

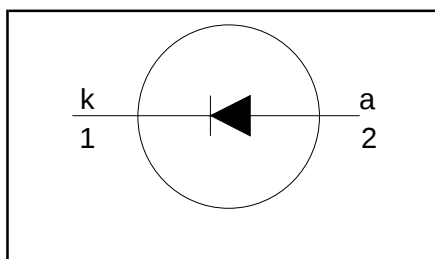
# Rectifier diodes ultrafast, rugged

## BYW29E series

### FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- Reverse surge capability
- High thermal cycling performance
- Low thermal resistance

### SYMBOL



### QUICK REFERENCE DATA

$$V_R = 100\text{ V} / 150\text{ V} / 200\text{ V}$$

$$V_F \leq 0.895\text{ V}$$

$$I_{F(AV)} = 8\text{ A}$$

$$I_{RRM} \leq 0.2\text{ A}$$

$$t_{rr} \leq 25\text{ ns}$$

### GENERAL DESCRIPTION

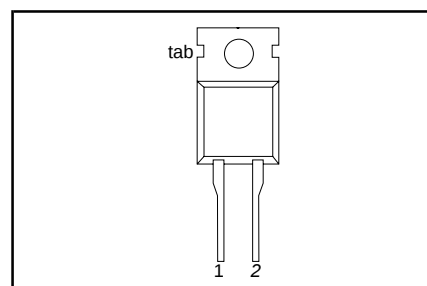
Ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYW29E series is supplied in the conventional leaded SOD59 (TO220AC) package.

### PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | cathode     |
| 2   | anode       |
| tab | cathode     |

### SOD59 (TO220AC)



### LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

| SYMBOL      | PARAMETER                                 | CONDITIONS                                                                                                                                                                                                                                                                                                                                  | MIN. | MAX. |      |      | UNIT               |
|-------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|--------------------|
| $V_{RRM}$   | Peak repetitive reverse voltage           | BYW29E<br>square wave; $\delta = 0.5$ ; $T_{mb} \leq 128\text{ }^{\circ}\text{C}$<br>square wave; $\delta = 0.5$ ; $T_{mb} \leq 128\text{ }^{\circ}\text{C}$<br>$t = 10\text{ ms}$<br>$t = 8.3\text{ ms}$<br>sinusoidal; with reapplied $V_{RRM(max)}$<br>$t_p = 2\text{ }\mu\text{s}$ ; $\delta = 0.001$<br>$t_p = 100\text{ }\mu\text{s}$ | -    | -100 | -150 | -200 | V                  |
| $V_{RWM}$   | Working peak reverse voltage              |                                                                                                                                                                                                                                                                                                                                             | -    | 100  | 150  | 200  | V                  |
| $V_R$       | Continuous reverse voltage                |                                                                                                                                                                                                                                                                                                                                             | -    | 100  | 150  | 200  | V                  |
| $I_{F(AV)}$ | Average rectified forward current         |                                                                                                                                                                                                                                                                                                                                             | -    | 8    |      |      | A                  |
| $I_{FRM}$   | Repetitive peak forward current           |                                                                                                                                                                                                                                                                                                                                             | -    | 16   |      |      | A                  |
| $I_{FSM}$   | Non-repetitive peak forward current       |                                                                                                                                                                                                                                                                                                                                             | -    | 80   |      |      | A                  |
|             |                                           |                                                                                                                                                                                                                                                                                                                                             | -    | 88   |      |      | A                  |
| $I_{RRM}$   | Peak repetitive reverse surge current     |                                                                                                                                                                                                                                                                                                                                             | -    | 0.2  |      |      | A                  |
| $I_{RSM}$   | Peak non-repetitive reverse surge current |                                                                                                                                                                                                                                                                                                                                             | -    | 0.2  |      |      | A                  |
| $T_j$       | Operating junction temperature            |                                                                                                                                                                                                                                                                                                                                             | -    | 150  |      |      | $^{\circ}\text{C}$ |
| $T_{stg}$   | Storage temperature                       |                                                                                                                                                                                                                                                                                                                                             | - 40 | 150  |      |      | $^{\circ}\text{C}$ |

### ESD LIMITING VALUE

| SYMBOL | PARAMETER                                 | CONDITIONS                                                          | MIN. | MAX. | UNIT |
|--------|-------------------------------------------|---------------------------------------------------------------------|------|------|------|
| $V_C$  | Electrostatic discharge capacitor voltage | Human body model;<br>$C = 250\text{ pF}$ ; $R = 1.5\text{ k}\Omega$ | -    | 8    | kV   |

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### THERMAL RESISTANCES

| SYMBOL         | PARAMETER                                    | CONDITIONS  | MIN. | TYP. | MAX. | UNIT |
|----------------|----------------------------------------------|-------------|------|------|------|------|
| $R_{th\ j-mb}$ | Thermal resistance junction to mounting base | in free air | -    | -    | 2.7  | K/W  |
| $R_{th\ j-a}$  | Thermal resistance junction to ambient       |             | -    | 60   | -    | K/W  |

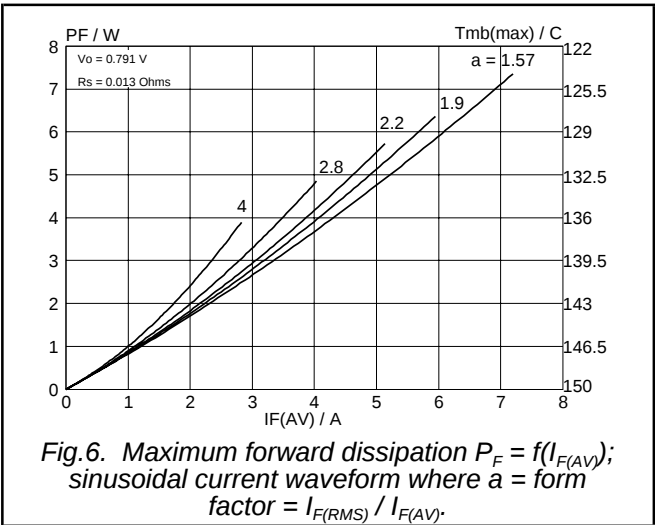
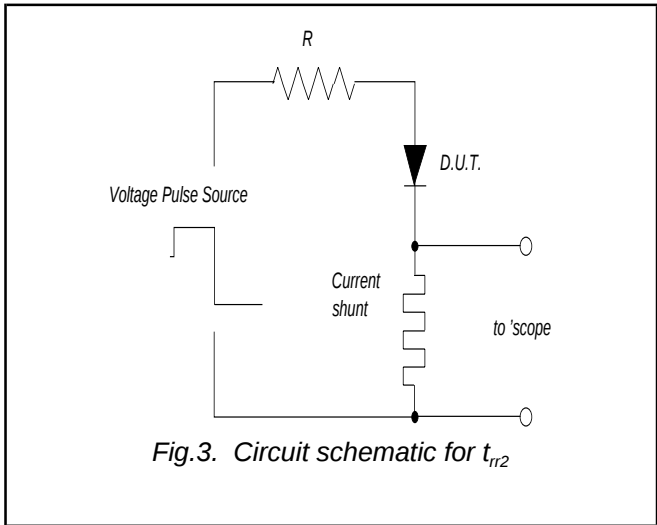
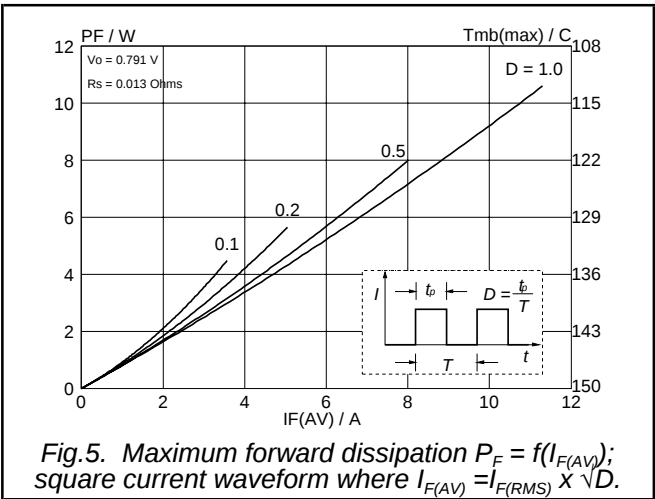
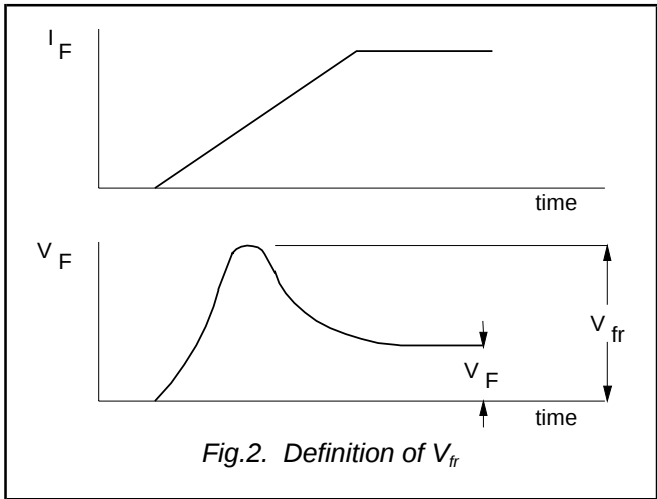
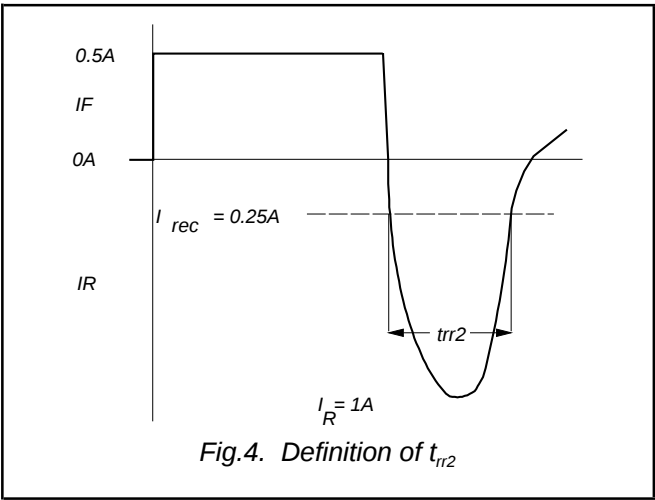
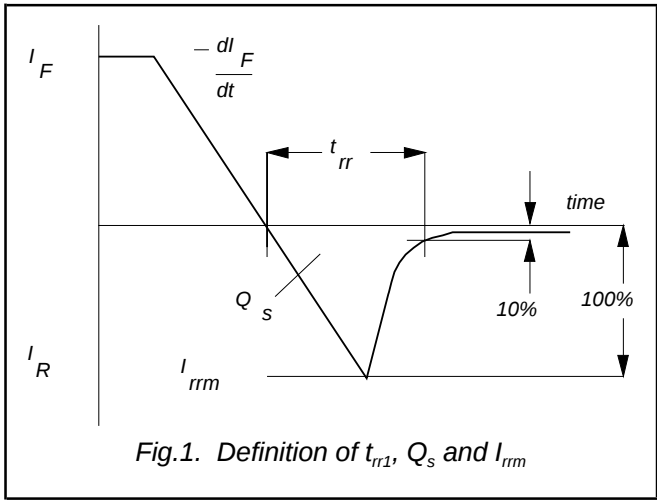
### ELECTRICAL CHARACTERISTICS

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

| SYMBOL    | PARAMETER                | CONDITIONS                                                                          | MIN. | TYP. | MAX.  | UNIT          |
|-----------|--------------------------|-------------------------------------------------------------------------------------|------|------|-------|---------------|
| $V_F$     | Forward voltage          | $I_F = 8\text{ A}$ ; $T_j = 150^\circ\text{C}$                                      | -    | 0.8  | 0.895 | V             |
|           |                          | $I_F = 8\text{ A}$                                                                  | -    | 0.92 | 1.05  | V             |
|           |                          | $I_F = 20\text{ A}$                                                                 | -    | 1.1  | 1.3   | V             |
| $I_R$     | Reverse current          | $V_R = V_{RWM}$                                                                     | -    | 2    | 10    | $\mu\text{A}$ |
|           |                          | $V_R = V_{RWM}$ ; $T_j = 100^\circ\text{C}$                                         | -    | 0.2  | 0.6   | mA            |
| $Q_{rr}$  | Reverse recovered charge | $I_F = 2\text{ A}$ ; $V_R \geq 30\text{ V}$ ; $-di_F/dt = 20\text{ A}/\mu\text{s}$  | -    | 4    | 11    | nC            |
| $t_{rr1}$ | Reverse recovery time    | $I_F = 1\text{ A}$ ; $V_R \geq 30\text{ V}$ ; $-di_F/dt = 100\text{ A}/\mu\text{s}$ | -    | 20   | 25    | ns            |
| $t_{rr2}$ | Reverse recovery time    | $I_F = 0.5\text{ A}$ to $I_R = 1\text{ A}$ ; $I_{rec} = 0.25\text{ A}$              | -    | 15   | 20    | ns            |
| $V_{fr}$  | Forward recovery voltage | $I_F = 1\text{ A}$ ; $di_F/dt = 10\text{ A}/\mu\text{s}$                            | -    | 1    | -     | V             |

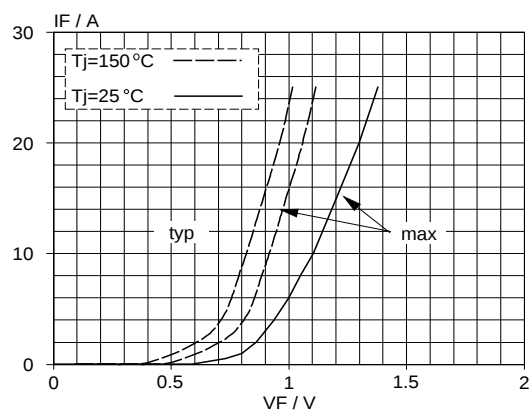
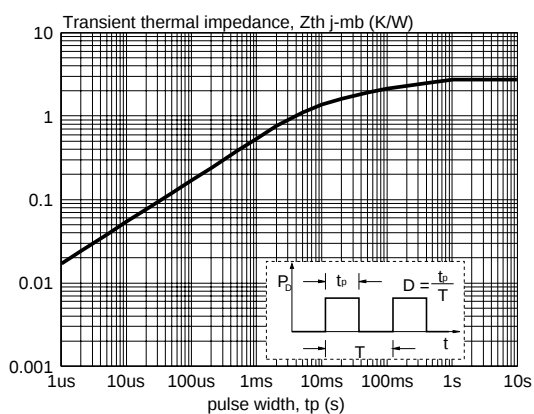
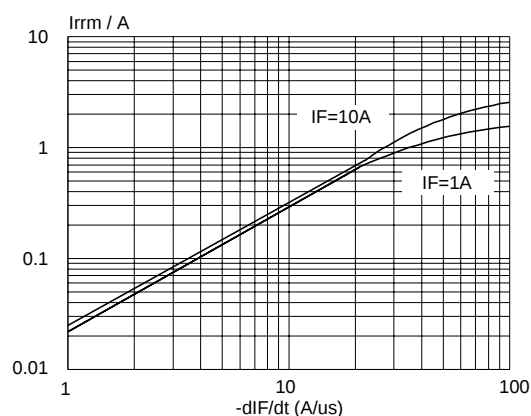
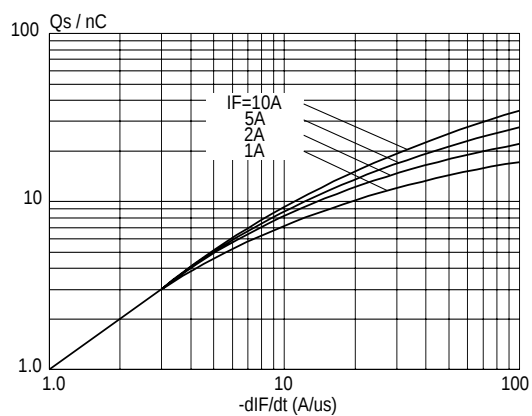
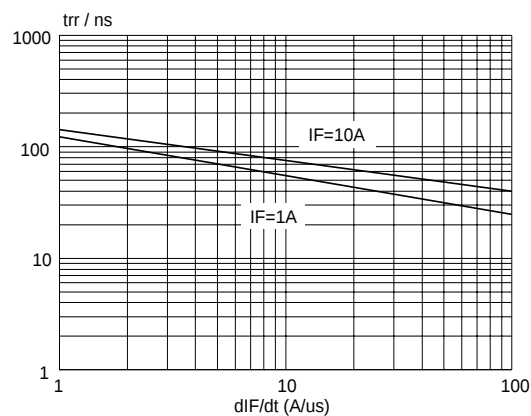
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ultrafast, rugged

BYW29E series



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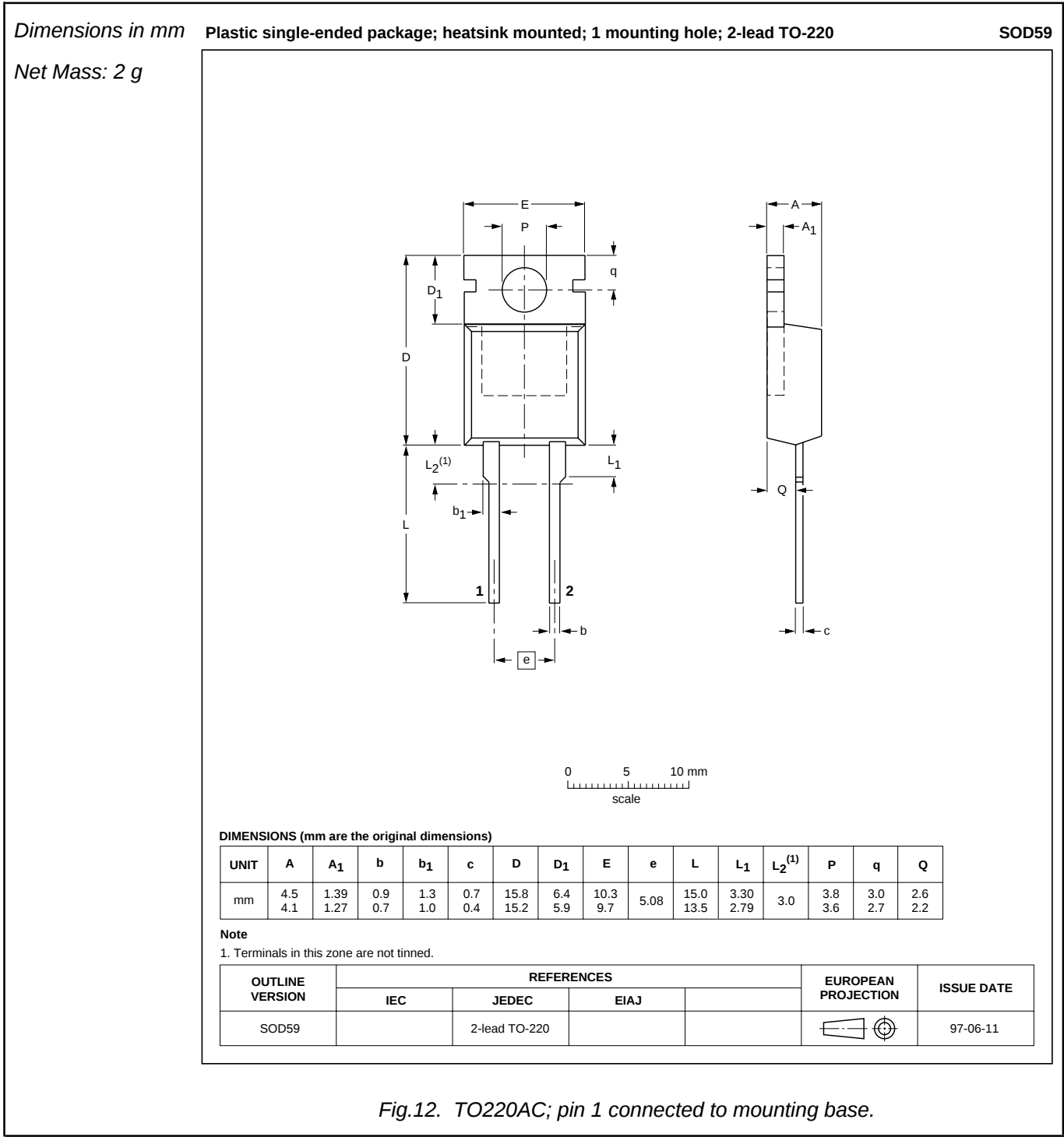
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MECHANICAL DATA



Notes

- 1. Refer to mounting instructions for TO220 envelopes.
- 2. Epoxy meets UL94 V0 at 1/8".

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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 are given 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 this 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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