

High-voltage fast soft-recovery rectifier diodes

BY8400 series

FEATURES

- Non-snap-off (soft- recovery) switching characteristics
- Hermetic seal
- Glass passivation
- Withstands peak currents during flash-over in picture tubes.

APPLICATIONS

They are designed for colour television and monitor applications with frequencies up to 25 kHz and suitable for use in high voltage applications such as multipliers and especially in layer-wound diode-split-transformers.

DESCRIPTION

Glass passivated high-voltage rectifier diodes in hermetically-sealed, axial-leaded glass envelopes. Because of the small envelope, the diode should be used in a suitable insulating medium (resin, oil, or SF6 gas).

CATHODE BAND COLOUR CODES

| TYPE NUMBER | INNER BAND | OUTER BAND |
|-------------|------------|------------|
| BY8404 | black | black |
| BY8406 | black | green |
| BY8408 | black | red |
| BY8410 | black | violet |
| BY8412 | black | orange |
| BY8414 | black | lilac |
| BY8416 | black | grey |
| BY8418 | black | brown |
| BY8420 | black | dark blue |
| BY8424 | black | no band |

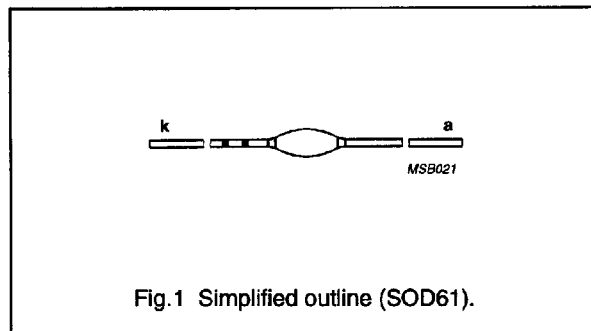


Fig.1 Simplified outline (SOD61).

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | TYP. | MAX. | UNIT |
|-------------|---------------------------------|------|------|------|
| V_{RW} | working reverse voltage | | | |
| | BY8404 | — | 4 | kV |
| | BY8406 | — | 6 | kV |
| | BY8408 | — | 8 | kV |
| | BY8410 | — | 10 | kV |
| | BY8412 | — | 12 | kV |
| | BY8414 | — | 14 | kV |
| | BY8416 | — | 16 | kV |
| | BY8418 | — | 18 | kV |
| | BY8420 | — | 20 | kV |
| V_{RRM} | repetitive peak reverse voltage | | | |
| | BY8404 | — | 5 | kV |
| | BY8406 | — | 8 | kV |
| | BY8408 | — | 10 | kV |
| | BY8410 | — | 12 | kV |
| | BY8412 | — | 14 | kV |
| | BY8414 | — | 17 | kV |
| | BY8416 | — | 19 | kV |
| | BY8418 | — | 22 | kV |
| | BY8420 | — | 24 | kV |
| $I_{F(AV)}$ | average forward current | | | |
| | BY8404 | — | 20 | mA |
| | BY8406 | — | 10 | mA |
| | BY8408 | — | 5 | mA |
| | BY8410 | — | 5 | mA |
| | BY8412 | — | 5 | mA |
| | BY8414 | — | 5 | mA |
| | BY8416 | — | 3 | mA |
| | BY8418 | — | 3 | mA |
| | BY8420 | — | 3 | mA |
| BY8424 | — | 3 | mA | |
| T_j | junction temperature | —65 | 120 | °C |
| Q_r | recovery charge | — | 1 | nC |
| t_{rr} | reverse recovery time | 200 | — | ns |

High-voltage fast soft-recovery rectifier diodes

BY8400 series

LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--------------------|---|---------------------------------|------|------|------|
| V _{RW} | working reverse voltage | | | | |
| | BY8404 | | – | 4 | kV |
| | BY8406 | | – | 6 | kV |
| | BY8408 | | – | 8 | kV |
| | BY8410 | | – | 10 | kV |
| | BY8412 | | – | 12 | kV |
| | BY8414 | | – | 14 | kV |
| | BY8416 | | – | 16 | kV |
| | BY8418 | | – | 18 | kV |
| V _{RRM} | repetitive peak reverse voltage | | | | |
| | BY8404 | | – | 5 | kV |
| | BY8406 | | – | 8 | kV |
| | BY8408 | | – | 10 | kV |
| | BY8410 | | – | 12 | kV |
| | BY8412 | | – | 14 | kV |
| | BY8414 | | – | 17 | kV |
| | BY8416 | | – | 19 | kV |
| | BY8418 | | – | 22 | kV |
| I _{F(AV)} | average forward current | averaged over any 20 ms period. | | | |
| | BY8404 | | – | 20 | mA |
| | BY8406 | | – | 10 | mA |
| | BY8408 | | – | 5 | mA |
| | BY8410 | | – | 5 | mA |
| | BY8412 | | – | 5 | mA |
| | BY8414 | | – | 5 | mA |
| | BY8416 | | – | 3 | mA |
| | BY8418 | | – | 3 | mA |
| I _{FRM} | repetitive peak forward current; note 1 | | – | 500 | mA |
| T _{stg} | storage temperature | –65 | +120 | °C | |
| T _j | junction temperature | –65 | +120 | °C | |

Note

1. Withstands peak currents during flash-over in a picture tube.

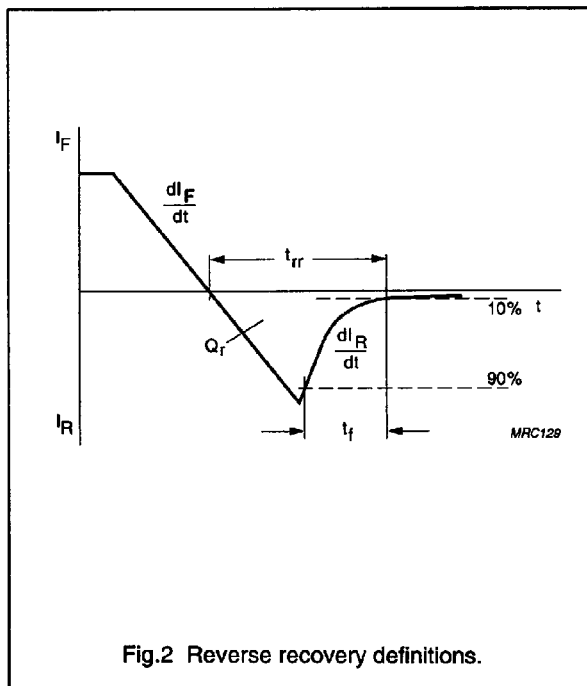
High-voltage fast soft-recovery
rectifier diodes

BY8400 series

CHARACTERISTICS

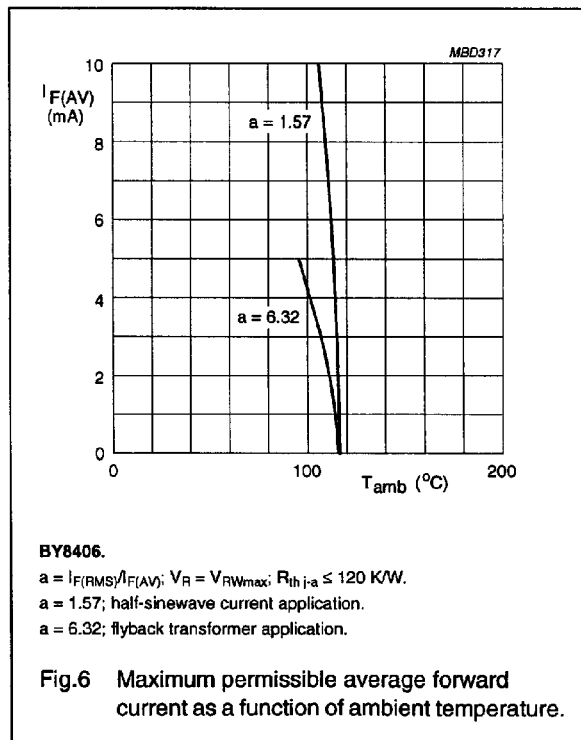
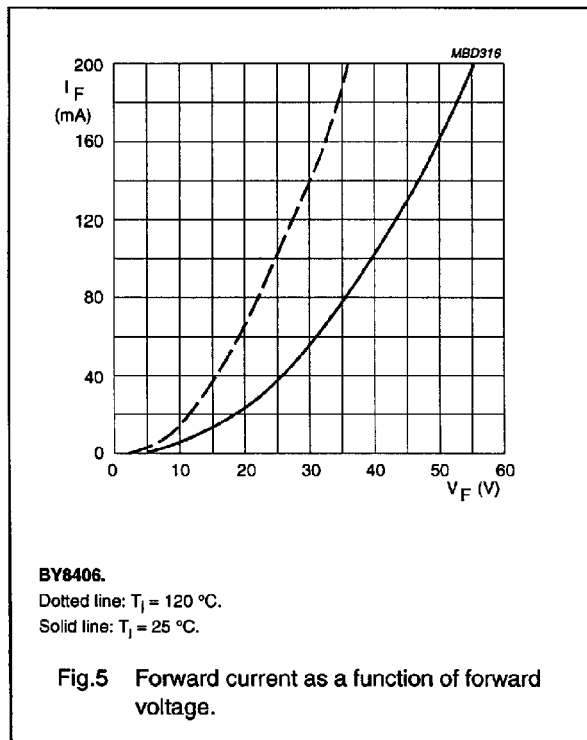
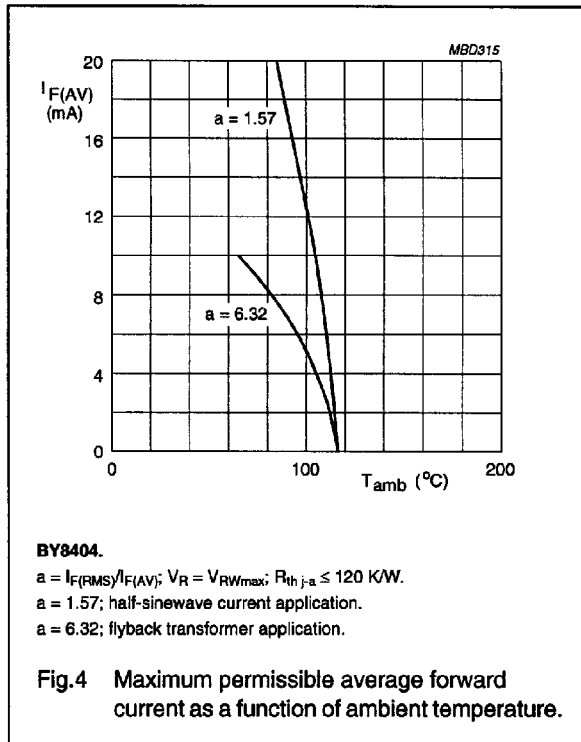
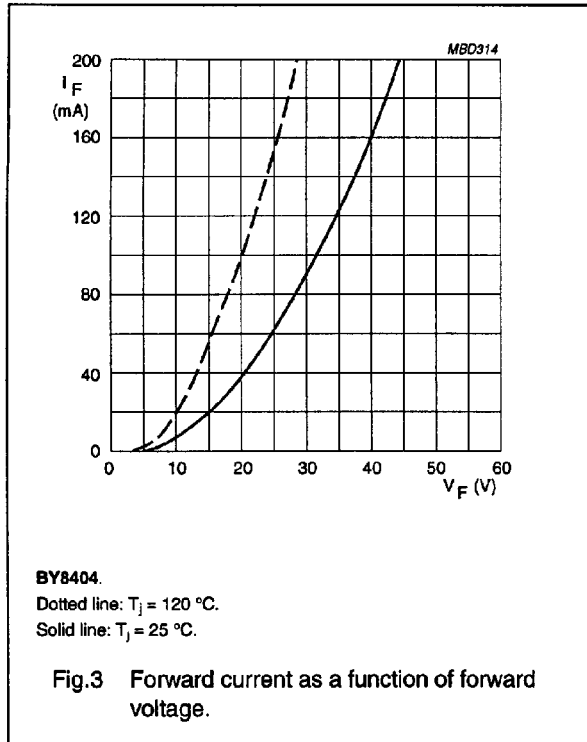
$T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|----------|----------------------------------|---|------|------|------|---------------|
| V_F | forward voltage | measured under pulsed conditions to avoid excessive dissipation; $I_F = 100\text{ mA}$; $T_j = T_{j\text{max}}$ | - | - | 20 | V |
| | BY8404 | | | | 25 | V |
| | BY8406 | | | | 35 | V |
| | BY8408 | | | | 42 | V |
| | BY8410 | | | | 52 | V |
| | BY8412 | | | | 60 | V |
| | BY8414 | | | | 70 | V |
| | BY8416 | | | | 77 | V |
| | BY8418 | | | | 88 | V |
| BY8420 | 98 | V | | | | |
| BY8424 | | | | | | |
| I_R | reverse current | $V_R = V_{RW}$; $T_j = 120\text{ }^\circ\text{C}$ | - | - | 3 | μA |
| Q_r | recovery charge; see Fig.2 | when switched from $I_F = 100\text{ mA}$ to $V_R \geq 100\text{ V}$ and $dI_F/dt = -200\text{ mA}/\mu\text{s}$; | - | - | 1 | nC |
| t_{rr} | reverse recovery time; see Fig.2 | when switched from $I_F = 100\text{ mA}$ to $V_R \geq 100\text{ V}$ and $dI_F/dt = -200\text{ mA}/\mu\text{s}$; | - | 200 | - | ns |
| t_f | fall time; see Fig.2 | when switched from $I_F = 100\text{ mA}$ to $V_R \geq 100\text{ V}$ and $dI_F/dt = -200\text{ mA}/\mu\text{s}$; | 100 | - | - | ns |



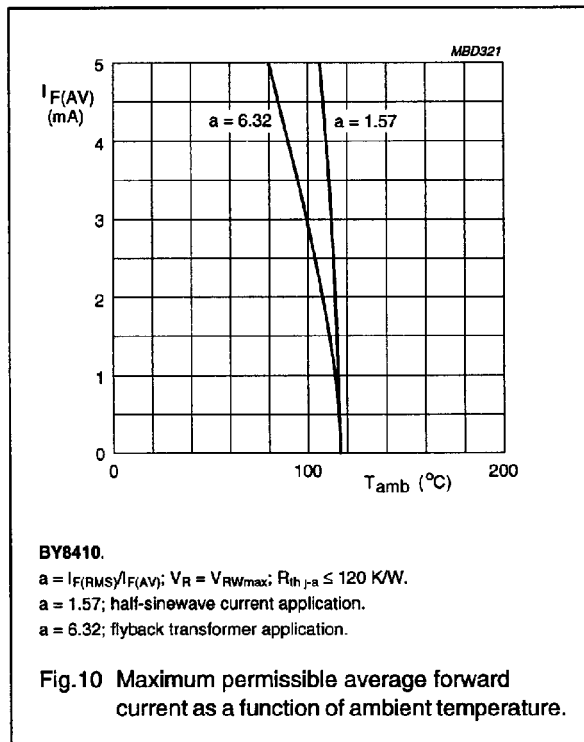
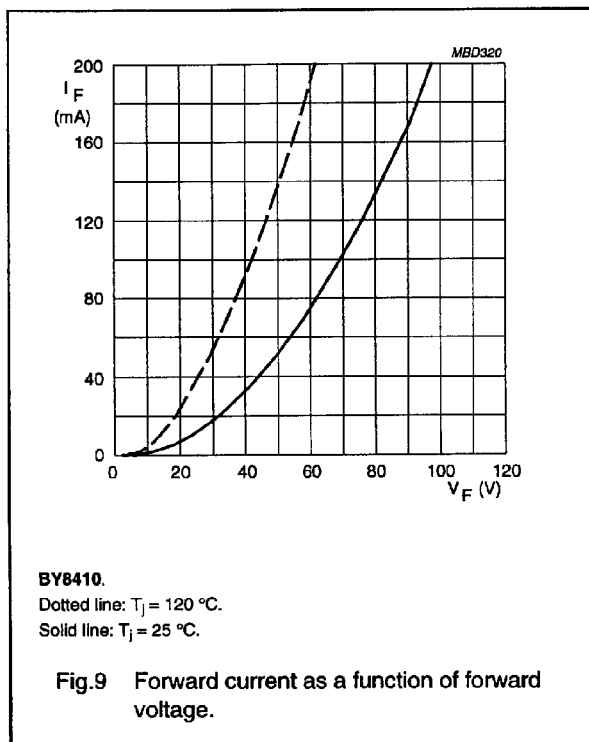
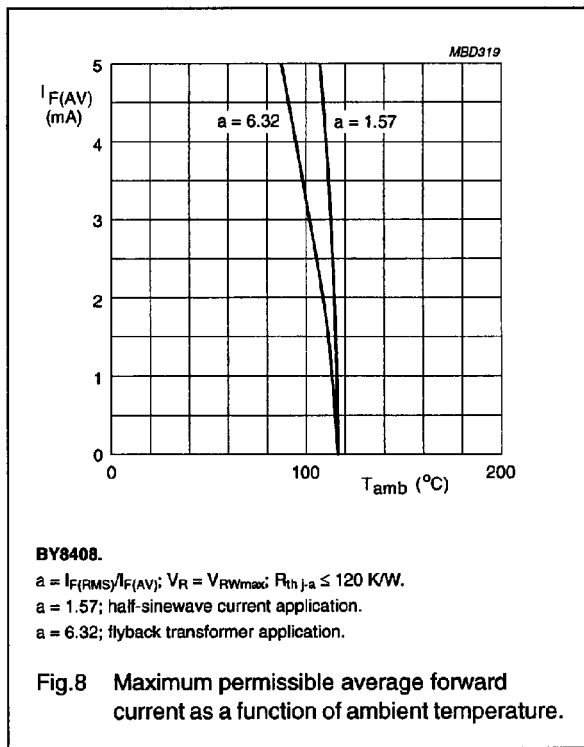
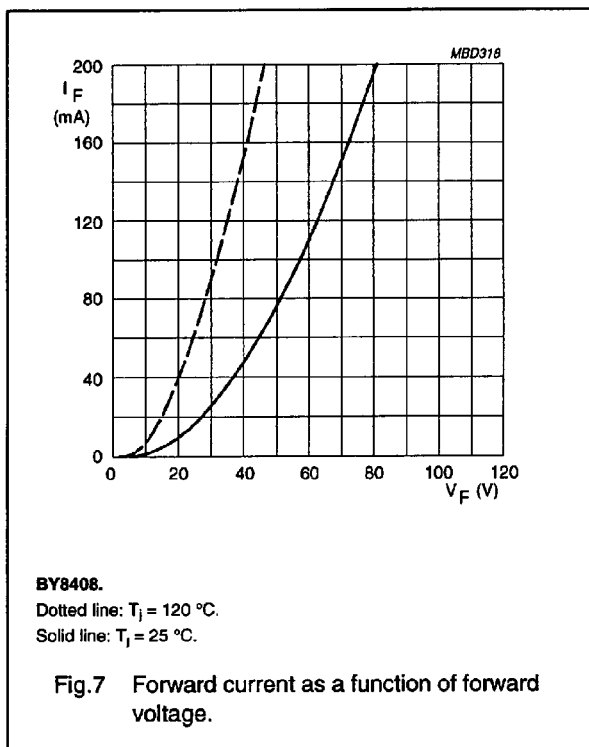
High-voltage fast soft-recovery rectifier diodes

BY8400 series



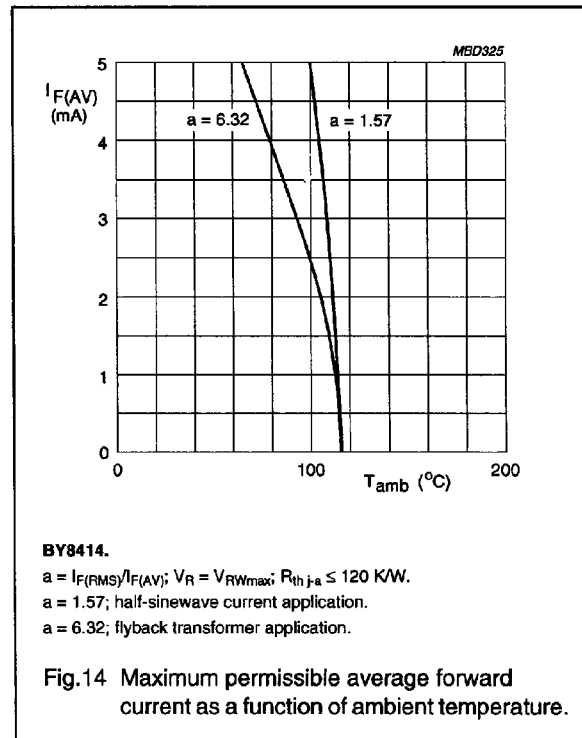
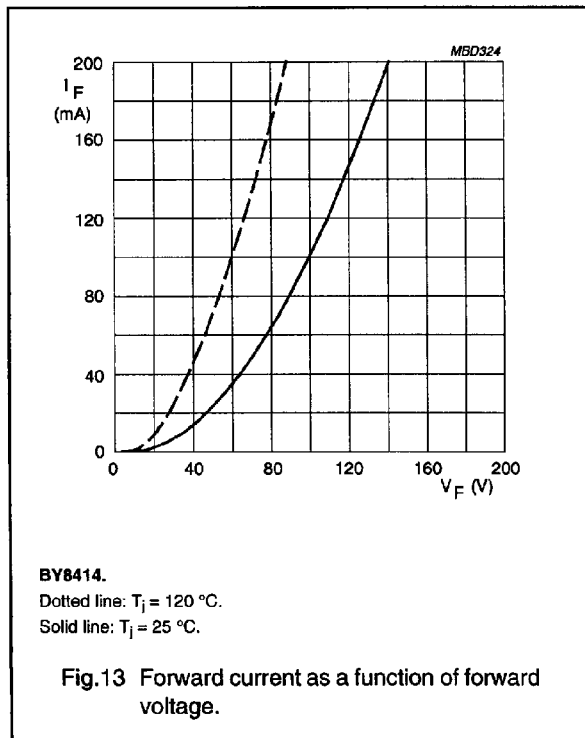
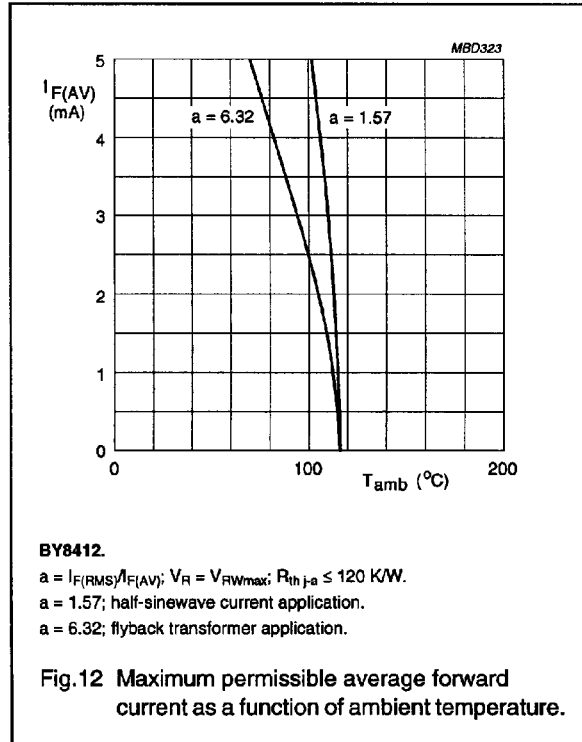
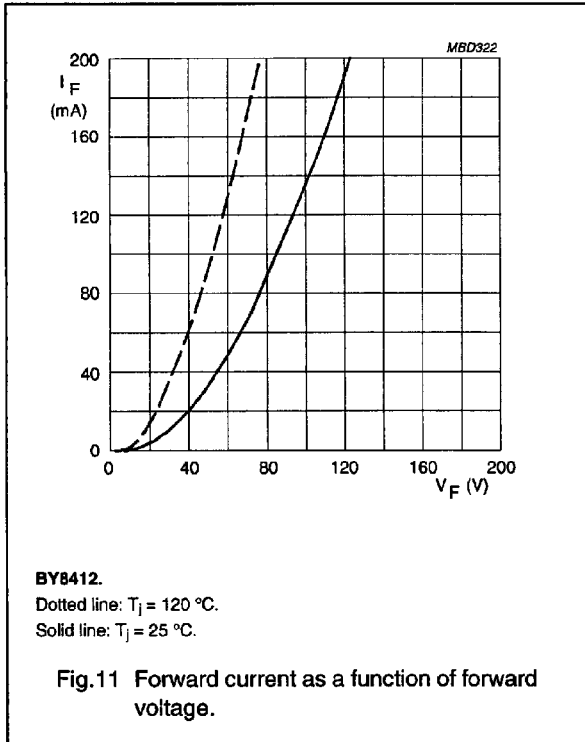
High-voltage fast soft-recovery rectifier diodes

BY8400 series



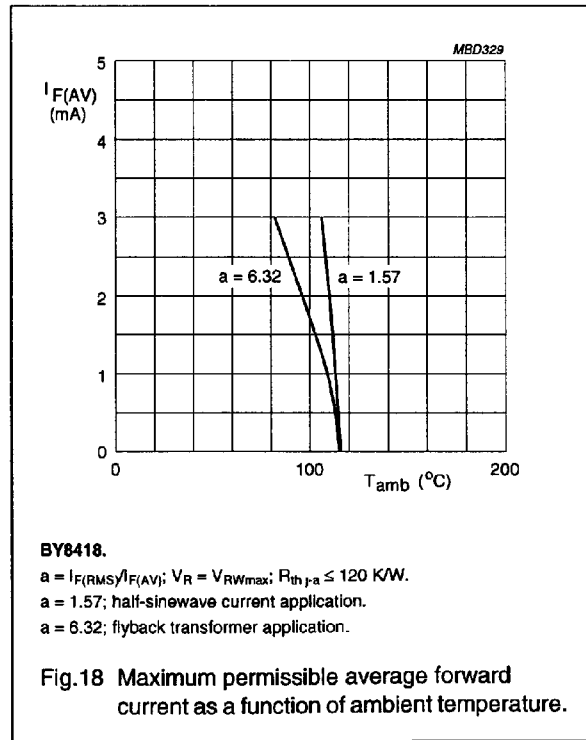
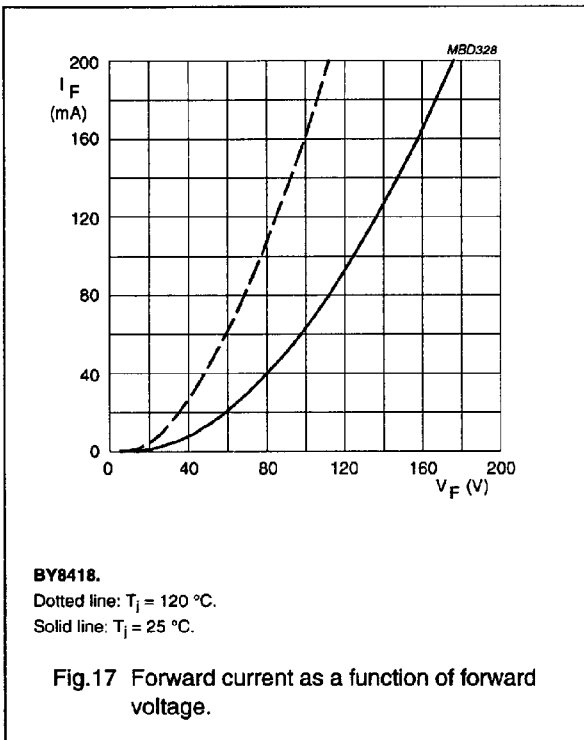
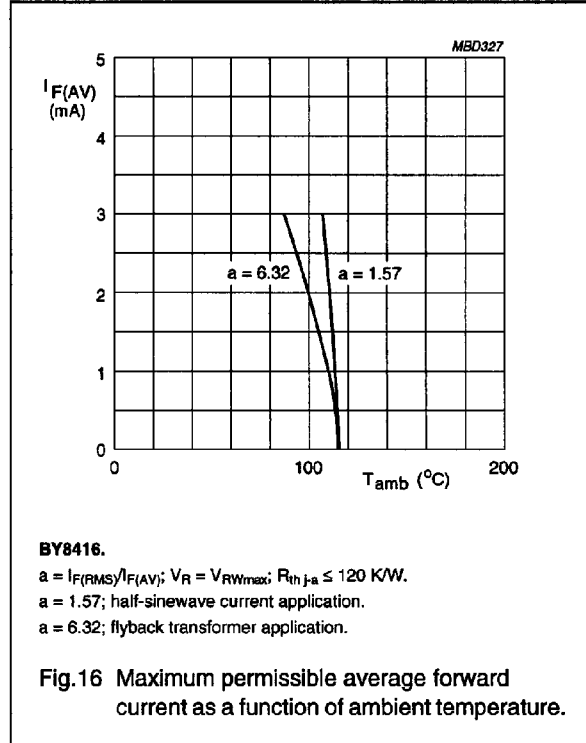
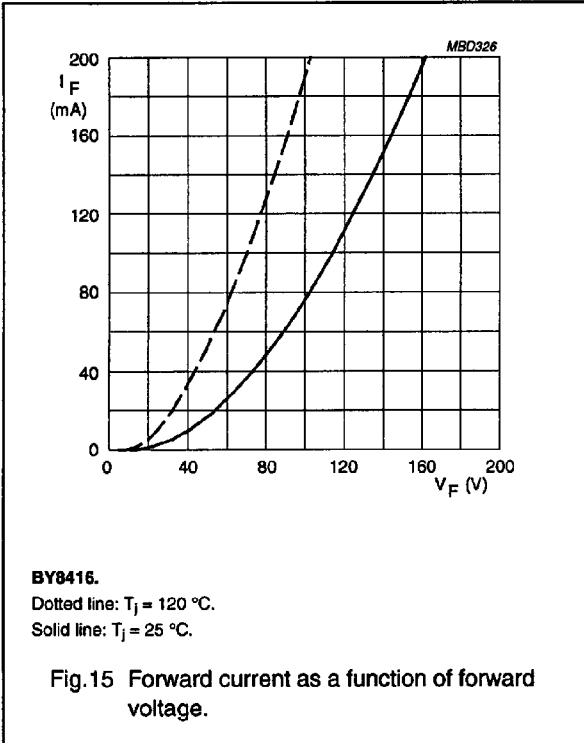
High-voltage fast soft-recovery rectifier diodes

BY8400 series



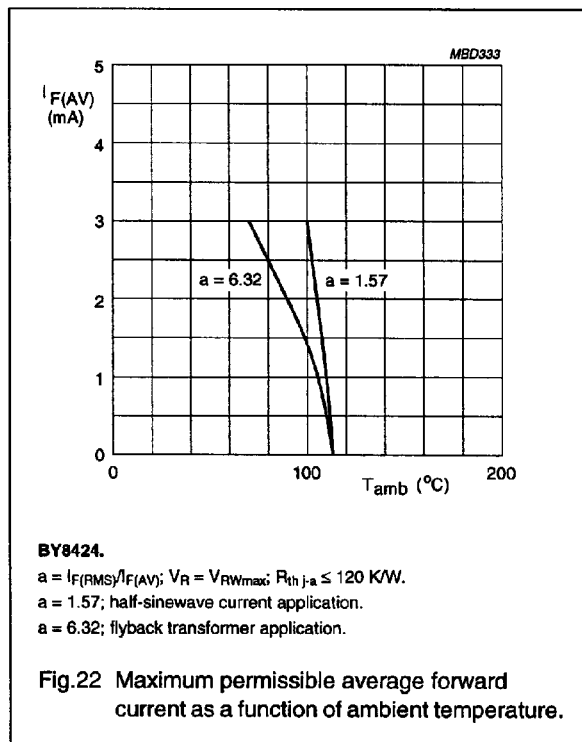
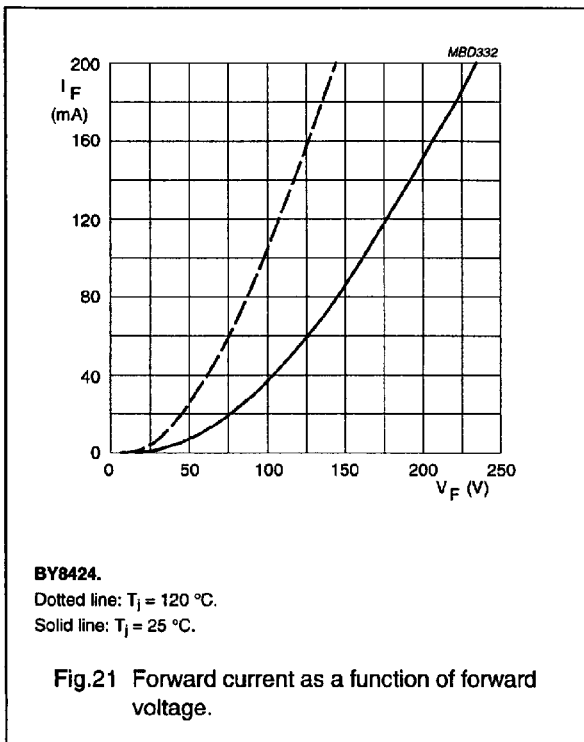
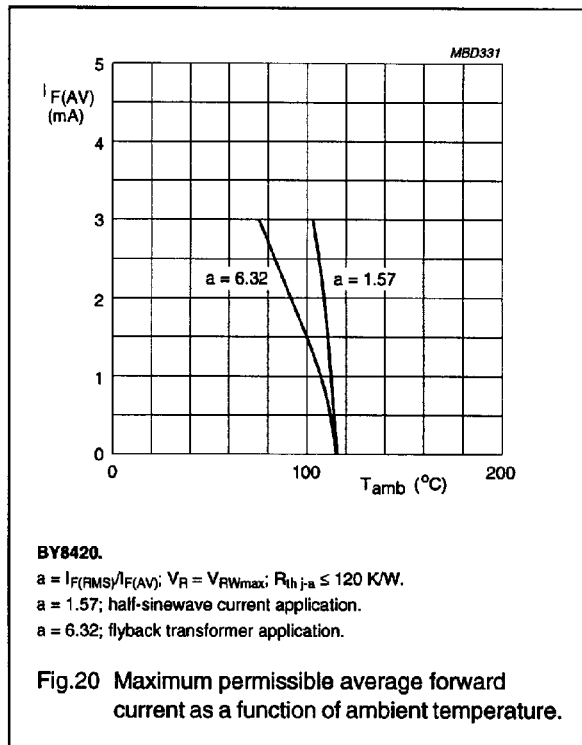
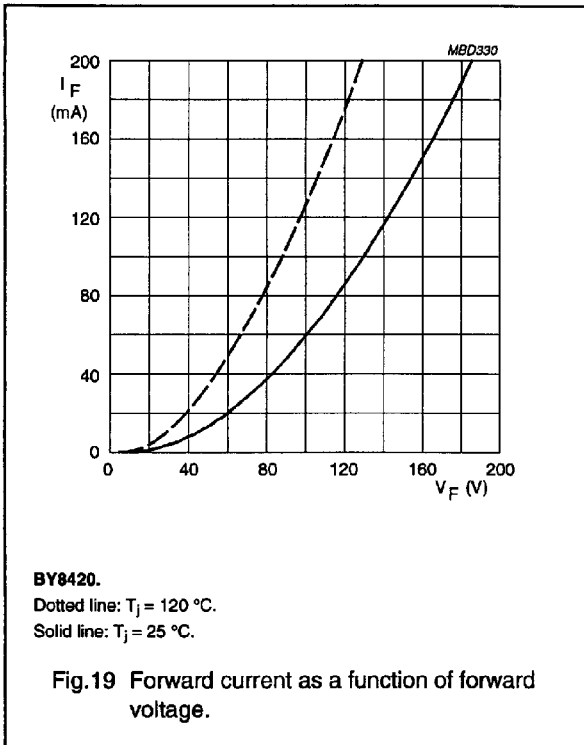
High-voltage fast soft-recovery rectifier diodes

BY8400 series



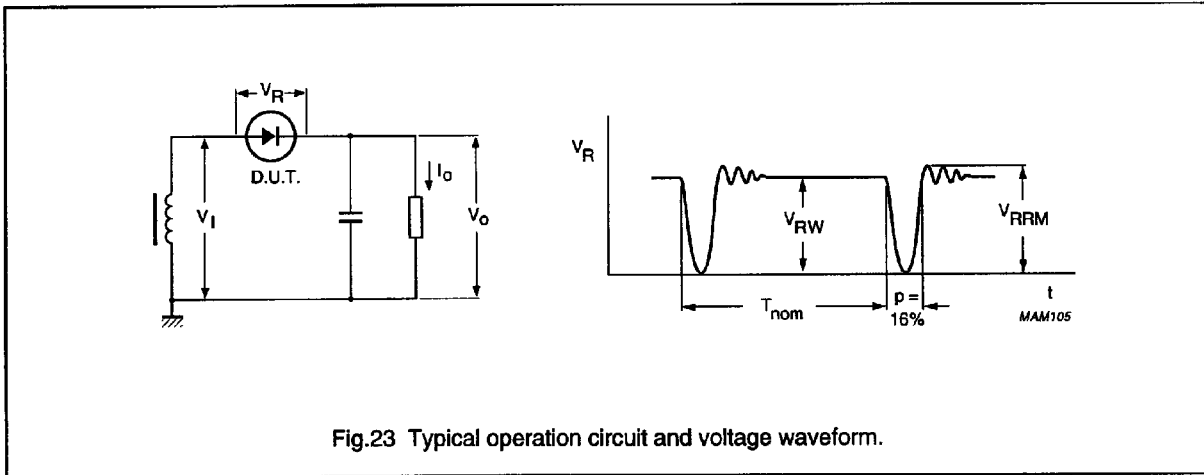
High-voltage fast soft-recovery rectifier diodes

BY8400 series

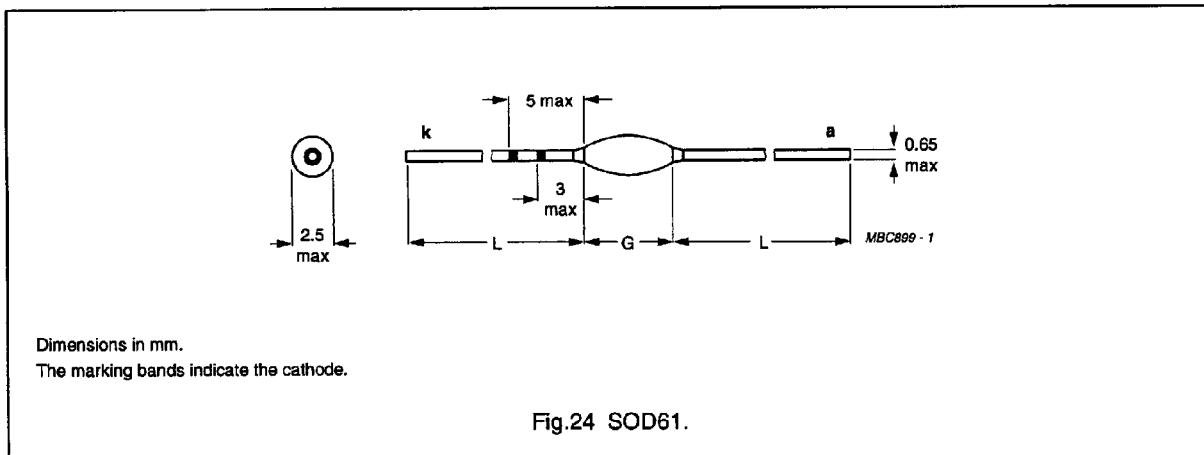


High-voltage fast soft-recovery
rectifier diodes

BY8400 series



PACKAGE OUTLINE



SOD61 package specification

| TYPE NUMBER | PACKAGE CODE | L _{min} (mm) | G _{max} (mm) |
|-------------|--------------|-----------------------|-----------------------|
| BY8404 | SOD61AB | 31.8 | 5.5 |
| BY8406 | SOD61AC | 30.4 | 8.3 |
| BY8408 | SOD61AD | 30.2 | 8.7 |
| BY8410 | SOD61AE | 30.0 | 9.1 |
| BY8412 | SOD61AF | 29.8 | 9.5 |
| BY8414 | SOD61AG | 29.6 | 9.9 |
| BY8416 | SOD61AH | 29.3 | 10.5 |
| BY8418 | SOD61AI | 28.8 | 11.5 |
| BY8420 | SOD61AJ | 28.3 | 12.5 |
| BY8424 | SOD61AK | 27.8 | 13.5 |

High-voltage fast soft-recovery rectifier diodes

BY8400 series

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. | |

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.