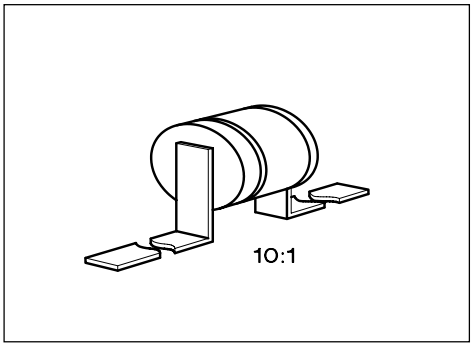
SIEMENS

## Silicon Schottky Diodes

**BAT 14- … 4**

- Medium barrier diodes for detector and mixer applications
- Hermetical ceramic package
- For frequencies up to 40 GHz




**ESD: E**lectro**s**tatic **d**ischarge sensitive device, observe handling precautions!

| Type | Frequency band (GHz) | Ordering Code | Pin Configuration | Package[1)] |
|---|---|---|---|---|
| BAT 14-014<br>BAT 14-034 | … 4 (S) | Q62702-D1005<br>Q62702-D1019 | Cathode: black dot, heat sink<br>  | T1 |
| BAT 14-044<br>BAT 14-064 | … 8 (C) | Q62702-D1026<br>Q62702-D1036 | | |
| BAT 14-074<br>BAT 14-094 | … 12 (X) | Q62702-D1041<br>Q62702-D1051 | | |
| BAT 14-104<br>BAT 14-114 | … 18 (Ku) | Q62702-D1056<br>Q62702-D1061 | | |
| BAT 14-124 | … 40 (Ka) | Q62702-D1066 | | |

### Maximum Ratings

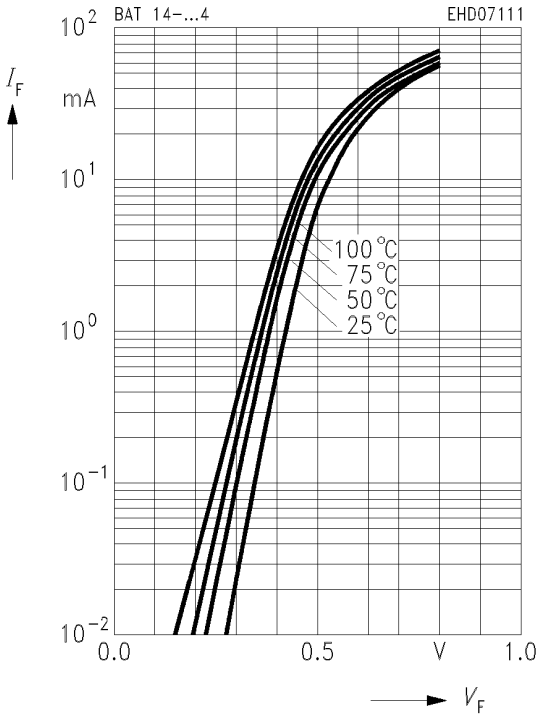
| Parameter | Symbol | Values | Unit |
|---|---|---|---|
| Reverse voltage | $V_R$ | 3 | V |
| Forward current BAT 14-014 … BAT 14-064<br>BAT 14-074 … BAT 74-124 | $I_F$ | 100<br>50 | mA |
| Junction temperature | $T_j$ | 175 | °C |
| Storage temperature range | $T_{stg}$ | – 65 … + 150 | |
| Operating temperature range | $T_{op}$ | – 65 … + 150 | |

1) For detailed information see chapter Package Outlines.

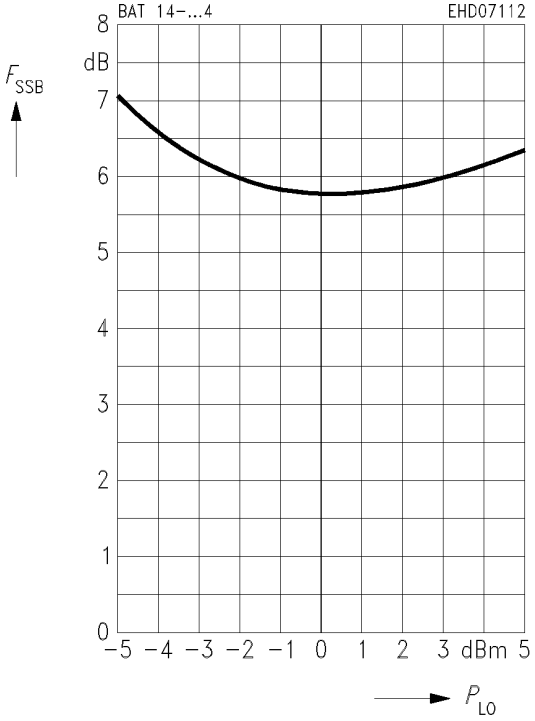
**Electrical Characteristics**
at $T_A$ = 25 °C, unless otherwise specified.

| Parameter | | Symbol | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | min. | typ. | max. | |
| Breakdown voltage $I_R$ = 10 µA | | $V_{(BR)}$ | 3 | – | – | V |
| Forward voltage | | $V_F$ | | | | |
| $I_F$ = 1 mA | BAT 14-014/-034 | | – | 0.42 | – | |
| | BAT 14-044/-064 | | – | 0.43 | – | |
| | BAT 14-074/-094 | | – | 0.44 | – | |
| | BAT 14-104/-114 | | – | 0.46 | – | |
| | BAT 14-124 | | – | 0.47 | – | |
| $I_F$ = 10 mA | BAT 14-014/-034 | | – | 0.5 | – | |
| | BAT 14-044/-064 | | – | 0.53 | – | |
| | BAT 14-074/-094 | | – | 0.55 | – | |
| | BAT 14-104/-114 | | – | 0.58 | – | |
| | BAT 14-124 | | – | 0.63 | – | |
| Diode capacitance | | $C_T$ | | | | pF |
| $f$= 1 MHz, $V_R$ = 0 | BAT 14-014/-034 | | – | 0.25 | 0.35 | |
| | BAT 14-044/-064 | | – | 0.2 | 0.25 | |
| | BAT 14-074/-094 | | – | 0.17 | 0.2 | |
| | BAT 14-104/-114 | | – | 0.13 | 0.15 | |
| | BAT 14-124 | | – | 0.1 | 0.12 | |
| Case capacitance | | $C_C$ | – | 0.1 | – | |
| Noise figure (single sideband) | | $F_{SSB}$ | | | | dB |
| IF amplifier noise | | | | | | |
| $F_{IF}$ = 1.5 dB, $P_{LO}$ = 3 dBm, $f_{IF}$ = 10.7 MHZ | | | | | | |
| $f$= 3 GHz | BAT 14-014 | | – | 5.5 | – | |
| | BAT 14-034 | | – | 6.5 | – | |
| $f$= 6 GHz | BAT 14-044 | | – | 5.5 | – | |
| | BAT 14-064 | | – | 6.5 | – | |
| $f$= 9.3 GHz | BAT 14-074 | | – | 5.5 | – | |
| | BAT 14-094 | | – | 6.5 | – | |
| $f$= 16 GHz | BAT 14-104 | | – | 6.0 | – | |
| | BAT 14-114 | | – | 7.0 | – | |
| | BAT 14-124 | | – | 9.0 | – | |
| Differential forward resistance | | $r_f$ | | | | Ω |
| $I_F$ = 10/50 mA | BAT 14-014 | | – | 3 | – | |
| | BAT 14-034 | | – | 4 | – | |
| | BAT 14-044 | | – | 3.5 | – | |
| | BAT 14-064 | | – | 4.5 | – | |
| | BAT 14-074 | | – | 4.5 | – | |
| | BAT 14-094 | | – | 5.5 | – | |
| | BAT 14-104 | | – | 5.5 | – | |
| | BAT 14-114 | | – | 7 | – | |
| | BAT 14-124 | | – | 8 | – | |

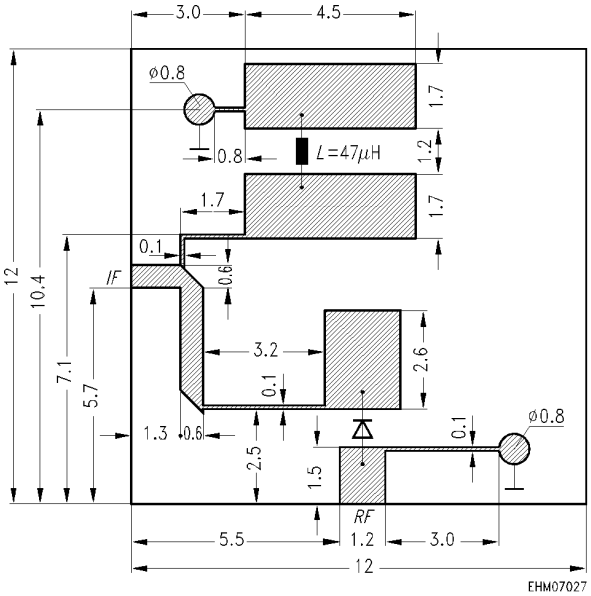
**Forward current $I_F = f(V_F)$**
of BAT 14-094




**Single sideband noise $F_{SSB} = f(P_{LO})$**
$f_{LO}$ = 9.375 GHz, $f_{IF}$ = 10.7 MHZ at
$F_{IF}$ = 1.5 dB




**Measuring circuit for IF amplifier noise**




Ceramic p. c. board for noise measurement
at 9.375 GHz (material = alumina; $E_R$ = 9.94; thickness = 0.635 mm)

Dimensions in mm