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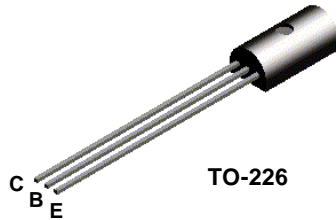
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*Discrete POWER & Signal
Technologies*

TN6705A



NPN General Purpose Amplifier

This device is designed for use as general purpose amplifiers and switches requiring collector currents to 1.2 A. Sourced from Process 38. See TN6715A for characteristics.

Absolute Maximum Ratings* TA = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|----------------|--|-------------|-------|
| V_{CEO} | Collector-Emitter Voltage | 45 | V |
| V_{CBO} | Collector-Base Voltage | 60 | V |
| V_{EBO} | Emitter-Base Voltage | 5.0 | V |
| I_C | Collector Current - Continuous | 1.5 | A |
| T_J, T_{stg} | Operating and Storage Junction Temperature Range | -55 to +150 | °C |

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics TA = 25°C unless otherwise noted

| Symbol | Characteristic | Max | Units |
|-----------------|---|---------|-------|
| | | TN6705a | |
| P_D | Total Device Dissipation Derate above 25°C | 1.0 | W |
| | | 8.0 | mW/°C |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 125 | °C/W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 50 | °C/W |

NPN General Purpose Amplifier

(continued)

Electrical Characteristics

TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|--------|-----------|-----------------|-----|-----|-------|
|--------|-----------|-----------------|-----|-----|-------|

OFF CHARACTERISTICS

| | | | | | |
|---------------|--------------------------------------|----------------------------------|-----|-----|---------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage* | $I_C = 10\text{ mA}, I_B = 0$ | 45 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 100\text{ mA}, I_E = 0$ | 60 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = 1.0\text{ mA}, I_C = 0$ | 5.0 | | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 60\text{ V}, I_E = 0$ | | 0.1 | μA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB} = 5.0\text{ V}, I_C = 0$ | | 0.1 | μA |

ON CHARACTERISTICS*

| | | | | | |
|---------------|--------------------------------------|--|----|-----|---|
| h_{FE} | DC Current Gain | $V_{CE} = 2.0\text{ V}, I_C = 50\text{ mA}$ | 40 | | |
| | | $V_{CE} = 2.0\text{ V}, I_C = 250\text{ mA}$ | 40 | 250 | |
| | | $V_{CE} = 2.0\text{ V}, I_C = 500\text{ mA}$ | 25 | | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 500\text{ mA}, I_B = 50\text{ mA}$ | | 0.5 | V |
| | | $I_C = 1.0\text{ A}, I_B = 100\text{ mA}$ | | 1.0 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $V_{CE} = 2.0\text{ V}, I_C = 1.0\text{ A}$ | | 1.5 | V |

SMALL SIGNAL CHARACTERISTICS

| | | | | | |
|----------|----------------------------|--|-----|----|----|
| C_{cb} | Collector-Base Capacitance | $V_{CB} = 10\text{ V}, f = 1.0\text{ MHz}$ | | 30 | pF |
| h_{fe} | Small-Signal Current Gain | $I_C = 50\text{ mA}, V_{CE} = 5.0\text{ V}, f = 20\text{ MHz}$ | 2.5 | 20 | |

*Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$