F = 0.5\text{ A}$ to $I_R = 1\text{ A}$; measured at $I_R = 0.25\text{ A}$; see Fig.6 | 1 | μs |
| t_{fr} | forward recovery time | when switched to $I_F = 5\text{ A}$ in 50 ns; $T_j = T_{j,max}$; Fig.7 | 1 | μs |

Damper diode**BY278**

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|----------------|---|---------------------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point | lead length = 10 mm | 25 | K/W |
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 75 | K/W |
| | | mounted as shown in Fig.5 | 40 | K/W |

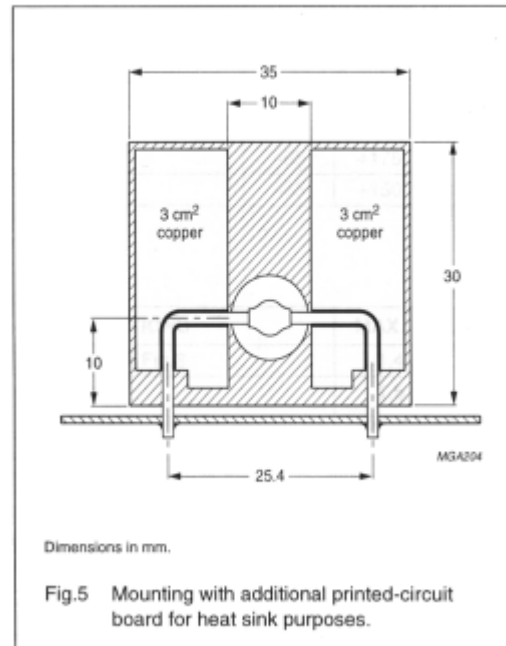
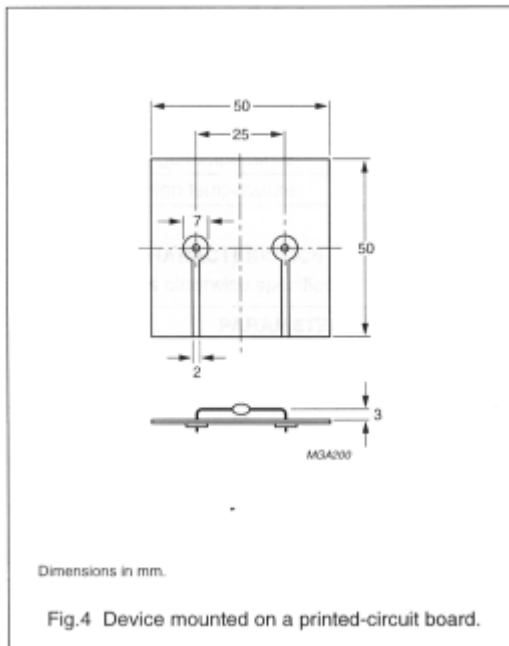
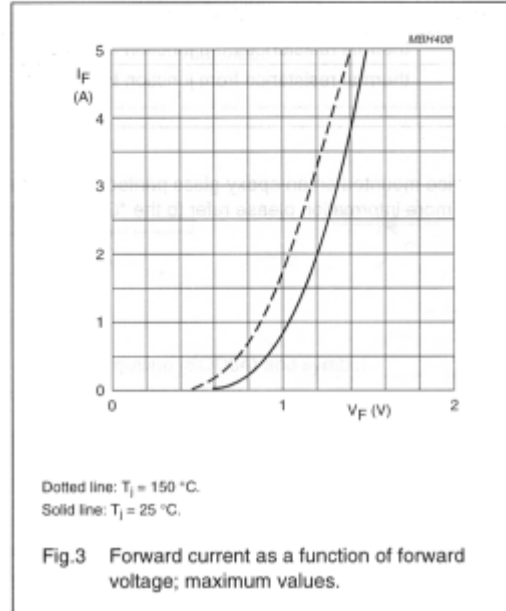
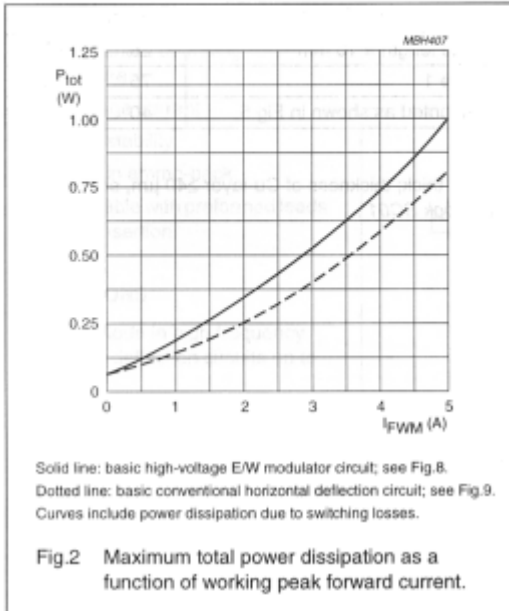
Note

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer $\geq 40\ \mu\text{m}$, see Fig.4.
For more information please refer to the "General Part of Handbook SC01".

Damper diode

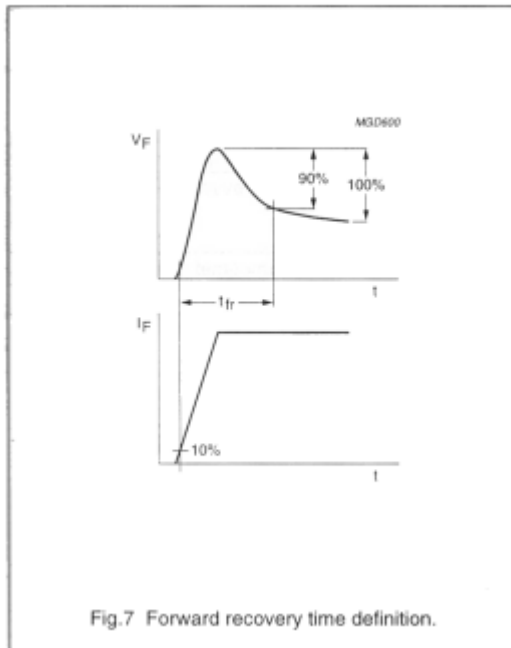
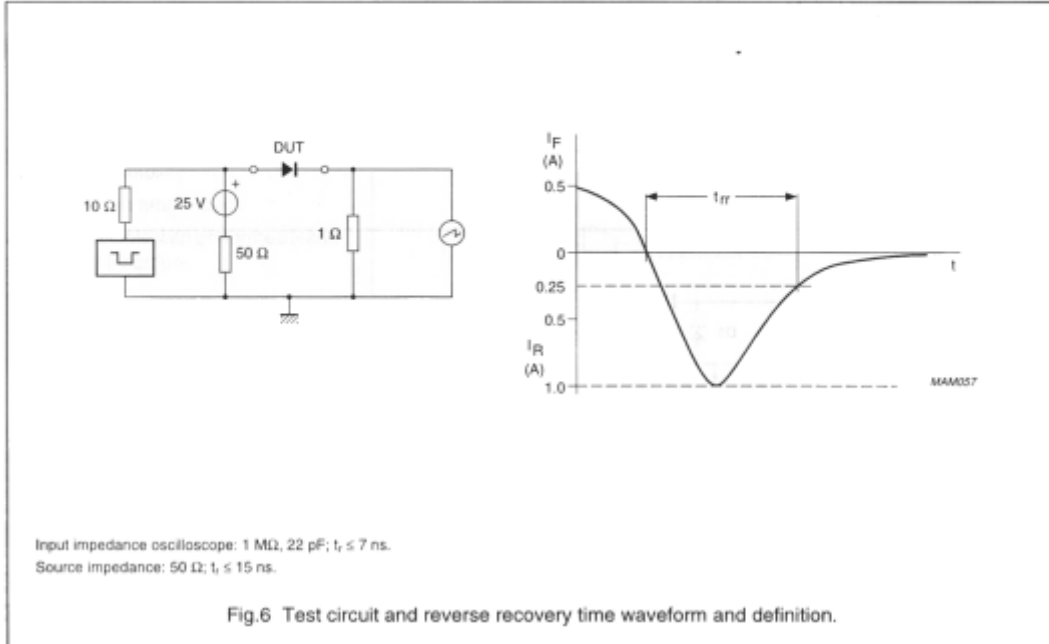
BY278

GRAPHICAL DATA



Damper diode

BY278



Damper diode

BY278

APPLICATION INFORMATION

For horizontal deflection circuits, two basic applications are shown in Figs 8 and 9.

The maximum allowable total power dissipation for the diode can be calculated from the thermal resistance $R_{th\ j-a}$ and the difference between $T_{j\ max}$ and $T_{amb\ max}$ in the application. The maximum I_{FWM} can then be taken from Fig.2.

The basic application waveforms in Fig.10 relate to the circuit in Fig.8. In the circuit in Fig.9 the forward conduction time of the diode is shorter, allowing a higher I_{FWM} (see Fig.2).

