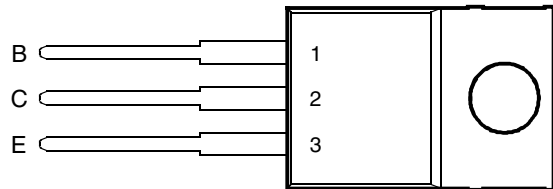


- Designed for Complementary Use with BD896, BD898, BD900 and BD902
- 70 W at 25°C Case Temperature
- 8 A Continuous Collector Current
- Minimum  $h_{FE}$  of 750 at 3V, 3A

TO-220 PACKAGE  
(TOP VIEW)



This series is obsolete and not recommended for new designs.

Pin 2 is in electrical contact with the mounting base.

MDTRACA

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

| RATING                                                                             |       | SYMBOL    | VALUE       | UNIT |
|------------------------------------------------------------------------------------|-------|-----------|-------------|------|
| Collector-base voltage ( $I_E = 0$ )                                               | BD895 | $V_{CBO}$ | 45          | V    |
|                                                                                    | BD897 |           | 60          |      |
|                                                                                    | BD899 |           | 80          |      |
|                                                                                    | BD901 |           | 100         |      |
| Collector-emitter voltage ( $I_B = 0$ )                                            | BD895 | $V_{CEO}$ | 45          | V    |
|                                                                                    | BD897 |           | 60          |      |
|                                                                                    | BD899 |           | 80          |      |
|                                                                                    | BD901 |           | 100         |      |
| Base-emitter voltage                                                               |       | $V_{EBO}$ | 5           | V    |
| Continuous collector current                                                       |       | $I_C$     | 8           | A    |
| Continuous base current                                                            |       | $I_B$     | 0.3         | A    |
| Continuous device dissipation at (or below) 25°C case temperature (see Note 1)     |       | $P_{tot}$ | 70          | W    |
| Continuous device dissipation at (or below) 25°C free air temperature (see Note 2) |       | $P_{tot}$ | 2           | 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   |

NOTES: 1. Derate linearly to 150°C case temperature at the rate of 0.56 W/°C.  
2. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.

**PRODUCT INFORMATION**

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**electrical characteristics at 25°C case temperature (unless otherwise noted)**

| PARAMETER                                          | TEST CONDITIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | MIN                   | TYP | MAX                                          | UNIT |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----|----------------------------------------------|------|
| $V_{(BR)CEO}$ Collector-emitter breakdown voltage  | $I_C = 100 \text{ mA}$ $I_B = 0$ (see Note 3)<br>BD895<br>BD897<br>BD899<br>BD901                                                                                                                                                                                                                                                                                                                                                                                                      | 45<br>60<br>80<br>100 |     |                                              | V    |
| $I_{CEO}$ Collector-emitter cut-off current        | $V_{CE} = 30 \text{ V}$ $I_B = 0$<br>$V_{CE} = 30 \text{ V}$ $I_B = 0$<br>$V_{CE} = 40 \text{ V}$ $I_B = 0$<br>$V_{CE} = 50 \text{ V}$ $I_B = 0$<br>BD895<br>BD897<br>BD899<br>BD901                                                                                                                                                                                                                                                                                                   |                       |     | 0.5<br>0.5<br>0.5<br>0.5                     | mA   |
| $I_{CBO}$ Collector cut-off current                | $V_{CB} = 45 \text{ V}$ $I_E = 0$<br>$V_{CB} = 60 \text{ V}$ $I_E = 0$<br>$V_{CB} = 80 \text{ V}$ $I_E = 0$<br>$V_{CB} = 100 \text{ V}$ $I_E = 0$<br>$V_{CB} = 45 \text{ V}$ $I_E = 0$ $T_C = 100^\circ\text{C}$<br>$V_{CB} = 60 \text{ V}$ $I_E = 0$ $T_C = 100^\circ\text{C}$<br>$V_{CB} = 80 \text{ V}$ $I_E = 0$ $T_C = 100^\circ\text{C}$<br>$V_{CB} = 100 \text{ V}$ $I_E = 0$ $T_C = 100^\circ\text{C}$<br>BD895<br>BD897<br>BD899<br>BD901<br>BD895<br>BD897<br>BD899<br>BD901 |                       |     | 0.2<br>0.2<br>0.2<br>0.2<br>2<br>2<br>2<br>2 | mA   |
| $I_{EBO}$ Emitter cut-off current                  | $V_{EB} = 5 \text{ V}$ $I_C = 0$ (see Notes 3 and 4)                                                                                                                                                                                                                                                                                                                                                                                                                                   |                       |     | 2                                            | mA   |
| $h_{FE}$ Forward current transfer ratio            | $V_{CE} = 3 \text{ V}$ $I_C = 3 \text{ A}$ (see Notes 3 and 4)                                                                                                                                                                                                                                                                                                                                                                                                                         | 750                   |     |                                              |      |
| $V_{CE(sat)}$ Collector-emitter saturation voltage | $I_B = 12 \text{ mA}$ $I_C = 3 \text{ A}$ (see Notes 3 and 4)                                                                                                                                                                                                                                                                                                                                                                                                                          |                       |     | 2.5                                          | V    |
| $V_{BE(on)}$ Base-emitter voltage                  | $V_{CE} = 3 \text{ V}$ $I_C = 3 \text{ A}$ (see Notes 3 and 4)                                                                                                                                                                                                                                                                                                                                                                                                                         |                       |     | 2.5                                          | V    |
| $V_F$ Parallel diode forward voltage               | $I_F = 8 \text{ A}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                       |     | 3.5                                          | V    |

NOTES: 3. These parameters must be measured using pulse techniques,  $t_p = 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

4. 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     |     |     | 1.79 | $^\circ\text{C/W}$ |
| $R_{\theta JA}$ Junction to free air thermal resistance |     |     | 62.5 | $^\circ\text{C/W}$ |

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

| PARAMETER               | TEST CONDITIONS <sup>†</sup>                                                            | MIN | TYP | MAX | UNIT          |
|-------------------------|-----------------------------------------------------------------------------------------|-----|-----|-----|---------------|
| $t_{on}$ Turn-on time   | $I_C = 3 \text{ A}$ $I_{B(on)} = 12 \text{ mA}$ $I_{B(off)} = -12 \text{ mA}$           |     | 1   |     | $\mu\text{s}$ |
| $t_{off}$ Turn-off time | $V_{BE(off)} = -3.5 \text{ V}$ $R_L = 10 \Omega$ $t_p = 20 \mu\text{s}$ , dc $\leq 2\%$ |     | 5   |     | $\mu\text{s}$ |

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

**PRODUCT INFORMATION**

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TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN  
vs  
COLLECTOR CURRENT

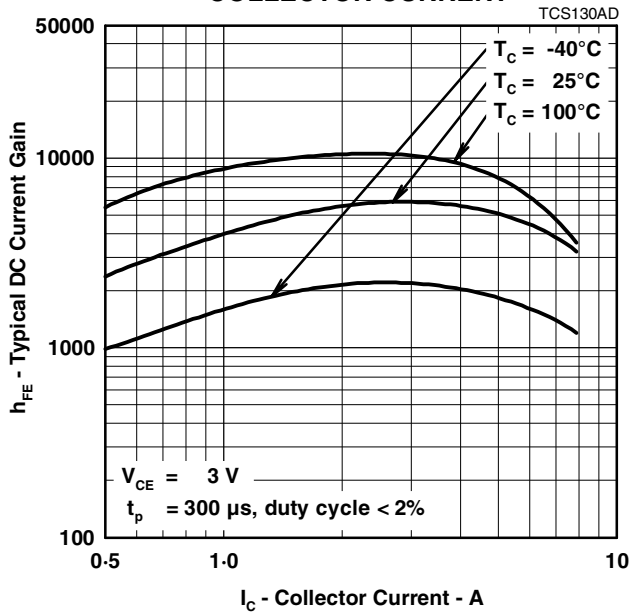


Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE  
vs  
COLLECTOR CURRENT

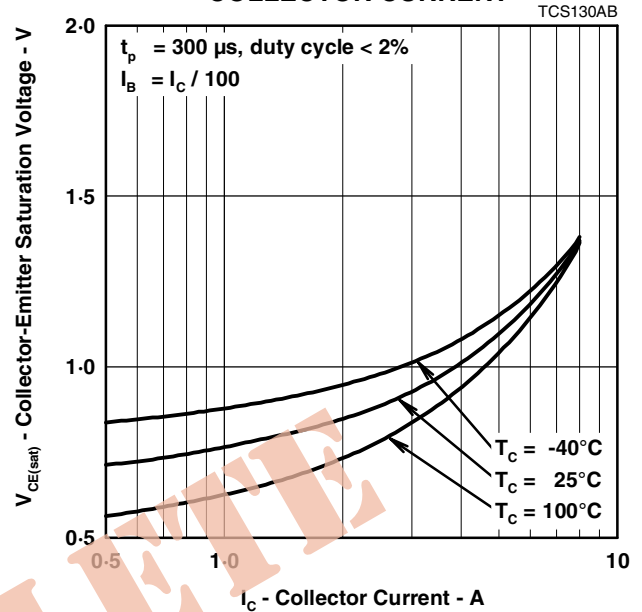


Figure 2.

BASE-EMITTER SATURATION VOLTAGE  
vs  
COLLECTOR CURRENT

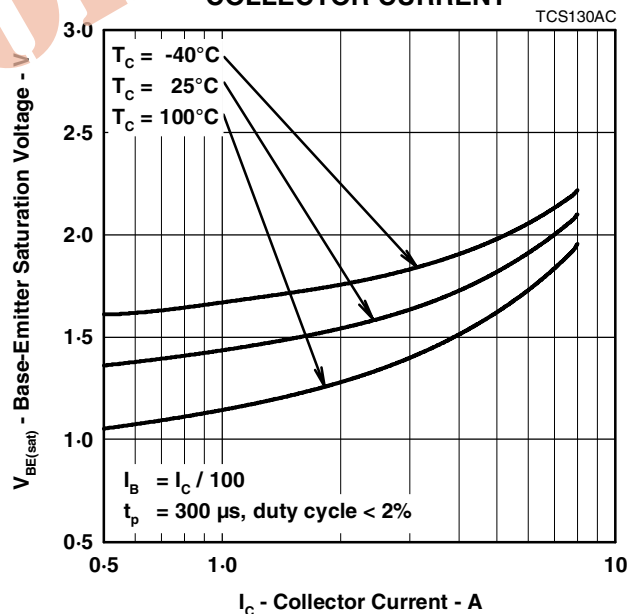
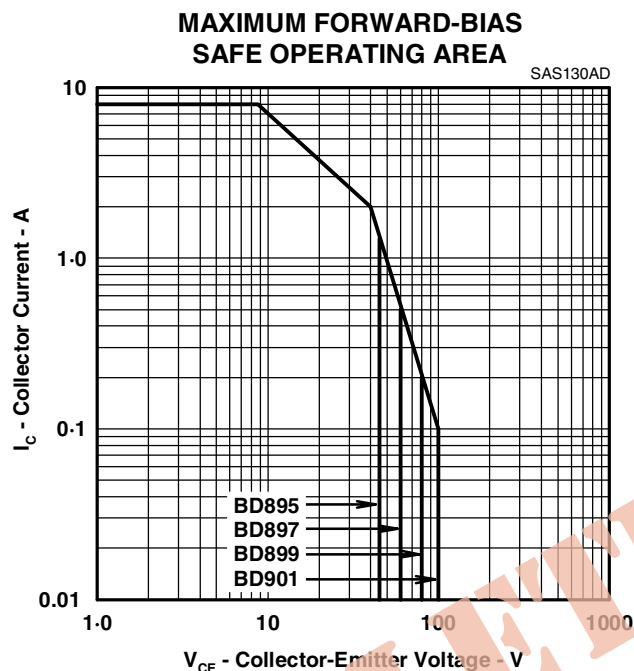


Figure 3.

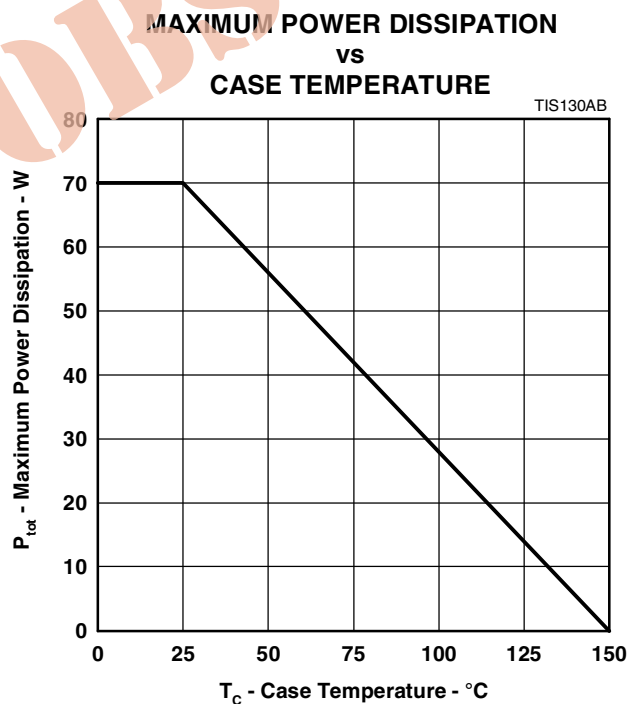
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## MAXIMUM SAFE OPERATING REGIONS



## THERMAL INFORMATION



## PRODUCT INFORMATION

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