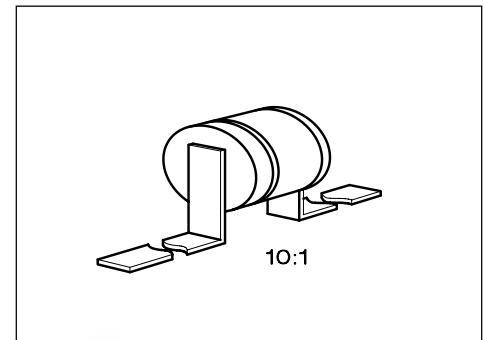


## Silicon Schottky Diodes

## BAT 14- ... 4

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



**ESD:** Electrostatic discharge sensitive device, observe handling precautions!

| Type                     | Frequency band (GHz) | Ordering Code                | Pin Configuration                                                                                                            | Package <sup>1)</sup> |
|--------------------------|----------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| BAT 14-014<br>BAT 14-034 | ... 4 (S)            | Q62702-D1005<br>Q62702-D1019 | Cathode: black dot,<br>heat sink<br><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

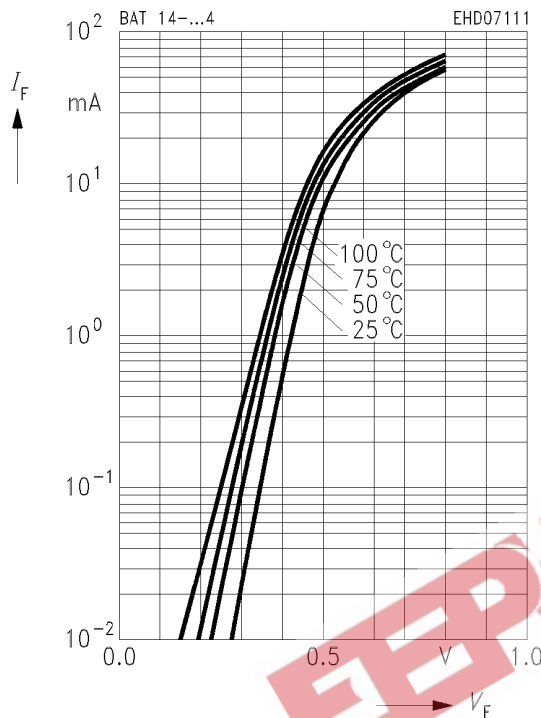
| Parameter                                                              | Symbol    | Values         | Unit |
|------------------------------------------------------------------------|-----------|----------------|------|
| Reverse voltage                                                        | $V_R$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

<sup>1)</sup> For detailed information see chapter Package Outlines.

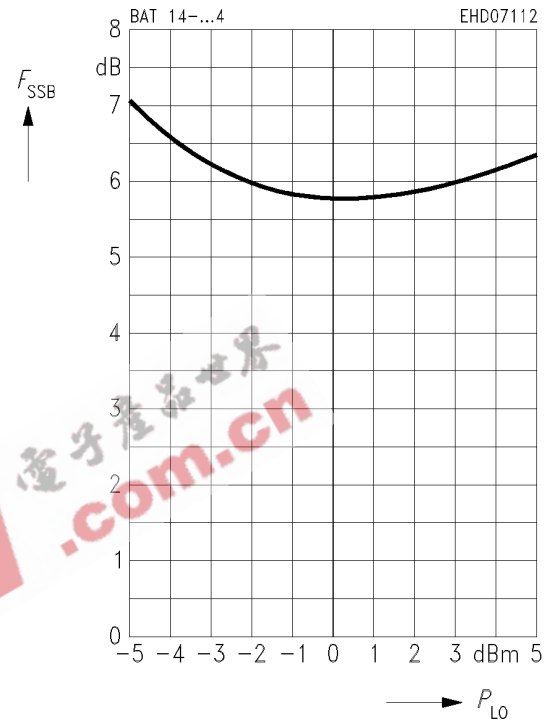
**Electrical Characteristics**at  $T_A = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified.

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

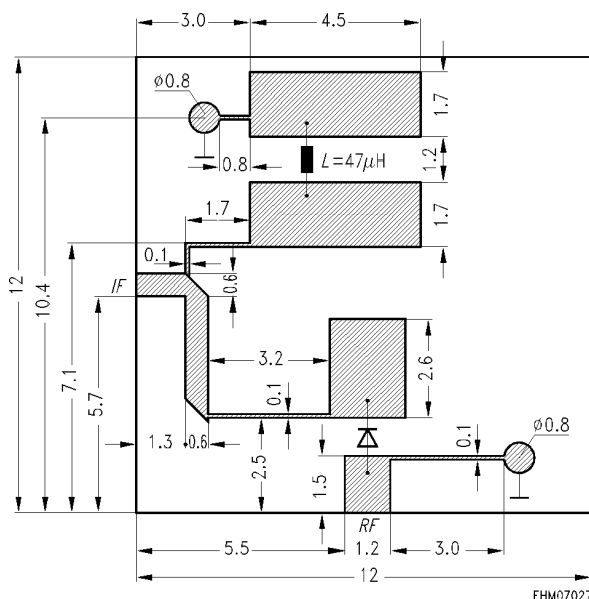
## Forward current $I_F = f(V_F)$ of BAT 14-094



## 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