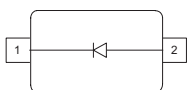


## Silicon Schottky Diodes

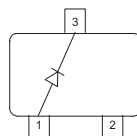
- For low-loss, fast-recovery, meter protection, bias isolation and clamping application
- Guard ring protected
- Low forward voltage
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101<sup>1)</sup>



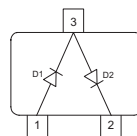
**BAT54-02LRH**  
**BAT54-02V**  
**BAT54-03W**



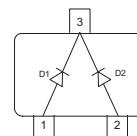
**BAT54**  
**BAT54W**



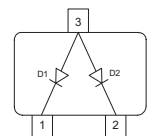
**BAT54-04**  
**BAT54-04W**



**BAT54-05**  
**BAT54-05W**



**BAT54-06**  
**BAT54-06W**



| Type         | Package  | Configuration  | $L_S$ (nH) | Marking |
|--------------|----------|----------------|------------|---------|
| BAT54        | SOT23    | single         | 1.8        | T       |
| BAT54-02LRH* | TSLP-2-7 | single         | 0.4        | 54      |
| BAT54-02V    | SC79     | single         | 0.6        | b       |
| BAT54-03W    | SOD323   | single         | 1.8        | blue 5  |
| BAT54-04     | SOT23    | series         | 1.8        | TS      |
| BAT54-04W    | SOT323   | series         | 1.4        | TS      |
| BAT54-05     | SOT23    | common cathode | 1.8        | TC      |
| BAT54-05W    | SOT323   | common cathode | 1.4        | TC      |
| BAT54-06     | SOT23    | common anode   | 1.8        | TA      |
| BAT54-06W    | SOT323   | common anode   | 1.4        | TA      |
| BAT54W       | SOT323   | single         | 1.4        | T5      |

<sup>1)</sup>BAT54-02LRH is not qualified according AEC Q101

**Maximum Ratings** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| Parameter                                                                       | Symbol    | Value       | Unit             |
|---------------------------------------------------------------------------------|-----------|-------------|------------------|
| Diode reverse voltage                                                           | $V_R$     | 30          | V                |
| Forward current                                                                 | $I_F$     | 200         | mA               |
| Non-repetitive peak surge forward current<br>( $t \leq 10$ ms)                  | $I_{FSM}$ | 600         |                  |
| Repetitive peak forward current <sup>1)</sup><br>$t_p \leq 1$ s, $\delta = 0.5$ | $I_{FRM}$ | 300         | mA               |
| Total power dissipation                                                         | $P_{tot}$ |             | mW               |
| BAT54, $T_S \leq 94^\circ\text{C}$                                              |           | 230         |                  |
| BAT54-02LRH, $T_S \leq 135^\circ\text{C}$                                       |           | 230         |                  |
| BAT54-02V, $T_S \leq 126^\circ\text{C}$                                         |           | 230         |                  |
| BAT54-03W, $T_S \leq 122^\circ\text{C}$                                         |           | 230         |                  |
| BAT54-04, $T_S \leq 71^\circ\text{C}$                                           |           | 230         |                  |
| BAT54-04W, $T_S \leq 117^\circ\text{C}$                                         |           | 230         |                  |
| BAT54-05, $T_S \leq 48^\circ\text{C}$                                           |           | 230         |                  |
| BAT54-05W, $T_S \leq 110^\circ\text{C}$                                         |           | 230         |                  |
| BAT54-06, $T_S \leq 71^\circ\text{C}$                                           |           | 230         |                  |
| BAT54-06W, $T_S \leq 117^\circ\text{C}$                                         |           | 230         |                  |
| BAT54W, $T_S \leq 125^\circ\text{C}$                                            |           | 230         |                  |
| Junction temperature                                                            | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature                                                             | $T_{stg}$ | -65 ... 150 |                  |

<sup>1)</sup>Device mounted on epoxy PCB 40 x 40 x 1.5 mm / 6 cm<sup>2</sup> Cu

**Thermal Resistance**

| Parameter                                | Symbol     | Value      | Unit |
|------------------------------------------|------------|------------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ |            |      |
| BAT54                                    |            | $\leq 245$ |      |
| BAT54-02LRH                              |            | $\leq 65$  |      |
| BAT54-02V                                |            | $\leq 105$ |      |
| BAT54-03W                                |            | $\leq 120$ |      |
| BAT54-04                                 |            | $\leq 345$ |      |
| BAT54-04W                                |            | $\leq 145$ |      |
| BAT54-05                                 |            | $\leq 445$ |      |
| BAT54-05W                                |            | $\leq 175$ |      |
| BAT54-06                                 |            | $\leq 345$ |      |
| BAT54-06W                                |            | $\leq 145$ |      |
| BAT54W                                   |            | $\leq 110$ |      |

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

| Parameter                                                                                                                                                                                           | Symbol                   | Values                |                       |                                 | Unit |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------|-----------------------|---------------------------------|------|
|                                                                                                                                                                                                     |                          | min.                  | typ.                  | max.                            |      |
| DC Characteristics                                                                                                                                                                                  |                          |                       |                       |                                 |      |
| Breakdown voltage <sup>2)</sup><br><i>I</i> <sub>(BR)</sub> = 10 μA                                                                                                                                 | <i>V</i> <sub>(BR)</sub> | 30                    | -                     | -                               | V    |
| Reverse current <sup>2)</sup><br><i>V</i> <sub>R</sub> = 25 V                                                                                                                                       | <i>I</i> <sub>R</sub>    | -                     | -                     | 2                               | μA   |
| Forward voltage <sup>2)</sup><br><i>I</i> <sub>F</sub> = 0.1 mA<br><i>I</i> <sub>F</sub> = 1 mA<br><i>I</i> <sub>F</sub> = 10 mA<br><i>I</i> <sub>F</sub> = 30 mA<br><i>I</i> <sub>F</sub> = 100 mA | <i>V</i> <sub>F</sub>    | -<br>-<br>-<br>-<br>- | -<br>-<br>-<br>-<br>- | 240<br>320<br>400<br>500<br>800 | mV   |

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note Thermal Resistance

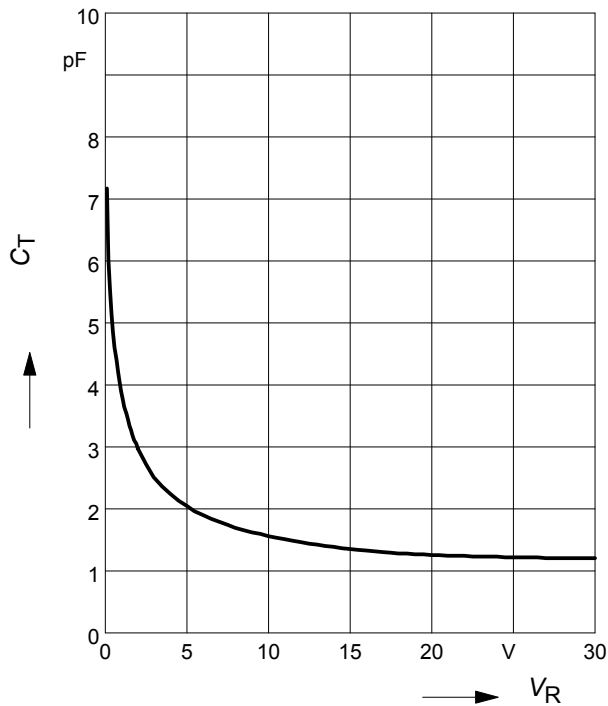
<sup>2)</sup>Pulsed test:  $t_p = 300 \mu\text{s}$ ;  $D = 0.01$

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

| Parameter                                                                                                                          | Symbol   | Values |      |      | Unit |
|------------------------------------------------------------------------------------------------------------------------------------|----------|--------|------|------|------|
|                                                                                                                                    |          | min.   | typ. | max. |      |
| AC Characteristics                                                                                                                 |          |        |      |      |      |
| Diode capacitance<br>$V_R = 1\text{ V}$ , $f = 1\text{ MHz}$                                                                       | $C_T$    | -      | -    | 10   | pF   |
| Reverse recovery time<br>$I_F = 10\text{ mA}$ , $I_R = 10\text{ mA}$ , measured $I_R = 1\text{ mA}$ ,<br>$R_L = 100\text{ }\Omega$ | $t_{rr}$ | -      | -    | 5    | ns   |

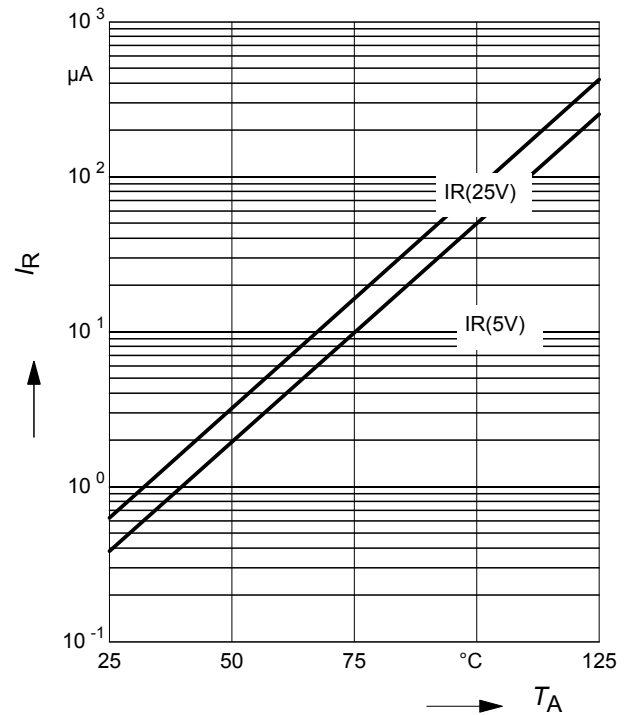
**Diode capacitance  $C_T = f(V_R)$**

$f = 1\text{MHz}$



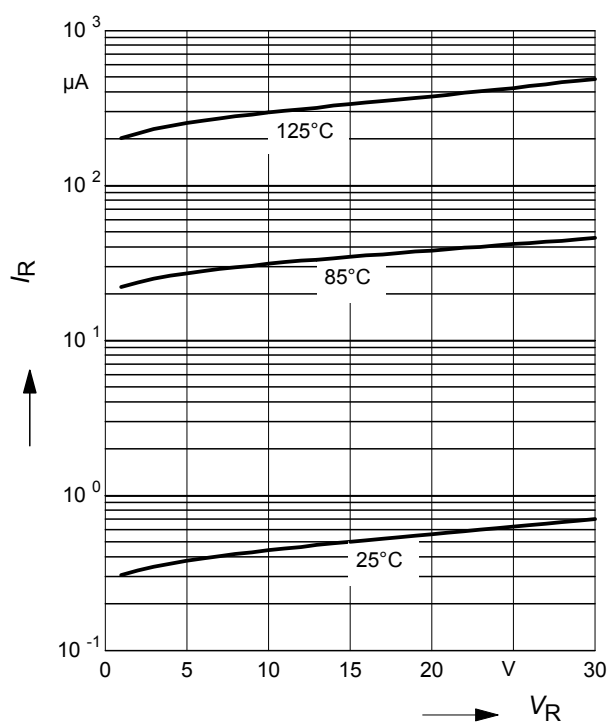
**Reverse current  $I_R = f(T_A)$**

$V_R = \text{Parameter}$



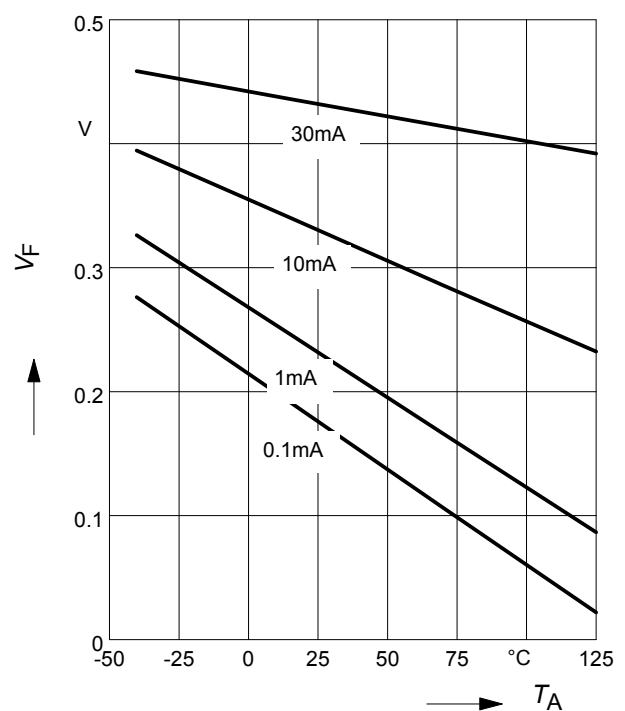
**Reverse current  $I_R = f(V_R)$**

$T_A = \text{Parameter}$



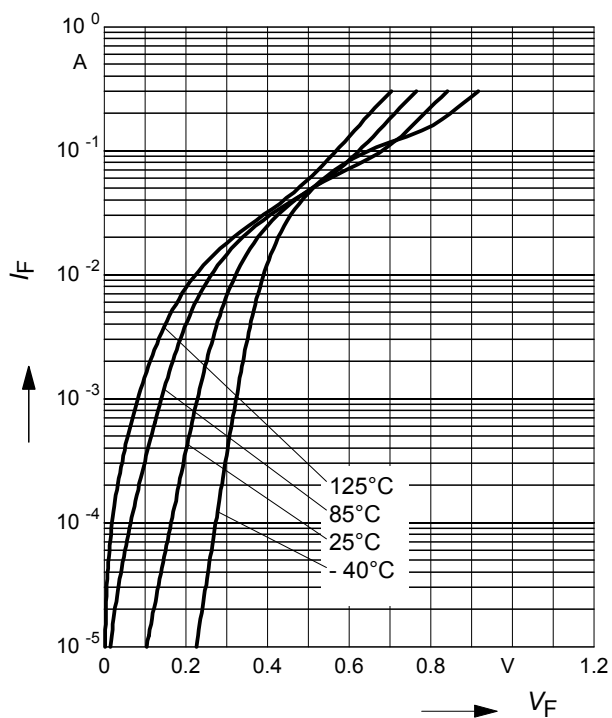
**Forward Voltage  $V_F = f(T_A)$**

$I_F = \text{Parameter}$



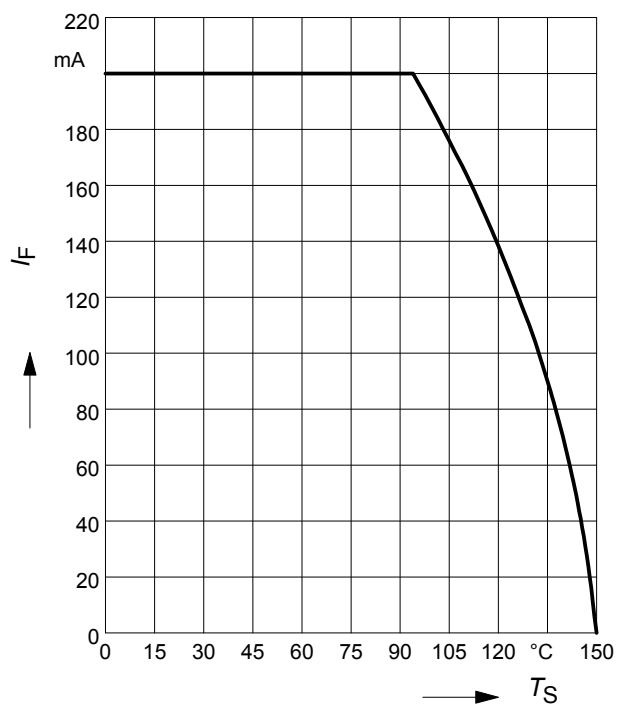
Forward current  $I_F = f(V_F)$

$T_A = \text{Parameter}$



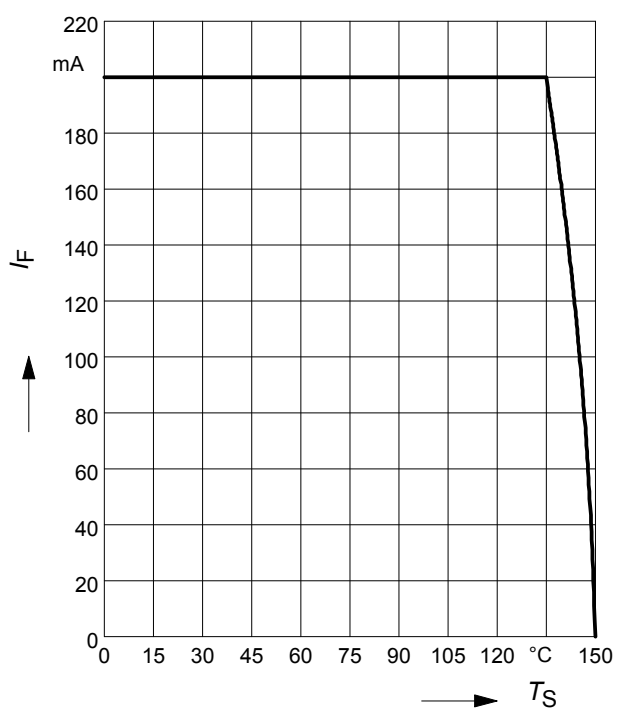
Forward current  $I_F = f(T_S)$

BAT54



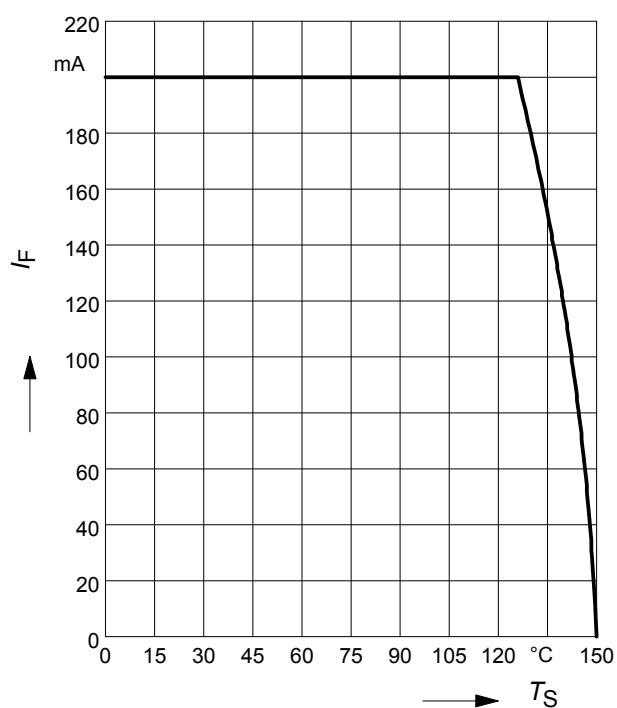
Forward current  $I_F = f(T_S)$

BAT54-02LRH



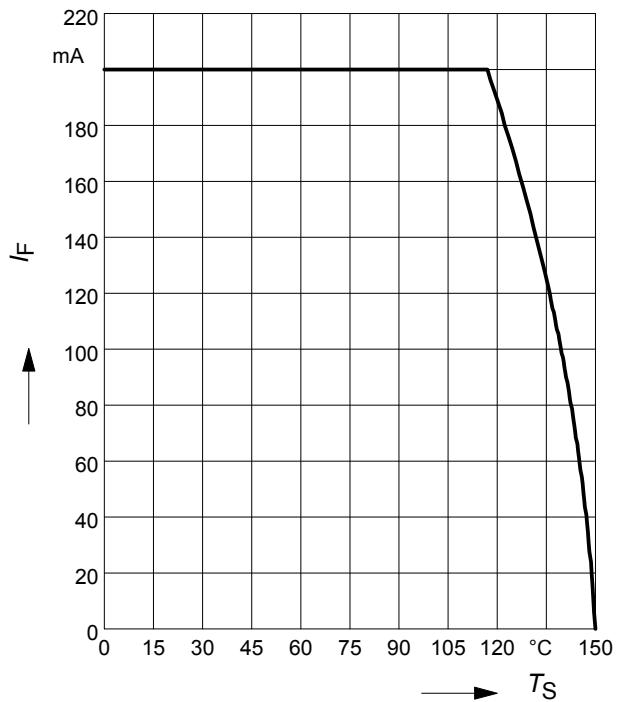
Forward current  $I_F = f(T_S)$

BAT54-02V



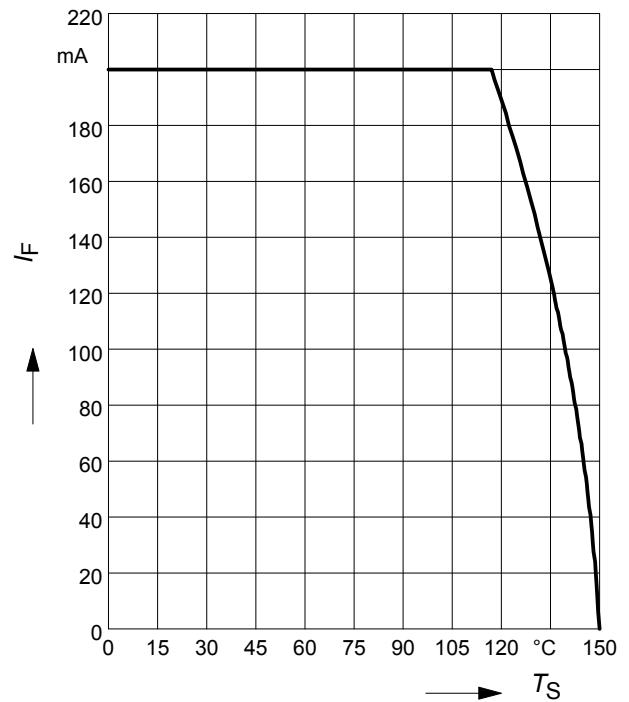
Forward current  $I_F = f(T_S)$

BAT54-04



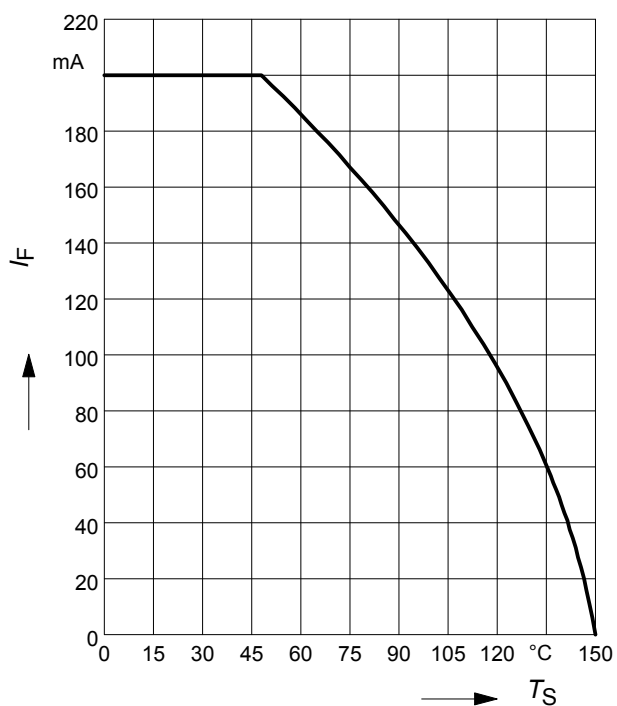
Forward current  $I_F = f(T_S)$

BAT54-04W



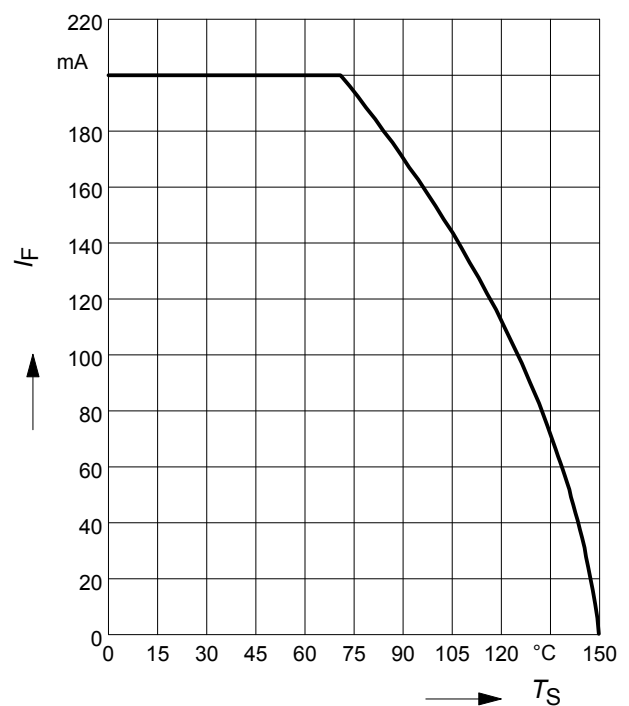
Forward current  $I_F = f(T_S)$

BAT54-05



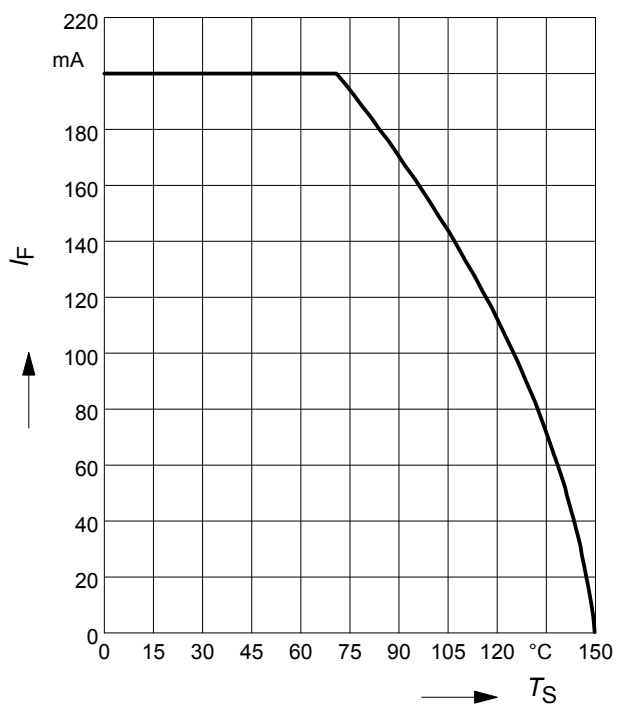
Forward current  $I_F = f(T_S)$

BAT54-05W



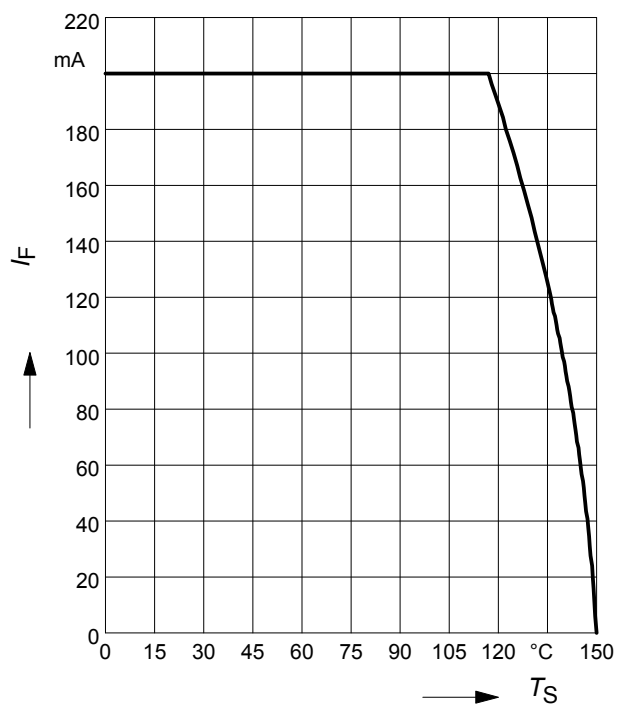
**Forward current  $I_F = f(T_S)$**

**BAT54-06**



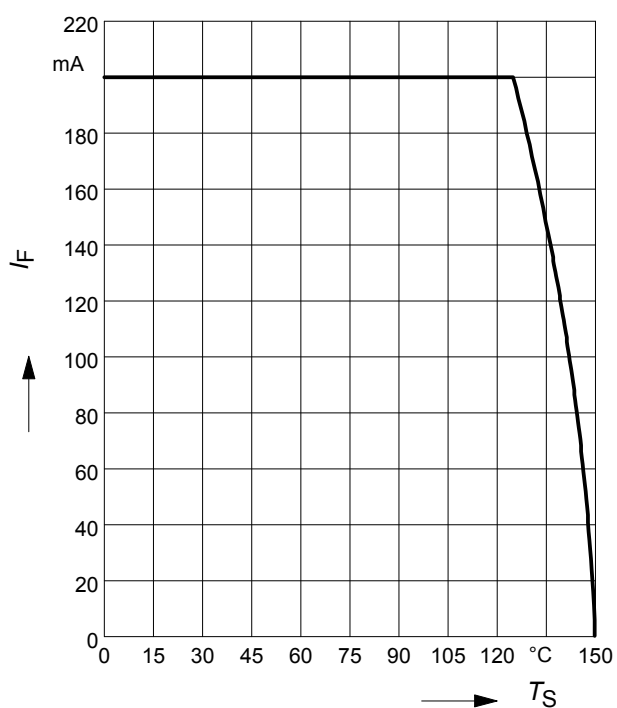
**Forward current  $I_F = f(T_S)$**

**BAT54-06W**

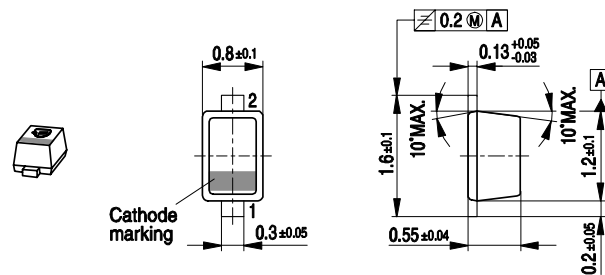


**Forward current  $I_F = f(T_S)$**

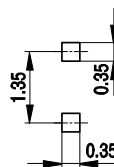
**BAT54W**



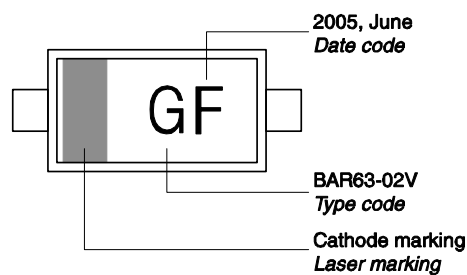
## Package Outline



## Foot Print

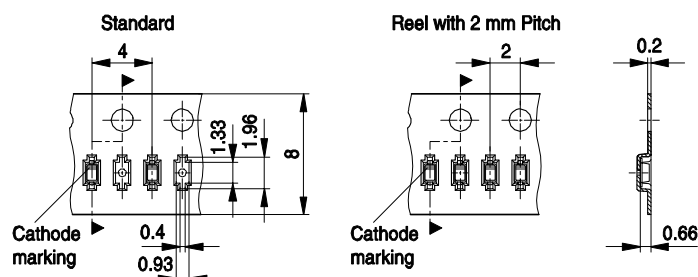


## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø180 mm = 8.000 Pieces/Reel (2 mm Pitch)  
 Reel ø330 mm = 10.000 Pieces/Reel



Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

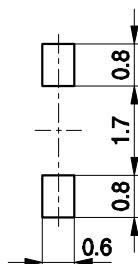
| Month | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| 01    | a    | p    | A    | P    | a    | p    | A    | P    | a    | p    | A    | P    |
| 02    | b    | q    | B    | Q    | b    | q    | B    | Q    | b    | q    | B    | Q    |
| 03    | c    | r    | C    | R    | c    | r    | C    | R    | c    | r    | C    | R    |
| 04    | d    | s    | D    | S    | d    | s    | D    | S    | d    | s    | D    | S    |
| 05    | e    | t    | E    | T    | e    | t    | E    | T    | e    | t    | E    | T    |
| 06    | f    | u    | F    | U    | f    | u    | F    | U    | f    | u    | F    | U    |
| 07    | g    | v    | G    | V    | g    | v    | G    | V    | g    | v    | G    | V    |
| 08    | h    | x    | H    | X    | h    | x    | H    | X    | h    | x    | H    | X    |
| 09    | j    | y    | J    | Y    | j    | y    | J    | Y    | j    | y    | J    | Y    |
| 10    | k    | z    | K    | Z    | k    | z    | K    | Z    | k    | z    | K    | Z    |
| 11    | l    | 2    | L    | 4    | l    | 2    | L    | 4    | l    | 2    | L    | 4    |
| 12    | n    | 3    | N    | 5    | n    | 3    | N    | 5    | n    | 3    | N    | 5    |

1) New Marking Layout for SC75, implemented at October 2005.

## Package Outline



## Foot Print

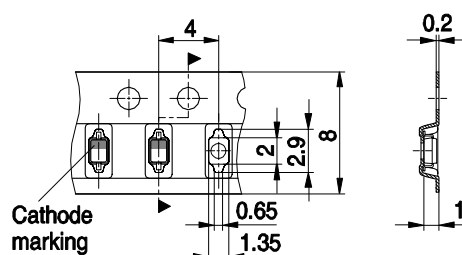


## Marking Layout (Example)



## Standard Packing

Reel  $\varnothing 180 \text{ mm}$  = 3.000 Pieces/Reel  
 Reel  $\varnothing 330 \text{ mm}$  = 10.000 Pieces/Reel

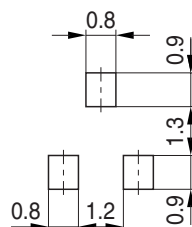


## Package Outline

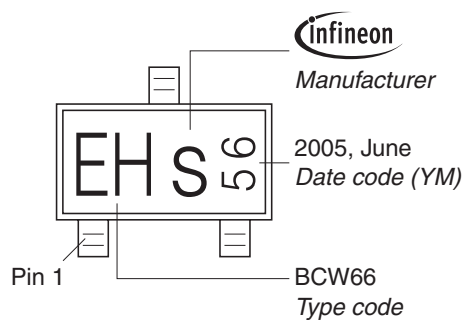


1) Lead width can be 0.6 max. in dambar area

## Foot Print



## Marking Layout (Example)



## Standard Packing

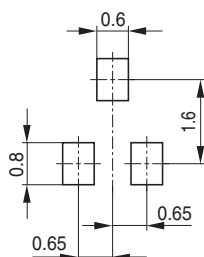
Reel ø180 mm = 3.000 Pieces/Reel  
Reel ø330 mm = 10.000 Pieces/Reel



## Package Outline



## Foot Print



## Marking Layout (Example)

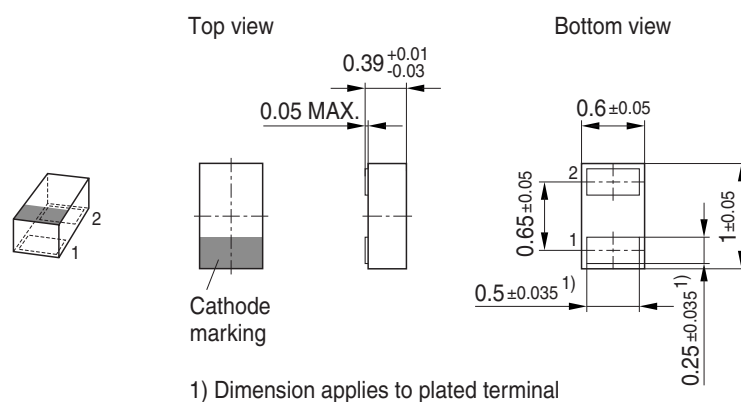


## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel  
 Reel ø330 mm = 10.000 Pieces/Reel

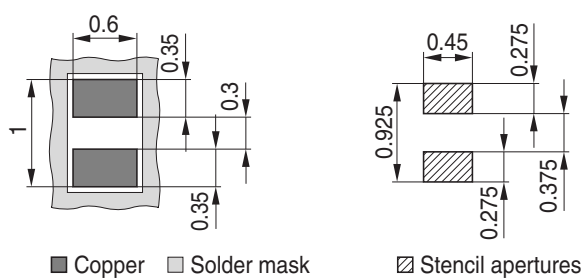


## Package Outline

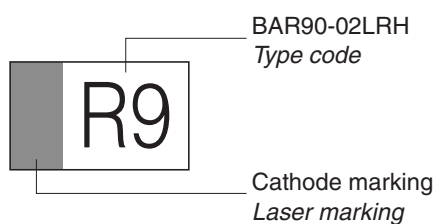


## Foot Print

For board assembly information please refer to Infineon website "Packages"

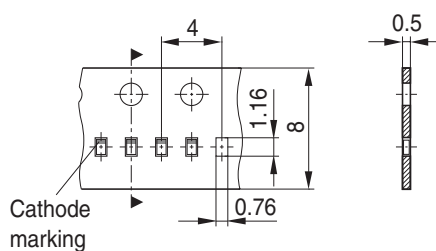


## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel  
Reel ø330 mm = 50.000 Pieces/Reel (optional)



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