

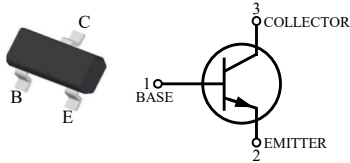


BC846AWH / BC846BWH / BC846CWH

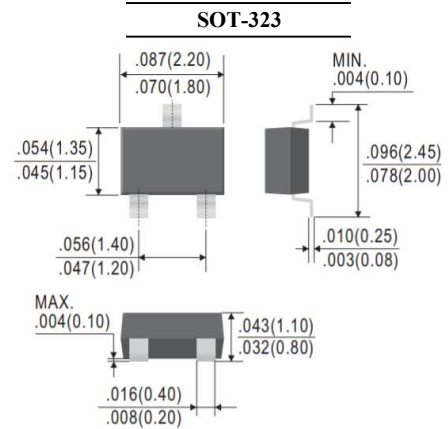
NPN TRANSISTORS

FEATURES

- For switching and amplifier applications
- Suffix "H" indicates Halogen-free parts, ex. BC846AWH



| | |
|---|-----------|
| B | Base |
| C | Collector |
| E | Emitter |



Dimensions in inch and (millimeter)

Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------------|---------------|---------------------------|
| Collector Base Voltage | V_{CBO} | 80 | V |
| Collector Emitter Voltage | V_{CEO} | 65 | V |
| Emitter Base Voltage | V_{EBO} | 6 | V |
| Collector Current | I_C | 100 | mA |
| Peak Collector Current | I_{CM} | 200 | mA |
| Power Dissipation | P_D | 200 | mW |
| Thermal Resistance from Junction to Ambient (Note 1) | $R_{\theta JA}$ | 625 | $^\circ\text{C}/\text{W}$ |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | - 55 to + 150 | $^\circ\text{C}$ |

Note :

1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

| Parameter | Conditions | Symbol | Min. | Typ. | Max. | Unit |
|--------------------------------------|---|---------------|------|------|------|------|
| DC Current Gain | $V_{CE}=5\text{V}, I_C=2\text{mA}$ | A | 110 | - | 220 | - |
| | | B | 200 | - | 450 | - |
| | | C | 420 | - | 800 | - |
| Collector Base Cutoff Current | $V_{CB}=30\text{V}$ | I_{CBO} | - | - | 15 | nA |
| Emitter Base Cutoff Current | $V_{EB}=5\text{V}$ | I_{EBO} | - | - | 100 | nA |
| Collector Base Breakdown Voltage | $I_C=10\mu\text{A}$ | $V_{(BR)CBO}$ | 50 | - | - | V |
| Collector Emitter Breakdown Voltage | $I_C=10\text{mA}$ | $V_{(BR)CEO}$ | 45 | - | - | V |
| Emitter Base Breakdown Voltage | $I_E=1\mu\text{A}$ | $V_{(BR)EBO}$ | 6 | - | - | V |
| Collector Emitter Saturation Voltage | $I_C=10\text{mA}, I_B=0.5\text{mA}$ $I_C=100\text{mA}, I_B=5\text{mA}$ | $V_{CE(sat)}$ | - | - | 0.25 | V |
| | | | - | - | 0.60 | V |
| Base Emitter Voltage | $V_{CE}=5\text{V}, I_C=2\text{mA}$ $V_{CE}=5\text{V}, I_C=10\text{mA}$ | V_{BE} | 0.58 | - | 0.70 | V |
| | | | - | - | 0.77 | V |
| Transition Frequency | $V_{CE}=5\text{V}, I_C=10\text{mA}, f=100\text{MHz}$ | f_T | - | 100 | - | MHz |
| Output Capacitance | $V_{CB}=10\text{V}, I_E=0\text{V}, f=1\text{MHz}$ | C_{ob} | - | - | 4.5 | pF |



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RATINGS AND CHARACTERISTIC CURVES

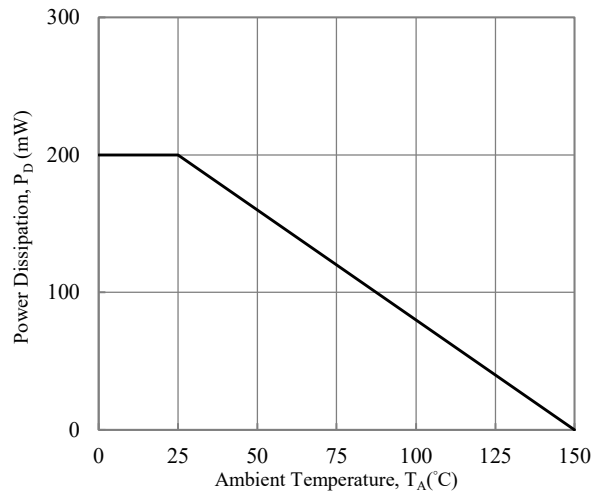


Fig. 1 Power Derating Curves

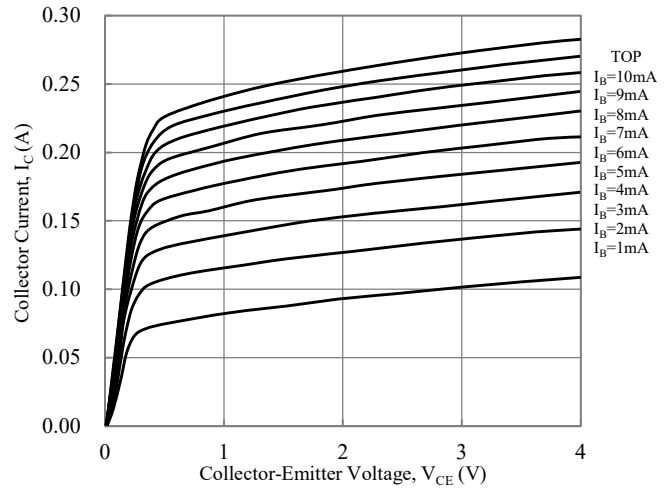


Fig. 2 Collector Current vs. Collector-Emitter Voltage

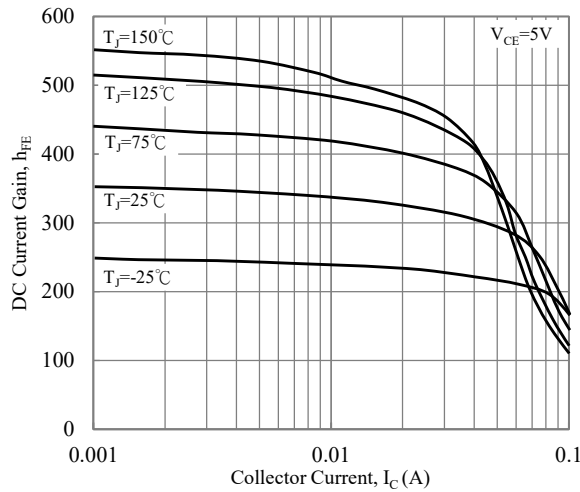


Fig. 3 Current Gain vs. Collector Current

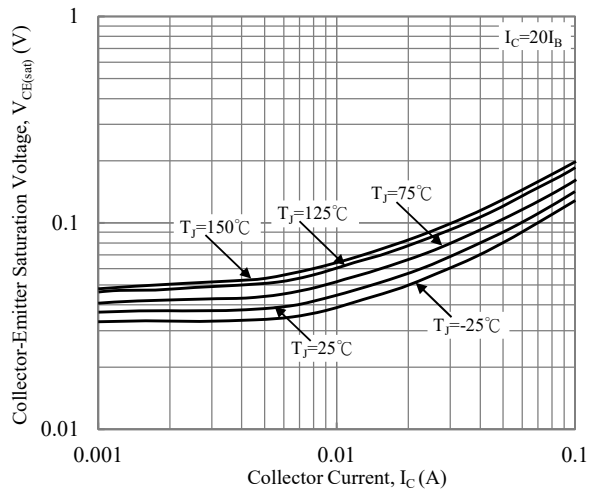


Fig. 4 Collector-Emitter Saturation Voltage vs. Collector Current

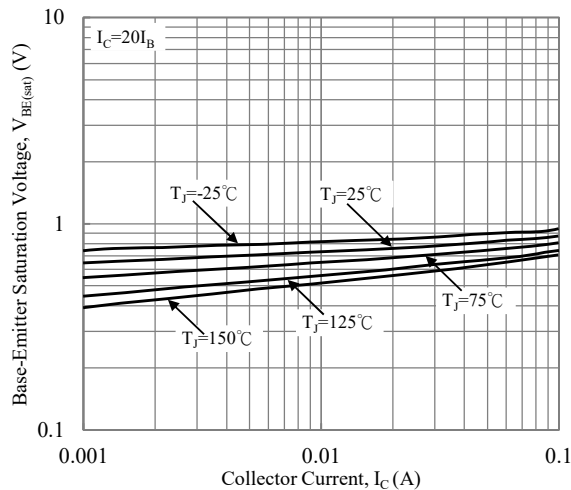


Fig. 5 Base-Emitter Saturation Voltage vs. Collector Current

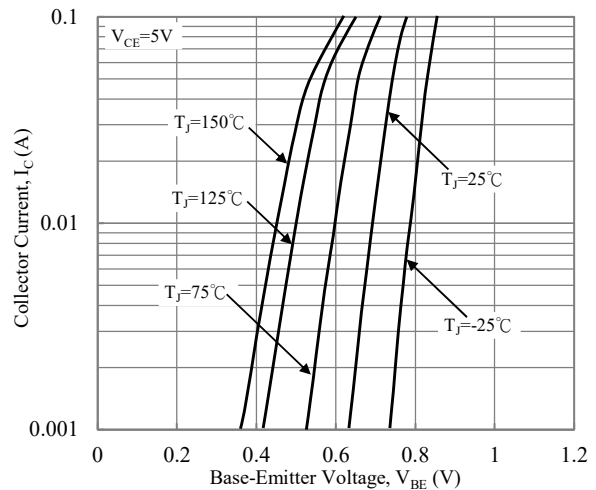


Fig. 6 Base-Emitter Voltage vs. Collector Current



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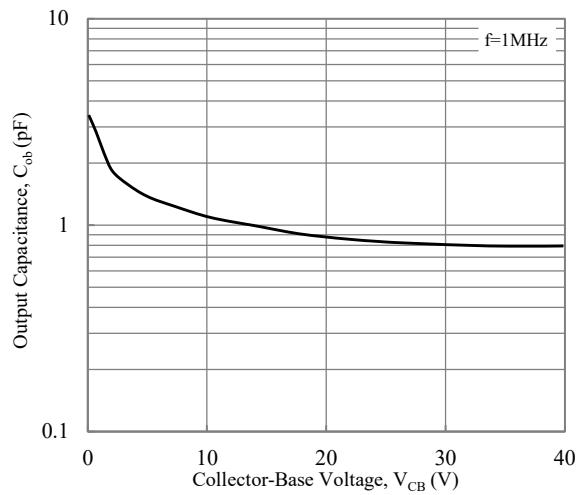


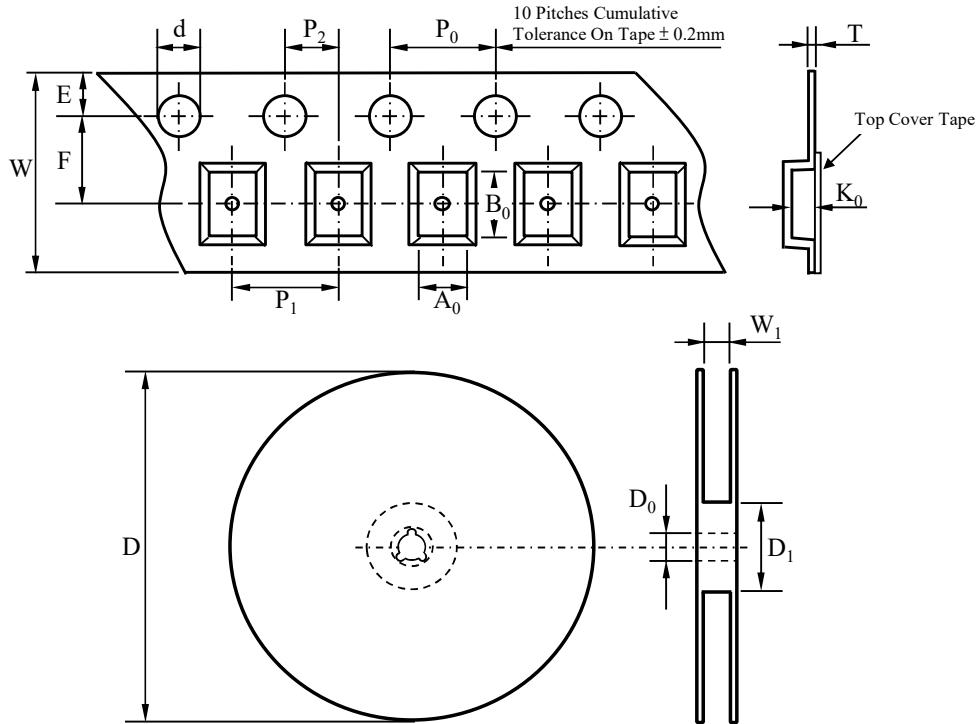
Fig. 7 Output Capacitance



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TAPE & REEL SPECIFICATION



| Item | Symbol | SOT-323 |
|------------------------|--------|-------------------|
| Carrier width | A_0 | * |
| Carrier length | B_0 | |
| Carrier depth | K_0 | |
| Sprocket hole | d | 1.50 ± 0.10 |
| Reel outside diameter | D | 178.00 ± 2.00 |
| Feed hole width | D_0 | 13.00 ± 0.50 |
| Reel inner diameter | D_1 | MIN. 50.00 |
| Sprocket hole position | E | 1.75 ± 0.10 |
| Punch hole position | F | 3.50 ± 0.10 |
| Sprocket hole pitch | P_0 | 4.00 ± 0.10 |
| Punch hole pitch | P_1 | 4.00 ± 0.10 |
| Embossment center | P_2 | 2.00 ± 0.10 |
| Overall tape thickness | T | 0.20 ± 0.05 |
| Tape width | W | 8.00 ± 0.20 |
| Reel width | W1 | MAX. 14.50 |

Note *: A_0 , B_0 , and K_0 are determined by component size. The clearance between the components and the cavity must be within 0.05 mm min. to 0.5 mm max.

ORDER INFORMATION

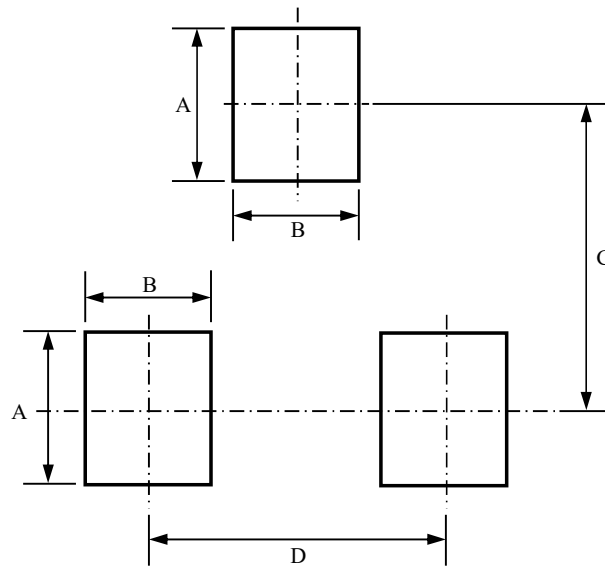
| Part Number | Marking Code | Reel Size | Quantity |
|-------------|--------------|-----------|----------|
| BC846AWH | 1A | 7" | 3,000 |
| BC846BWH | 1B | | |
| BC846CWH | 1C | | |



BC846AWH / BC846BWH / BC846CWH

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SUGGESTED SOLDER PAD LAYOUT



Unit :mm

| PACKAGE | A | B | C | D |
|---------|------|------|------|------|
| SOT-323 | 0.80 | 0.80 | 1.60 | 1.30 |