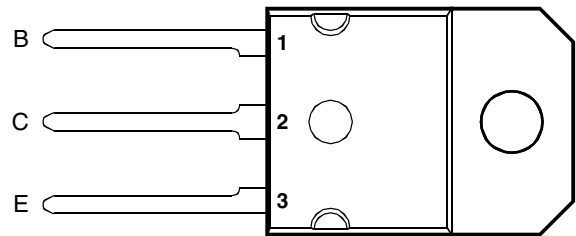


- Designed for Complementary Use with the BD545 Series
- 85 W at 25°C Case Temperature
- 15 A Continuous Collector Current
- Customer-Specified Selections Available

SOT-93 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDTRAAA

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

| RATING | | SYMBOL | VALUE | UNIT |
|--|--------|-----------|-------------|------|
| Collector-base voltage ($I_E = 0$) | BD546 | V_{CBO} | -40 | V |
| | BD546A | | -60 | |
| | BD546B | | -80 | |
| | BD546C | | -100 | |
| Collector-emitter voltage ($I_B = 0$) (see Note 1) | BD546 | V_{CEO} | -40 | V |
| | BD546A | | -60 | |
| | BD546B | | -80 | |
| | BD546C | | -100 | |
| Emitter-base voltage | | V_{EBO} | -5 | V |
| Continuous collector current | | I_C | -15 | A |
| Continuous device dissipation at (or below) 25°C case temperature (see Note 2) | | P_{tot} | 85 | W |
| Continuous device dissipation at (or below) 25°C free air temperature (see Note 3) | | P_{tot} | 3.5 | W |
| Operating free air temperature range | | T_A | -65 to +150 | °C |
| Operating junction temperature range | | T_j | -65 to +150 | °C |
| Storage temperature range | | T_{stg} | -65 to +150 | °C |
| Lead temperature 3.2 mm from case for 10 seconds | | T_L | 260 | °C |

- NOTES: 1. These values apply when the base-emitter diode is open circuited.
 2. Derate linearly to 150°C case temperature at the rate of 0.68 W/°C.
 3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.

PRODUCT INFORMATION

electrical characteristics at 25°C case temperature

| PARAMETER | TEST CONDITIONS | | | MIN | TYP | MAX | UNIT |
|--|---|---|-------------------------------------|---------------------------|-----|------------------------------|------|
| $V_{(BR)CEO}$ Collector-emitter breakdown voltage | $I_C = -30 \text{ mA}$ (see Note 4) | $I_B = 0$ | BD546 BD546A BD546B BD546C | -40 -60 -80 -100 | | | V |
| I_{CES} Collector-emitter cut-off current | $V_{CE} = -40 \text{ V}$ $V_{CE} = -60 \text{ V}$ $V_{CE} = -80 \text{ V}$ $V_{CE} = -100 \text{ V}$ | $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ $V_{BE} = 0$ | BD546 BD546A BD546B BD546C | | | -0.4 -0.4 -0.4 -0.4 | mA |
| I_{CEO} Collector cut-off current | $V_{CE} = -30 \text{ V}$ $V_{CE} = -60 \text{ V}$ | $I_B = 0$ $I_B = 0$ | BD546/546A BD546B/546C | | | -0.7 -0.7 | mA |
| I_{EBO} Emitter cut-off current | $V_{EB} = -5 \text{ V}$ | $I_C = 0$ | | | | -1 | mA |
| h_{FE} Forward current transfer ratio | $V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$ | $I_C = -1 \text{ A}$ $I_C = -5 \text{ A}$ $I_C = -10 \text{ A}$ | (see Notes 4 and 5) | 60 25 10 | | | |
| $V_{CE(sat)}$ Collector-emitter saturation voltage | $I_B = -625 \text{ mA}$ $I_B = -2 \text{ A}$ | $I_C = -5 \text{ A}$ $I_C = -10 \text{ A}$ | (see Notes 4 and 5) | | | -0.8 -1 | V |
| V_{BE} Base-emitter voltage | $V_{CE} = -4 \text{ V}$ | $I_C = -10 \text{ A}$ | (see Notes 4 and 5) | | | -1.8 | V |
| h_{fe} Small signal forward current transfer ratio | $V_{CE} = -10 \text{ V}$ | $I_C = -0.5 \text{ A}$ | $f = 1 \text{ kHz}$ | 20 | | | |
| $ h_{fe} $ Small signal forward current transfer ratio | $V_{CE} = -10 \text{ V}$ | $I_C = -0.5 \text{ A}$ | $f = 1 \text{ MHz}$ | 3 | | | |

NOTES: 4. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.

5. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

| PARAMETER | MIN | TYP | MAX | UNIT |
|---|-----|-----|------|------|
| $R_{\theta JC}$ Junction to case thermal resistance | | | 1.47 | °C/W |
| $R_{\theta JA}$ Junction to free air thermal resistance | | | 35.7 | °C/W |

resistive-load-switching characteristics at 25°C case temperature

| PARAMETER | TEST CONDITIONS † | | | MIN | TYP | MAX | UNIT |
|-------------------------|-----------------------------|------------------------------|--|-----|-----|-----|---------------|
| t_{on} Turn-on time | $I_C = -6 \text{ A}$ | $I_{B(on)} = -0.6 \text{ A}$ | $I_{B(off)} = 0.6 \text{ A}$ | | 0.4 | | μs |
| t_{off} Turn-off time | $V_{BE(off)} = 4 \text{ V}$ | $R_L = 5 \Omega$ | $t_p = 20 \mu\text{s}$, dc $\leq 2\%$ | | 0.7 | | μs |

† Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

TYPICAL CHARACTERISTICS

**TYPICAL DC CURRENT GAIN
vs
COLLECTOR CURRENT**

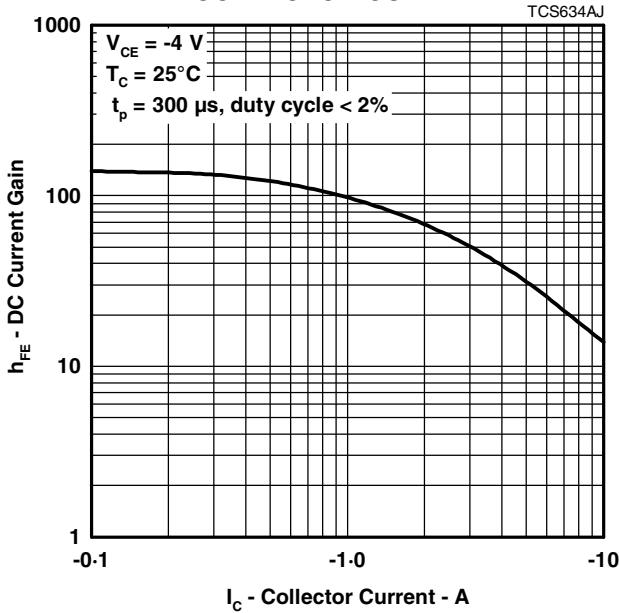


Figure 1.

**COLLECTOR-EMITTER SATURATION VOLTAGE
vs
BASE CURRENT**

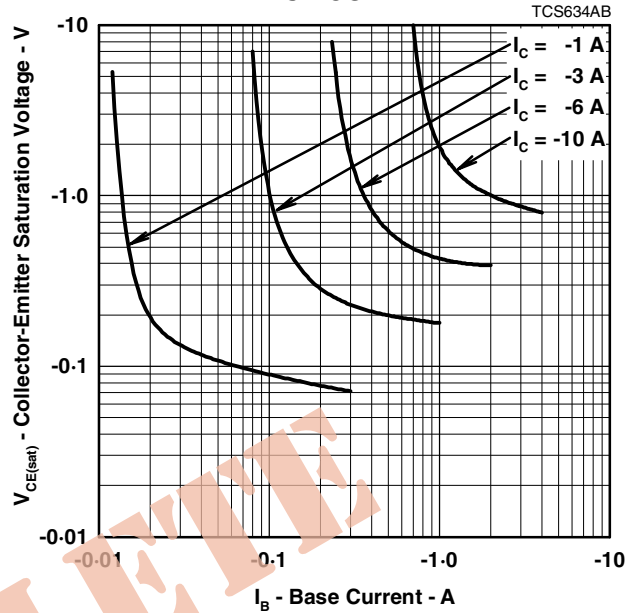


Figure 2.

**BASE-EMITTER VOLTAGE
vs
COLLECTOR CURRENT**

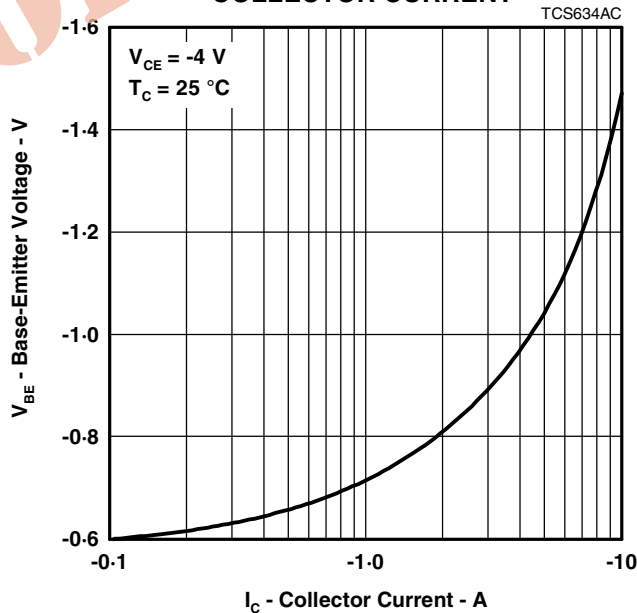


Figure 3.

PRODUCT INFORMATION

MAXIMUM SAFE OPERATING REGIONS

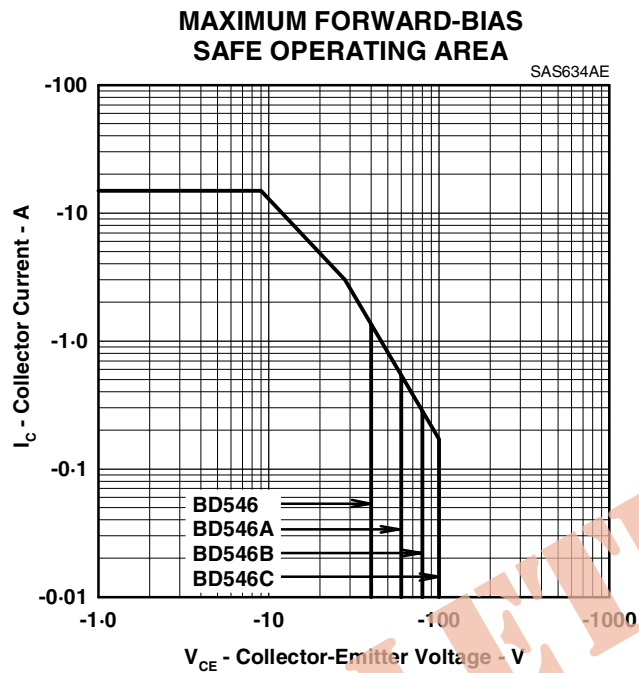


Figure 4.

THERMAL INFORMATION

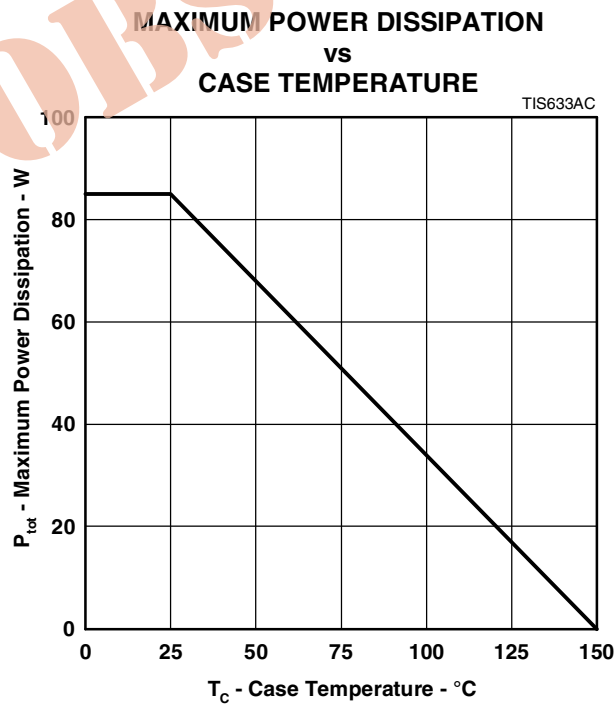


Figure 5.

PRODUCT INFORMATION