


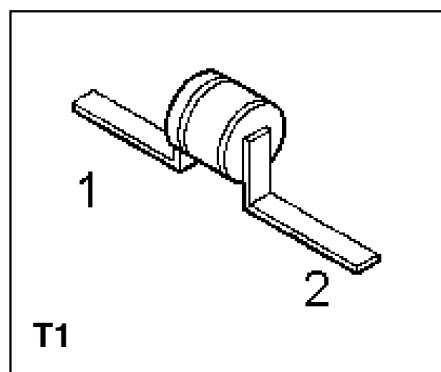
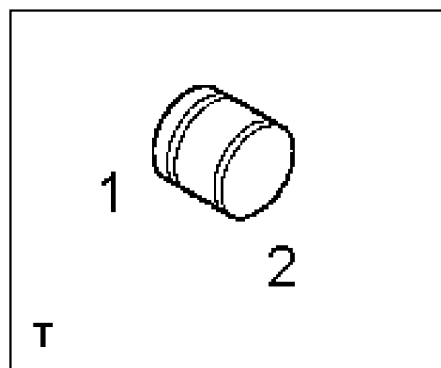
HiRel Silicon Schottky Diode


BAT 15

Features

- **HiRel Discrete and Microwave Semiconductor**
- Medium barrier diodes for detector and mixer applications
- Hermetically sealed microwave package
-  **esa** qualified
- ESA/SCC Detail Spec. No.: 5106/014

ESD: Electrostatic discharge sensitive device, observe handling precautions!



| Type | Marking | Ordering Code | Pin Configuration | Package |
|-----------------|---------|---------------|--|---------|
| BAT 15-013 (ql) | – | see below |  | T |
| BAT 15-014 (ql) | – | see below | see BAT15-013 | T1 |
| BAT 15-033 (ql) | – | see below | see BAT15-013 | T |
| BAT 15-034 (ql) | – | see below | see BAT15-013 | T1 |
| BAT 15-043 (ql) | – | see below | see BAT15-013 | T |
| BAT 15-044 (ql) | – | see below | see BAT15-013 | T1 |
| BAT 15-063 (ql) | – | see below | see BAT15-013 | T |
| BAT 15-064 (ql) | – | see below | see BAT15-013 | T1 |
| BAT 15-073 (ql) | – | see below | see BAT15-013 | T |
| BAT 15-074 (ql) | – | see below | see BAT15-013 | T1 |
| BAT 15-093 (ql) | – | see below | see BAT15-013 | T |
| BAT 15-094 (ql) | – | see below | see BAT15-013 | T1 |
| BAT 15-103 (ql) | – | see below | see BAT15-013 | T |
| BAT 15-104 (ql) | – | see below | see BAT15-013 | T1 |
| BAT 15-113 (ql) | – | see below | see BAT15-013 | T |
| BAT 15-114 (ql) | – | see below | see BAT15-013 | T1 |
| BAT 15-123 (ql) | – | see below | see BAT15-013 | T |
| BAT 15-124 (ql) | – | see below | see BAT15-013 | T1 |

(ql) Quality Level:

P: Professional Quality,
H: High Rel Quality,
S: Space Quality,
ES: ESA Space Quality,

Ordering Code: Q62702A1178
Ordering Code: on request
Ordering Code: on request
Ordering Code: Q62702A1180

(see **Chapter Order Instructions** for ordering example)

Table 1 Maximum Ratings

| Parameter | Symbol | Limit Values | Unit |
|--|-----------|---------------------------------|------|
| Reverse voltage | V_R | 3 | V |
| Forward current BAT15-013, -014, -033, -034 BAT15-043, -044, -063, -064 BAT15-073, -074, -093, -094 BAT15-103, -104, -113, -114 BAT15-123, -124 | I_F | 100 100 50 50 50 | mA |
| Power dissipation BAT15-013, -014, -033, -034 BAT15-043, -044, -063, -064 BAT15-073, -074, -093, -094 BAT15-103, -104, -113, -114 BAT15-123, -124 | P_{tot} | 100 100 50 50 50 | mW |
| Operating temperature range | T_{op} | - 55 to + 150 | °C |
| Storage temperature range | T_{stg} | - 65 to + 175 | °C |
| Soldering temperature | T_{sol} | + 220 | °C |
| Burn-out energy ¹⁾ BAT15-013, -014, -033, -034 BAT15-043, -044, -063, -064 BAT15-073, -074, -093, -094 BAT15-103, -104, -113, -114 BAT15-123, -124 | E_B | 5.0 5.0 2.0 2.0 1.0 | Erg |

¹⁾ Quoted for a single discharge of torry line during the first 2.4 ns current flow in the forward direction. General criterion for burn-out energy is a 3 dB increase in noise figure.

Electrical Characteristics

Table 2 DC Characteristics at $T_A = 25\text{ °C}$ unless otherwise specified

| Parameter | Symbol | Limit Values | | | Unit |
|---|------------|--------------|------|------|---------------|
| | | min. | typ. | max. | |
| Breakdown voltage $I_R = 10\ \mu\text{A}$ | $V_{(BR)}$ | 3 | – | – | V |
| Reverse current $V_R = 2\ \text{V}$ | I_R | | | | μA |
| BAT15-013, -014, -033, -034 | | – | – | 5 | |
| BAT15-043, -044, -063, -064 | | – | – | 5 | |
| BAT15-073, -074, -093, -094 | | – | – | 5 | |
| BAT15-103, -104, -113, -114 | | – | – | 1 | |
| BAT15-123, -124 | | – | – | 1 | |
| Forward voltage 1 $I_{F1} = 0.01\ \text{mA}$ | V_{F1} | | | | V |
| BAT15-013, -014, -033, -034 | | – | – | 0.15 | |
| BAT15-043, -044, -063, -064 | | – | – | 0.17 | |
| BAT15-073, -074, -093, -094 | | – | – | 0.18 | |
| BAT15-103, -104, -113, -114 | | – | – | 0.19 | |
| BAT15-123, -124 | | – | – | 0.20 | |
| Forward voltage 2 $I_{F2} = 1\ \text{mA}$ | V_{F2} | | | | V |
| BAT15-013, -014, -033, -034 | | – | 0.23 | 0.28 | |
| BAT15-043, -044, -063, -064 | | – | 0.27 | 0.30 | |
| BAT15-073, -074, -093, -094 | | – | 0.29 | 0.31 | |
| BAT15-103, -104, -113, -114 | | – | 0.30 | 0.32 | |
| BAT15-123, -124 | | – | 0.31 | 0.33 | |

Table 2 DC Characteristics at $T_A = 25\text{ °C}$ unless otherwise specified (cont'd)

| Parameter | Symbol | Limit Values | | | Unit |
|---|--------|--------------|------|------|----------|
| | | min. | typ. | max. | |
| Series resistance ²⁾ $I_{F1} = 10\text{ mA}, I_{F2} = 50\text{ mA}$ | R_F | | | | Ω |
| BAT15-013, -014 | | – | 3.0 | 3.5 | |
| BAT15-033, -034 | | – | 4.0 | 4.5 | |
| BAT15-043, -044 | | – | 3.5 | 4.0 | |
| BAT15-063, -064 | | – | 4.5 | 5.0 | |
| BAT15-073, -074 | | – | 4.5 | 5.5 | |
| BAT15-093, -094 | | – | 5.5 | 6.5 | |
| BAT15-103, -104 | | – | 6.0 | 7.0 | |
| BAT15-113, -114 | | – | 7.0 | 8.0 | |
| BAT15-123, -124 | | – | 8.0 | 9.0 | |

$$^2) R_F = \frac{\Delta V_F}{40 \times 10^{-3}} \Omega$$

Table 3 AC Characteristics at $T_A = 25\text{ °C}$ unless otherwise specified

| Parameter | Symbol | Limit Values | | | Unit |
|---|--------|--------------|------|------|------|
| | | min. | typ. | max. | |
| Total capacitance $V_R = 0\text{ V}, f = 1\text{ MHz}$ | C_T | | | | pF |
| BAT15-013, -014, -033, -034 | | – | 0.35 | 0.60 | |
| BAT15-043, -044, -063, -064 | | – | 0.30 | 0.35 | |
| BAT15-073, -074, -093, -094 | | – | 0.27 | 0.30 | |
| BAT15-103, -104, -113, -114 | | – | 0.23 | 0.25 | |
| BAT15-123, -124 | | – | 0.20 | 0.22 | |
| Noise figure I.F. = 30 MHz LO power = 0 dBm LO = 9.375 GHz | NF | | | | dB |
| BAT15-013, -014 | | – | 5.3 | 5.5 | |
| BAT15-033, -034 | | – | 6.3 | 6.5 | |
| BAT15-043, -044 | | – | 5.3 | 5.5 | |
| BAT15-063, -064 | | – | 6.3 | 6.5 | |
| BAT15-073, -074 | | – | 5.3 | 5.5 | |
| BAT15-093, -094 | | – | 6.3 | 6.5 | |
| BAT15-103, -104 | | – | 5.7 | 6.0 | |
| BAT15-113, -114 | | – | 7.2 | 7.5 | |
| BAT15-123, -124 | – | 8.0 | 9.0 | | |

Order Instructions

Full type variant including type variant and quality level must be specified by the orderer. For HiRel Discrete and Microwave Semiconductors the ordering code specifies device family and quality level only.

Ordering Form:

Ordering Code: Q...
BAT15- (x) (ql)
(x): Type Variant
(ql): Quality Level

Ordering Example:

Ordering Code: Q62702A1180
BAT15-014 ES
For BAT15-014 in T1 Package; ESA Space Quality Level

Further Information

See our WWW-Pages:

- Discrete and RF-Semiconductors (Small Signal Semiconductors)
www.siemens.de/semiconductor/products/35/35.htm
- HiRel Discrete and Microwave Semiconductors
www.siemens.de/semiconductor/products/35/353.htm

Please contact also our marketing division:

Tel.: ++89 6362 4480
Fax.: ++89 6362 5568
e-mail: martin.wimmers@hl.siemens.de

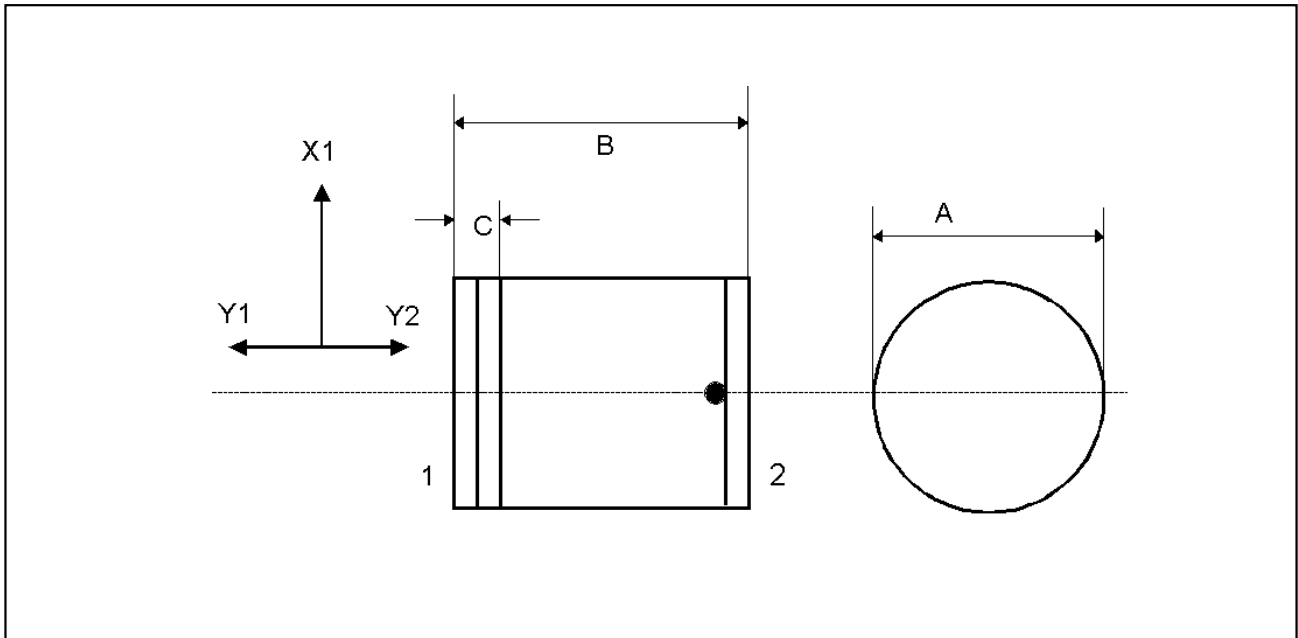


Figure 1 T Package

| Symbol | Millimetre | |
|--------|------------|------|
| | min. | max. |
| A | 1.30 | 1.45 |
| B | 1.15 | 1.35 |
| C | – | 0.40 |

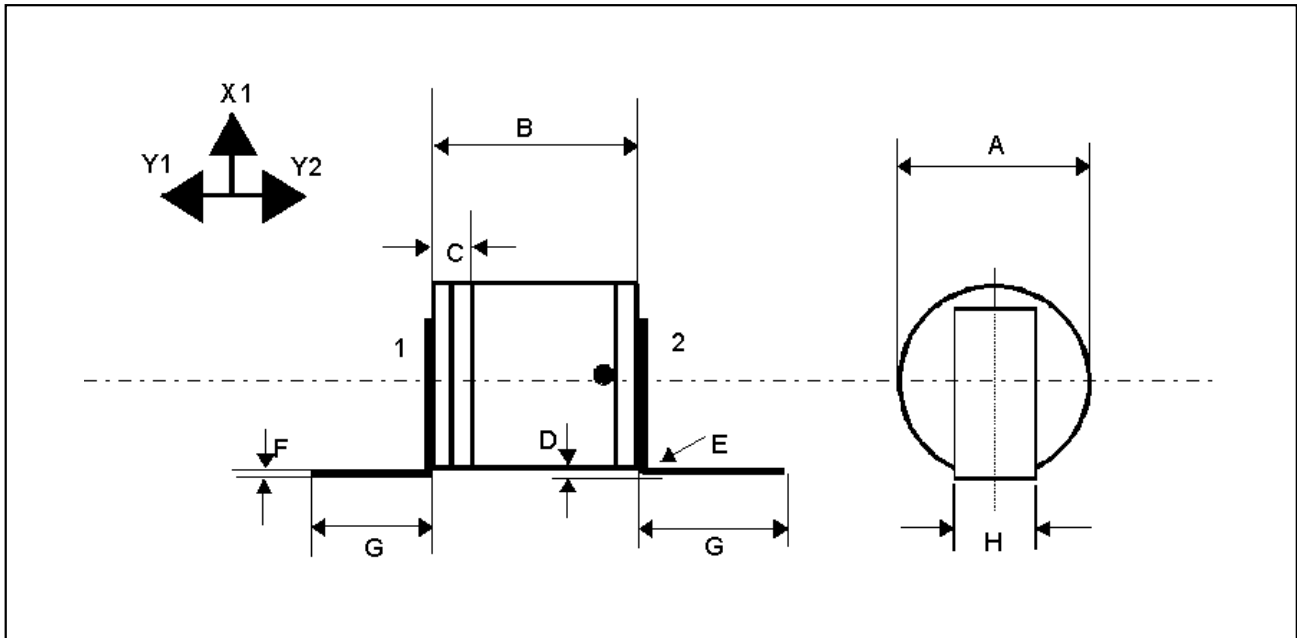


Figure 2 T1 Package

| Symbol | Millimetre | |
|--------|------------|------|
| | min. | max. |
| A | 1.30 | 1.45 |
| B | 1.15 | 1.35 |
| C | - | 0.40 |
| D | 0.10 | 0.50 |
| E | - | 0.30 |
| F | 0.06 | 0.10 |
| G | 5.50 | - |
| H | 0.40 | 0.60 |