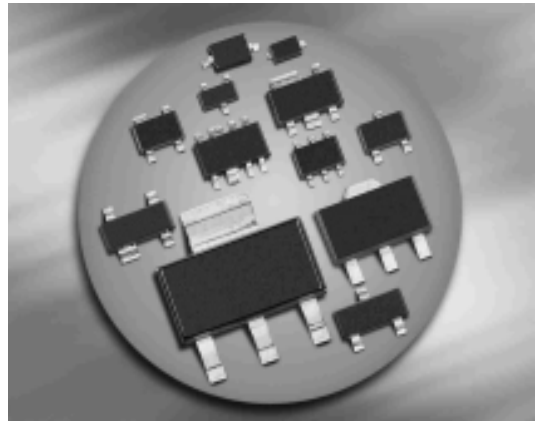
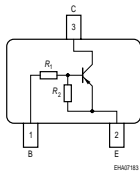


**PNP Silicon Digital Transistor**

- Switching circuit, inverter, interface circuit, driver circuit
- Built in resistor ( $R_1=2.2k\Omega$ ,  $R_2=2.2k\Omega$ )
- BCR153U: Two internally isolated transistors with good matching in one multichip package


**BCR153F/L3  
BCR153T**


| Type     | Marking | Pin Configuration |     |     |   |   |   | Package  |
|----------|---------|-------------------|-----|-----|---|---|---|----------|
| BCR153F  | WBs     | 1=B               | 2=E | 3=C | - | - | - | TSFP-3   |
| BCR153L3 | WB      | 1=B               | 2=E | 3=C | - | - | - | TSLP-3-4 |
| BCR153T  | WB      | 1=B               | 2=E | 3=C | - | - | - | SC75     |

**Maximum Ratings**

| Parameter                              | Symbol       | Value       | Unit             |
|--|--------------|-------------|------------------|
| Collector-emitter voltage              | $V_{CEO}$    | 50          | V                |
| Collector-base voltage                 | $V_{CBO}$    | 50          |                  |
| Input forward voltage                  | $V_{i(fwd)}$ | 20          |                  |
| Input reverse voltage                  | $V_{i(rev)}$ | 10          |                  |
| Collector current                      | $I_C$        | 100         | mA               |
| Total power dissipation                | $P_{tot}$    |             | mW               |
| BCR153F, $T_S \leq 128^\circ\text{C}$  |              | 250         |                  |
| BCR153L3, $T_S \leq 135^\circ\text{C}$ |              | 250         |                  |
| BCR153T, $T_S \leq 109^\circ\text{C}$  |              | 250         |                  |
| Junction temperature                   | $T_j$        | 150         | $^\circ\text{C}$ |
| Storage temperature                    | $T_{std}$    | -65 ... 150 |                  |

**Thermal Resistance**

| Parameter                                | Symbol     | Value | Unit |
|--|------------|-------|------|
| Junction - soldering point <sup>1)</sup> | $R_{thJS}$ |       | K/W  |
| BCR153F                                  |            | ≤ 90  |      |
| BCR153L3                                 |            | ≤ 60  |      |
| BCR153T                                  |            | ≤ 165 |      |

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

| Parameter | Symbol | Values |      |      | Unit |
|-----------|--------|--------|------|------|------|
|           |        | min.   | typ. | max. |      |

**DC Characteristics**

|   |               |     |     |     |    |
|---|---------------|-----|-----|-----|----|
| Collector-emitter breakdown voltage<br>$I_C = 100 \mu\text{A}, I_B = 0$                       | $V_{(BR)CEO}$ | 50  | -   | -   | V  |
| Collector-base breakdown voltage<br>$I_C = 10 \mu\text{A}, I_E = 0$                           | $V_{(BR)CBO}$ | 50  | -   | -   |    |
| Collector-base cutoff current<br>$V_{CB} = 40 \text{V}, I_E = 0$                              | $I_{CBO}$     | -   | -   | 100 | nA |
| Emitter-base cutoff current<br>$V_{EB} = 10 \text{V}, I_C = 0$                                | $I_{EBO}$     | -   | -   | 3.5 | mA |
| DC current gain <sup>2)</sup><br>$I_C = 20 \text{mA}, V_{CE} = 5 \text{V}$                    | $h_{FE}$      | 20  | -   | -   | -  |
| Collector-emitter saturation voltage <sup>2)</sup><br>$I_C = 20 \text{mA}, I_B = 1 \text{mA}$ | $V_{CEsat}$   | -   | -   | 0.3 | V  |
| Input off voltage<br>$I_C = 100 \mu\text{A}, V_{CE} = 5 \text{V}$                             | $V_{i(off)}$  | 0.8 | -   | 1.5 |    |
| Input on voltage<br>$I_C = 2 \text{mA}, V_{CE} = 0.3 \text{V}$                                | $V_{i(on)}$   | 0.8 | -   | 2.5 |    |
| Input resistor  | $R_1$         | 1.5 | 2.2 | 2.9 | kΩ |
| Resistor ratio  | $R_1/R_2$     | 0.9 | 1   | 1.1 | -  |

**AC Characteristics**

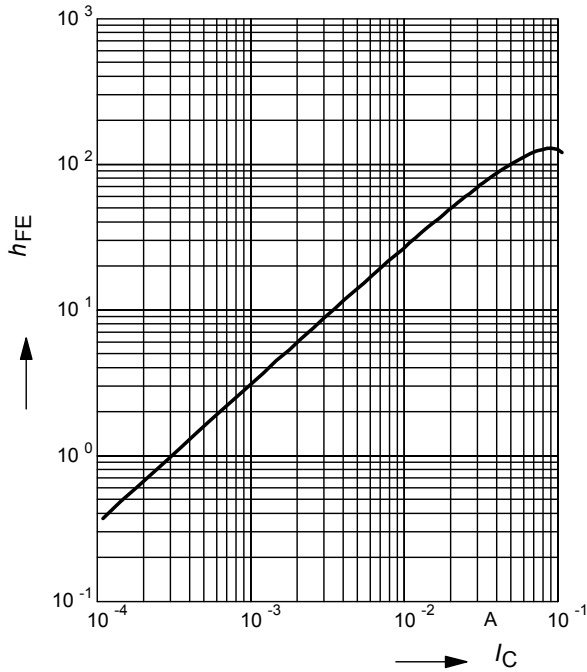
|   |          |   |     |   |     |
|---|----------|---|-----|---|-----|
| Transition frequency<br>$I_C = 10 \text{mA}, V_{CE} = 5 \text{V}, f = 100 \text{MHz}$ | $f_T$    | - | 200 | - | MHz |
| Collector-base capacitance<br>$V_{CB} = 10 \text{V}, f = 1 \text{MHz}$                | $C_{cb}$ | - | 3   | - | pF  |

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

<sup>2</sup>Pulse test:  $t < 300 \mu\text{s}$ ;  $D < 2\%$

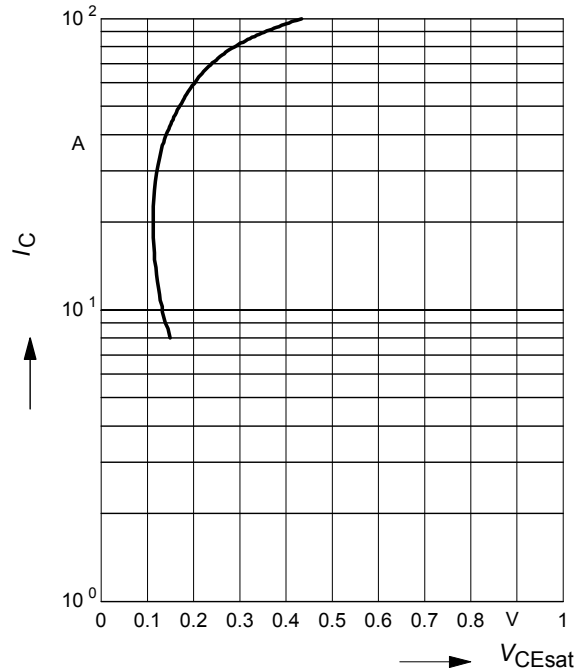
**DC current gain  $h_{FE} = f(I_C)$**

$V_{CE} = 5V$  (common emitter configuration)



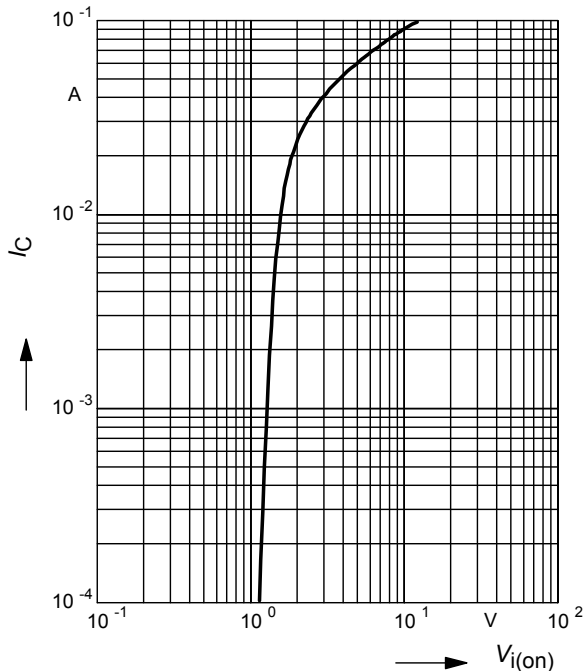
**Collector-emitter saturation voltage**

$V_{CEsat} = f(I_C), h_{FE} = 20$



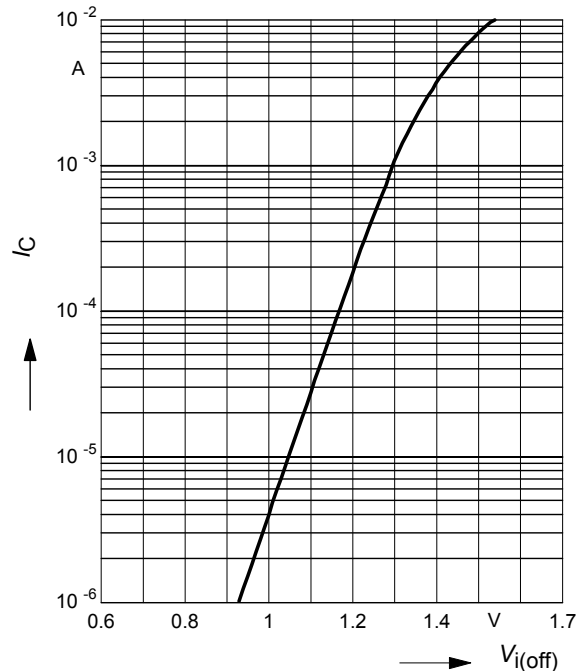
**Input on Voltage  $V_{i(on)} = f(I_C)$**

$V_{CE} = 0.3V$  (common emitter configuration)



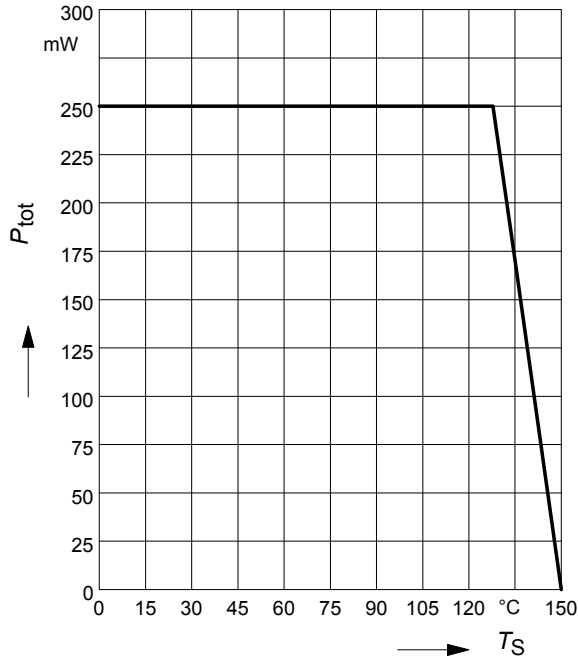
**Input off voltage  $V_{i(off)} = f(I_C)$**

$V_{CE} = 5V$  (common emitter configuration)



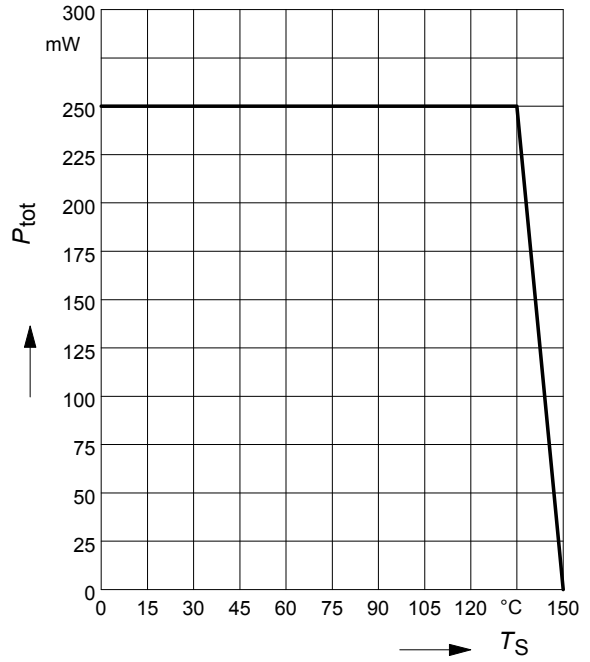
Total power dissipation  $P_{tot} = f(T_S)$

BCR153F



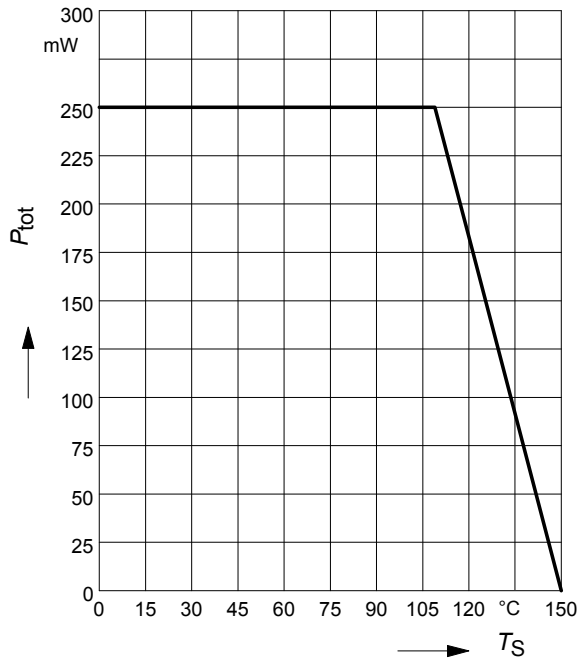
Total power dissipation  $P_{tot} = f(T_S)$

BCR153L3



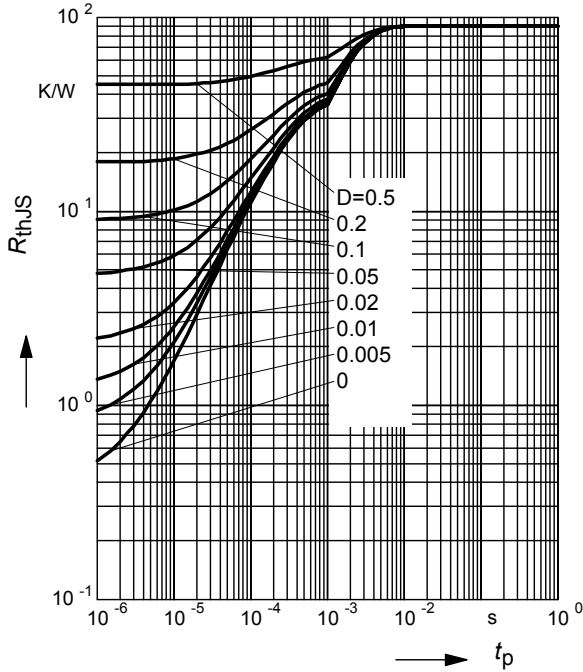
Total power dissipation  $P_{tot} = f(T_S)$

BCR153T



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

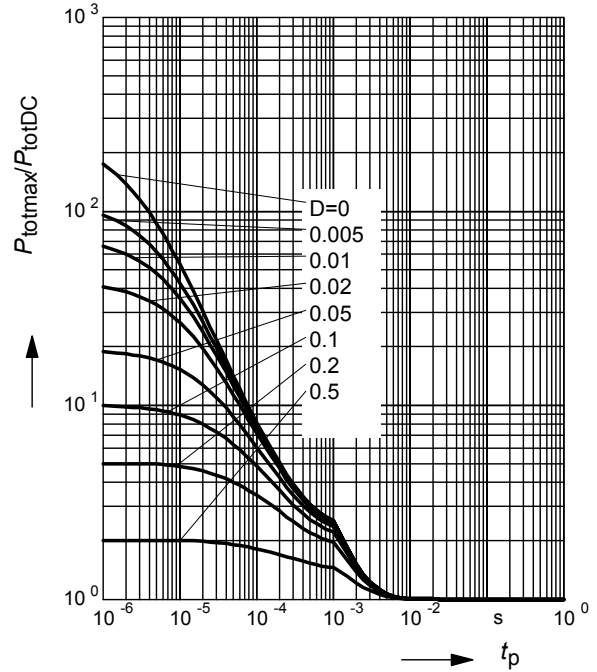
BCR153F



**Permissible Pulse Load**

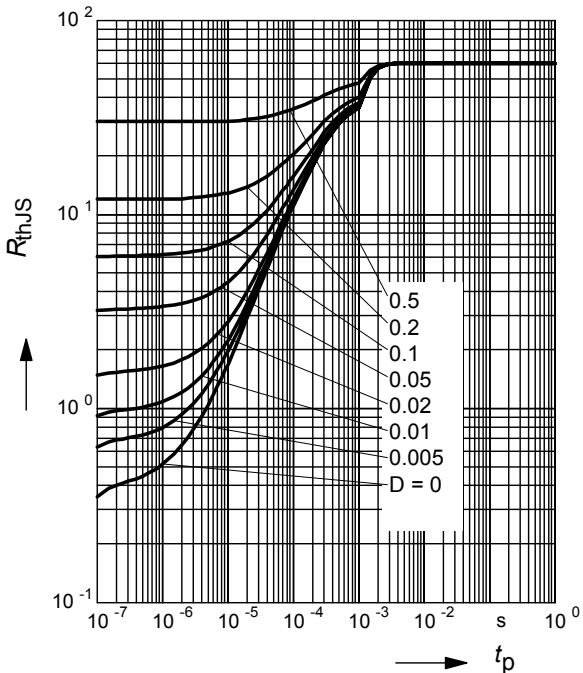
$P_{totmax}/P_{totDC} = f(t_p)$

BCR153F



**Permissible Puls Load  $R_{thJS} = f(t_p)$**

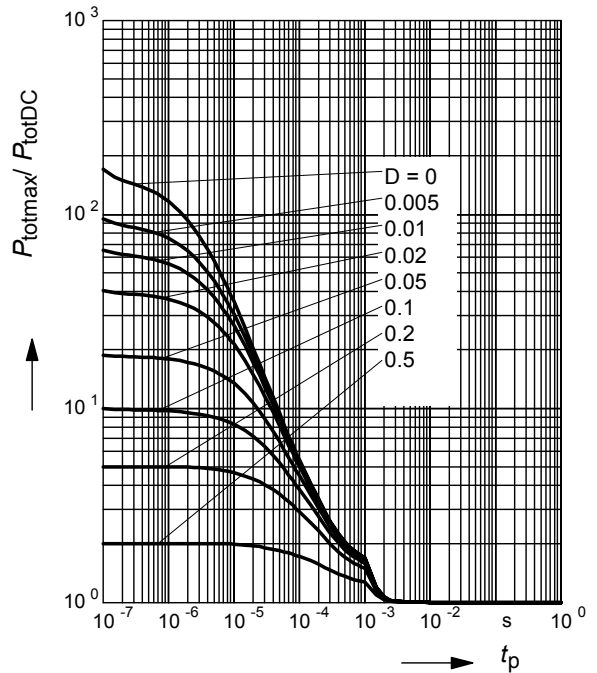
BCR153L3



**Permissible Pulse Load**

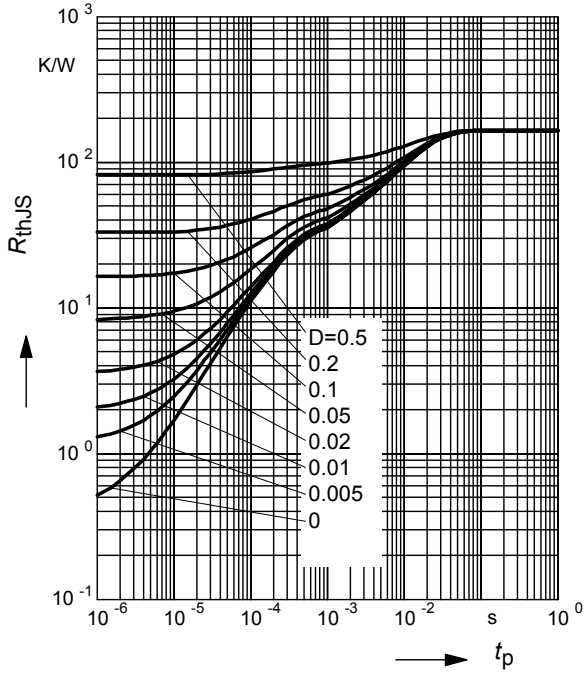
$P_{totmax}/P_{totDC} = f(t_p)$

BCR153L3



Permissible Puls Load  $R_{thJS} = f(t_p)$

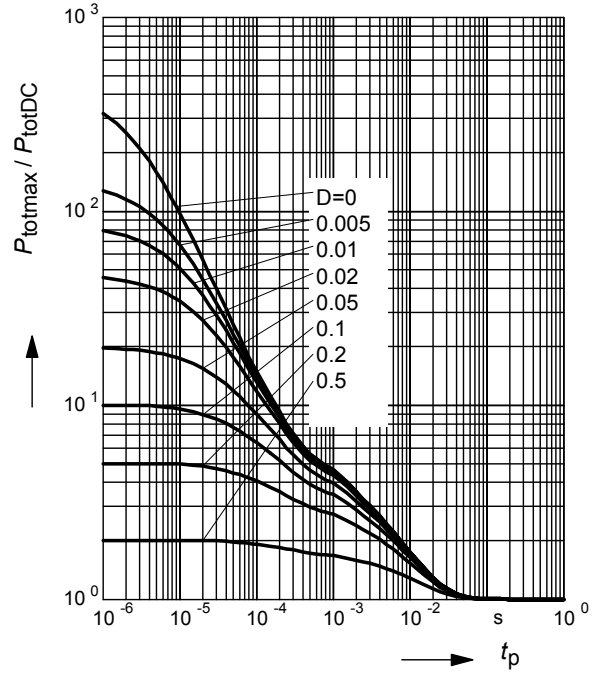
BCR153T



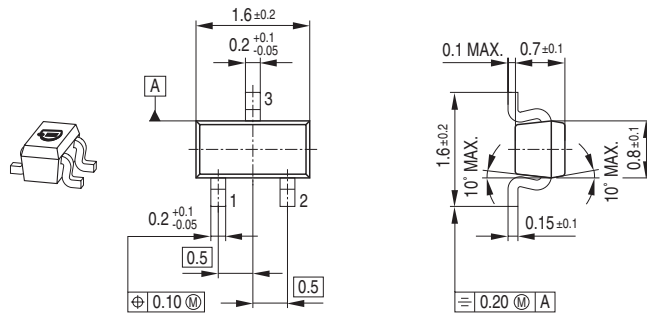
Permissible Pulse Load

$P_{totmax}/P_{totDC} = f(t_p)$

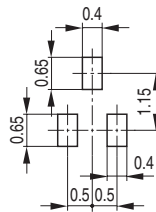
BCR153T



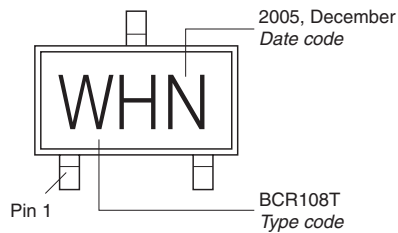
Package Outline



Foot Print

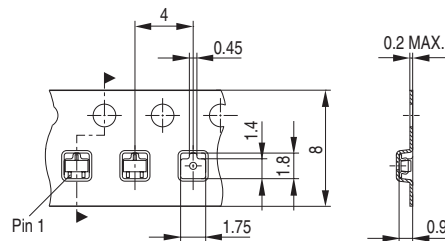


Marking Layout (Example)



Standard Packing

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



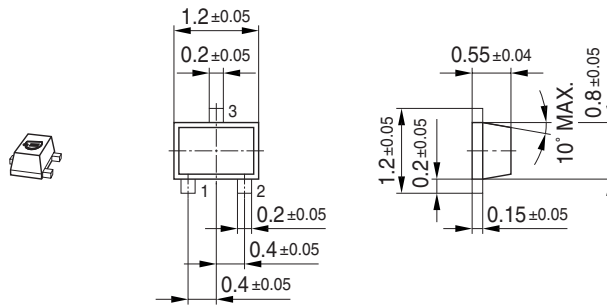
Date Code marking for discrete packages with one digit (SCD80, SC79, SC75<sup>1)</sup>) CES-Code

| 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    |

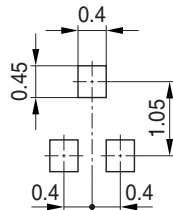
1) New Marking Layout for SC75, implemented at October 2005.



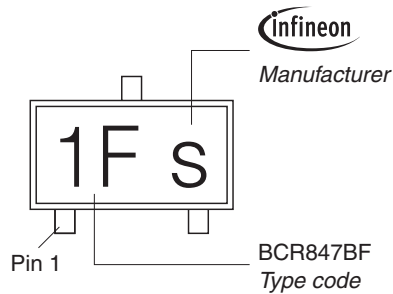
Package Outline



Foot Print

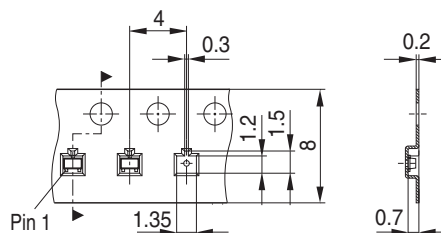


Marking Layout (Example)

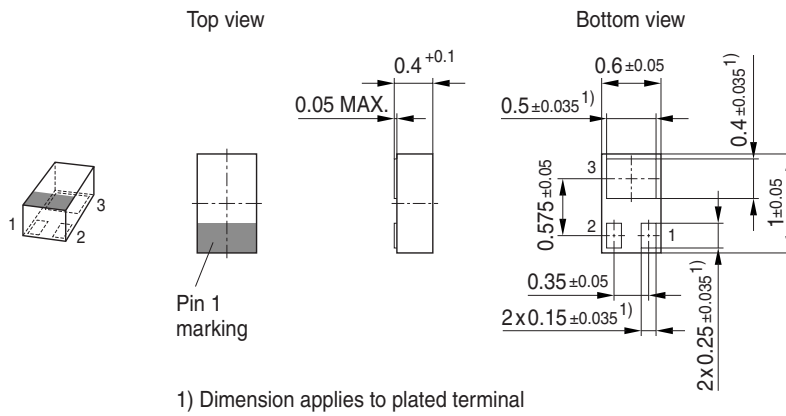


Standard Packing

Reel  $\phi$ 180 mm = 3.000 Pieces/Reel  
 Reel  $\phi$ 330 mm = 10.000 Pieces/Reel

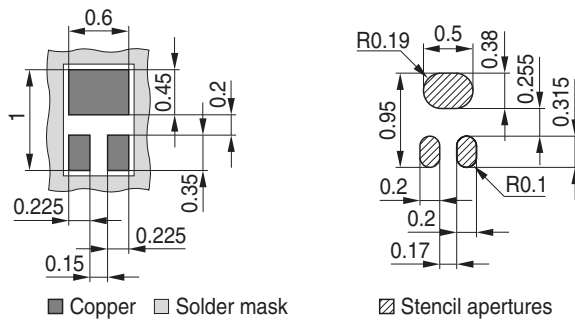


### Package Outline

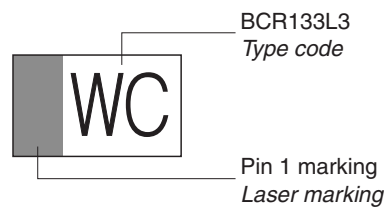


### Foot Print

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

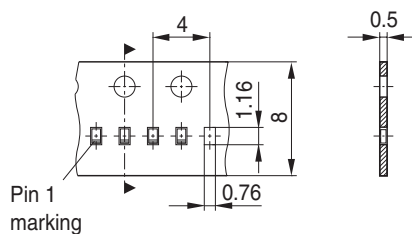


### Marking Layout



### Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



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