

## Features

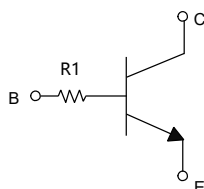
- Built-In Bias Resistors Enable the Configuration of an Inverter Circuit Without Connecting External Input Resistors
- The Bias Resistors Consist of Thin-Film Resistors With Complete Isolation to Allow Negative Biasing of the Input. They Also Have the Advantage of Almost Completely Eliminating Parasitic Effects
- Only the On/Off Conditions Need to Be Set For Operation, Making Device Design Easy
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings @ 25°C Unless Otherwise Specified

| Parameter                    | Symbol    | Value       | Unit |
|------------------------------|-----------|-------------|------|
| Collector-Emitter Voltage    | $V_{CEO}$ | 50          | V    |
| Collector-Base Voltage       | $V_{CBO}$ | 50          | V    |
| Emitter-Base Voltage         | $V_{EBO}$ | 5           | V    |
| Collector Current-Continuous | $I_C$     | 100         | mA   |
| Collector Dissipation        | $P_C$     | 200         | mW   |
| Junction Temperature         | $T_J$     | 150         | °C   |
| Storage Temperature Range    | $T_{STG}$ | -55 to +150 | °C   |

## Device Marking: 06

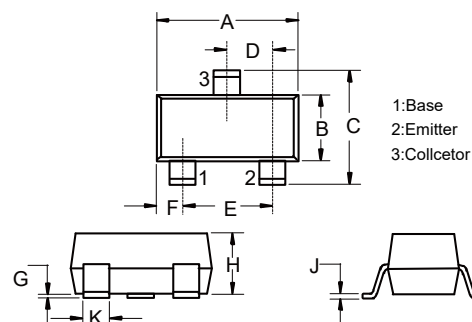
### Internal Structure



B:Base  
C:Collector  
E:Emitter

## NPN Digital Transistor

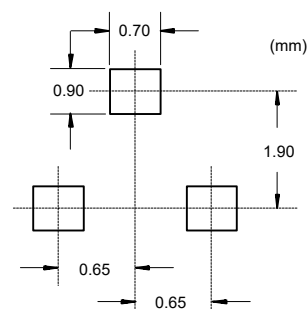
### SOT-323



### DIMENSIONS

| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.071  | 0.087 | 1.80 | 2.20 |      |
| B   | 0.045  | 0.053 | 1.15 | 1.35 |      |
| C   | 0.083  | 0.096 | 2.10 | 2.45 |      |
| D   | 0.026  |       | 0.65 |      | TYP. |
| E   | 0.047  | 0.055 | 1.20 | 1.40 |      |
| F   | 0.012  | 0.016 | 0.30 | 0.40 |      |
| G   | 0.000  | 0.004 | 0.00 | 0.10 |      |
| H   | 0.035  | 0.044 | 0.90 | 1.10 |      |
| J   | 0.002  | 0.010 | 0.05 | 0.25 |      |
| K   | 0.006  | 0.016 | 0.15 | 0.40 |      |

### Suggested Solder Pad Layout



## Electrical Characteristics @ 25°C Unless Otherwise Specified

| Parameter                            | Symbol        | Min  | Typ | Max  | Units      | Conditions                         |
|--------------------------------------|---------------|------|-----|------|------------|------------------------------------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | 50   | --- | ---  | V          | $I_C=50\mu A, I_E=0$               |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | 50   | --- | ---  | V          | $I_C=1mA, I_B=0$                   |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | 5    | --- | ---  | V          | $I_E=50\mu A, I_C=0$               |
| Collector Cut-off Current            | $I_{CBO}$     | ---  | --- | 0.5  | $\mu A$    | $V_{CB}=50V, I_E=0$                |
| Emitter Cut-off Current              | $I_{EBO}$     | ---  | --- | 0.5  | $\mu A$    | $V_{EB}=4V, I_C=0$                 |
| DC Current Gain                      | $h_{FE}$      | 100  | 300 | 600  | ---        | $I_C=1mA, V_{CE}=5V$               |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | ---  | --- | 0.3  | V          | $I_C=10mA, I_B=1mA$                |
| Input Resistance                     | $R_1$         | 32.9 | 47  | 61.1 | K $\Omega$ |                                    |
| Transition Frequency                 | $f_T$         | ---  | 250 | ---  | MHz        | $V_{CE}=10.0V, I_E=-5mA, f=100MHz$ |

## Curve Characteristics

Fig. 1 - Static Characteristics

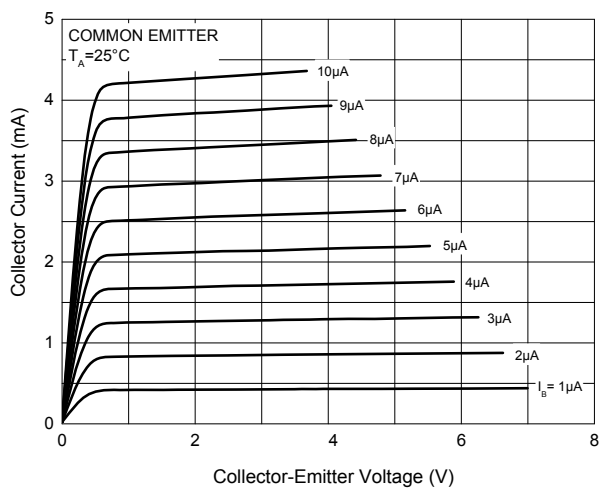


Fig. 2 - DC Current Gain Characteristics

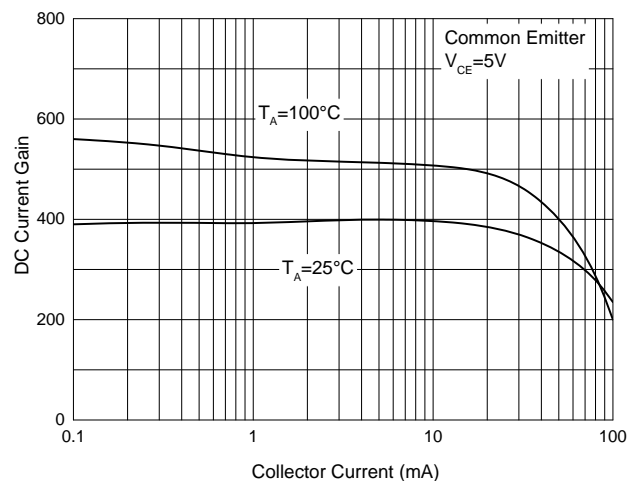


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

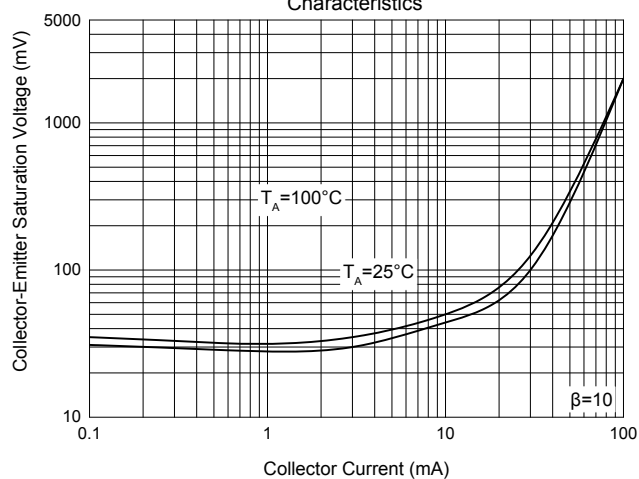
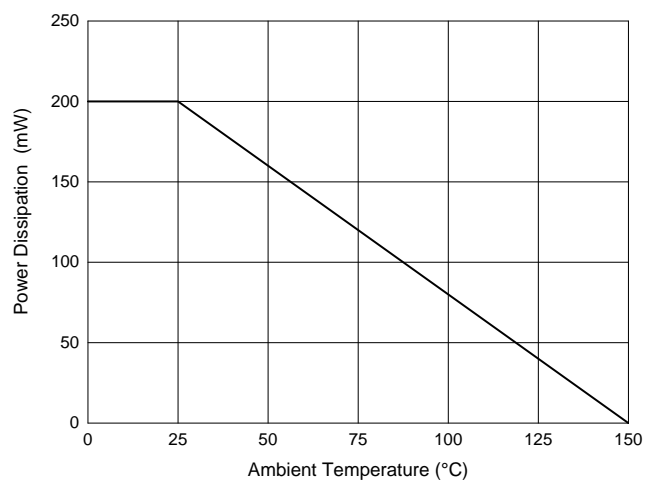


Fig. 4 - Power Derating Curve



## Ordering Information

| Device         | Packing              |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:3Kpcs/Reel |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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