

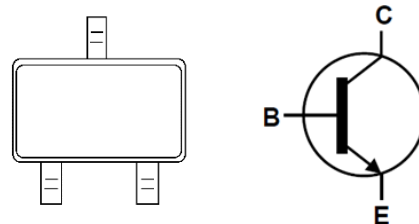
### FEATURES AND BENEFITS

#### Product Summary

|            |       |                 |
|------------|-------|-----------------|
| $I_C$      | 100mA | @25 °C          |
| $BV_{CBO}$ | 30V   | @ $I_C=10\mu A$ |
| $BV_{CEO}$ | 30V   | @ $I_C=10mA$    |
| $BV_{EBO}$ | 5V    | @ $I_E=1\mu A$  |

- For General Purpose NPN Amplifier
- Low Current Leakage
- RoHS Compliant / Green EMC UL Flammability Classification Rating 94V-0
- Matte Tin (Sn) Lead finish Solderable per MIL-STD-202, Method 208
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.006 grams (Approximate)

SOT-323



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

| PARAMETER                   | SYMBOL    | VALUE       | UNIT |
|-----------------------------|-----------|-------------|------|
| Collector-Base Voltage      | $V_{CBO}$ | 30          | V    |
| Collector-Emitter Voltage   | $V_{CEO}$ | 30          | V    |
| Emitter-Base Voltage        | $V_{EBO}$ | 5           | V    |
| Collector Current           | $I_C$     | 100         | mA   |
| Collector Power Dissipation | $P_T$     | 150         | mW   |
| Junction Temperature        | $T_J$     | 150         | °C   |
| Storage Temperature         | $T_{STG}$ | -55 to +150 | °C   |

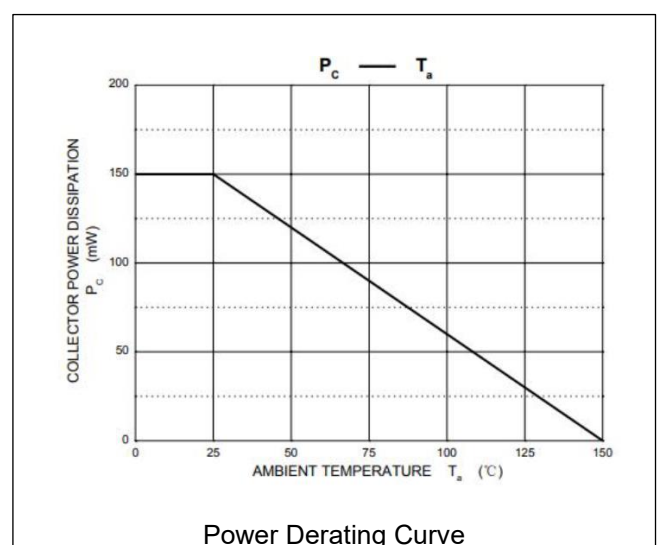
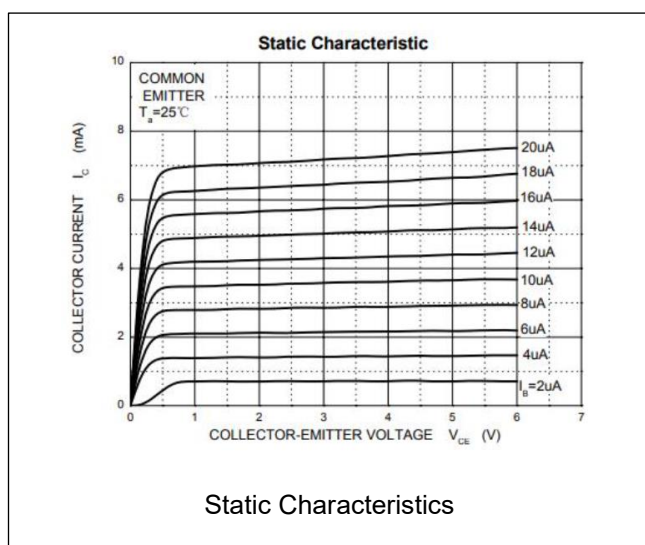
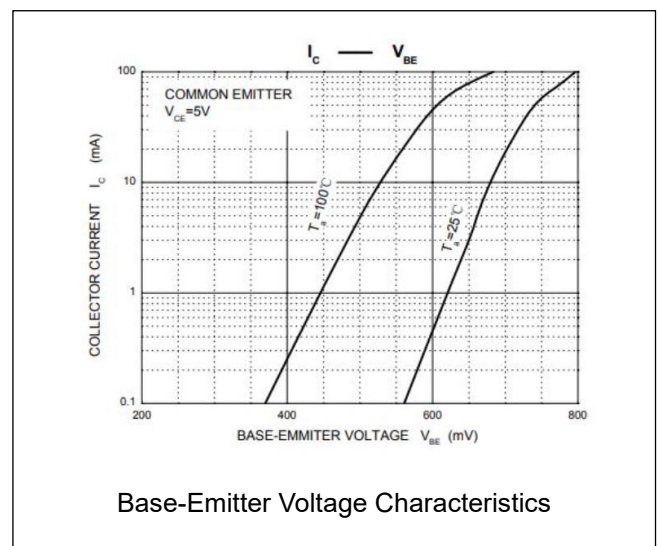
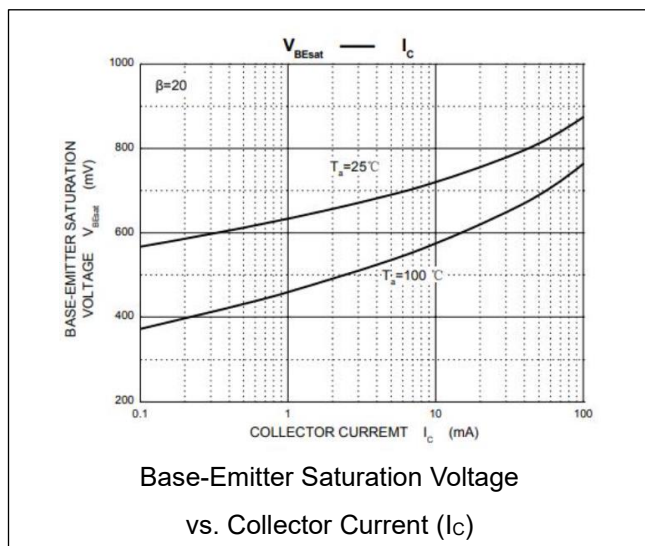
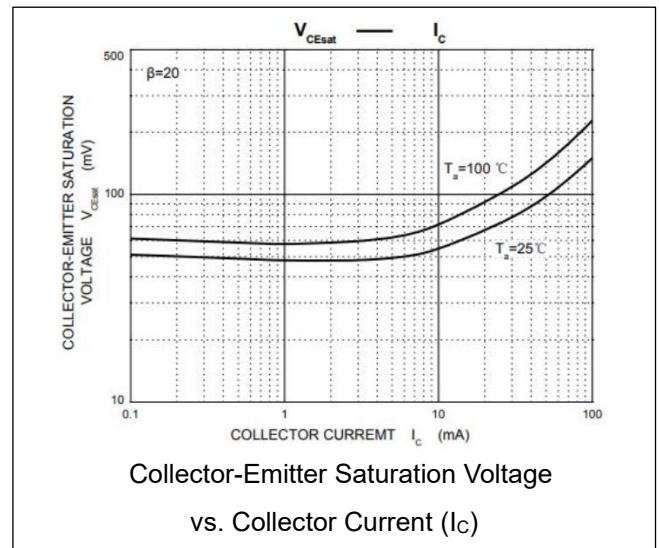
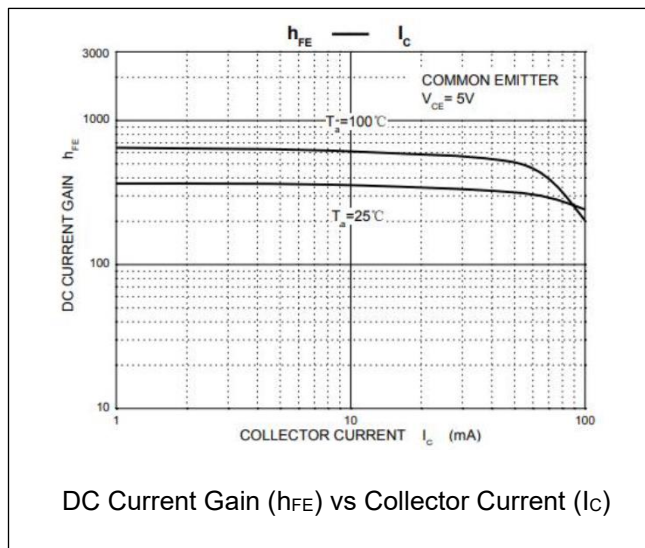
#### THERMAL CHARACTERISTICS (TA = 25 °C unless otherwise noted)

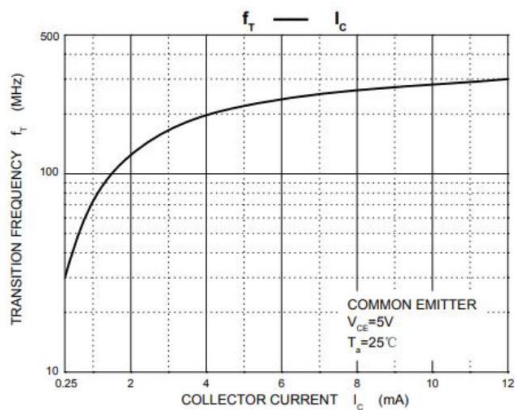
| PARAMETER                                    | SYMBOL          | VALUE | UNIT |
|----------------------------------------------|-----------------|-------|------|
| Thermal Resistance from Junction to Ambient* | $R_{\theta JA}$ | 833   | °C/W |

\* Device mounted on 1"x1" FR4 PCB

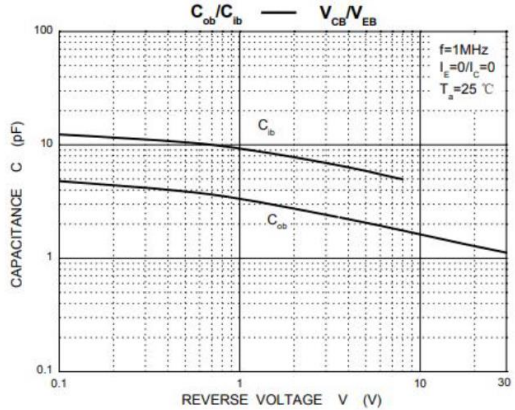
| <b>ELECTRICAL CHARACTERISTICS</b> (TA = 25 °C unless otherwise noted) |               |                                       |      |      |      |
|-----------------------------------------------------------------------|---------------|---------------------------------------|------|------|------|
| PARAMETER                                                             | SYMBOL        | CONDITION                             | MIN  | MAX  | UNIT |
| Collector-Emitter Breakdown Voltage                                   | $V_{(BR)CEO}$ | $I_C = 10mA, I_B = 0$                 | 30   |      | V    |
| Collector-Base Breakdown Voltage                                      | $V_{(BR)CBO}$ | $I_C = 10\mu A, I_E = 0$              | 30   |      | V    |
| Emitter-Base Breakdown Voltage                                        | $V_{(BR)EBO}$ | $I_E = 1\mu A, I_C = 0$               | 5    |      | V    |
| Collector Cutoff Current                                              | $I_{CBO}$     | $V_{CB} = 30V, I_E = 0$               |      | 15   | nA   |
| Emitter Cutoff Current                                                | $I_{EBO}$     | $V_{EB} = 5V, I_C = 0$                |      | 0.1  | uA   |
| DC Current Gain                                                       | $h_{FE}$      | $V_{CE} = 5V, I_C = 2mA$              | 420  | 800  |      |
| Collector-Emitter Saturation Voltage                                  | $V_{CE(sat)}$ | $I_C = 10mA, I_B = 0.5mA$             |      | 0.25 | V    |
|                                                                       |               | $I_C = 100mA, I_B = 5mA$              |      | 0.60 |      |
| Base-Emitter Voltage                                                  | $V_{BE(on)}$  | $V_{CE} = 5V, I_C = 2mA$              | 0.58 | 0.7  | V    |
|                                                                       |               | $V_{CE} = 5V, I_C = 10mA$             |      | 0.77 |      |
| Transition Frequency                                                  | $f_T$         | $V_{CE} = 5V, I_C = 10mA, f = 100MHz$ | 100  |      | MHz  |
| Output Capacitance                                                    | $C_{obo}$     | $V_{CB} = 10V, f = 1MHz$              |      | 4.5  | pF   |

### RATING AND CHARACTERISTICS CURVES





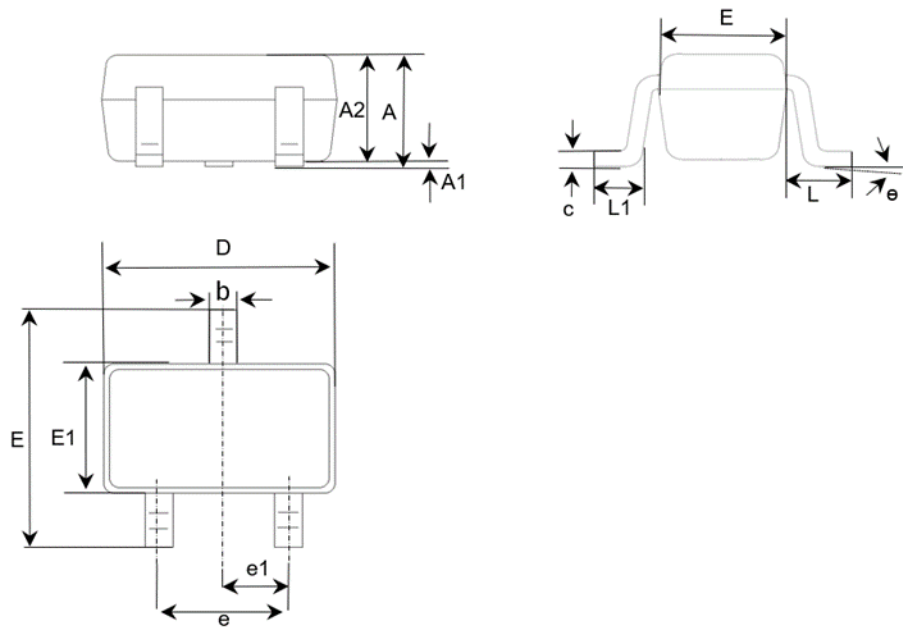
Transition Frequency ( $f_T$ ) vs Collector Current ( $I_C$ )



Capacitance vs. Reverse Voltage

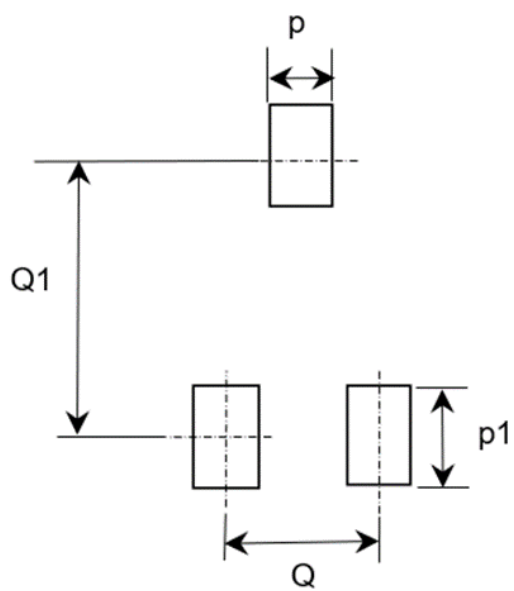
**PACKAGE OUTLINE DIMENSIONS**

SOT-323



| Symbol   | MIN      | MAX  |
|----------|----------|------|
| A        | 0.90     | 1.00 |
| A1       | 0.00     | 0.10 |
| A2       | 0.90     | 1.00 |
| b        | 0.20     | 0.40 |
| c        | 0.08     | 0.15 |
| D        | 2.00     | 2.20 |
| E        | 1.15     | 1.35 |
| E1       | 2.15     | 2.45 |
| e        | 0.65TYP  |      |
| e1       | 1.20     | 1.40 |
| L        | 0.525REF |      |
| L1       | 0.26     | 0.46 |
| ⌀        | 0°       | 8°   |
| Unit: mm |          |      |

**SUGGESTED PAD LAYOUT**



Land Pattern Recommendation

| Symbol   | Type |
|----------|------|
| Q1       | 2.2  |
| Q        | 1.3  |
| p        | 0.5  |
| p1       | 0.8  |
| Unit: mm |      |

**DEVICE MARKING AND ORDERING INFORMATION**

| DEVICE  | Marking | Quantity    | Packing     |
|---------|---------|-------------|-------------|
| BC848CW | 1L      | 3000/7"Reel | Tape & Reel |

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