

Silicon Diode

BYM36F

1200V/2.9A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

Fast soft-recovery controlled avalanche rectifiers

BYM36 series

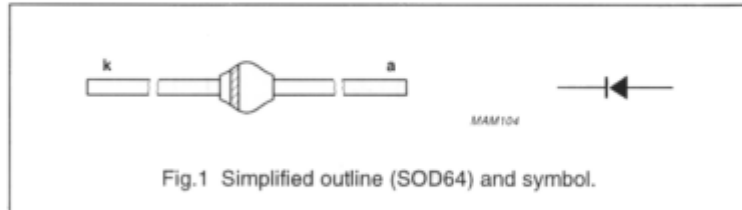
FEATURES

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

DESCRIPTION

Rugged glass SOD64 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_{RRM} | repetitive peak reverse voltage | | | | |
| | BYM36A | | – | 200 | V |
| | BYM36B | | – | 400 | V |
| | BYM36C | | – | 600 | V |
| | BYM36D | | – | 800 | V |
| | BYM36E | | – | 1000 | V |
| | BYM36F | | – | 1200 | V |
| | BYM36G | | – | 1400 | V |
| V_R | continuous reverse voltage | | | | |
| | BYM36A | | – | 200 | V |
| | BYM36B | | – | 400 | V |
| | BYM36C | | – | 600 | V |
| | BYM36D | | – | 800 | V |
| | BYM36E | | – | 1000 | V |
| | BYM36F | | – | 1200 | V |
| | BYM36G | | – | 1400 | V |
| $I_{F(AV)}$ | average forward current | | | | |
| | BYM36A to C | $T_{ip} = 55\text{ °C}$; lead length = 10 mm; see Figs 2; 3 and 4 | – | 3.0 | A |
| | BYM36D and E | averaged over any 20 ms period; see also Figs 14; 15 and 16 | – | 2.9 | A |
| | BYM36F and G | | – | 2.9 | A |
| $I_{F(AV)}$ | average forward current | | | | |
| | BYM36A to C | $T_{amb} = 65\text{ °C}$; PCB mounting (see Fig.25); see Figs 5; 6 and 7 | – | 1.25 | A |
| | BYM36D and E | averaged over any 20 ms period; see also Figs 14; 15 and 16 | – | 1.20 | A |
| | BYM36F and G | | – | 1.15 | A |

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| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|--|---|------|------|------|
| I_{FRM} | repetitive peak forward current | $T_{tp} = 55\text{ °C}$; see Figs 8; 9 and 10 | | | |
| | BYM36A to C | | – | 37 | A |
| | BYM36D and E | | – | 33 | A |
| I_{FRM} | repetitive peak forward current | $T_{amb} = 65\text{ °C}$; see Figs 11; 12 and 13 | | | |
| | BYM36A to C | | – | 13 | A |
| | BYM36D and E | | – | 11 | A |
| I_{FSM} | non-repetitive peak forward current | $t = 10\text{ ms}$ half sine wave; $T_j = T_{j\max}$ prior to surge; $V_R = V_{RRM\max}$ | – | 65 | A |
| | BYM36F and G | | – | 10 | A |
| E_{RSM} | non-repetitive peak reverse avalanche energy | $L = 120\text{ mH}$; $T_j = T_{j\max}$ prior to surge; inductive load switched off | – | 10 | mJ |
| T_{stg} | storage temperature | | –65 | +175 | °C |
| T_j | junction temperature | see Figs 17 and 18 | –65 | +175 | °C |

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------|-------------------------------------|--|------|------|------|---------------|
| V_F | forward voltage | $I_F = 3\text{ A}$; $T_j = T_{j\max}$; see Figs 19; 20 and 21 | – | – | 1.22 | V |
| | BYM36A to C | | – | – | 1.28 | V |
| | BYM36D and E | | – | – | 1.24 | V |
| V_F | forward voltage | $I_F = 3\text{ A}$; see Figs 19; 20 and 21 | – | – | 1.60 | V |
| | BYM36A to C | | – | – | 1.78 | V |
| | BYM36D and E | | – | – | 1.57 | V |
| $V_{(BR)R}$ | reverse avalanche breakdown voltage | $I_R = 0.1\text{ mA}$ | | | | |
| | BYM36A | | 300 | – | – | V |
| | BYM36B | | 500 | – | – | V |
| | BYM36C | | 700 | – | – | V |
| | BYM36D | | 900 | – | – | V |
| | BYM36E | | 1100 | – | – | V |
| | BYM36F | | 1300 | – | – | V |
| I_R | reverse current | $V_R = V_{RRM\max}$; see Fig.22 | – | – | 5 | μA |
| | | $V_R = V_{RRM\max}$; $T_j = 165\text{ °C}$; see Fig.22 | – | – | 150 | μA |

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| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|---|--|------|------|------|------------|
| t_{rr} | reverse recovery time | when switched from $I_F = 0.5$ A to $I_R = 1$ A; measured at $I_R = 0.25$ A; see Fig. 26 | - | - | 100 | ns |
| | BYM36A to C | | - | - | 150 | ns |
| | BYM36D and E BYM36F and G | | - | - | 250 | ns |
| C_d | diode capacitance | $f = 1$ MHz; $V_R = 0$ V; see Figs 23 and 24 | - | 85 | - | pF |
| | BYM36A to C | | - | 75 | - | pF |
| | BYM36D and E BYM36F and G | | - | 65 | - | pF |
| $\left \frac{di_R}{dt} \right $ | maximum slope of reverse recovery current | when switched from $I_F = 1$ A to $V_R \geq 30$ V and $di_F/dt = -1$ A/ μ s; see Fig.27 | - | - | 7 | A/ μ s |
| | BYM36A to C | | - | - | 6 | A/ μ s |
| | BYM36D and E BYM36F and G | | - | - | 5 | A/ μ s |

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 |

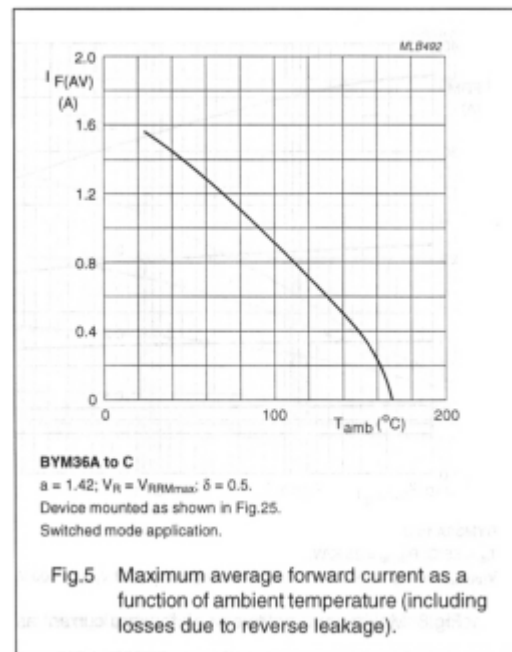
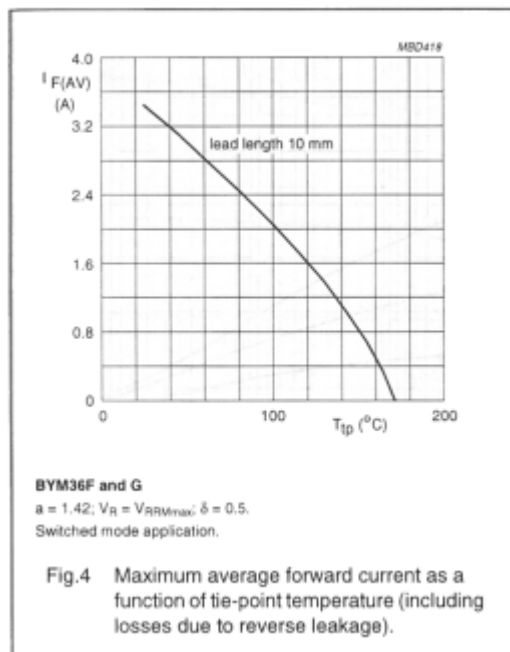
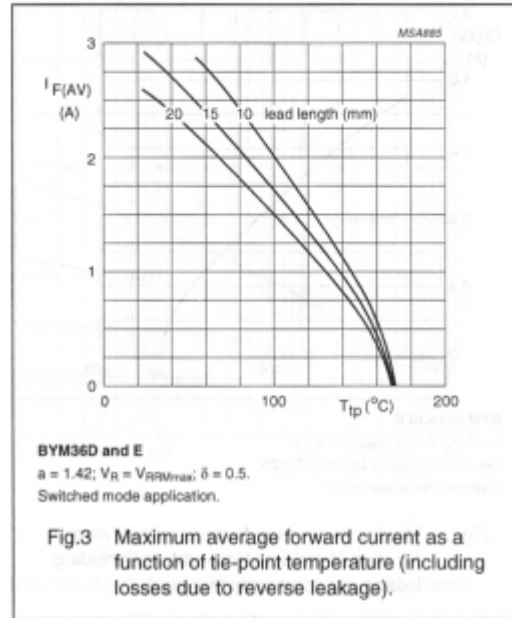
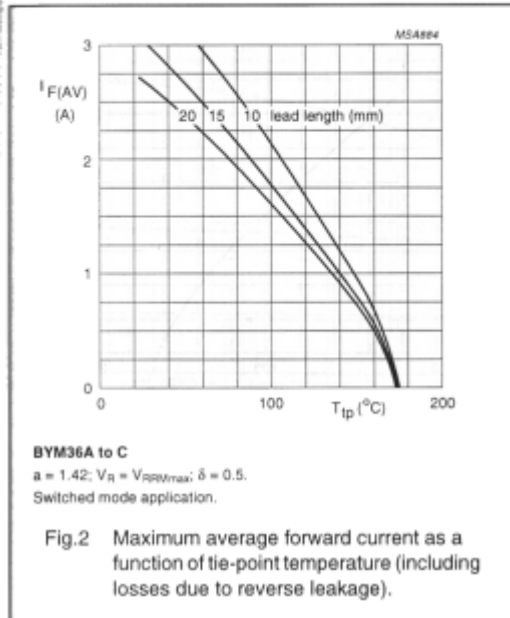
Note

1. Device mounted on an epoxy-glass printed-circuit board, 1.5 mm thick; thickness of Cu-layer ≥ 40 μ m, see Fig.25. For more information please refer to the 'General Part of Handbook SC01'.

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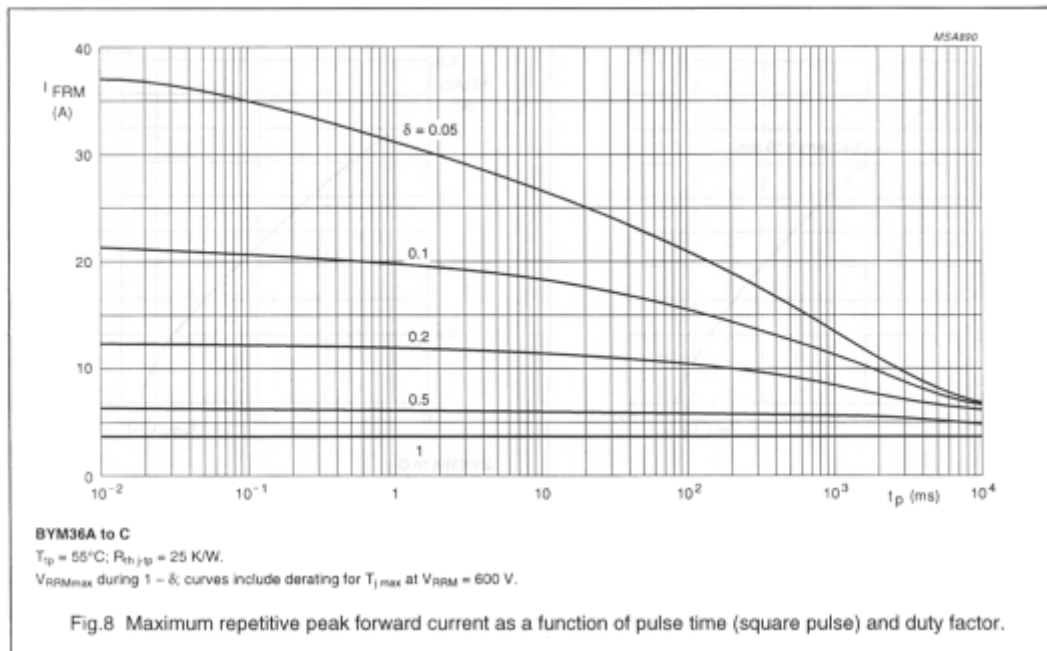
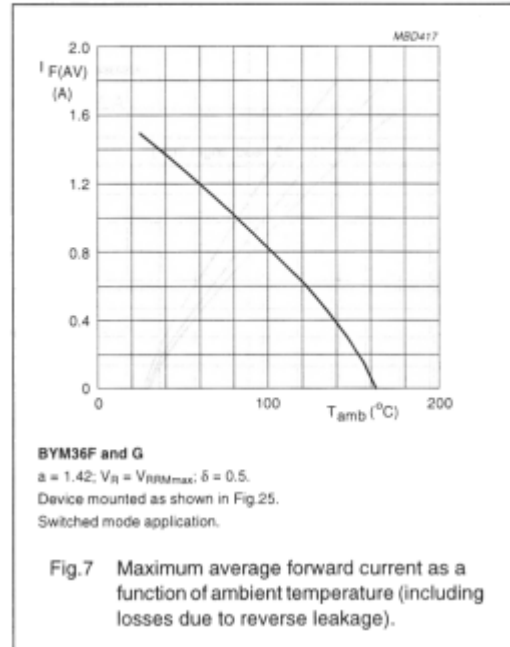
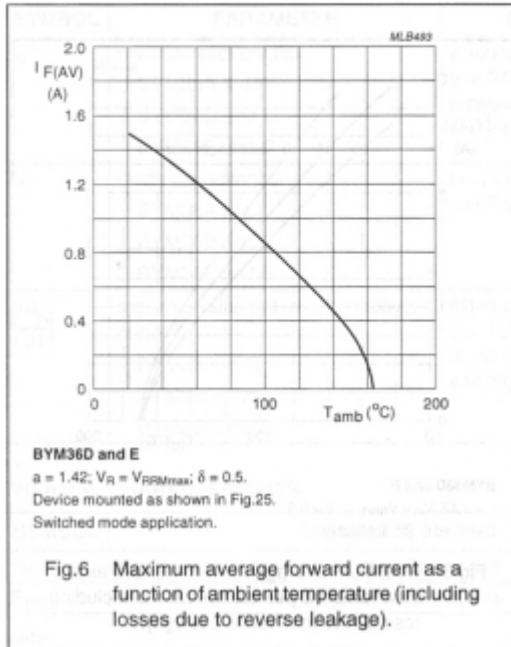
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GRAPHICAL DATA



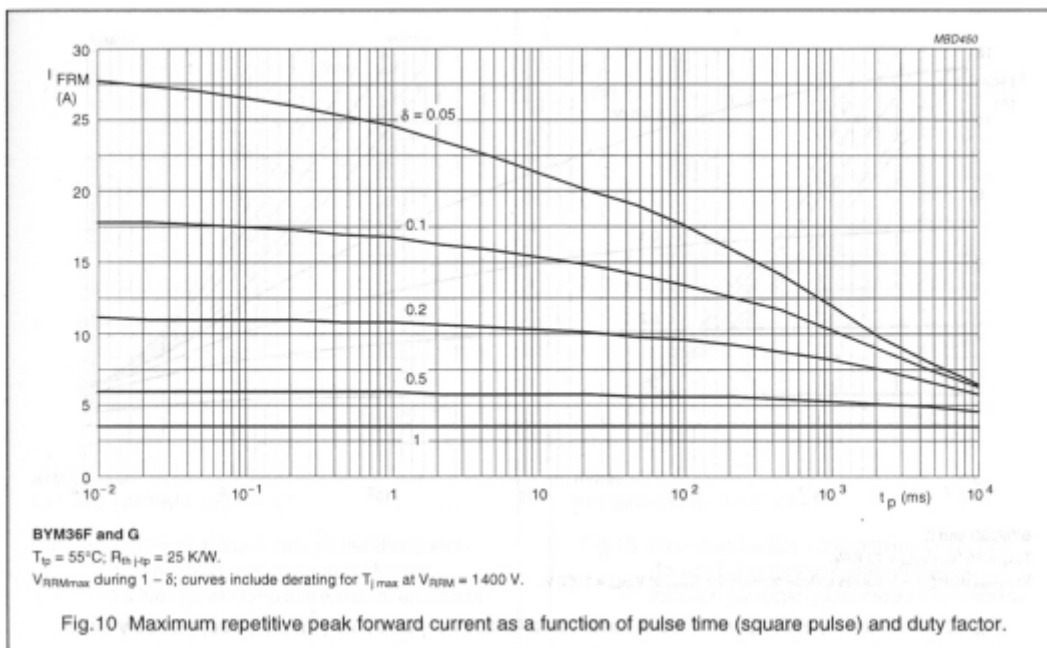
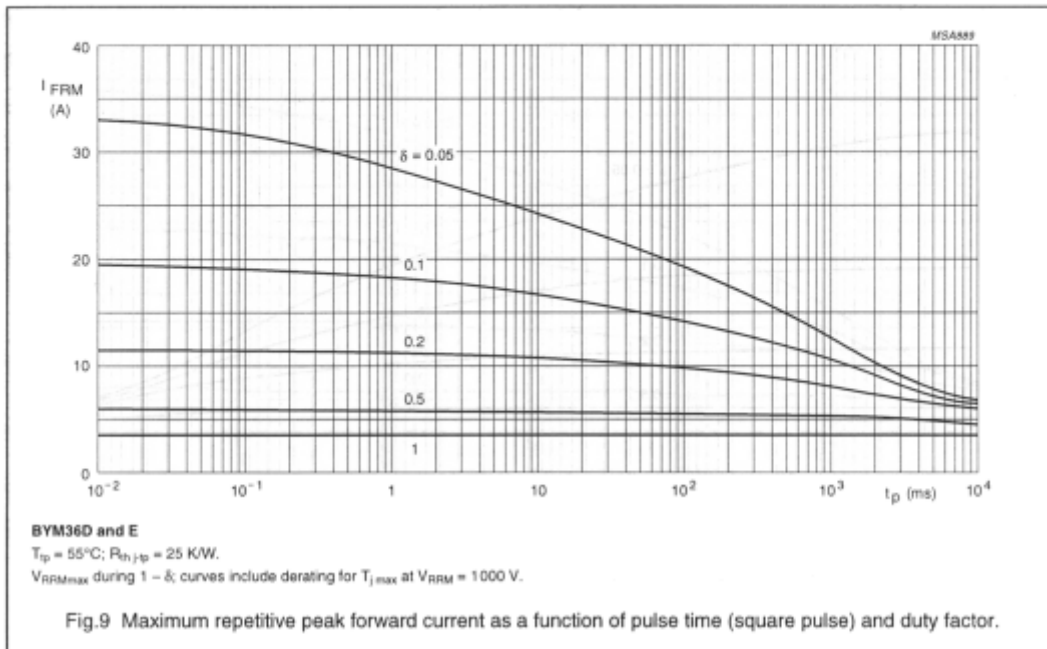
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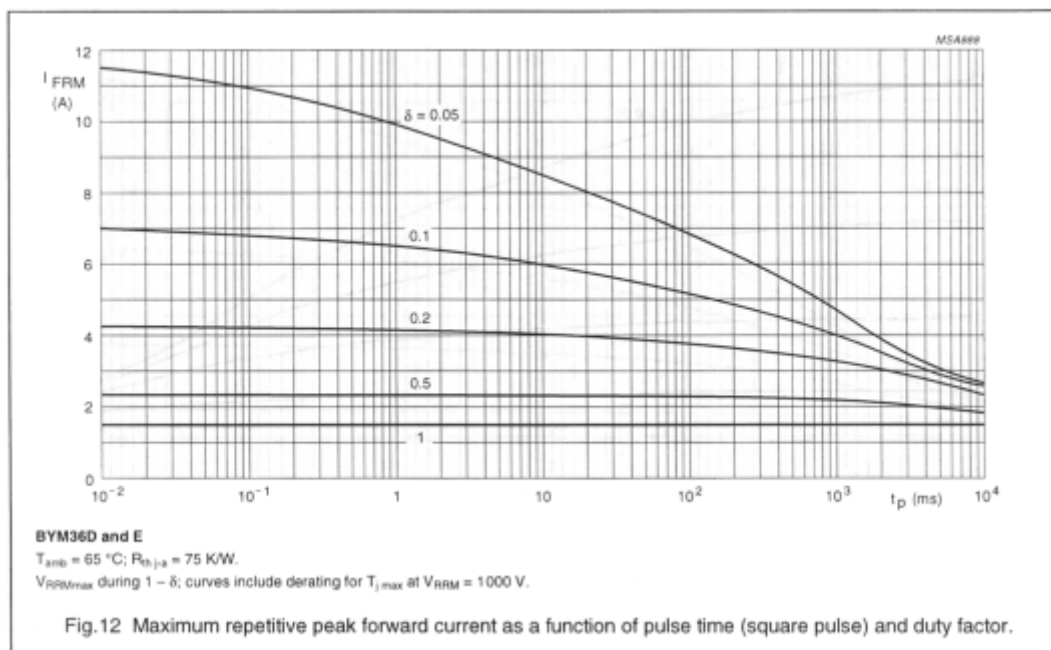
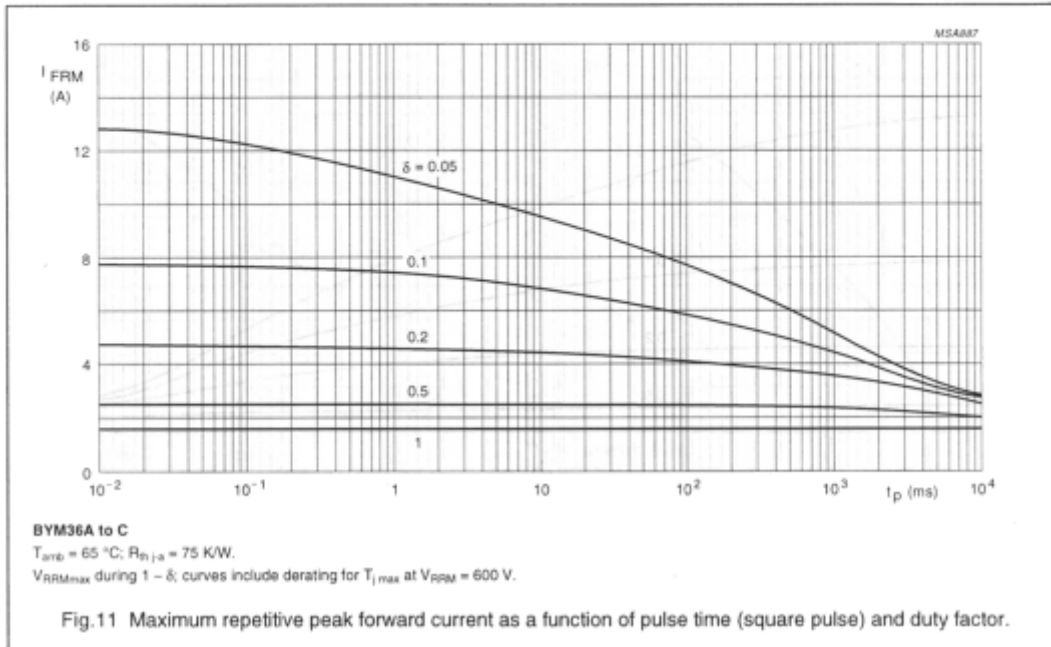
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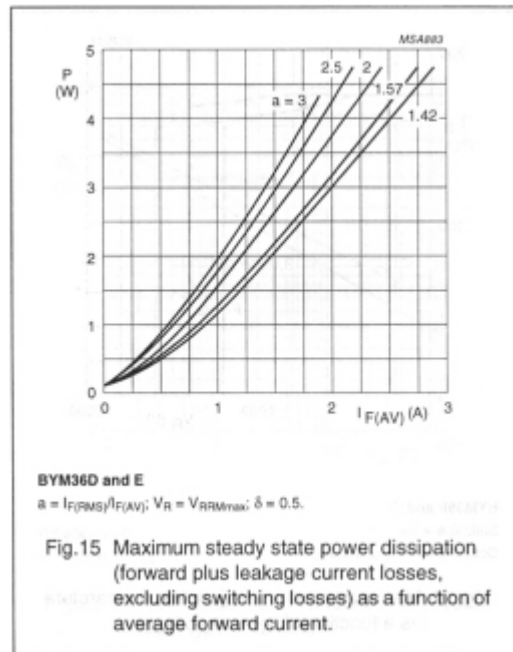
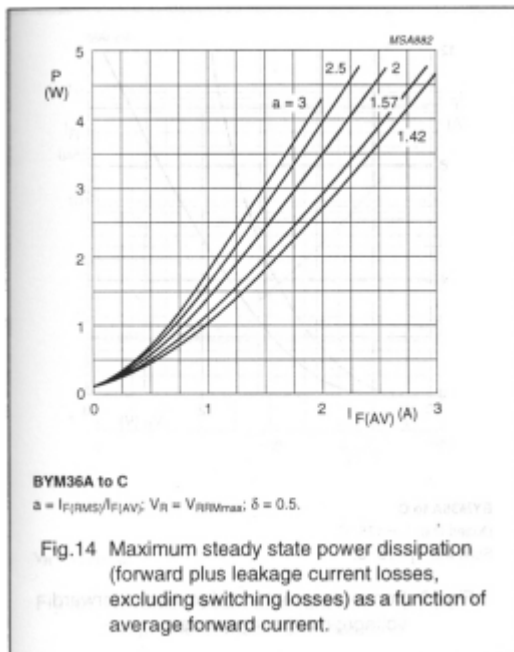
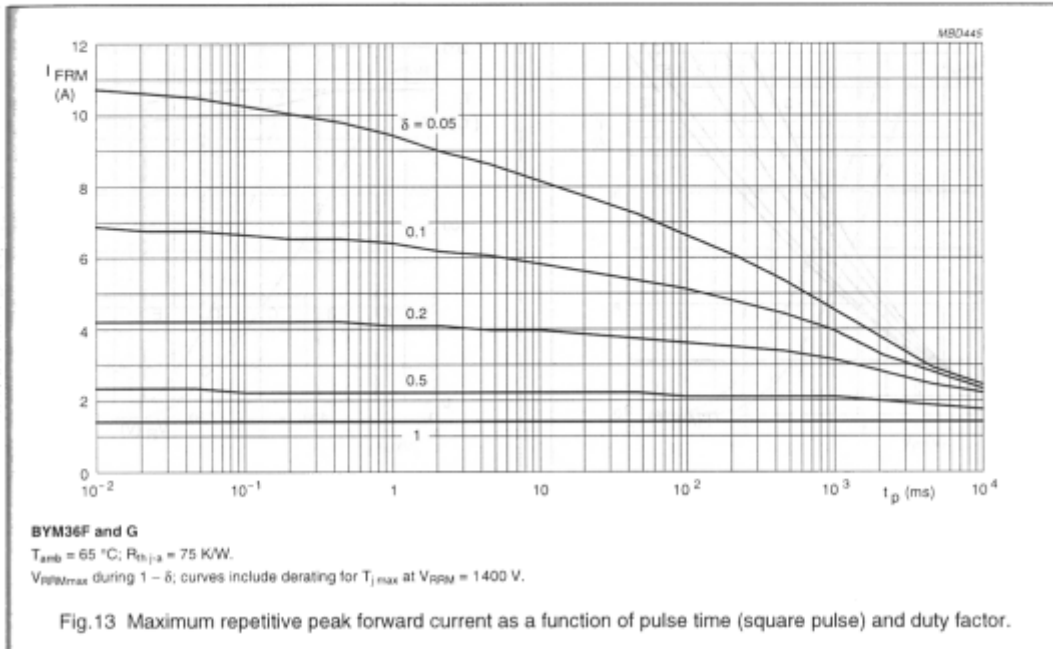
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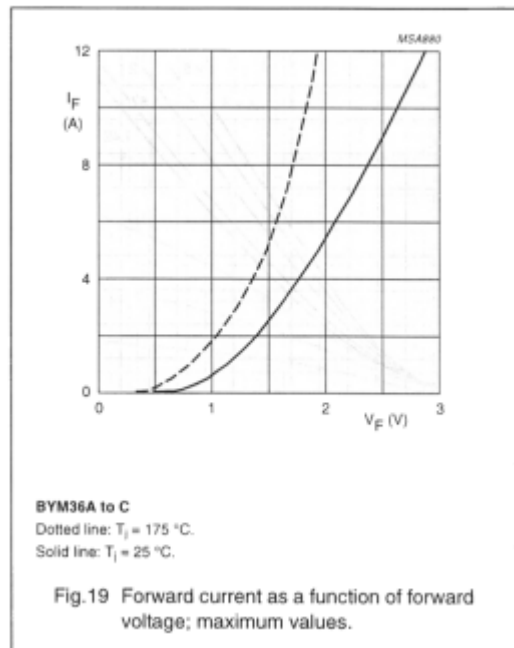
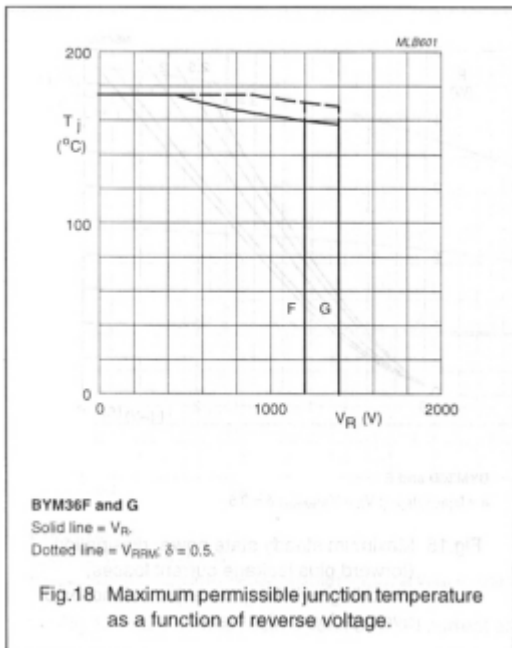
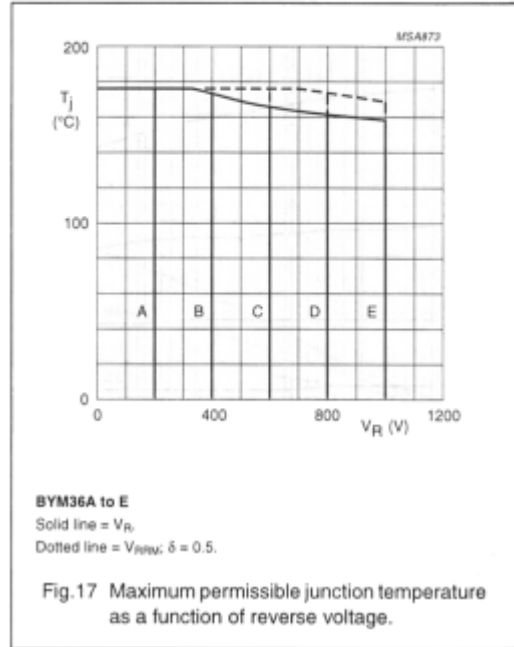
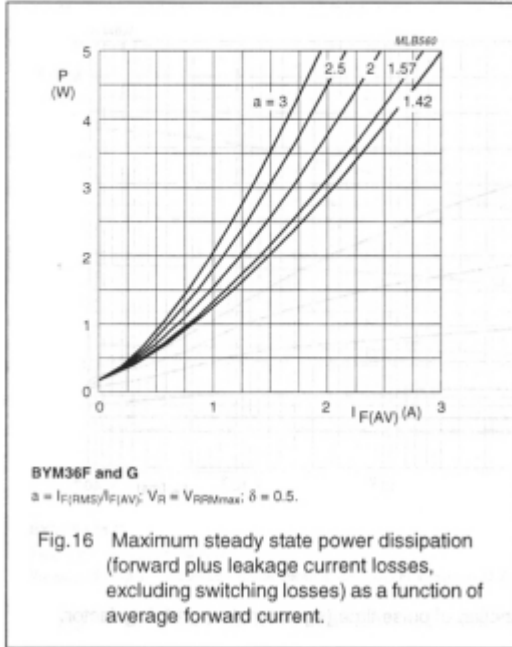
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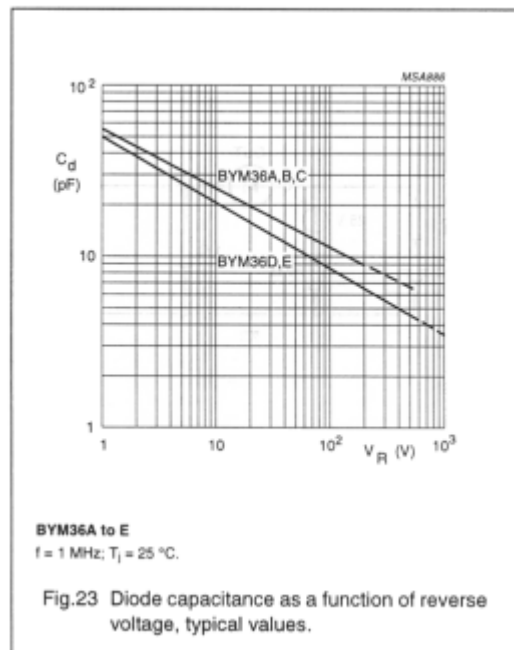
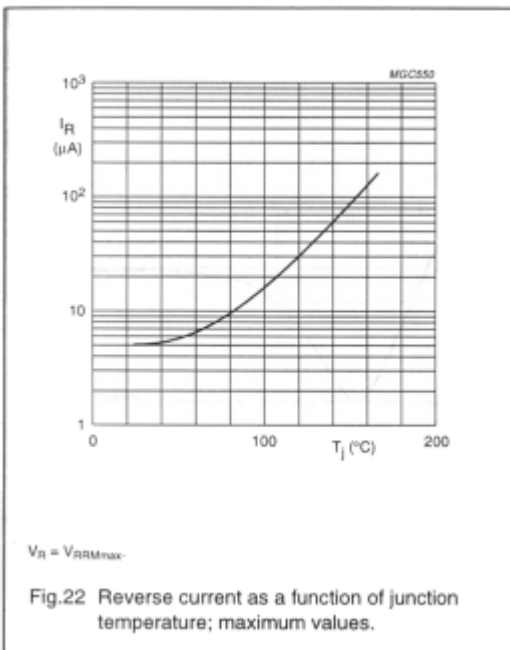
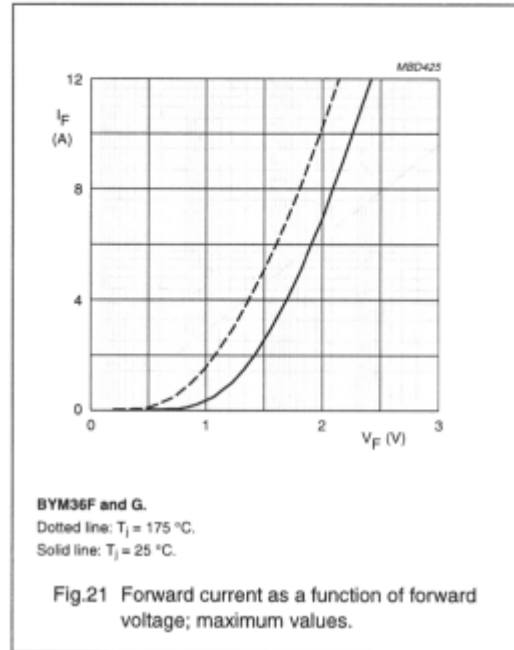
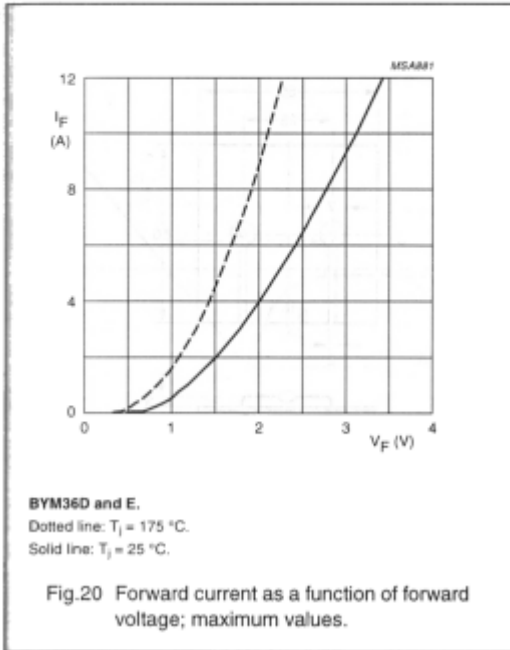
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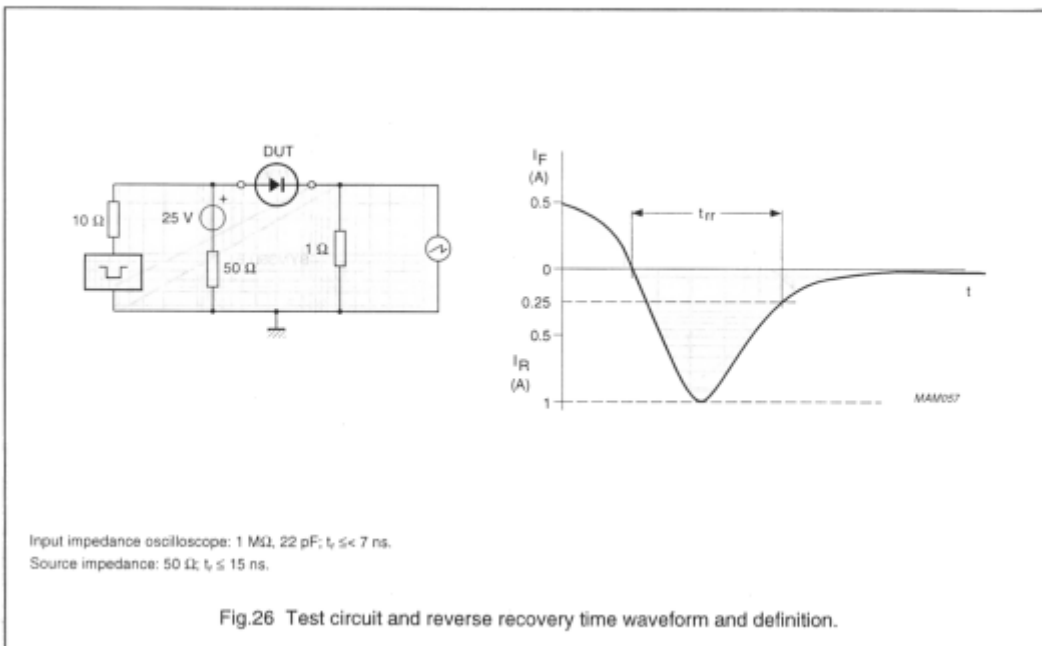
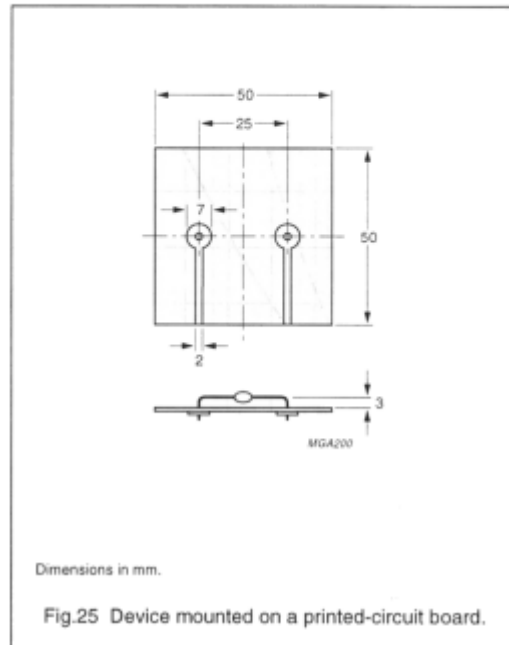
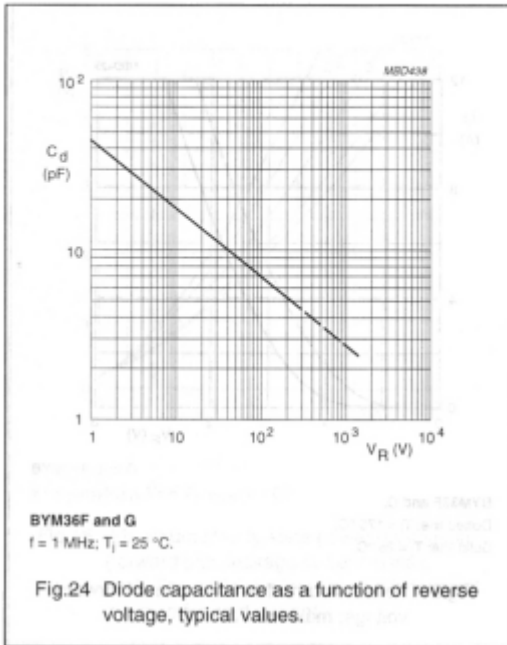
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