

1. General description

Dual common cathode power Schottky diode designed for high frequency switched mode power supplies in a TO263 (D2PAK) plastic package.



2. Features and benefits

- High junction temperature up to 175 °C
- Low forward voltage drop, negligible switching losses
- High efficiency

3. Applications

- DC to DC converters
- Freewheeling diode
- OR-ing diode
- Switched mode power supply rectifier

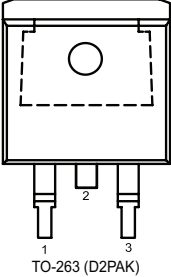
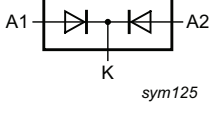
4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Notes | Values | | | Unit |
|--------------------------------|---------------------------------|---|-------|--------|------|------|---------|
| Absolute maximum rating | | | | | | | |
| V_{RRM} | repetitive peak reverse voltage | | | 170 | | | V |
| $I_{F(AV)}$ | average forward current | $\delta = 0.5$; square-wave pulse; $T_{mb} \leq 158$ °C; per diode; Fig. 1 ; Fig. 2 ; Fig. 3 | | 15 | | | A |
| $I_{O(AV)}$ | average output current | $\delta = 0.5$; square-wave pulse; $T_{mb} \leq 158$ °C; both diodes conducting | | 30 | | | A |
| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
| Static characteristics | | | | | | | |
| V_F | forward voltage | $I_F = 15$ A; $T_j = 25$ °C; per diode; Fig. 6 | | - | 0.81 | 0.90 | V |
| I_R | reverse current | $V_R = 170$ V; $T_j = 25$ °C; per diode; Fig. 7 ; Fig. 8 | | - | 0.2 | 10 | μ A |

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------------------------------|--|---|
| 1 | A1 | anode 1 |  <p>TO-263 (D2PAK)</p> |  <p>sym125</p> |
| 2 | K | cathode | | |
| 3 | A2 | anode 2 | | |
| mb | K | mounting base; connected to cathode | | |

6. Ordering information

Table 3. Ordering information

| Type number | Package name | Orderable part number | Packing method | Small packing quantity | Package version | Package issue date |
|---------------|--------------|-----------------------|----------------|------------------------|-----------------|--------------------|
| WN3S30H170CBT | TO263 | WN3S30H170CBTJ | Reel | 800 | TO263N | 26-Sep-2016 |

7. Marking

Table 4. Marking codes

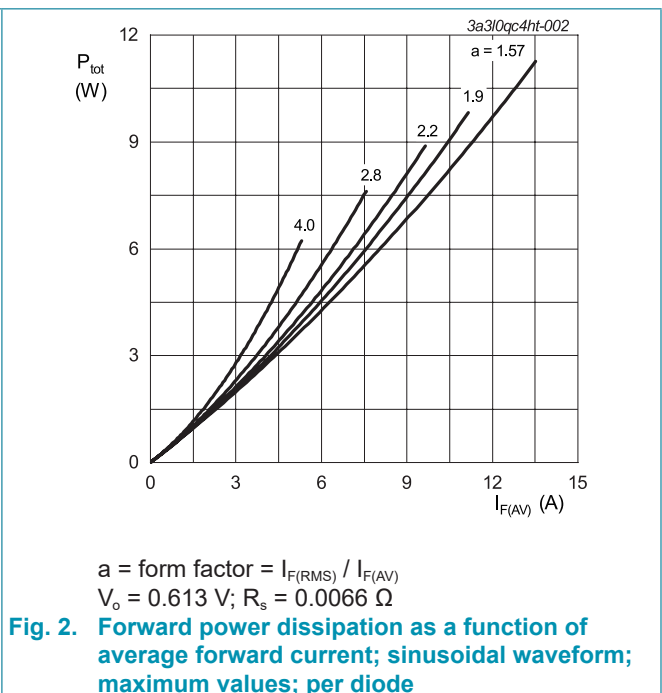
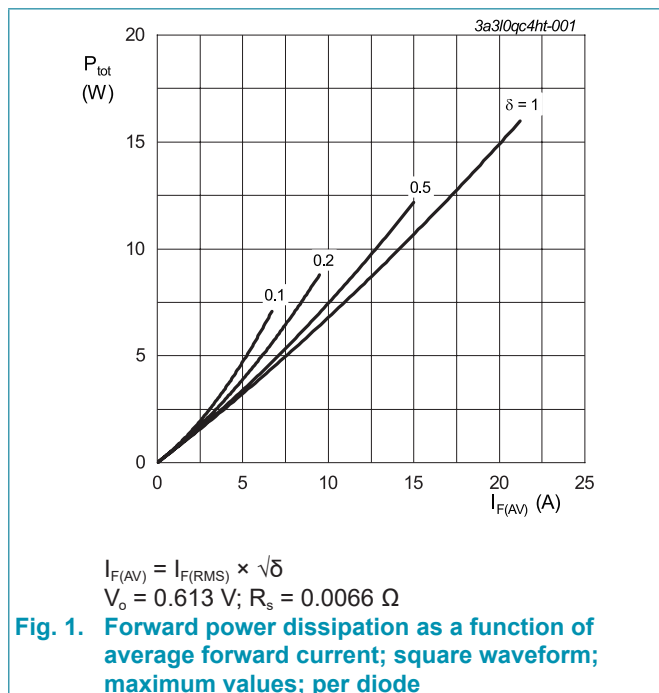
| Type number | Marking codes |
|---------------|-------------------|
| WN3S30H170CBT | WN3S30 H170CBT |

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol | Parameter | Conditions | Notes | Values | Unit |
|-------------|-------------------------------------|---|-------|------------|------------------|
| V_{RRM} | repetitive peak reverse voltage | | | 170 | V |
| V_{RWM} | crest working reverse voltage | | | 170 | V |
| V_R | reverse voltage | DC | | 170 | V |
| $I_{F(AV)}$ | average forward current | $\delta = 0.5$; square-wave pulse; $T_{mb} \leq 158\text{ }^\circ\text{C}$; per diode; Fig. 1 ; Fig. 2 ; Fig. 3 | | 15 | A |
| $I_{O(AV)}$ | average output current | $\delta = 0.5$; square-wave pulse; $T_{mb} \leq 158\text{ }^\circ\text{C}$; both diodes conducting | | 30 | A |
| I_{FSM} | non-repetitive peak forward current | $t_p = 10\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse; per diode; Fig. 4 | | 300 | A |
| | | $t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse; per diode | | 330 | A |
| T_{stg} | storage temperature | | | -40 to 175 | $^\circ\text{C}$ |
| T_j | junction temperature | | | -40 to 175 | $^\circ\text{C}$ |



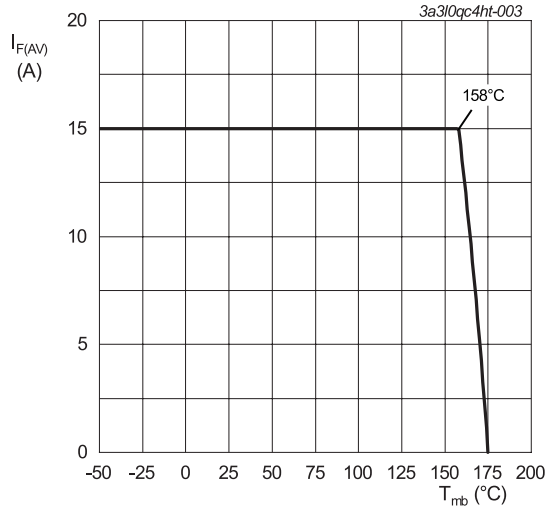


Fig. 3. Average forward current as a function of mounting base temperature; maximum values; per diode

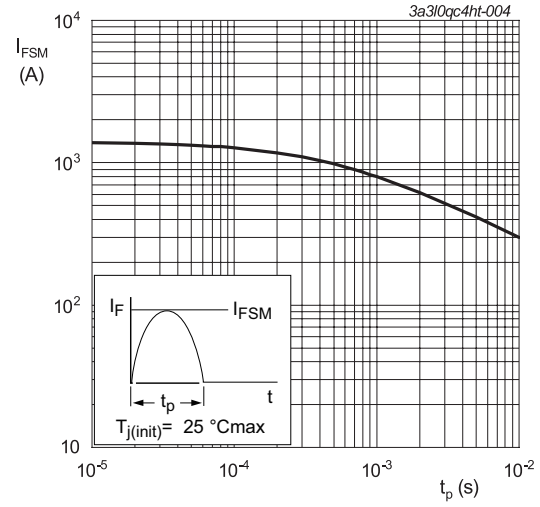


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode

9. Thermal characteristics

Table 6. Thermal characteristics

| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
|----------------|--|-----------------------------------|-------|-----|-----|-----|------|
| $R_{th(j-mb)}$ | thermal resistance from junction to mounting base | per diode; Fig. 5 | | - | - | 1.4 | K/W |
| | | both diodes conducting | | - | - | 0.7 | K/W |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient free air | in free air | | - | 60 | - | K/W |

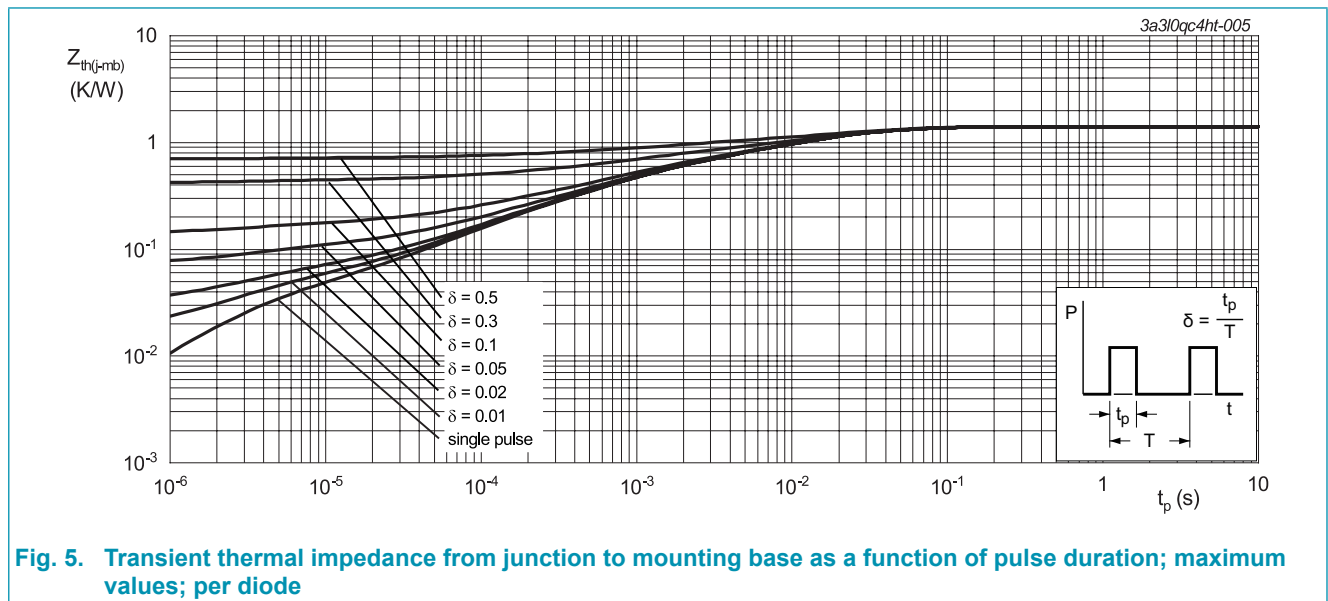
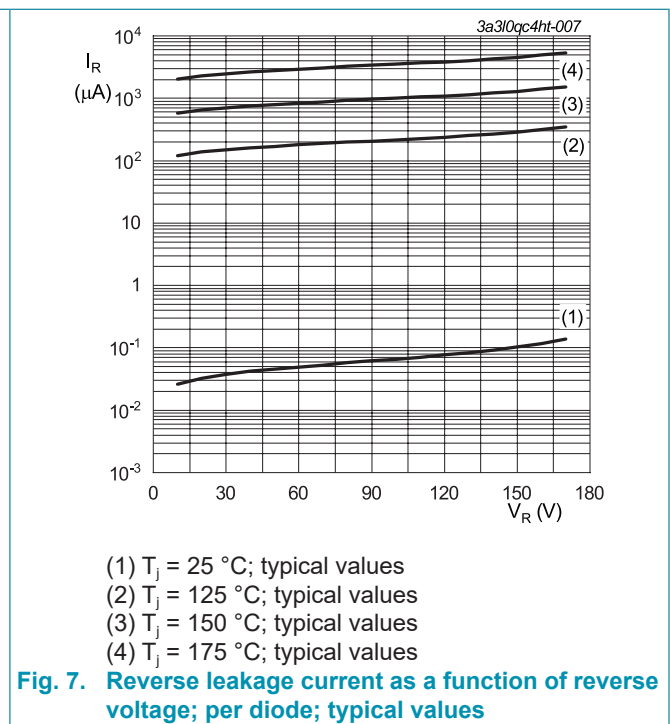
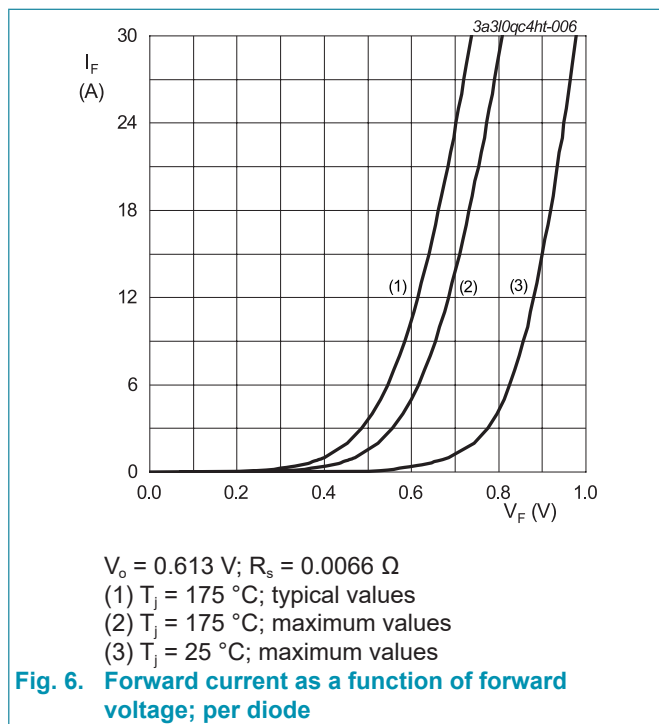


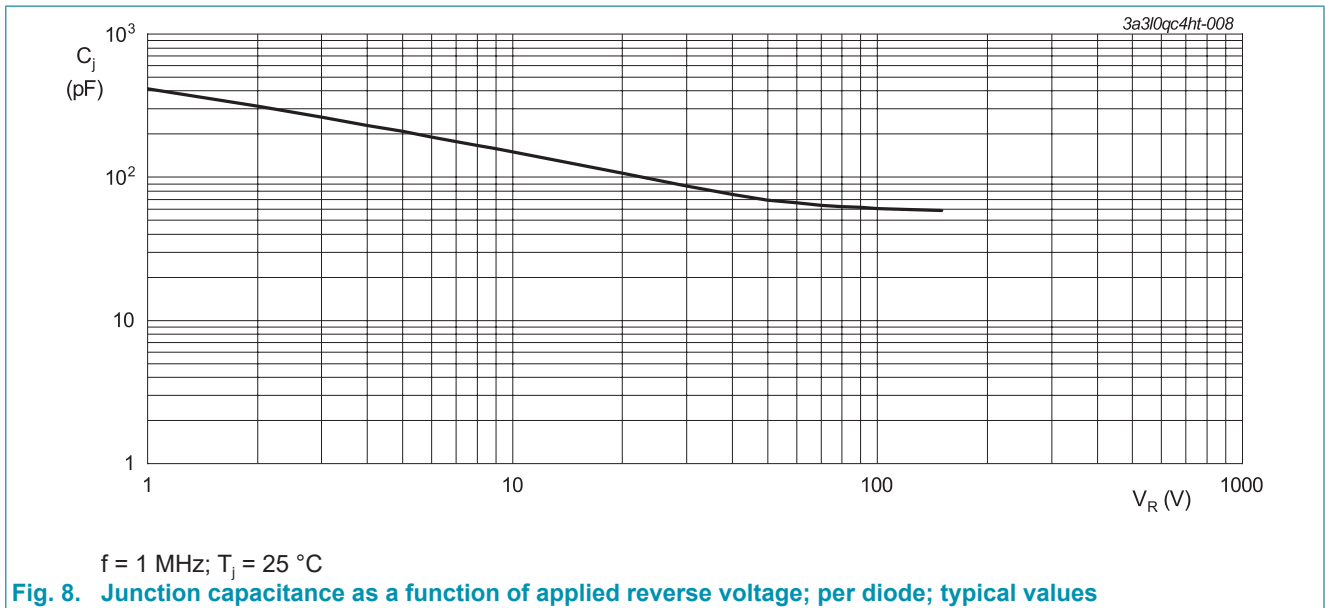
Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration; maximum values; per diode

10. Characteristics

Table 7. Characteristics

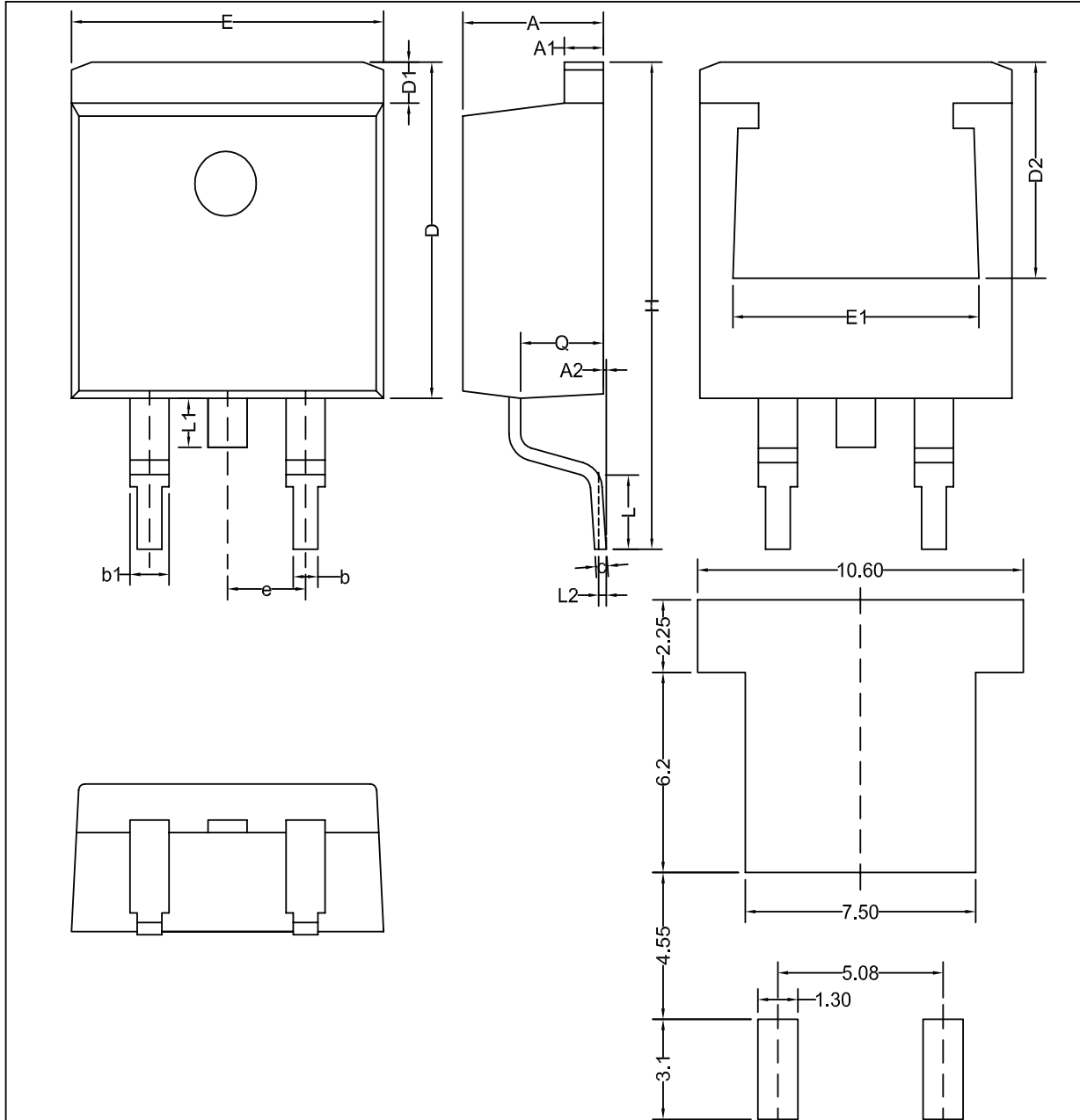
| Symbol | Parameter | Conditions | Notes | Min | Typ | Max | Unit |
|-------------------------------|-----------------|---|-------|-----|------|------|------|
| Static characteristics | | | | | | | |
| V _F | forward voltage | I _F = 15 A; T _j = 25 °C; per diode; Fig. 6 | | - | 0.81 | 0.90 | V |
| | | I _F = 15 A; T _j = 125 °C; per diode; Fig. 6 | | - | 0.67 | - | V |
| I _R | reverse current | V _R = 170 V; T _j = 25 °C; per diode; Fig. 7 ; Fig. 8 | | - | 0.2 | 10 | μA |
| | | V _R = 170 V; T _j = 125 °C; per diode; Fig. 7 ; Fig. 8 | | - | 0.4 | 10 | mA |





11. Package outline

Plastic single-ended surface-mounted package (D2PAK); 3 leads (one lead cropped) TO263



Recommended Footprint

| Unit | A | A1 | A2 | b | b1 | c | D | D1 | D2 | e | E | E1 | H | L | L1 | L2 | Q |
|------|------|------|------|------|------|------|-------|------|------|---------------|-------|------|-------|------|------|---------------|------|
| min | 4.10 | 1.22 | 0.00 | 0.60 | 1.05 | 0.34 | --- | 1.20 | 6.60 | 2.54 (BSC) | 9.70 | 7.80 | 14.80 | 2.10 | --- | 0.25 (BSC) | 2.20 |
| max | 4.70 | 1.40 | 0.25 | 0.90 | 1.45 | 0.64 | 11.00 | 1.60 | --- | --- | 10.30 | --- | 15.80 | 2.90 | 1.75 | --- | 2.79 |

12. Legal information

Data sheet status

| Document status [1][2] | Product status [3] | Definition |
|--------------------------------|--------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
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- [2] The term 'short data sheet' is explained in section "Definitions".
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