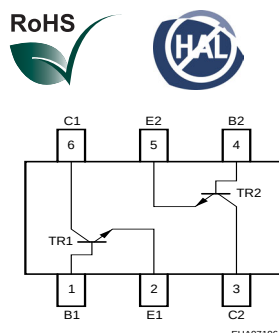
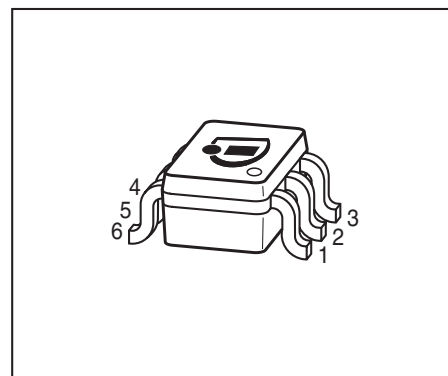


## Low Noise Silicon Bipolar RF Transistor

- For low noise, high-gain broadband amplifiers at collector currents from 2 mA to 30 mA
- $f_T = 8 \text{ GHz}$ ,  $NF_{\min} = 0.9 \text{ dB}$  at 900 MHz
- Two (galvanic) internal isolated Transistor in one package
- For orientation in reel see package information below
- Pb-free (RoHS compliant) and halogen-free package with visible leads
- Qualification report according to AEC-Q101 available



**ESD (Electrostatic discharge) sensitive device, observe handling precaution!**

| Type   | Marking | Pin Configuration |     |     |     |     |     | Package |
|--------|---------|-------------------|-----|-----|-----|-----|-----|---------|
| BFS483 | RHs     | 1=B               | 2=E | 3=C | 4=B | 5=E | 6=C | SOT363  |

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

| Parameter                                                        | Symbol    | Value       | Unit |
|------------------------------------------------------------------|-----------|-------------|------|
| Collector-emitter voltage                                        | $V_{CEO}$ | 12          | V    |
| Collector-emitter voltage                                        | $V_{CES}$ | 20          |      |
| Collector-base voltage                                           | $V_{CBO}$ | 20          |      |
| Emitter-base voltage                                             | $V_{EBO}$ | 2           |      |
| Collector current                                                | $I_C$     | 65          | mA   |
| Base current                                                     | $I_B$     | 5           |      |
| Total power dissipation <sup>1)</sup><br>$T_S \leq 40\text{ °C}$ | $P_{tot}$ | 450         | mW   |
| Junction temperature                                             | $T_J$     | 150         | °C   |
| Ambient temperature                                              | $T_A$     | -65 ... 150 |      |
| Storage temperature                                              | $T_{Stg}$ | -65 ... 150 |      |

**Thermal Resistance**

| Parameter                                | Symbol     | Value | Unit |
|------------------------------------------|------------|-------|------|
| Junction - soldering point <sup>2)</sup> | $R_{thJS}$ | 245   | K/W  |

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

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

**DC Characteristics**

|                                                                                  |               |    |     |     |               |
|----------------------------------------------------------------------------------|---------------|----|-----|-----|---------------|
| Collector-emitter breakdown voltage<br>$I_C = 1\text{ mA}$ , $I_B = 0$           | $V_{(BR)CEO}$ | 12 | -   | -   | V             |
| Collector-emitter cutoff current<br>$V_{CE} = 20\text{ V}$ , $V_{BE} = 0$        | $I_{CES}$     | -  | -   | 100 | $\mu\text{A}$ |
| Collector-base cutoff current<br>$V_{CB} = 10\text{ V}$ , $I_E = 0$              | $I_{CBO}$     | -  | -   | 100 | nA            |
| Emitter-base cutoff current<br>$V_{EB} = 1\text{ V}$ , $I_C = 0$                 | $I_{EBO}$     | -  | -   | 1   | $\mu\text{A}$ |
| DC current gain<br>$I_C = 15\text{ mA}$ , $V_{CE} = 8\text{ V}$ , pulse measured | $h_{FE}$      | 70 | 100 | 140 | -             |

<sup>1</sup>  $T_S$  is measured on the collector lead at the soldering point to the pcb

<sup>2</sup> For the definition of  $R_{thJS}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

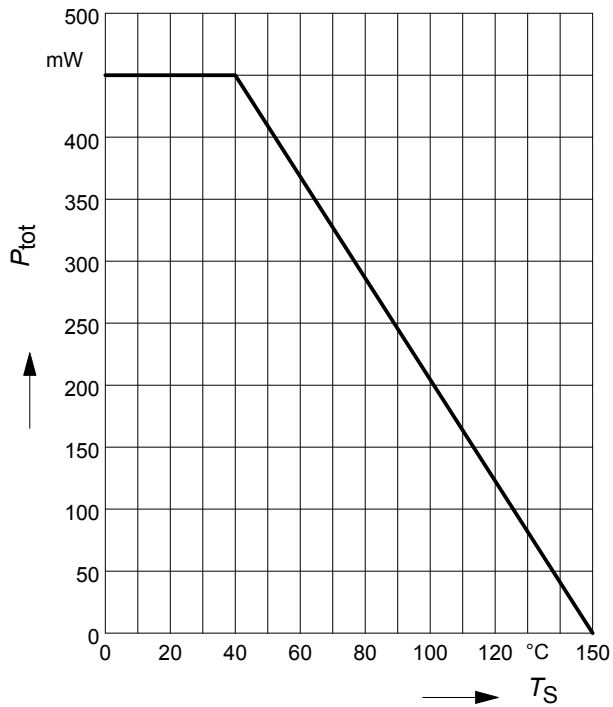
**Electrical Characteristics at  $T_A = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified**

| Parameter                                                                                                                                                                                                                             | Symbol        | Values     |                |            | Unit |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|----------------|------------|------|
|                                                                                                                                                                                                                                       |               | min.       | typ.           | max.       |      |
| AC Characteristics (verified by random sampling)                                                                                                                                                                                      |               |            |                |            |      |
| Transition frequency<br>$I_C = 25\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $f = 500\text{ MHz}$                                                                                                                                           | $f_T$         | 6          | 8              | -          | GHz  |
| Collector-base capacitance<br>$V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$ , $V_{BE} = 0$ ,<br>emitter grounded                                                                                                                        | $C_{cb}$      | -          | 0.34           | 0.54       | pF   |
| Collector emitter capacitance<br>$V_{CE} = 10\text{ V}$ , $f = 1\text{ MHz}$ , $V_{BE} = 0$ ,<br>base grounded                                                                                                                        | $C_{ce}$      | -          | 0.13           | -          |      |
| Emitter-base capacitance<br>$V_{EB} = 0.5\text{ V}$ , $f = 1\text{ MHz}$ , $V_{CB} = 0$ ,<br>collector grounded                                                                                                                       | $C_{eb}$      | -          | 1.1            | -          |      |
| Minimum noise figure<br>$I_C = 5\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_{Sopt}$ ,<br>$f = 900\text{ MHz}$<br>$I_C = 5\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_{Sopt}$ ,<br>$f = 1.8\text{ GHz}$                          | $NF_{min}$    | -<br><br>- | 0.9<br><br>1.4 | -<br><br>- | dB   |
| Power gain, maximum stable <sup>1)</sup><br>$I_C = 15\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_{Sopt}$ , $Z_L = Z_{Lopt}$ ,<br>$f = 900\text{ MHz}$                                                                              | $G_{ms}$      | -          | 19             | -          | dB   |
| Power gain, maximum available <sup>2)</sup><br>$I_C = 15\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_{Sopt}$ , $Z_L = Z_{Lopt}$ ,<br>$f = 1.8\text{ GHz}$                                                                           | $G_{ma}$      | -          | 12.5           | -          | dB   |
| Transducer gain<br>$I_C = 15\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_L = 50\text{ }\Omega$ ,<br>$f = 900\text{ MHz}$<br>$I_C = 15\text{ mA}$ , $V_{CE} = 8\text{ V}$ , $Z_S = Z_L = 50\text{ }\Omega$ ,<br>$f = 1.8\text{ MHz}$ | $ S_{21e} ^2$ | -<br><br>- | 15.5<br><br>10 | -<br><br>- | dB   |

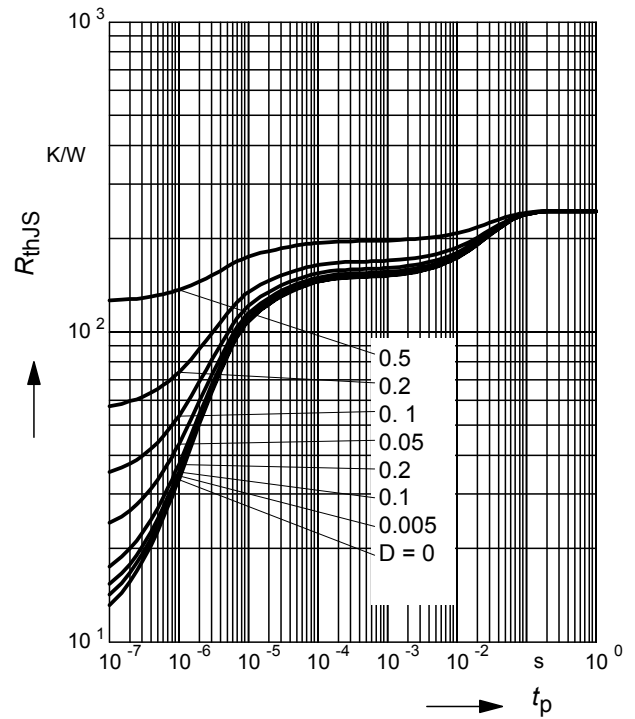
$$^1G_{ms} = |S_{21} / S_{12}|$$

$$^2G_{ma} = |S_{21e} / S_{12e}| (k - (k^2 - 1)^{1/2})$$

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

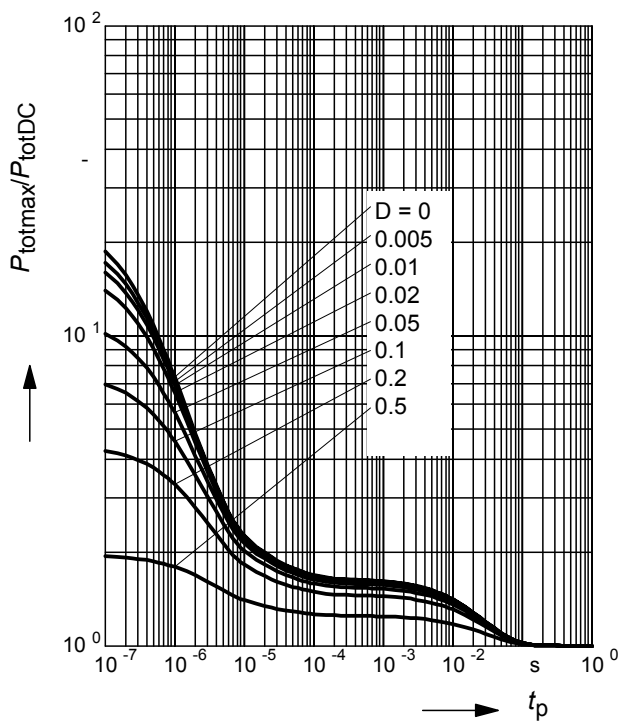


Permissible Pulse Load  $R_{\text{thJS}} = f(t_p)$

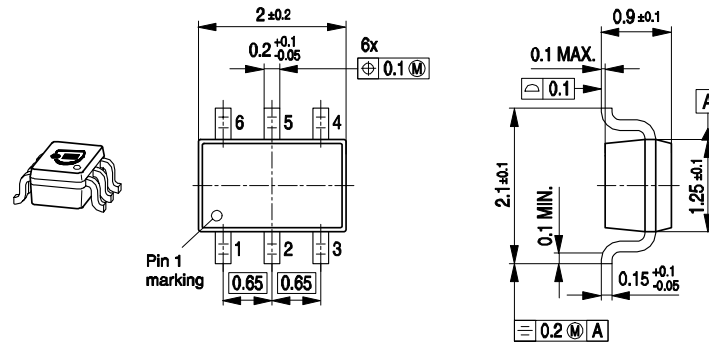


Permissible Pulse Load

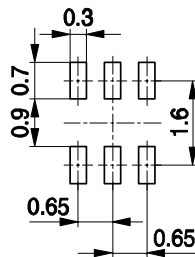
$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$



## Package Outline

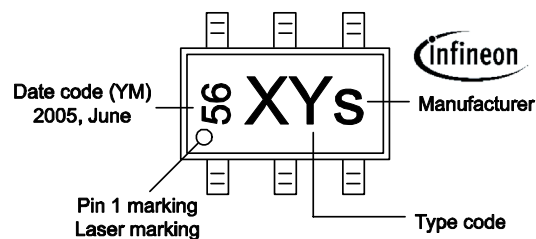


## Foot Print



## Marking Layout (Example)

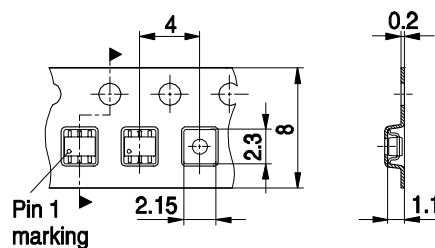
Small variations in positioning of Date code, Type code and Manufacturer are possible.



## Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.



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