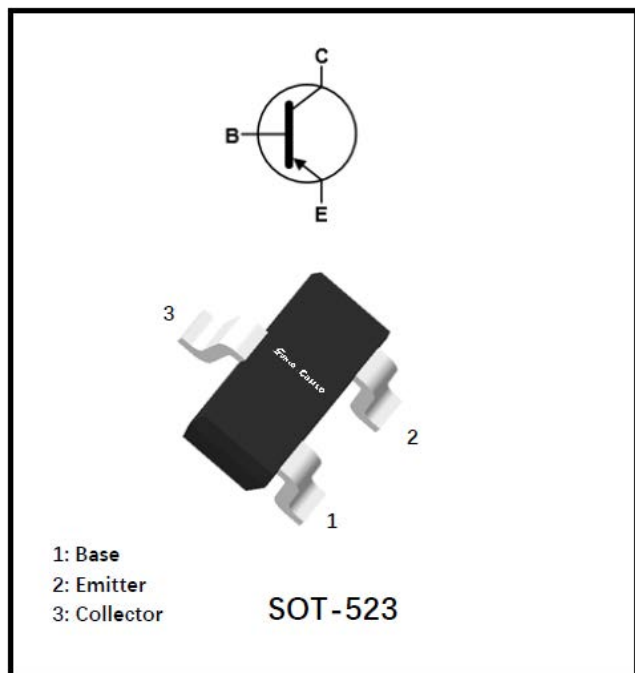


## NPN Transistor



### Features

- Moisture Sensitivity Level 1
- Surface mount package ideally Suited for Automatic Insertion
- Halogen-free

### Mechanical Data

- **Package:** SOT-523
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:**

|         |    |
|---------|----|
| BC846AT | 1A |
| BC846BT | 1B |
| BC847AT | 1E |
| BC847BT | 1F |
| BC847CT | 1G |
| BC848AT | 1J |
| BC848BT | 1K |
| BC848CT | 1L |

### ■Maximum Ratings (Ta=25°C Unless otherwise specified)

| Symbol | Parameter                                   | Value    | Unit |
|--------|---------------------------------------------|----------|------|
| VCBO   | Collector-Base Voltage                      | 80       | V    |
|        |                                             | 50       |      |
|        |                                             | 30       |      |
|        |                                             |          |      |
| VCEO   | Collector-Emitter Voltage                   | 65       | V    |
|        |                                             | 45       |      |
|        |                                             | 30       |      |
|        |                                             |          |      |
| VEBO   | Emitter-Base Voltage                        | 6        | V    |
|        |                                             | 6        |      |
|        |                                             | 5        |      |
|        |                                             |          |      |
| IC     | Collector Current                           | 100      | mA   |
| PC     | Collector Power Dissipation                 | 150      | mW   |
| RθJA   | Thermal Resistance From Junction To Ambient | 833      | °C/W |
| Tj     | Junction Temperature                        | 150      | °C   |
| Tstg   | Storage Temperature                         | -55~+150 | °C   |

## BC846T/BC847T/BC848T

### ■ Electrical Characteristics (Ta=25°C unless otherwise specified)

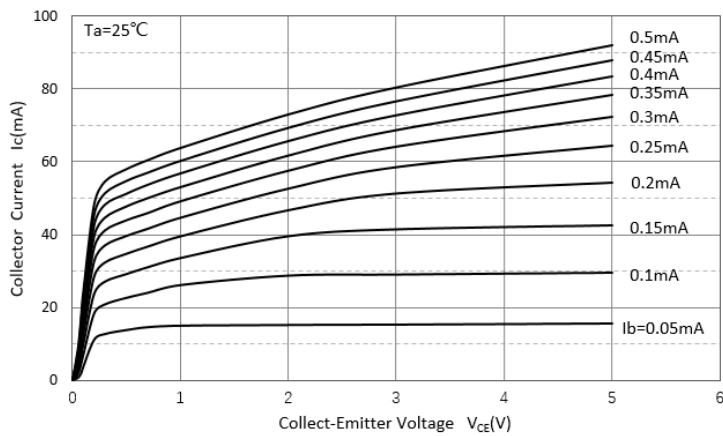
| Parameter                                                                | Symbol        | Test conditions                     | Min               | Max               | Unit |
|--------------------------------------------------------------------------|---------------|-------------------------------------|-------------------|-------------------|------|
| Collector-base breakdown voltage<br>BC846T<br>BC847T<br>BC848T           | $V_{CBO}$     | $I_C=10\mu A, I_E=0$                | 80<br>50<br>30    | -                 | V    |
| Collector-emitter breakdown voltage<br>BC846T<br>BC847T<br>BC848T        | $V_{CEO}$     | $I_C=10mA, I_B=0$                   | 65<br>45<br>30    | -                 | V    |
| Emitter-base breakdown voltage<br>BC846T<br>BC847T<br>BC848T             | $V_{EBO}$     | $I_E=10\mu A, I_C=0$                | 6<br>6<br>5       | -                 | V    |
| Collector-base cut-off current                                           | $I_{CBO}$     | $V_{CB}=30V, I_E=0$                 | -                 | 15                | nA   |
| Emitter-base cut-off current                                             | $I_{EBO}$     | $V_{EB}=5V, I_C=0$                  | -                 | 100               | nA   |
| DC current gain<br>BC846A,847A,848A<br>BC846B,847B,848B<br>BC847C,BC848C | $h_{FE}$      | $V_{CE}=5V, I_C=2mA$                | 110<br>200<br>420 | 220<br>450<br>800 |      |
| Collector-emitter saturation voltage                                     | $V_{CE(sat)}$ | $I_C=10mA, I_B=0.5mA$               | -                 | 0.25              | V    |
| Collector-emitter saturation voltage                                     | $V_{CE(sat)}$ | $I_C=100mA, I_B=5mA$                | -                 | 0.6               | V    |
| Base-emitter saturation voltage                                          | $V_{BE(sat)}$ | $I_C=10mA, I_B=0.5mA$               | -                 | 0.9               | V    |
| Base-emitter saturation voltage                                          | $V_{BE(sat)}$ | $I_C=100mA, I_B=5mA$                | -                 | 1.1               | V    |
| Base-emitter voltage                                                     | $V_{BE(ON)}$  | $V_{CE}=5V, I_C=2mA$                | 0.58              | 0.7               | V    |
| Base-emitter voltage                                                     | $V_{BE(ON)}$  | $V_{CE}=5V, I_C=10mA$               | -                 | 0.77              | V    |
| Transition frequency                                                     | $f_T$         | $V_{CE}=5V, I_C=10mA$<br>$f=100MHz$ | 100               | -                 | MHz  |

### ■ Ordering Information (Example)

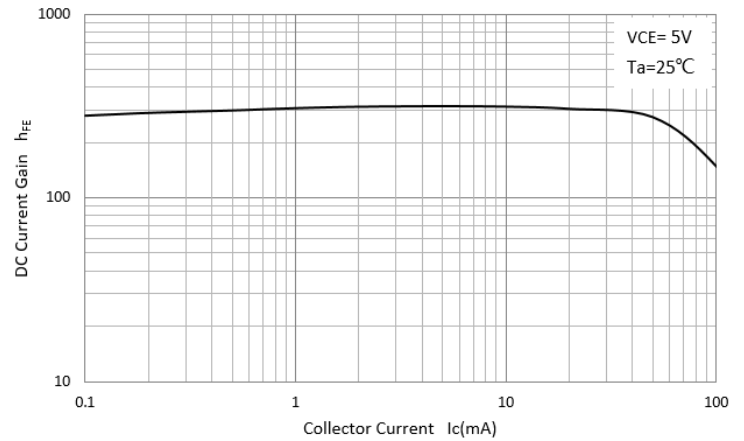
| Preferred P/N        | Packing Code | Unit Weight(G)     | Minimum Package(Pcs) | Inner Box Quantity(Pcs) | Outer Carton Quantity(Pcs) | Delivery Mode |
|----------------------|--------------|--------------------|----------------------|-------------------------|----------------------------|---------------|
| BC846T/BC847T/BC848T | F2           | Approximate 0.0027 | 3000                 | 30000                   | 120000                     | 7" reel       |

## ■ Characteristics (Typical)

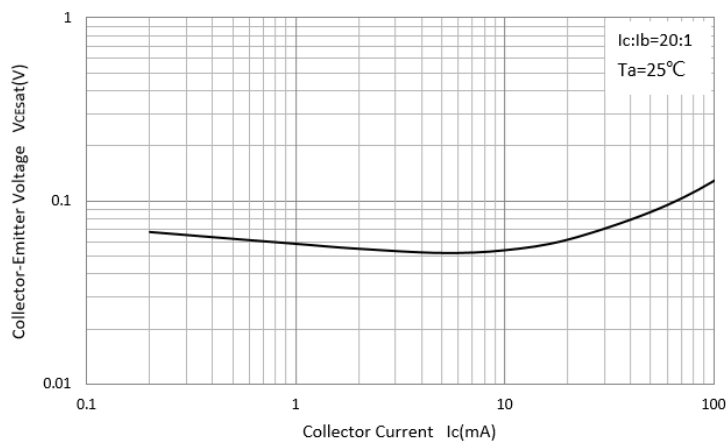
Static Characteristic



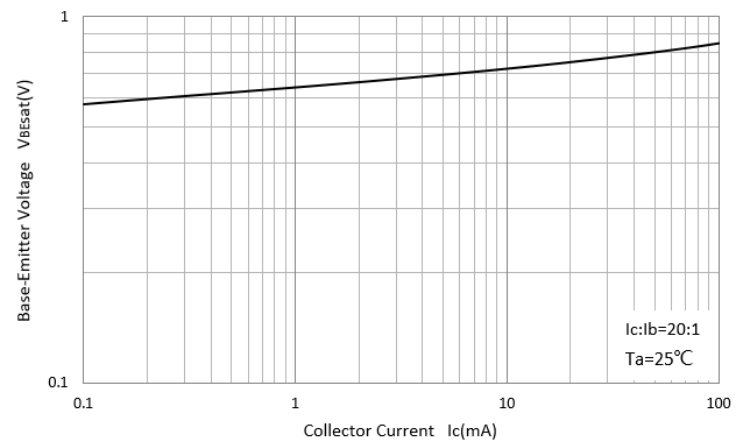
DC Current Gain



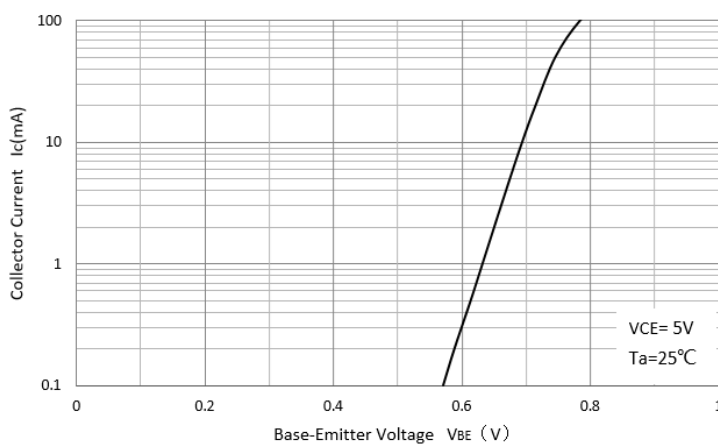
Collector-Emittor Saturation Voltage



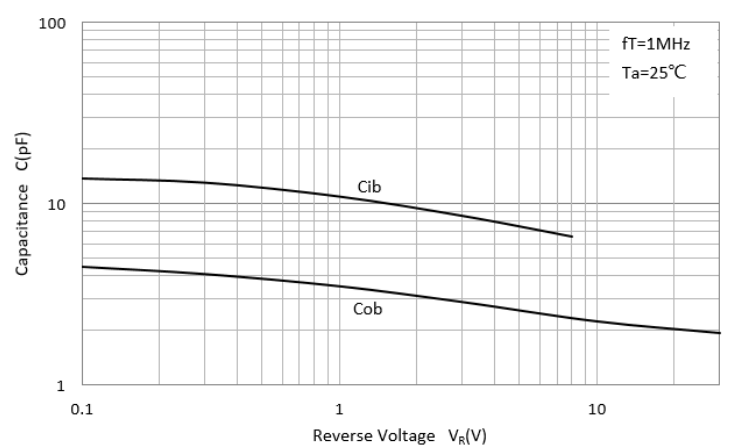
Base-Emittor Saturation Voltage



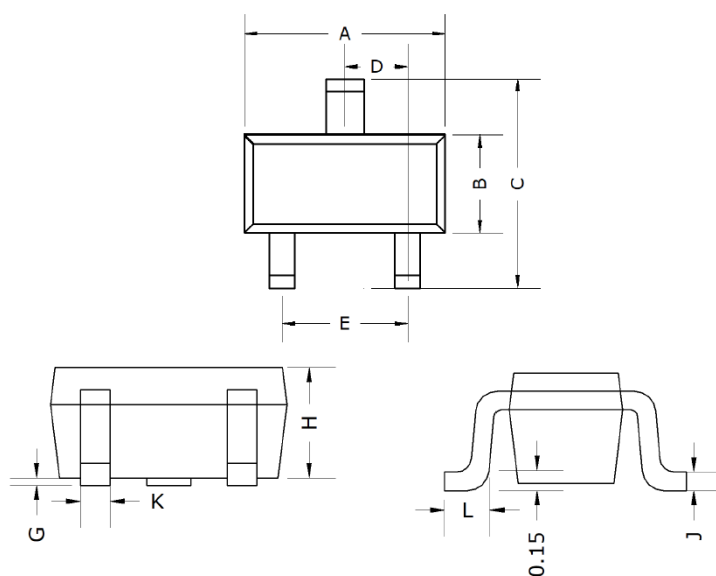
Base-Emittor On Voltage



$C_{ob}/C_{ib}-V_{CB}/V_{EB}$

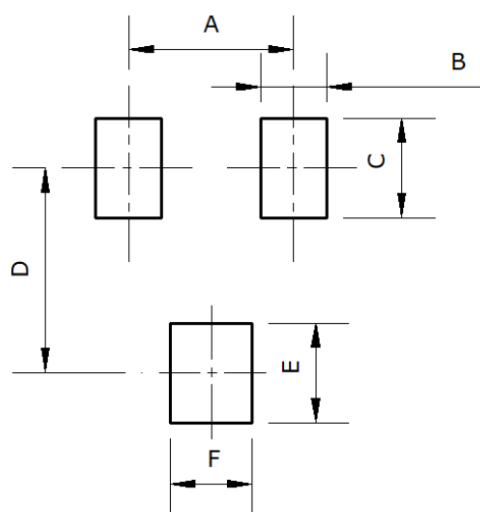


## ■ SOT-523 Package Outline Dimensions



| DIMENSIONS |          |       |         |      |
|------------|----------|-------|---------|------|
| DIM        | INCHES   |       | MM      |      |
|            | MIN      | MAX   | MIN     | MAX  |
| A          | 0.059    | 0.067 | 1.50    | 1.70 |
| B          | 0.030    | 0.033 | 0.75    | 0.85 |
| C          | 0.057    | 0.069 | 1.45    | 1.75 |
| D          | 0.020TYP |       | 0.50TYP |      |
| E          | 0.035    | 0.043 | 0.90    | 1.10 |
| G          | 0.000    | 0.004 | 0.00    | 0.10 |
| H          | 0.024    | 0.031 | 0.60    | 0.80 |
| J          | 0.004    | 0.008 | 0.10    | 0.20 |
| K          | 0.006    | 0.014 | 0.15    | 0.35 |
| L          | 0.010    | 0.018 | 0.26    | 0.46 |

## ■ SOT-523 Suggested Pad Layout



| DIMENSIONS |          |
|------------|----------|
| DIM        | MM (TYP) |
| A          | 1.00     |
| B          | 0.40     |
| C          | 0.60     |
| D          | 1.24     |
| E          | 0.60     |
| F          | 0.50     |

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