# 1 Electrical characteristics

## Absolute ratings (limiting values)

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | | 1200 | V |
| $V_{(RMS)}$ | Voltage rms | | | 850 | V |
| $I_{F(AV)}$ | Average forward current | Tl = 85°C δ =0.5 | DO-41 | 1 | A |
| | | Tl = 115°C δ =0.5 | SMA | | |
| | | Tl = 125°C δ =0.5 | SMB | | |
| $I_{FSM}$ | Forward surge current t = 8.3 ms | | DO-41 | 20 | A |
| | | | SMA | 18 | |
| | | | SMB | | |
| $T_{stg}$ | Storage temperature range | | | - 50 + 175 | °C |
| $T_j$ | Maximum operating junction temperature | | | + 175 | °C |

**Table 2. Thermal parameters**

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $R_{th\ (j-l)}$ | Junction to lead | L = 10 mm | DO-41 | 45 | °C/W |
| | | | SMA | 30 | |
| | | | SMB | 25 | |
| $R_{th\ (j-a)}$ | Junction to ambient | L = 10 mm | DO-41 | 110 | |

**Table 3. Static electrical characteristics**

| Symbol | Parameter | Tests conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_R$ | Reverse leakage current | $V_R$ = 1200 V | $T_j$ = 25 °C | | | 5 | µA |
| | | | $T_j$ = 125 °C | | | 50 | |
| $V_F$ | Forward voltage drop | $I_F$ = 1 A | $T_j$ = 25 °C | | | 1.9 | V |
| | | | $T_j$ = 125 °C | | 1.17 | 1.65 | |
| | | | $T_j$ = 150 °C | | 1.10 | 1.55 | |

**Table 4. Dynamic electrical characteristics**

| Symbol | Parameter | Tests conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $t_{rr}$ | Reverse recovery time | $I_F$ = 0.5 A<br>$I_{rr}$ = 0.25 A $I_R$ = 1A | $T_j$ = 25 °C | | | 75 | ns |
| $t_{fr}$ | Forward recovery time | $I_F$ = 1 A<br>$dI_F/dt$ = 50 A/µs<br>$V_{FR}$ = 1.1 x $V_{Fmax}$ | $T_j$ = 25 °C | | | 500 | ns |
| $V_{FP}$ | Forward recovery voltage | | | | | 30 | V |

**Figure 1. Conduction losses versus average current**

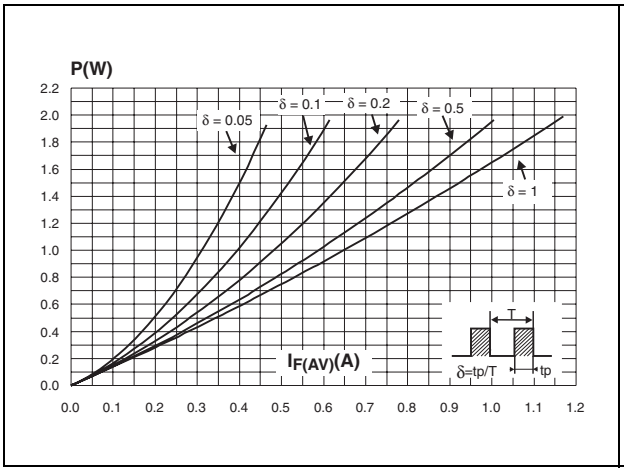



**Figure 2. Forward voltage drop versus forward current**

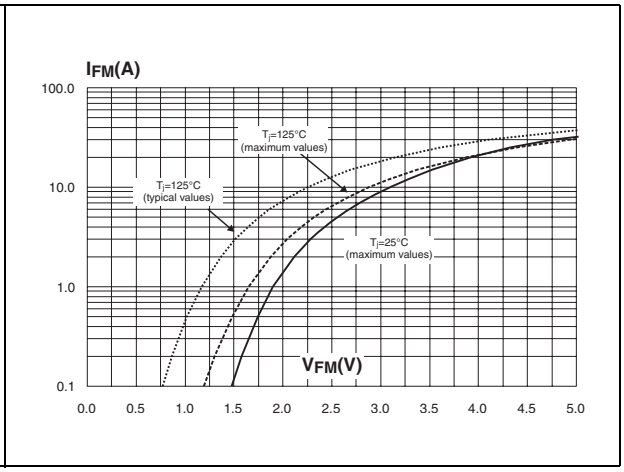



**Figure 3. Relative variation of thermal impedance junction ambient versus pulse duration (DO-41)**

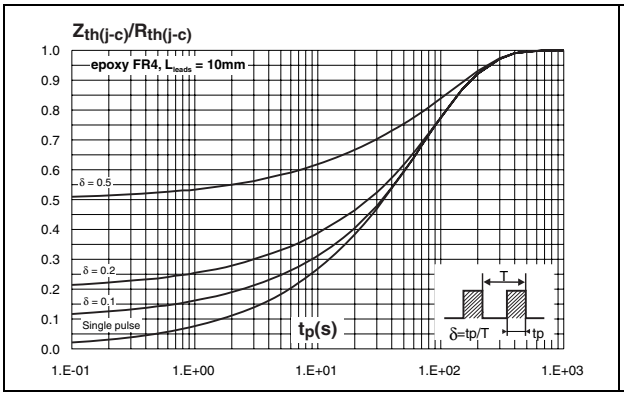



**Figure 4. Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4) (SMA)**

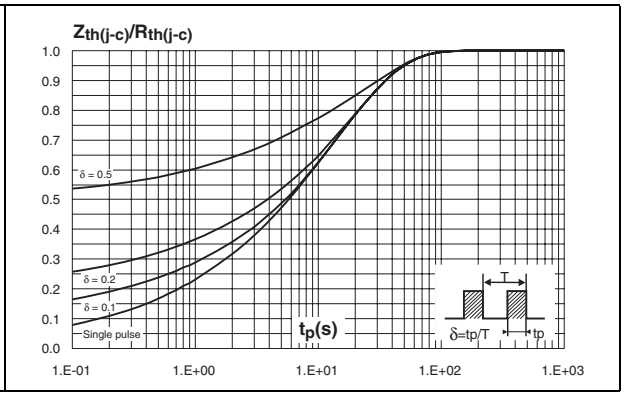



**Figure 5. Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4)(SMB)**

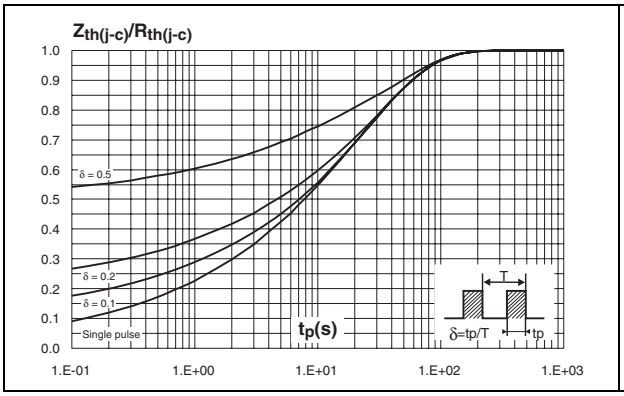



**Figure 6. Thermal resistance junction to ambient versus copper surface under each lead (DO-41, SMB)**

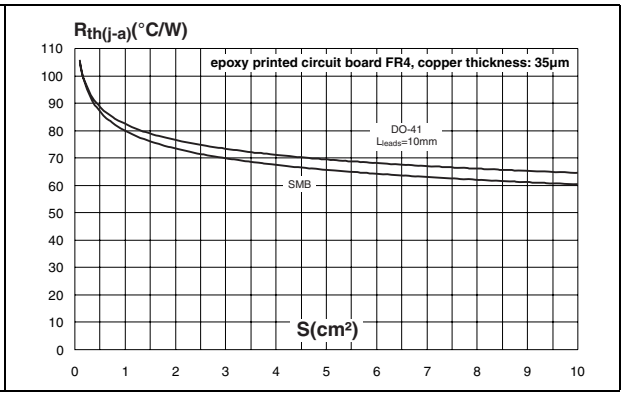
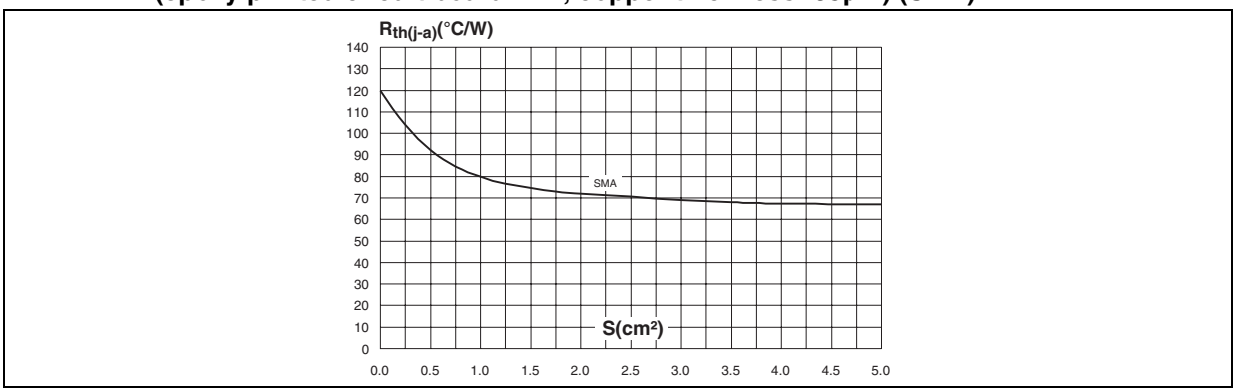


**Figure 7. Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35µm) (SMA)**



# 2 Package information

- Epoxy meets UL 94, V0
- Band indicates cathode
- Bending method (DO-41): see Application note AN1471

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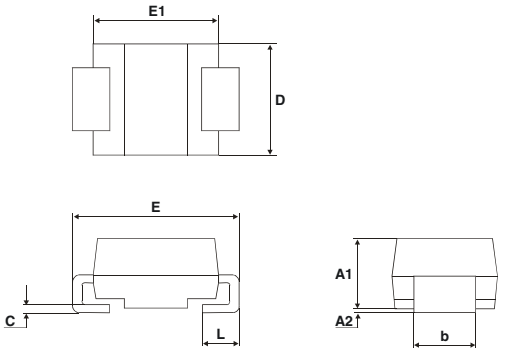
**Table 5. SMA dimensions**




| Ref. | Dimensions | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A1 | 1.90 | 2.45 | 0.075 | 0.094 |
| A2 | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 1.25 | 1.65 | 0.049 | 0.065 |
| c | 0.15 | 0.40 | 0.006 | 0.016 |
| D | 2.25 | 2.90 | 0.089 | 0.114 |
| E | 4.80 | 5.35 | 0.189 | 0.211 |
| E1 | 3.95 | 4.60 | 0.156 | 0.181 |
| L | 0.75 | 1.50 | 0.030 | 0.059 |

**Figure 8. Footprint (dimensions in mm)**

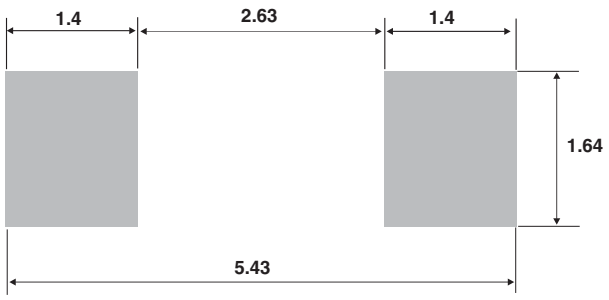
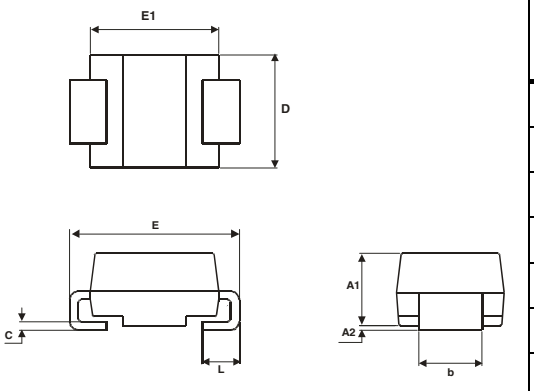


**Table 6. SMB dimensions**




| Ref. | Dimensions | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A1 | 1.90 | 2.45 | 0.075 | 0.096 |
| A2 | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 1.95 | 2.20 | 0.077 | 0.087 |
| c | 0.15 | 0.40 | 0.006 | 0.016 |
| D | 3.30 | 3.95 | 0.130 | 0.156 |
| E | 5.10 | 5.60 | 0.201 | 0.220 |
| E1 | 4.05 | 4.60 | 0.159 | 0.181 |
| L | 0.75 | 1.50 | 0.030 | 0.059 |

**Figure 9. Footprint (dimensions in mm)**

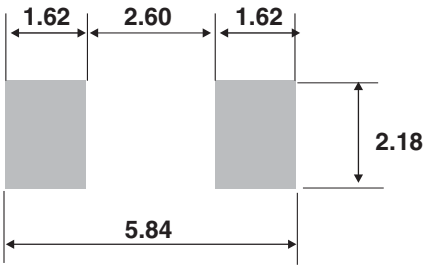
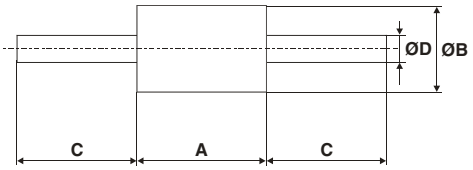



**Table 7. DO-41 (plastic) dimensions**




| Ref. | Dimensions | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.07 | 5.20 | 0.160 | 0.205 |
| B | 2.04 | 2.71 | 0.080 | 0.107 |
| C | 25.4 | | 1 | |
| D | 0.71 | 0.86 | 0.028 | 0.034 |

# 3 Ordering information

**Table 8. Ordering information**

| Order code | Marking | Package | Weight | Base qty | Delivery Mode |
|---|---|---|---|---|---|
| STTH112 | STTH112 | DO-41 | 0.34 g | 2000 | Ammopack |
| STTH112A | H12 | SMA | 0.068 g | 5000 | Tape and reel |
| STTH112U | U12 | SMB | 0.11 g | 2500 | Tape and reel |
| STTH112RL | STTH112 | DO-41 | 0.34 g | 5000 | Tape and reel |

# 4 Revision history

**Table 9. Document revision history**

| Date | Revision | Changes |
|---|---|---|
| Jan-2003 | 2 | Initial release. |
| 22-Jun-2005 | 3 | New value of $T_j$ = 150 °C added to table 2.<br>Dimensions A1 E and D updated in Table 4.<br>Data sheet reformatted.<br>No other technical changes. |
| 20-Mar-2007 | 4 | Reformatted to current standards. Updated dimensions and footprints for SMA and SMB packages. |
| 30-Sep-2009 | 5 | Updated table 7 package dimensions. |

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