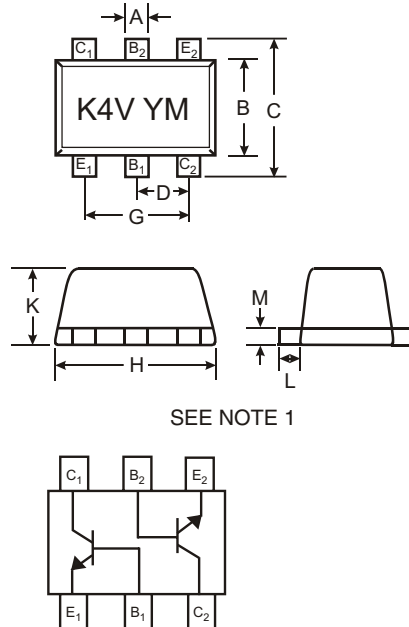


### Features

- Epitaxial Die Construction
- Complementary PNP Type Available (BC857BV)
- Ultra-Small Surface Mount Package
- Lead Free Plating

### Mechanical Data

- Case: SOT-563, Molded Plastic
- Case material - UL Flammability Rating Classification 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Terminals: Finish - Matte Tin (Note 2) Solderable per MIL-STD-202, Method 208
- Marking (See Page 2): K4V
- Ordering & Date Code Information: See Page 2
- Weight: 0.002 grams (approx.)



| SOT-563              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.15 | 0.30 | 0.25 |
| B                    | 1.10 | 1.25 | 1.20 |
| C                    | 1.55 | 1.70 | 1.60 |
| D                    | 0.50 |      |      |
| G                    | 0.90 | 1.10 | 1.00 |
| H                    | 1.50 | 1.70 | 1.60 |
| K                    | 0.56 | 0.60 | 0.60 |
| L                    | 0.10 | 0.30 | 0.20 |
| M                    | 0.10 | 0.18 | 0.11 |
| All Dimensions in mm |      |      |      |

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic                                   | Symbol          | Value       | Unit               |
|--------------------------------------------------|-----------------|-------------|--------------------|
| Collector-Base Voltage                           | $V_{CBO}$       | 50          | V                  |
| Collector-Emitter Voltage                        | $V_{CEO}$       | 45          | V                  |
| Emitter-Base Voltage                             | $V_{EBO}$       | 6.0         | V                  |
| Collector Current                                | $I_C$           | 100         | mA                 |
| Power Dissipation (Note 3)                       | $P_d$           | 150         | mW                 |
| Thermal Resistance, Junction to Ambient (Note 3) | $R_{\theta JA}$ | 833         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range          | $T_j, T_{STG}$  | -55 to +150 | $^\circ\text{C}$   |

- Notes:
1. Package is non-polarized. Parts may be on reel in orientation illustrated,  $180^\circ$  rotated, or mixed (both ways).
  2. If lead-bearing terminal plating is required, please contact your Diodes Inc. sales representative for availability and minimum order details.
  3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

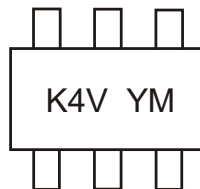
**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                                | Symbol                 | Min      | Typ        | Max        | Unit                | Test Condition                                                                                  |
|-----------------------------------------------|------------------------|----------|------------|------------|---------------------|-------------------------------------------------------------------------------------------------|
| Collector-Base Breakdown Voltage (Note 4)     | $V_{(BR)CBO}$          | 50       | —          | —          | V                   | $I_C = 10\mu\text{A}$ , $I_B = 0$                                                               |
| Collector-Emitter Breakdown Voltage (Note 4)  | $V_{(BR)CEO}$          | 45       | —          | —          | V                   | $I_C = 10\text{mA}$ , $I_B = 0$                                                                 |
| Emitter-Base Breakdown Voltage (Note 4)       | $V_{(BR)EBO}$          | 6        | —          | —          | V                   | $I_E = 1\mu\text{A}$ , $I_C = 0$                                                                |
| DC Current Gain (Note 4)                      | $h_{FE}$               | 200      | 290        | 450        | —                   | $V_{CE} = 5.0\text{V}$ , $I_C = 2.0\text{mA}$                                                   |
| Collector-Emitter Saturation Voltage (Note 4) | $V_{CE(SAT)}$          | —        | —          | 100<br>300 | mV                  | $I_C = 10\text{mA}$ , $I_B = 0.5\text{mA}$<br>$I_C = 100\text{mA}$ , $I_B = 5.0\text{mA}$       |
| Base-Emitter Saturation Voltage (Note 4)      | $V_{BE(SAT)}$          | —        | 700<br>900 | —          | mV                  | $I_C = 10\text{mA}$ , $I_B = 0.5\text{mA}$<br>$I_C = 100\text{mA}$ , $I_B = 5.0\text{mA}$       |
| Base-Emitter Voltage (Note 4)                 | $V_{BE}$               | 580<br>— | 660<br>—   | 700<br>770 | mV                  | $V_{CE} = 5.0\text{V}$ , $I_C = 2.0\text{mA}$<br>$V_{CE} = 5.0\text{V}$ , $I_C = 10\text{mA}$   |
| Collector-Emitter Cutoff Current (Note 4)     | $I_{CBO}$<br>$I_{CBO}$ | —        | —          | 15<br>5.0  | nA<br>$\mu\text{A}$ | $V_{CB} = 30\text{V}$<br>$V_{CB} = 30\text{V}$ , $T_A = 150^\circ\text{C}$                      |
| Gain Bandwidth Product                        | $f_T$                  | 100      | —          | —          | MHz                 | $V_{CE} = 5.0\text{V}$ , $I_C = 10\text{mA}$ ,<br>$f = 100\text{MHz}$                           |
| Output Capacitance                            | $C_{OBO}$              | —        | —          | 4.5        | pF                  | $V_{CB} = 10\text{V}$ , $f = 1.0\text{MHz}$                                                     |
| Noise Figure                                  | NF                     | —        | —          | 10         | dB                  | $V_{CE} = 5\text{V}$ , $R_S = 2.0\text{k}\Omega$ ,<br>$f = 1.0\text{kHz}$ , $BW = 200\text{Hz}$ |

**Ordering Information** (Note 5)

| Device    | Packaging | Shipping         |
|-----------|-----------|------------------|
| BC847BV-7 | SOT-563   | 3000/Tape & Reel |

- Notes: 4. Short duration pulse test used to minimize self-heating effect.  
 5. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**


K4V = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: P = 2003)  
 M = Month (ex: 9 = September)

**Date Code Key**

| Year | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|
| Code | P    | R    | S    | T    | U    | V    | W    |

| Month | Jan | Feb | March | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3     | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

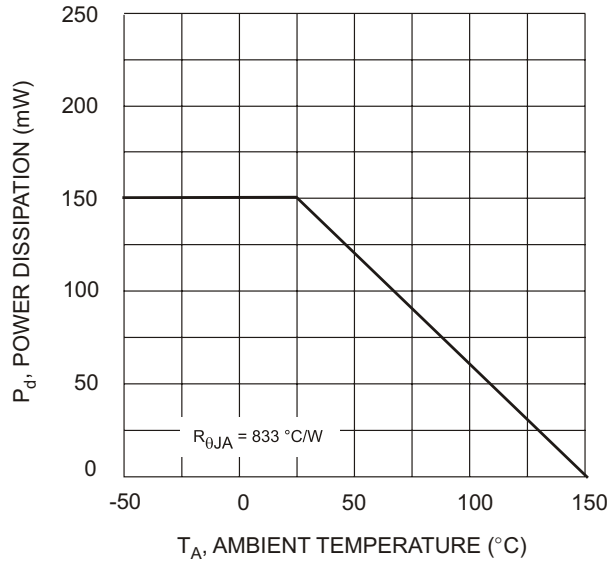


Fig. 1, Derating Curve - Total

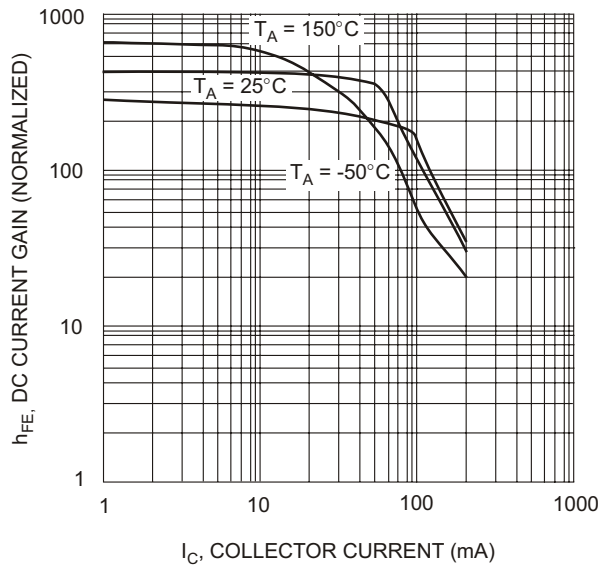


Fig. 3, DC Current Gain vs Collector Current

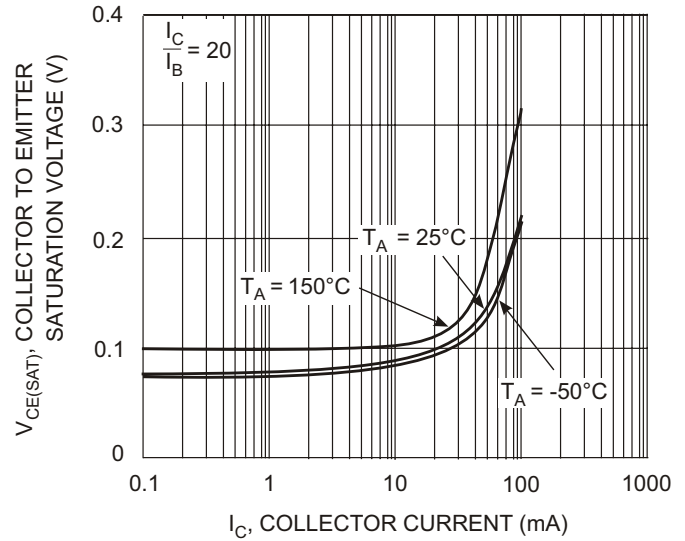


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

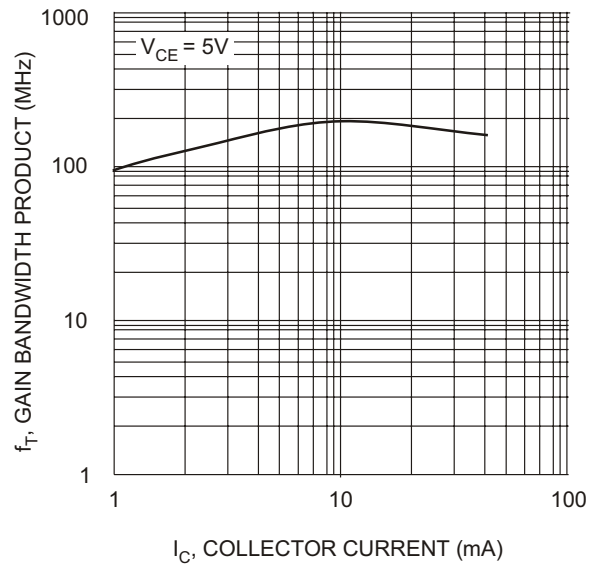


Fig. 4, Gain Bandwidth Product vs Collector Current