


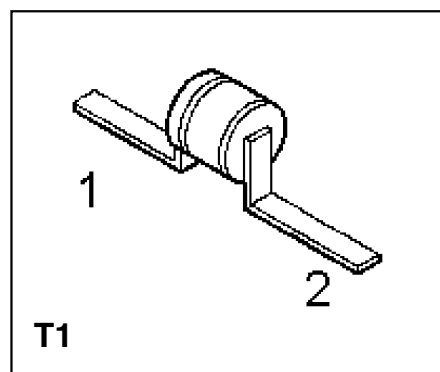
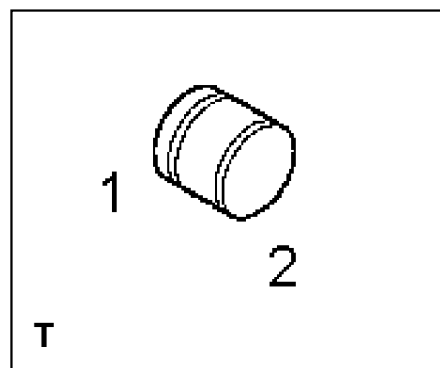
## HiRel Silicon Schottky Diode


**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 <sup>1)</sup> 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

<sup>1)</sup> 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 $V_R = 2\ \text{V}$	$I_R$				$\mu\text{A}$
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 <sup>2)</sup> $I_{F1} = 10\text{ mA}$ , $I_{F2} = 50\text{ mA}$	$R_F$				$\Omega$
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:

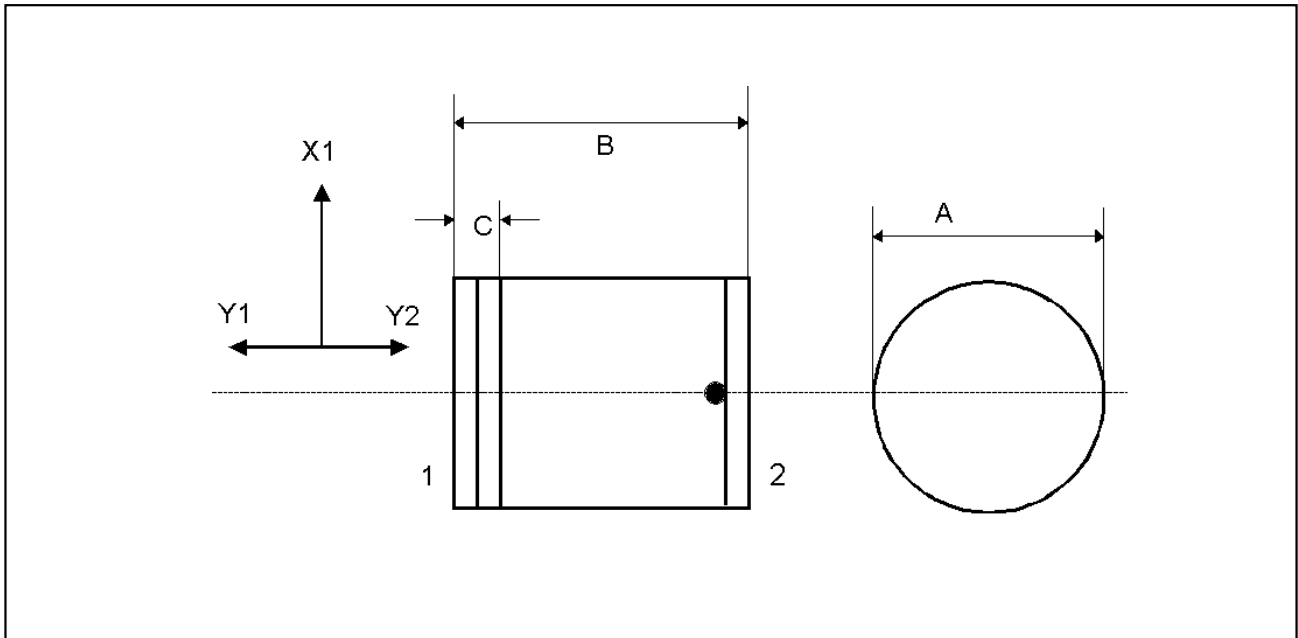
- Discrete and RF-Semiconductors (Small Signal Semiconductors)  
[www.siemens.de/semiconductor/products/35/35.htm](http://www.siemens.de/semiconductor/products/35/35.htm)
- HiRel Discrete and Microwave Semiconductors  
[www.siemens.de/semiconductor/products/35/353.htm](http://www.siemens.de/semiconductor/products/35/353.htm)

Please contact also our marketing division:

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e-mail: [martin.wimmers@hl.siemens.de](mailto: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

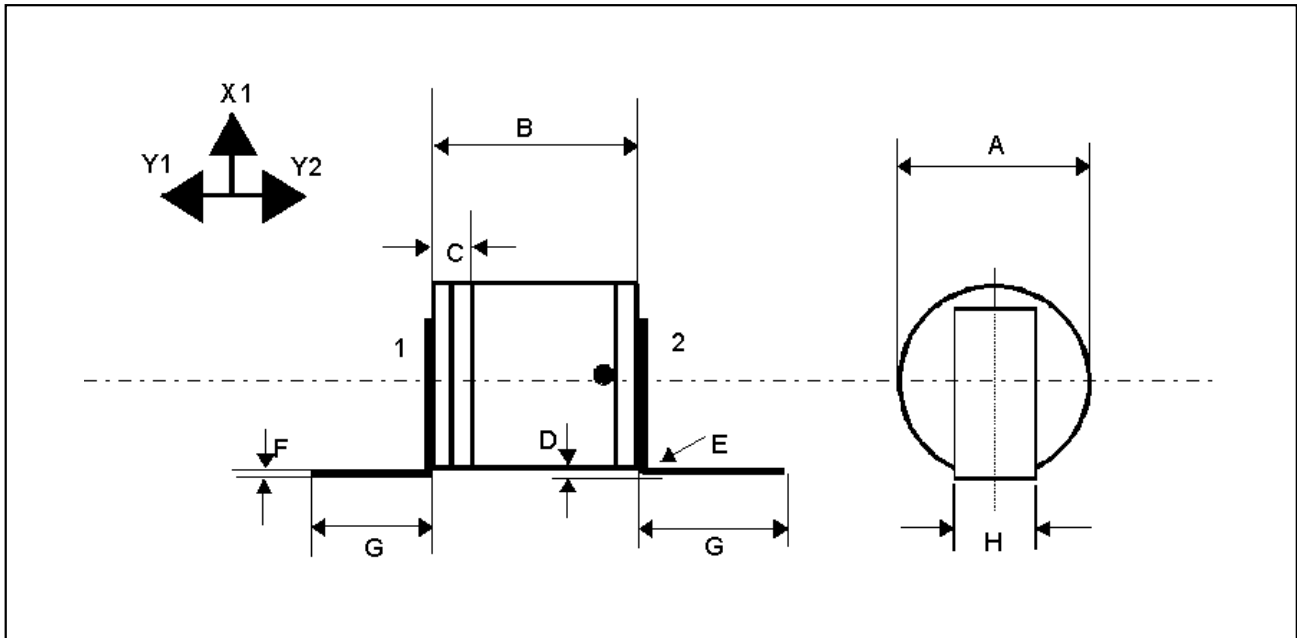


Figure 2 T1 Package

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