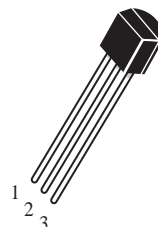


High-Voltage NPN Transistors

(Pb) Lead(Pb)-Free

TO-92


1. EMITTER
2. BASE
3. COLLECTOR

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| Rating | Symbol | Value | Unit |
|---|------------------|-------------|------|
| Collector-Emitter Voltage | V _{CEO} | 400 | Vdc |
| Collector-Base Voltage | V _{CBO} | 400 | Vdc |
| Emitter-Base Voltage | V _{EBO} | 5.0 | Vdc |
| Collector Current | I _C | 200 | mAdc |
| Total Device Dissipation T _A =25°C | P _D | 0.625 | W |
| Junction Temperature | T _j | 150 | °C |
| Storage, Temperature | T _{stg} | -55 to +150 | °C |

ELECTRICAL CHARACTERISTICS

| Characteristics | Symbol | Min | Max | Unit |
|--|----------------------|-----|-----|------|
| Collector-Emitter Breakdown Voltage (I _C = 1.0 mAdc, I _B =0) | V _{(BR)CEO} | 400 | - | Vdc |
| Collector-Base Breakdown Voltage (I _C = 100 uAdc, I _E =0) | V _{(BR)CBO} | 400 | - | Vdc |
| Emitter-Base Breakdown Voltage (I _E = 100 uAdc, I _C =0) | V _{(BR)EBO} | 5.0 | - | Vdc |
| Collector Cutoff Current (V _{CE} = 400 Vdc, I _B =0) | I _{CEO} | - | 5.0 | uAdc |
| Collector Cutoff Current (V _{CB} = 400 Vdc, I _E =0) | I _{CBO} | - | 0.1 | uAdc |
| Emitter Cutoff Current (V _{EB} = 4.0Vdc, I _C =0) | I _{EBO} | - | 0.1 | uAdc |

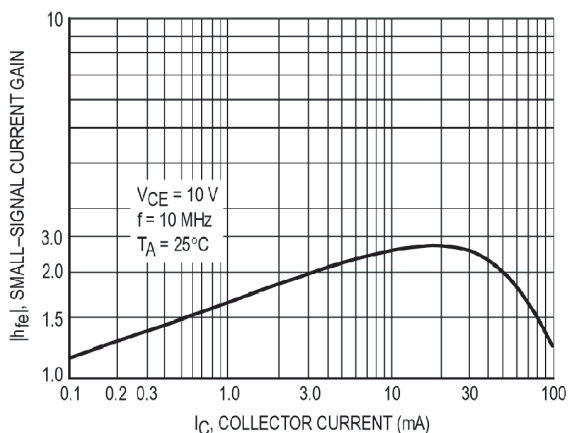
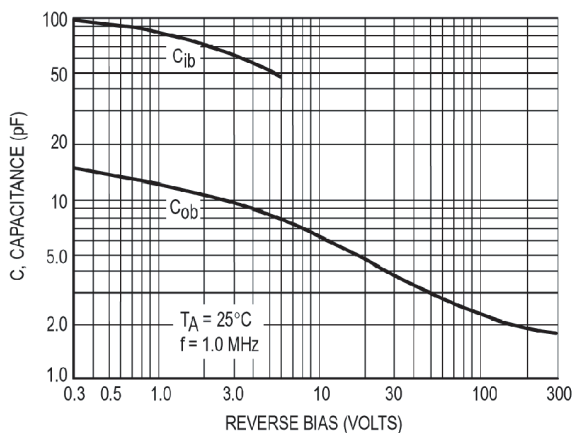
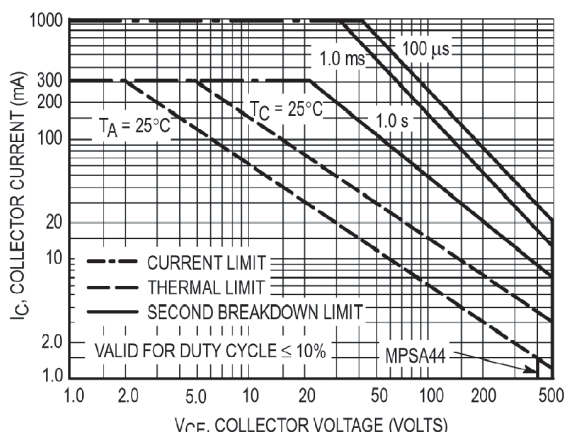
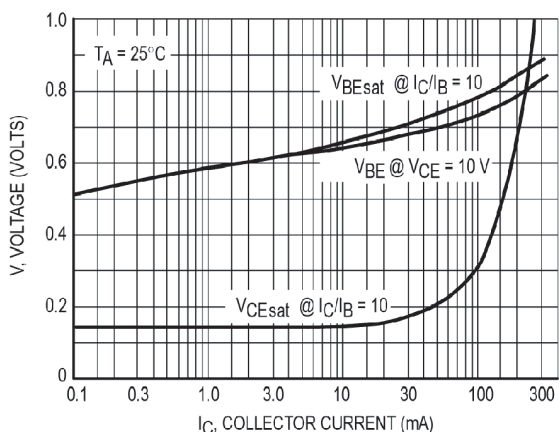
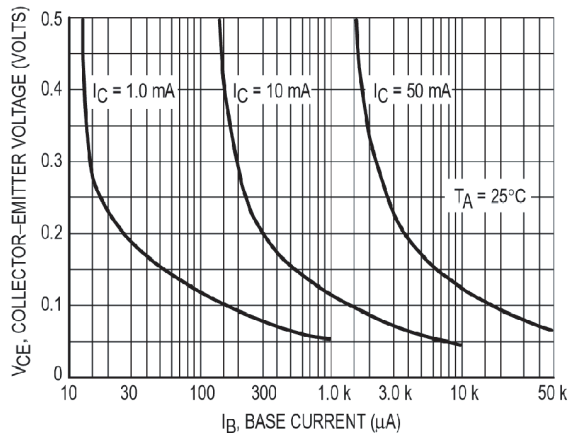
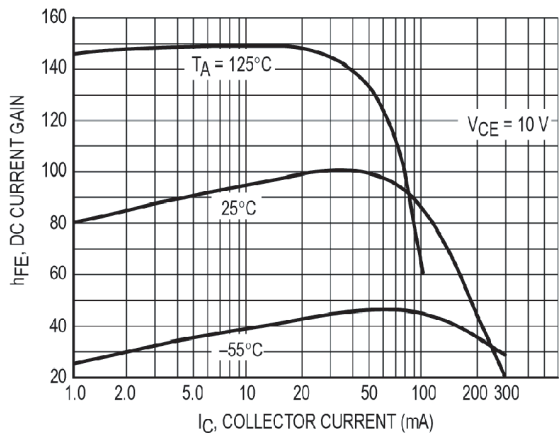
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted) (Continued)

| Characteristics | Symbol | Min | Max | Unit |
|-----------------|--------|-----|-----|------|
|-----------------|--------|-----|-----|------|

On Characteristics

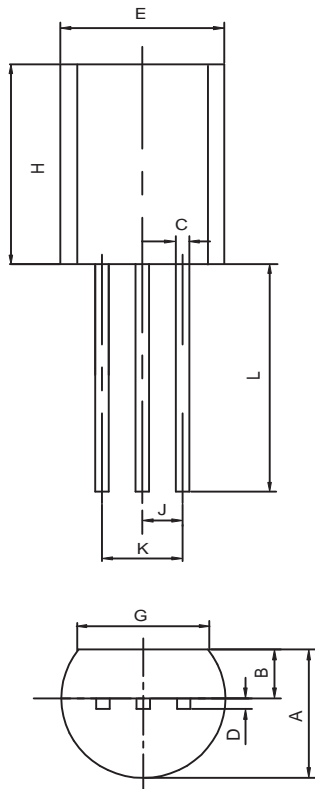
| | | | | |
|--|---------------|--------|------------|-----|
| DC Current Gain ($I_C=1.0\text{ mAdc}, V_{CE}=10\text{ Vdc}$) | $H_{FE(1)}$ | 70 | - | - |
| ($I_C=10\text{ mAdc}, V_{CE}=10\text{ Vdc}$) | $H_{FE(2)}$ | 80 | 300 | - |
| ($I_C=100\text{ mAdc}, V_{CE}=10\text{ Vdc}$) | $H_{FE(3)}$ | 60 | . | - |
| Collector-Emitter Saturation Voltage ($I_C=10\text{ mAdc}, I_B=1.0\text{ mAdc}$) ($I_C=50\text{ mAdc}, I_B=5.0\text{ mAdc}$) | $V_{CE(sat)}$ | - - | 0.2 0.3 | Vdc |
| Base-Emitter Saturation Voltage ($I_C=10\text{ mAdc}, I_B=1.0\text{ mAdc}$) | $V_{BE(sat)}$ | - | 0.75 | Vdc |
| Current-Gain-Bandwidth Product ($I_C=10\text{ mAdc}, V_{CE}=20\text{ Vdc}, f=30\text{ MHz}$) | f_T | 50 | - | MHz |

Typical Characteristics



TO-92 Outline Dimensions

unit:mm



| TO-92 | | |
|-------|----------|-------|
| Dim | Min | Max |
| A | 3.30 | 3.70 |
| B | 1.10 | 1.40 |
| C | 0.38 | 0.55 |
| D | 0.36 | 0.51 |
| E | 4.40 | 4.70 |
| G | 3.43 | - |
| H | 4.30 | 4.70 |
| J | 1.270TYP | |
| K | 2.44 | 2.64 |
| L | 14.10 | 14.50 |