

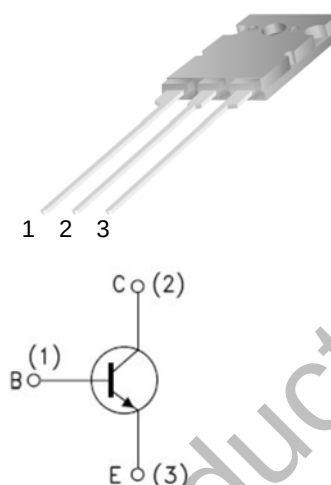


C3998

## Features:

- ☐ High Switching Speed
- ☐ High Breakdown Voltage- $V_{(BR)CBO}=1700V(\text{Min})$
- ☐ Minimum Lot-to-Lot variations for robust device performance and reliable operation

TO-264



1. Base (B)
2. Collector (C)
3. Emitter (E)

Absolute Maximum Ratings  $T_C=25^\circ\text{C}$  unless otherwise noted

| Symbol     | Parameter                 | Rating    | Units            |
|------------|---------------------------|-----------|------------------|
| $V_{CBO}$  | Collector-Base Voltage    | 1700      | V                |
| $V_{CEO}$  | Collector-Emitter Voltage | 800       | V                |
| $V_{EBO}$  | Emitter-Base Voltage      | 6         | V                |
| $I_C$      | Collector Current (DC)    | 20        | A                |
| $I_{CP}^*$ | Collector Current (Pulse) | 30        | A                |
| $P_C$      | Collector Dissipation     | 200       | W                |
| $T_J$      | Junction Temperature      | 150       | $^\circ\text{C}$ |
| $T_{STG}$  | Storage Temperature       | -55 ~ 150 | $^\circ\text{C}$ |

\* Pulse Test:  $PW=300\mu\text{s}$ , duty Cycle=2% PulsedElectrical Characteristics  $T_C=25^\circ\text{C}$  unless otherwise noted

| Symbol                 | Parameter                            | Test Conditions                             | Min.     | Typ. | Max. | Units         |
|------------------------|--------------------------------------|---------------------------------------------|----------|------|------|---------------|
| $I_{CES}$              | Collector Cut-off Current            | $V_{CB}=1400V, R_{BE}=0$                    |          |      | 1    | mA            |
| $I_{CBO}$              | Collector Cut-off Current            | $V_{CB}=800V, I_E=0$                        |          |      | 10   | $\mu\text{A}$ |
| $I_{EBO}$              | Emitter Cut-off Current              | $V_{EB}=4V, I_C=0$                          |          |      | 1    | mA            |
| $BV_{CBO}$             | Collector-Base Breakdown Voltage     | $I_C=500\mu\text{A}, I_E=0$                 | 1700     |      |      | V             |
| $BV_{CEO}$             | Collector-Emitter Breakdown Voltage  | $I_C=5\text{mA}, I_B=0$                     | 800      |      |      | V             |
| $BV_{EBO}$             | Emitter-Base Breakdown Voltage       | $I_E=500\mu\text{A}, I_C=0$                 | 6        |      |      | V             |
| $h_{FE1}$<br>$h_{FE2}$ | DC Current Gain                      | $V_{CE}=5V, I_C=1A$<br>$V_{CE}=5V, I_C=11A$ | 8<br>5.5 |      | 8.5  |               |
| $V_{CE(sat)}$          | Collector-Emitter Saturation Voltage | $I_C=11A, I_B=2.75A$                        |          |      | 3    | V             |
| $V_{BE(sat)}$          | Base-Emitter Saturation Voltage      | $I_C=11A, I_B=2.75A$                        |          |      | 1.5  | V             |
| $t_{STG}^*$            | Storage Time                         | $V_{CC}=200V, I_C=10A, R_L=20\Omega$        |          |      | 3    | $\mu\text{s}$ |
| $t_F^*$                | Fall Time                            | $I_{B1}=2.0A, I_{B2}=-4.0A$                 |          | 0.15 | 0.2  | $\mu\text{s}$ |

\* Pulse Test:  $PW=20\mu\text{s}$ , duty Cycle=1% PulsedThermal Characteristics  $T_C=25^\circ\text{C}$  unless otherwise noted

| Symbol          | Parameter                            | Typ | Max   | Units              |
|-----------------|--------------------------------------|-----|-------|--------------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case |     | 0.625 | $^\circ\text{C/W}$ |

## Typical Characteristics

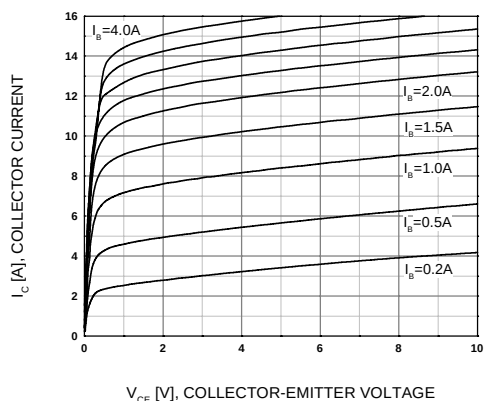


Figure 1. Static Characteristics

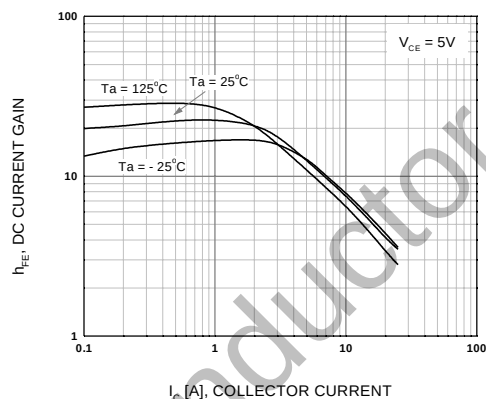


Figure 2. DC Current Gain

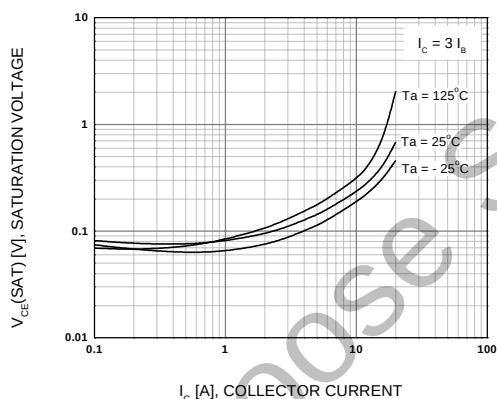


Figure 3. Collector-Emitter Saturation Voltage

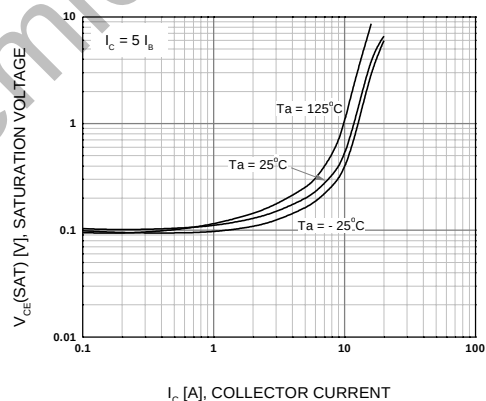


Figure 4. Collector-Emitter Saturation Voltage

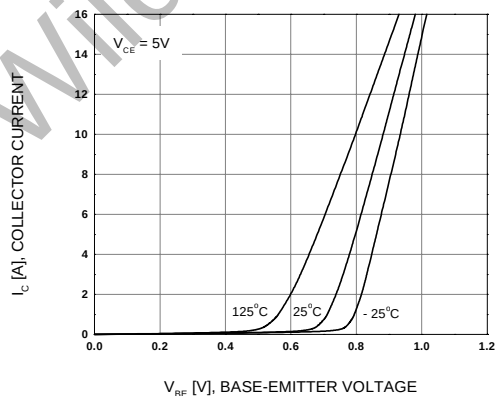


Figure 5. Base-Emitter On Voltage

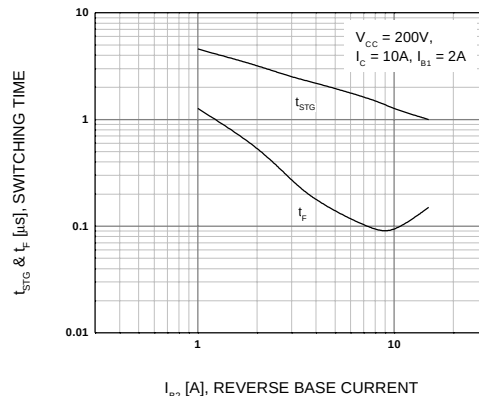


Figure 6. Resistive Load Switching Time

## Typical Characteristics (Continued)

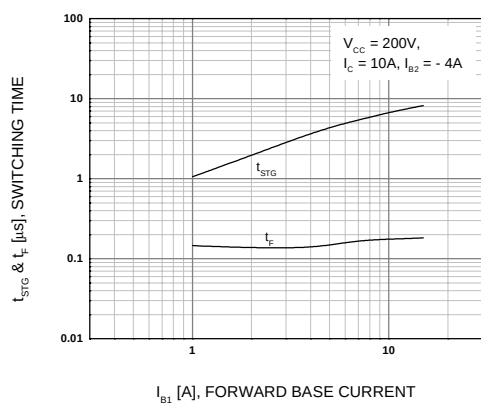


Figure 7. Resistive Load Switching Time

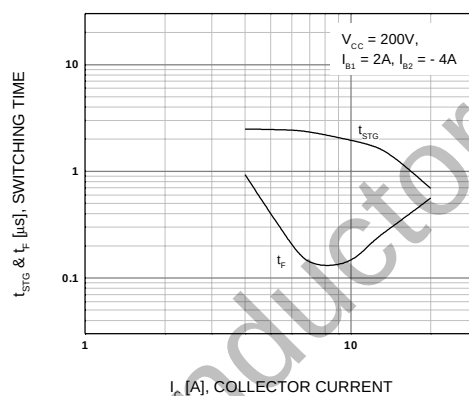


Figure 8. Resistive Load Switching Time

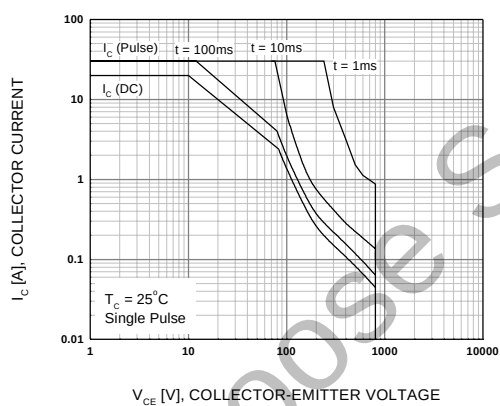


Figure 9. Forward Bias Safe Operating Area

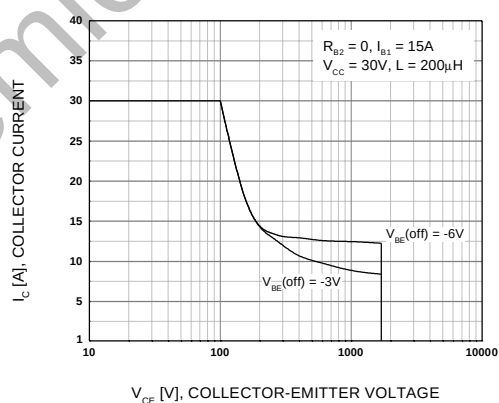


Figure 10. Reverse Bias Safe Operating Area

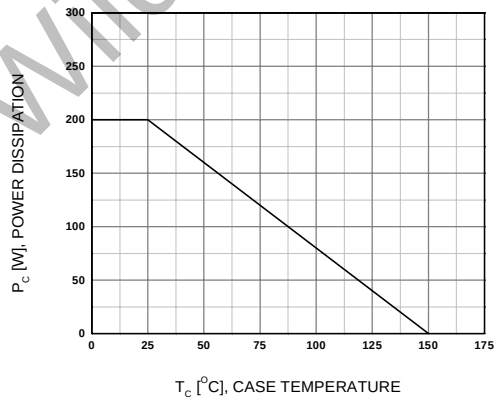


Figure 11. Power Derating

**Package Dimension**

TO-264

Unit: mm

