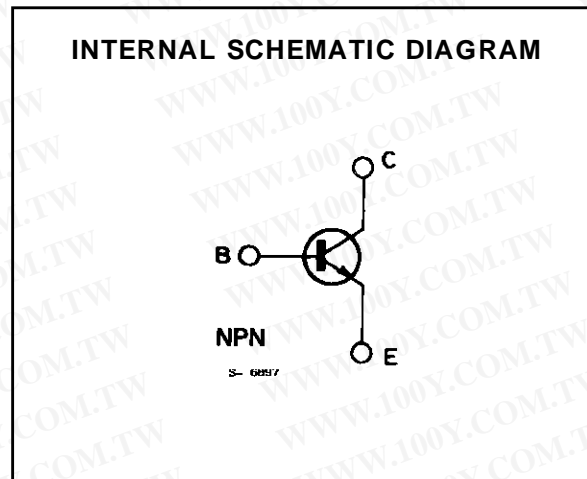


GENERAL PURPOSE AMPLIFIERS

DESCRIPTION

The 2N3700 is a silicon planar epitaxial NPN transistor in Jedec TO-18 metal case, intended for small signal, low noise industrial applications.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|----------------|--|-------------|------------------|
| V_{CBO} | Collector-base Voltage ($I_E = 0$) | 140 | V |
| V_{CEO} | Collector-emitter Voltage ($I_B = 0$) | 80 | V |
| V_{EBO} | Emitter-base Voltage ($I_C = 0$) | 7 | V |
| I_C | Collector Current | 1 | A |
| P_{tot} | Total Power Dissipation at $T_{amb} \leq 25\text{ }^\circ\text{C}$ | 0.5 | W |
| | at $T_{case} \leq 25\text{ }^\circ\text{C}$ | 1.8 | W |
| | at $T_{case} \leq 100\text{ }^\circ\text{C}$ | 1 | W |
| T_{stg}, T_j | Storage and Junction Temperature | - 65 to 200 | $^\circ\text{C}$ |

2N3700

THERMAL DATA

| | | | | |
|------------------|-------------------------------------|-----|-----|---------------|
| $R_{th\ j-case}$ | Thermal Resistance Junction-case | Max | 97 | $^{\circ}C/W$ |
| $R_{th\ j-amb}$ | Thermal Resistance Junction-ambient | Max | 350 | $^{\circ}C/W$ |

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}C$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------------------|---|--|-----------------------------------|------|------------|---------------|
| I_{CBO} | Collector Cutoff Current ($I_E = 0$) | $V_{CB} = 90\ V$ $V_{CB} = 90\ V$ $T_{amb} = 150^{\circ}C$ | | | 10 10 | nA μA |
| I_{EBO} | Emitter Cutoff Current ($I_C = 0$) | $V_{EB} = 5\ V$ | | | 10 | nA |
| $V_{(BR)CBO}$ | Collector-base Breakdown Voltage ($I_E = 0$) | $I_C = 100\ \mu A$ | 140 | | | V |
| $V_{(BR)CEO}^*$ | Collector-emitter Breakdown Voltage ($I_B = 0$) | $I_C = 30\ mA$ | 80 | | | V |
| $V_{(BR)EBO}$ | Emitter-base Breakdown Voltage ($I_C = 0$) | $I_E = 100\ \mu A$ | 7 | | | V |
| $V_{CE(sat)}^*$ | Collector-emitter Saturation Voltage | $I_C = 150\ mA$ $I_B = 15\ mA$ $I_C = 500\ mA$ $I_B = 50\ mA$ | | | 0.2 0.5 | V V |
| $V_{BE(sat)}^*$ | Base-emitter Saturation Voltage | $I_C = 150\ mA$ $I_B = 15\ mA$ | | | 1.1 | V |
| h_{FE}^* | DC Current Gain | $I_C = 0.1\ mA$ $V_{CE} = 10\ V$ $I_C = 10\ mA$ $V_{CE} = 10\ V$ $I_C = 150\ mA$ $V_{CE} = 10\ V$ $I_C = 500\ mA$ $V_{CE} = 10\ V$ $I_C = 1\ A$ $V_{CE} = 10\ V$ $I_C = 150\ mA$ $V_{CE} = 10\ V$ $T_{amb} = -55^{\circ}C$ | 50 90 100 50 15 40 | | 300 | |
| h_{fe} | Small Signal Current Gain | $I_C = 1\ mA$ $V_{CE} = 5\ V$ $f = 1\ kHz$ | 80 | | 400 | |
| f_T | Transition Frequency | $I_C = 50\ mA$ $V_{CE} = 10\ V$ $f = 20\ MHz$ | | 100 | | MHz |
| C_{EBO} | Emitter-base Capacitance | $I_C = 0$ $V_{EB} = 0.5\ V$ $f = 1\ MHz$ | | 60 | | pF |
| C_{CBO} | Collector-base Capacitance | $I_E = 0$ $V_{CB} = 10\ V$ $f = 1\ MHz$ | | 12 | | pF |
| $r_{bb} \cdot C_{b'c}$ | Feedback Time Constant | $I_C = 10\ mA$ $V_{CB} = 10\ V$ $f = 4\ MHz$ | 25 | | 400 | ps |

* Pulsed : pulse duration = 300 μs , duty cycle = 1 %.

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TO-18 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | | 12.7 | | | 0.500 | |
| B | | | 0.49 | | | 0.019 |
| D | | | 5.3 | | | 0.208 |
| E | | | 4.9 | | | 0.193 |
| F | | | 5.8 | | | 0.228 |
| G | 2.54 | | | 0.100 | | |
| H | | | 1.2 | | | 0.047 |
| I | | | 1.16 | | | 0.045 |
| L | 45° | | | 45° | | |

