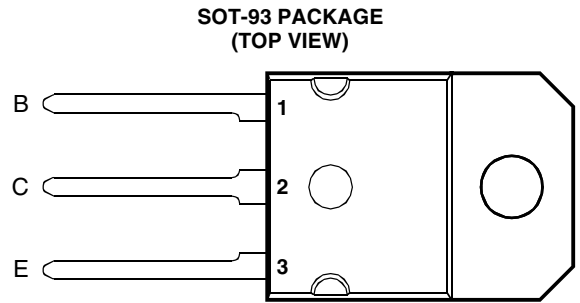


- Designed for Complementary Use with the TIP3055 Series
- 90 W at 25°C Case Temperature
- 15 A Continuous Collector Current
- Customer-Specified Selections Available



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 ($I_E = 0$) | V_{CBO} | -100 | V |
| Collector-emitter voltage ($I_B = 0$) (see Note 1) | V_{CER} | -70 | V |
| Emitter-base voltage | V_{EBO} | -7 | V |
| Continuous collector current | I_C | -15 | A |
| Continuous base current | I_B | -7 | A |
| Continuous device dissipation at (or below) 25°C case temperature (see Note 2) | P_{tot} | 90 | W |
| Continuous device dissipation at (or below) 25°C free air temperature (see Note 3) | P_{tot} | 3.5 | W |
| Unclamped inductive load energy (see Note 4) | $\frac{1}{2}LI_C^2$ | 62.5 | mJ |
| 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. This value applies when the base-emitter resistance $R_{BE} = 100 \Omega$.
 2. Derate linearly to 150°C case temperature at the rate of 0.72 W/°C.
 3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.
 4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20 \text{ mH}$, $I_{B(on)} = -0.4 \text{ A}$, $R_{BE} = 100 \Omega$, $V_{BE(off)} = 0$, $R_S = 0.1 \Omega$, $V_{CC} = -10 \text{ V}$.

PRODUCT INFORMATION

electrical characteristics at 25°C case temperature

| PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|---|---------|-----|------------|------|
| $V_{(BR)CEO}$ Collector-emitter breakdown voltage | $I_C = -30 \text{ mA}$ $I_B = 0$ (see Note 5) | -60 | | | V |
| I_{CEO} Collector cut-off current | $V_{CE} = -30 \text{ V}$ $I_B = 0$ | | | -0.7 | mA |
| I_{CEV} Voltage between base and emitter | $V_{CE} = -100 \text{ V}$ $V_{BE} = 1.5 \text{ V}$ | | | -5 | mA |
| I_{EBO} Emitter cut-off current | $V_{EB} = -7 \text{ V}$ $I_C = 0$ | | | -5 | mA |
| h_{FE} Forward current transfer ratio | $V_{CE} = -4 \text{ V}$ $I_C = -4 \text{ A}$ (see Notes 5 and 6) $V_{CE} = -4 \text{ V}$ $I_C = -10 \text{ A}$ | 20 5 | | 70 | |
| $V_{CE(sat)}$ Collector-emitter saturation voltage | $I_B = -0.4 \text{ A}$ $I_C = -4 \text{ A}$ (see Notes 5 and 6) $I_B = -3.3 \text{ A}$ $I_C = -10 \text{ A}$ | | | -1.1 -3 | V |
| V_{BE} Base-emitter voltage | $V_{CE} = -4 \text{ V}$ $I_C = -4 \text{ A}$ (see Notes 5 and 6) | | | -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: 5. These parameters must be measured using pulse techniques, $t_p = 300 \mu\text{s}$, duty cycle $\leq 2\%$.
6. 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 | | | 1.39 | °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**

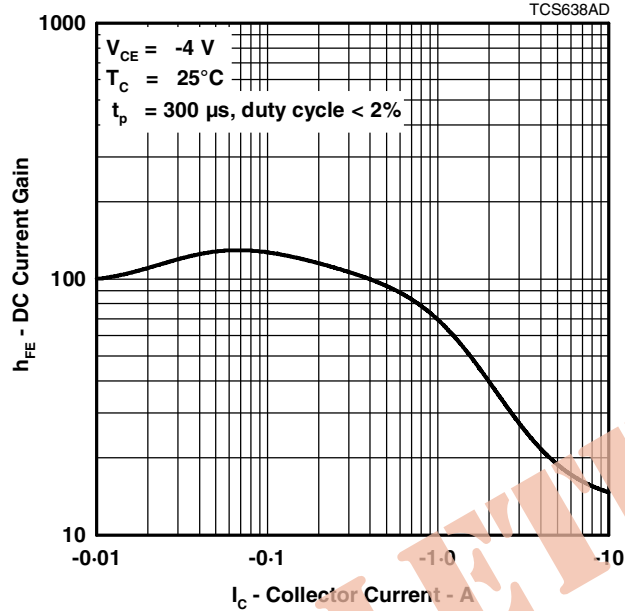


Figure 1.

MAXIMUM SAFE OPERATING REGIONS

**MAXIMUM FORWARD-BIAS
SAFE OPERATING AREA**

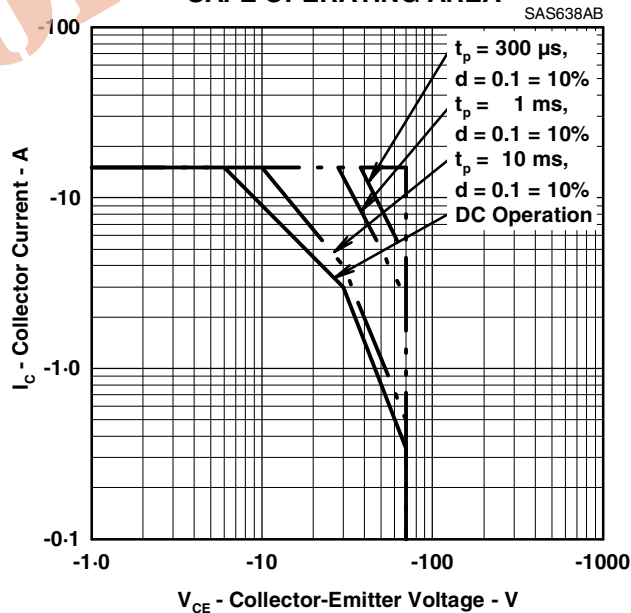


Figure 2.

PRODUCT INFORMATION

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THERMAL INFORMATION

**MAXIMUM POWER DISSIPATION
VS
CASE TEMPERATURE**

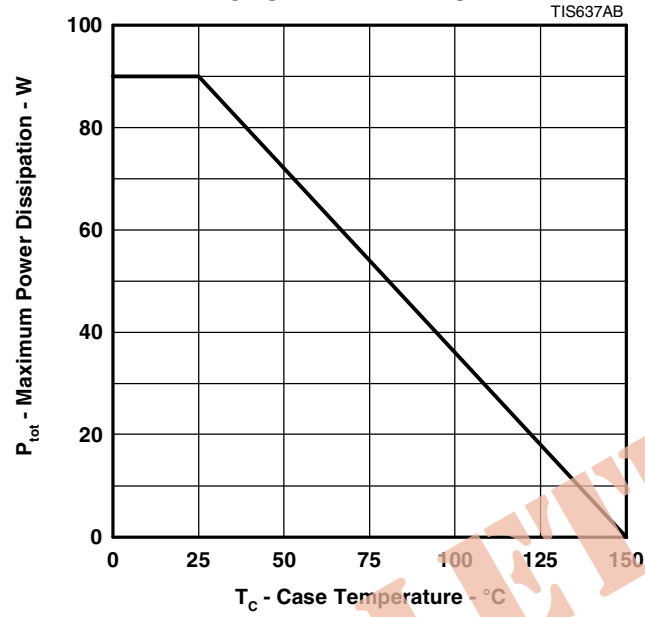


Figure 3.

OBSOLETE

PRODUCT INFORMATION

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