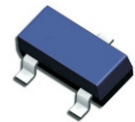


# BC856-HF Thru. BC858-HF Series (PNP)

RoHS Device  
Halogen Free



## Features

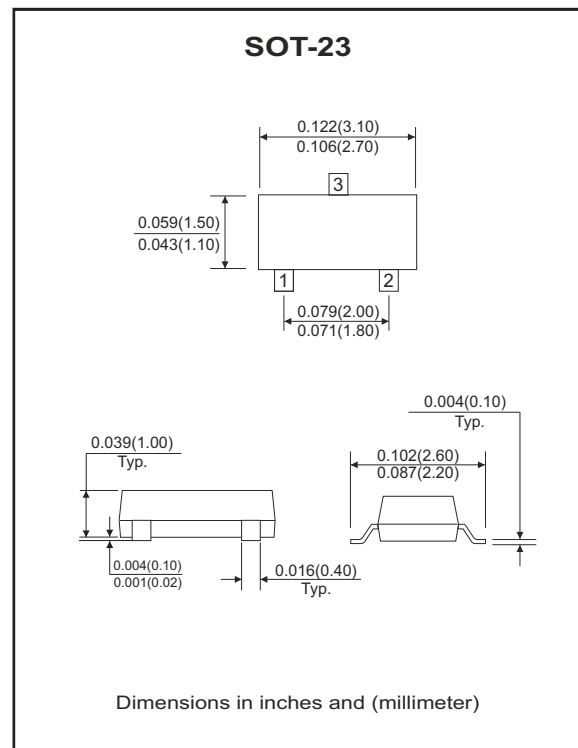
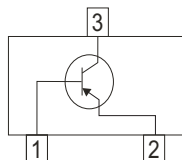
- Ideally suited for automatic insertion
- Power dissipation  
PCM: 0.25W (@TA=25°C)
- Low current.(max. 100mA)
- Collector-base voltage  
VCBO: BC856 = -80V  
BC857 = -50V  
BC858 = -30V
- Operating and storage junction temperature range: TJ, TSTG= -65 to +150°C

## Mechanical data

- Case: SOT-23, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.

## Circuit diagram

- 1.BASE
- 2.EMITTER
- 3.COLLECTOR



## Maximum Ratings (at Ta=25°C unless otherwise noted)

| Parameter                    | Symbol                          | Value             | Unit |
|------------------------------|---------------------------------|-------------------|------|
| Collector-Base voltage       | BC856<br>BC857<br>BC858<br>VCBO | -80<br>-50<br>-30 | V    |
| Collector-Emitter voltage    | BC856<br>BC857<br>BC858<br>VCEO | -65<br>-45<br>-30 | V    |
| Emitter-Base voltage         | VEBO                            | -5                | V    |
| Collector current-continuous | IC                              | -0.1              | A    |
| Collector dissipation        | PC                              | 250               | mW   |
| Junction temperature range   | TJ                              | -65 to +150       | °C   |
| Storage temperature range    | TSTG                            | -65 to +150       | °C   |

## Electrical Characteristics (T<sub>A</sub>= 25°C unless otherwise specified)

| Parameter                                                                   | Symbol               | Test Conditions                                                                                   | MIN               | TYP           | MAX               | Unit |
|-----------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------|-------------------|---------------|-------------------|------|
| Collector-Base breakdown voltage<br>BC856<br>BC857<br>BC858                 | V <sub>(BR)CBO</sub> | I <sub>C</sub> = -10μA , I <sub>E</sub> =0                                                        | -80<br>-50<br>-30 |               |                   | V    |
| Collector-Emitter breakdown voltage<br>BC856<br>BC857<br>BC858              | V <sub>(BR)CEO</sub> | I <sub>C</sub> = -10mA , I <sub>B</sub> =0                                                        | -65<br>-45<br>-30 |               |                   | V    |
| Emitter-Base breakdown voltage                                              | V <sub>(BR)EBO</sub> | I <sub>E</sub> = -1μA , I <sub>C</sub> =0                                                         | -5                |               |                   | V    |
| Collector cut-off current                                                   | I <sub>CBO</sub>     | V <sub>CB</sub> = -30V , I <sub>E</sub> =0                                                        |                   | -1            | -15               | nA   |
| Emitter cut-off current                                                     | I <sub>EBO</sub>     | V <sub>EB</sub> = -5V , I <sub>C</sub> =0                                                         |                   |               | -0.1              | μA   |
| DC current gain<br>BC856A ,857A ,858A<br>BC856B ,857B ,858B<br>BC857C ,858C | h <sub>FE</sub>      | V <sub>CE</sub> = -5V , I <sub>C</sub> = -2.2mA                                                   | 125<br>220<br>420 |               | 250<br>475<br>800 |      |
| Collector-Emitter saturation voltage                                        | V <sub>CE(sat)</sub> | I <sub>C</sub> = -100mA , I <sub>B</sub> =-5mA<br>I <sub>C</sub> = -10mA , I <sub>B</sub> =-0.5mA |                   |               | -0.65<br>-0.3     | V    |
| Base-Emitter saturation voltage                                             | V <sub>BE(sat)</sub> | I <sub>C</sub> = -10mA , I <sub>B</sub> =-0.5mA<br>I <sub>C</sub> = -100mA , I <sub>B</sub> =-5mA |                   | -0.7<br>-0.85 |                   | V    |
| Base-Emitter voltage                                                        | V <sub>BE(on)</sub>  | I <sub>C</sub> = -2mA , V <sub>CE</sub> =-5V<br>I <sub>C</sub> = -10mA , V <sub>CE</sub> =-5V     | -0.6              | -0.65         | -0.75<br>-0.82    | V    |
| Collector capacitance                                                       | C <sub>C</sub>       | V <sub>CB</sub> = -10V , I <sub>E</sub> =I <sub>C</sub> =0<br>f=1MHz                              |                   | 4.5           |                   | pF   |
| Transition frequency                                                        | F                    | I <sub>C</sub> =-200uA, V <sub>CE</sub> =-5V<br>R <sub>S</sub> =2kΩ, f=1kHz,<br>B=200Hz           |                   | 2             | 10                | dB   |
| Transition frequency                                                        | f <sub>T</sub>       | V <sub>CE</sub> =-5V, I <sub>C</sub> =-10mA<br>f=100MHz                                           | 100               |               |                   | MHz  |

## Electrical Characteristic Curves (BC856-HF Thru. BC858-HF Series)

Fig.1 - DC current gain as a function fo collector current; typical values.

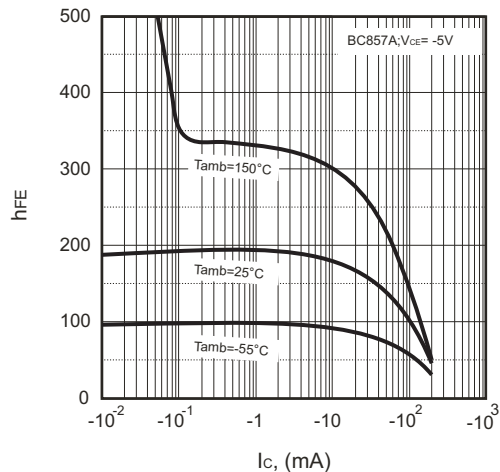


Fig.2 - Base-Emitter voltage as a function of collector current; typical values

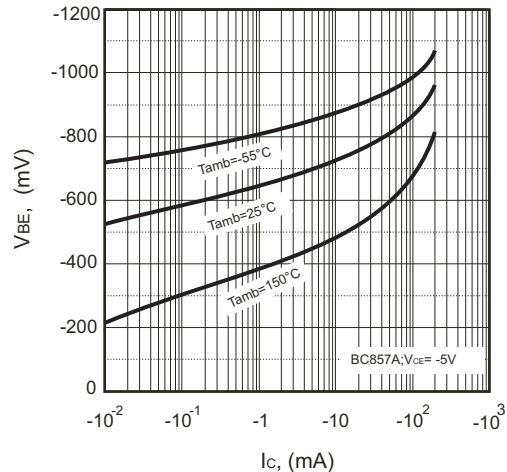


Fig.3 - Collector-Emitter saturation voltage as a function of collector current; typical values.

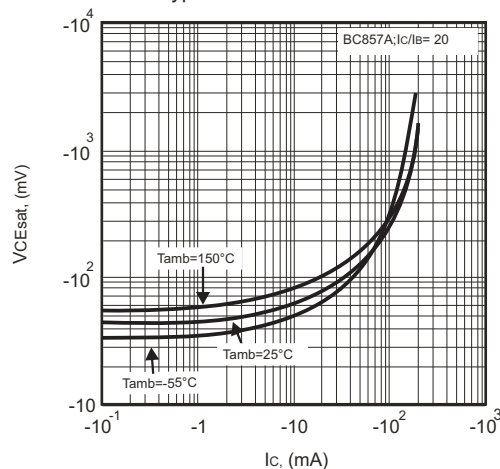


Fig.4 - Base-Emitter saturation voltage as a function of collector current; typical values

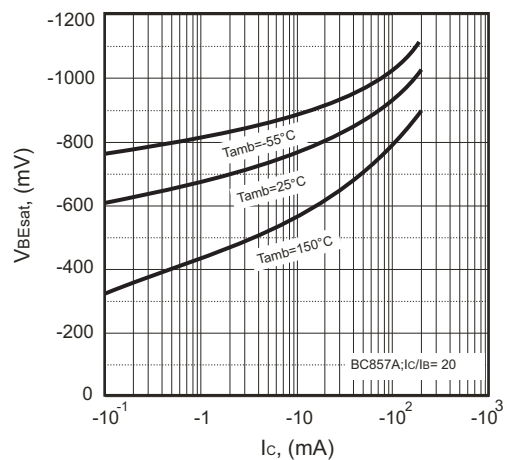


Fig.5 - DC current gain as a function fo collector current; typical values.

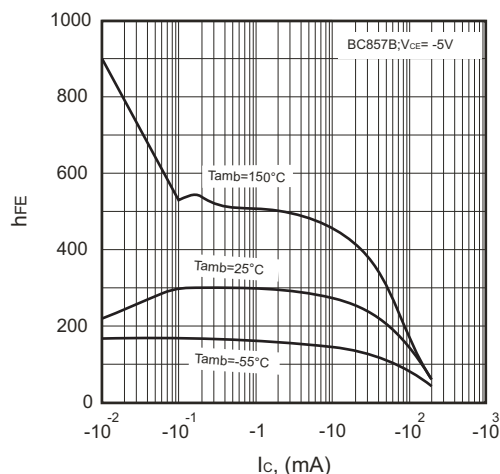
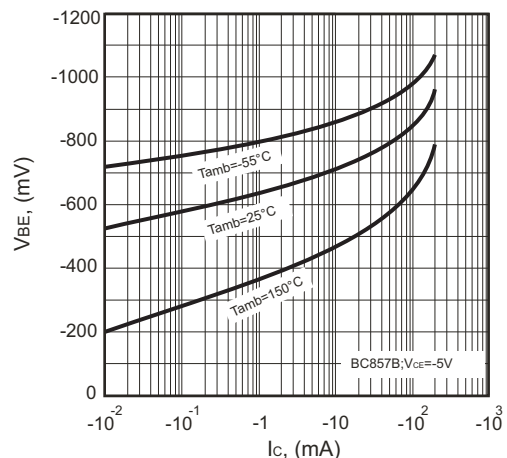


Fig. 6 - Base-Emitter voltage as a function of collector current; typical values.



## Electrical Characteristic Curves (BC856-HF Thru. BC858-HF Series)

Fig.7 - Collector-Emitter saturation voltage as a function of collector current; typical values.

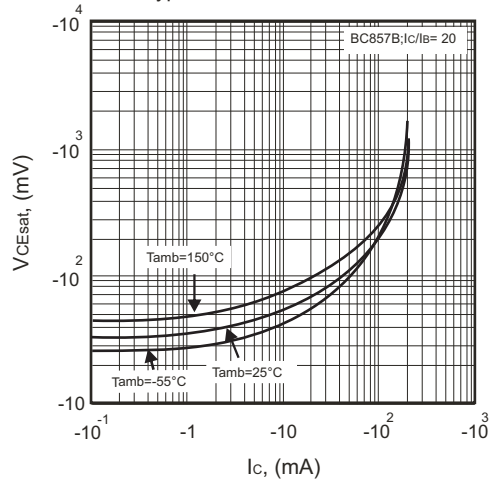


Fig.8 - Base-Emitter saturation voltage as a function of collector current; typical values

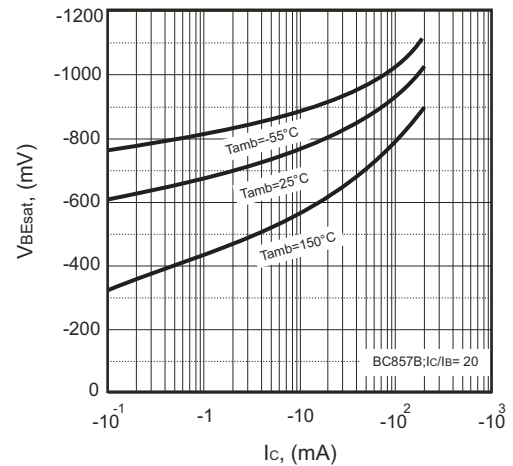


Fig.9 - DC current gain as a function of collector current; typical values.

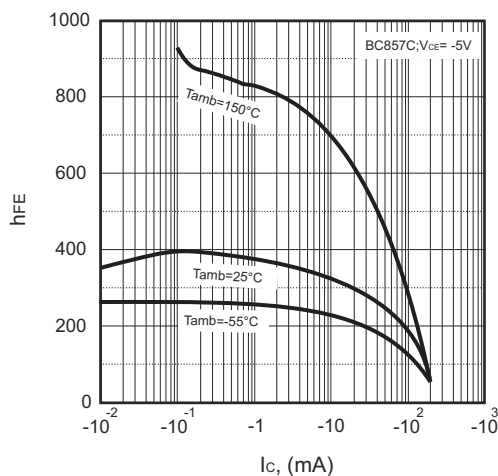


Fig.10 - Base-Emitter voltage as a function of collector current; typical values

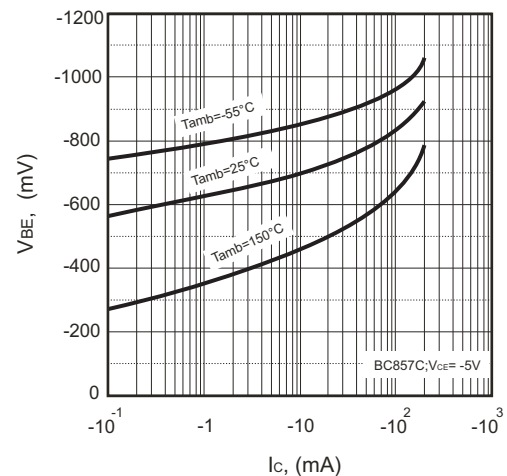


Fig.11 - Collector-Emitter saturation voltage as a function of collector current; typical values.

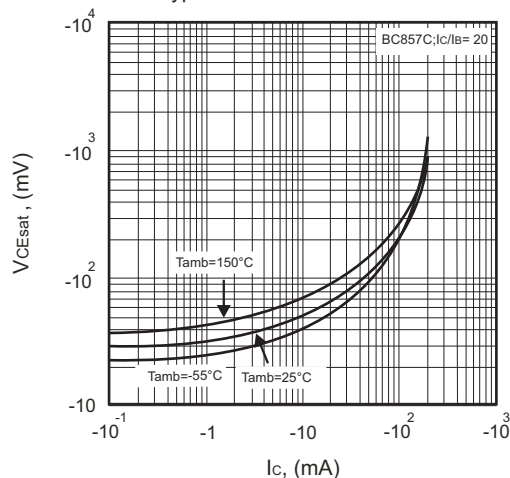
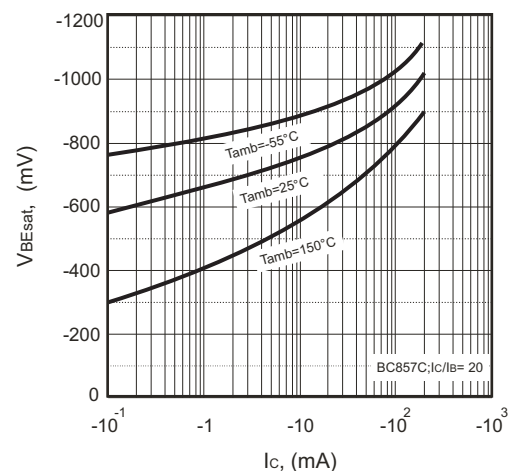
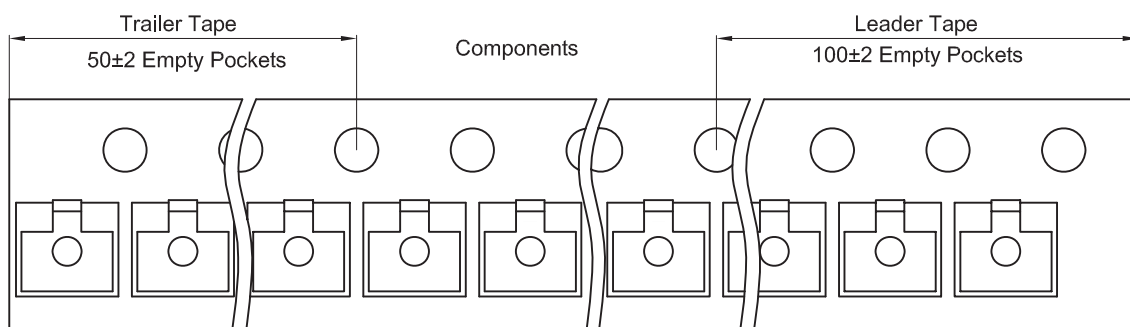
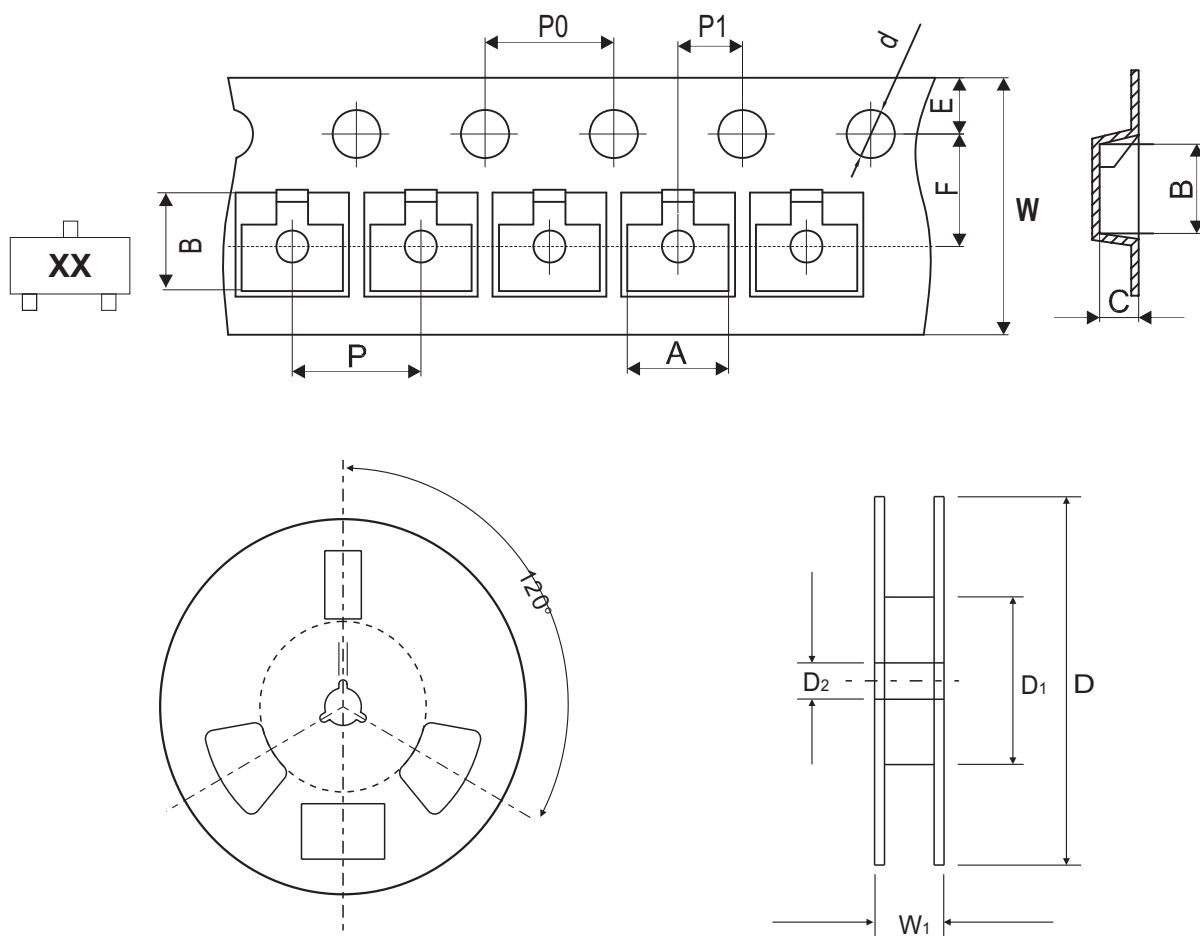


Fig.12 - Base-Emitter saturation voltage as a function of collector current; typical values



## Reel Taping Specification

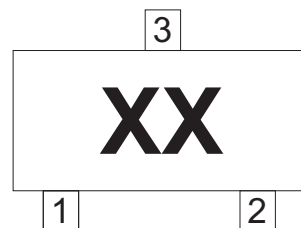


| SOT-23 | SYMBOL | A                 | B                 | C                 | d                 | D                 | D1                | D2                |
|--------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|        | (mm)   | $3.15 \pm 0.10$   | $2.77 \pm 0.10$   | $1.22 \pm 0.10$   | $1.50 \pm 0.10$   | $178.00 \pm 1.00$ | $54.40 \pm 0.50$  | $13.00 \pm 0.50$  |
|        | (inch) | $0.124 \pm 0.004$ | $0.109 \pm 0.004$ | $0.048 \pm 0.004$ | $0.059 \pm 0.004$ | $7.008 \pm 0.039$ | $2.142 \pm 0.020$ | $0.512 \pm 0.020$ |

| SOT-23 | SYMBOL | E                 | F                 | P                 | P0                | P1                | W                         | W1                |
|--------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------------|-------------------|
|        | (mm)   | $1.75 \pm 0.10$   | $3.50 \pm 0.05$   | $4.00 \pm 0.10$   | $4.00 \pm 0.10$   | $2.00 \pm 0.05$   | $8.00 + 0.30 / - 0.10$    | $12.50 \pm 1.00$  |
|        | (inch) | $0.069 \pm 0.004$ | $0.138 \pm 0.002$ | $0.157 \pm 0.004$ | $0.157 \pm 0.004$ | $0.079 \pm 0.002$ | $0.315 + 0.012 / - 0.004$ | $0.492 \pm 0.039$ |

## Marking Code

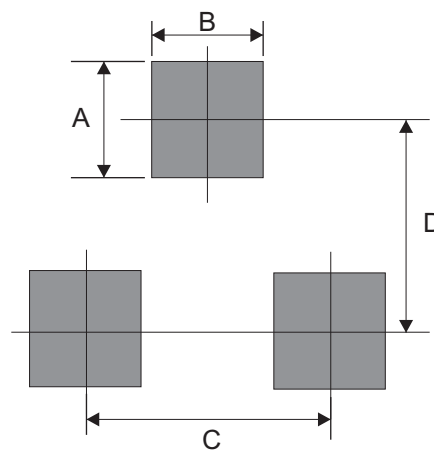
| Part Number | Marking Code |
|-------------|--------------|
| BC856A-HF   | 3A           |
| BC857A-HF   | 3E           |
| BC858A-HF   | 3J           |
| BC856B-HF   | 3B           |
| BC857B-HF   | 3F           |
| BC858B-HF   | 3K           |
| BC857C-HF   | 3G           |
| BC858C-HF   | 3L           |



xx = Product type marking code

## Suggested PAD Layout

| SIZE | SOT-23 |        |
|------|--------|--------|
|      | (mm)   | (inch) |
| A    | 0.90   | 0.035  |
| B    | 0.80   | 0.031  |
| C    | 1.90   | 0.075  |
| D    | 2.00   | 0.079  |



## Standard Packaging

| Case Type | Qty Per Reel | Reel Size |
|-----------|--------------|-----------|
|           | (Pcs)        | (inch)    |
| SOT-23    | 3,000        | 7         |