## Features

- 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)

# NPN General Purpose Amplifier

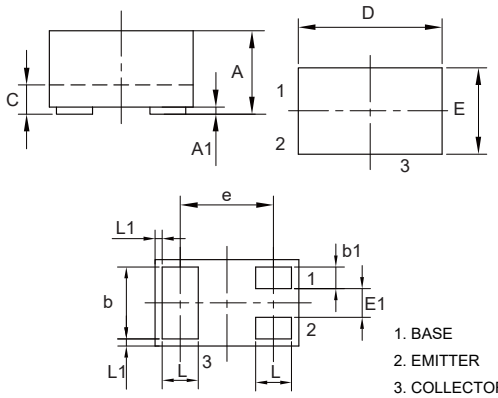
## Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55℃ to +150℃
- Storage Temperature Range: -55℃ to +150℃

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 60 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 40 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 6 | V |
| Collector Current | $I_C$ | 200 | mA |
| Collector Power Dissipation | $P_C$ | 150 | mW |

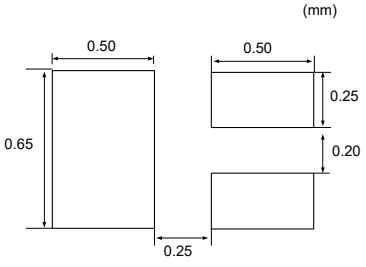
**Marking: 1AM**

## DFN1006-3




| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| DIM | INCHES | | MM | | NOTE |
| | MIN | MAX | MIN | MAX | |
| A | 0.018 | 0.022 | 0.45 | 0.55 | |
| A1 | 0.000 | 0.002 | 0.00 | 0.05 | |
| b | 0.018 | 0.022 | 0.45 | 0.55 | |
| b1 | 0.004 | 0.008 | 0.10 | 0.20 | |
| c | 0.005 | 0.007 | 0.12 | 0.18 | |
| D | 0.037 | 0.042 | 0.95 | 1.075 | |
| E | 0.022 | 0.026 | 0.55 | 0.675 | |
| E1 | 0.006 | 0.010 | 0.15 | 0.25 | |
| e | 0.026 | | 0.65 | | TYP. |
| L | 0.008 | 0.012 | 0.20 | 0.30 | |
| L1 | 0.0002 | | 0.05 | | TYP. |

**Suggested Solder Pad Layout**



## Electrical Characteristics @ 25°C Unless Otherwise Specified

| Parameter | Symbol | Min | Typ | Max | Units | Conditions |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 60 | | | V | $I_C$=10μA, $I_E$=0 |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 40 | | | V | $I_C$=1mA, $I_B$=0 |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 6 | | | V | $I_E$=10μA, $I_C$=0 |
| Collector-Base Cutoff Current | $I_{CBO}$ | | | 50 | nA | $V_{CB}$=30V, $I_E$=0 |
| Emitter-Base Cutoff Current | $I_{EBO}$ | | | 50 | nA | $V_{EB}$=5V, $I_C$=0 |
| DC Current Gain(Note1) | $h_{FE(1)}$ | 40 | | | | $V_{CE}$=1V, $I_C$=0.1mA |
| | $h_{FE(2)}$ | 70 | | | | $V_{CE}$=1V, $I_C$=1mA |
| | $h_{FE(3)}$ | 100 | | 300 | | $V_{CE}$=1V, $I_C$=10mA |
| | $h_{FE(4)}$ | 60 | | | | $V_{CE}$=1V, $I_C$=50mA |
| | $h_{FE(5)}$ | 30 | | | | $V_{CE}$=1V, $I_C$=100mA |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | | 0.2 | V | $I_C$=10mA, $I_B$=1mA |
| | | | | 0.3 | V | $I_C$=50mA, $I_B$=5mA |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | 0.65 | | 0.85 | V | $I_C$=10mA, $I_B$=1mA |
| | | | | 0.95 | V | $I_C$=50mA, $I_B$=5mA |
| Transition Frequency | $f_T$ | 300 | | | MHz | $V_{CE}$=20V, $I_C$=10mA, f=100MHz |
| Output Capacitance | $C_{ob}$ | | | 4 | pF | $V_{CB}$=5V, $I_E$=0, f=1MHz, |
| Noise Figure | NF | | | 5 | dB | $V_{CE}$=5V, $I_C$=100μA<br>$R_S$=1KΩ, f=1MHz |
| Delay Time | $t_d$ | | | 35 | ns | $V_{CC}$=3V, $V_{BE}$=0.5V |
| Rise Time | $t_r$ | | | 35 | ns | $I_C$=10mA, $I_{B1}$=1mA |
| Storage Time | $t_s$ | | | 200 | ns | $V_{CC}$=3V, $I_C$=10mA |
| Fall Time | $t_f$ | | | 50 | ns | $I_{B1}$=$I_{B2}$=1mA |

Note: 1.Pulse Width ≤ 300μs, Duty Cycle≤2.0%

## Curve Characteristics

Fig. 1 - Static Characteristics

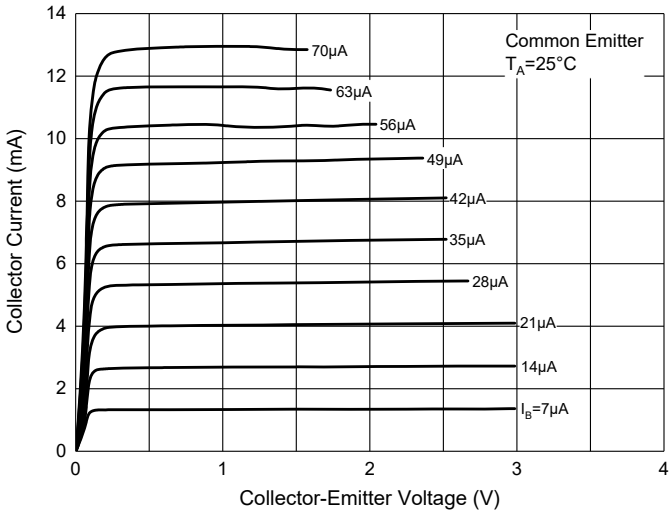



Fig. 2 - DC Current Gain Characteristics

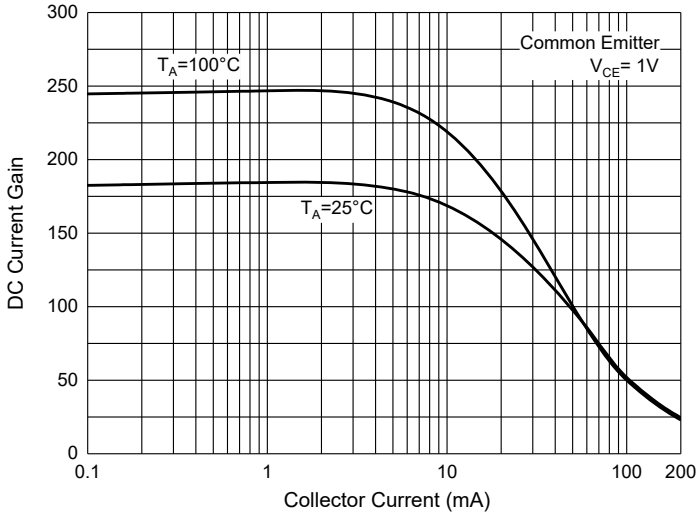



Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

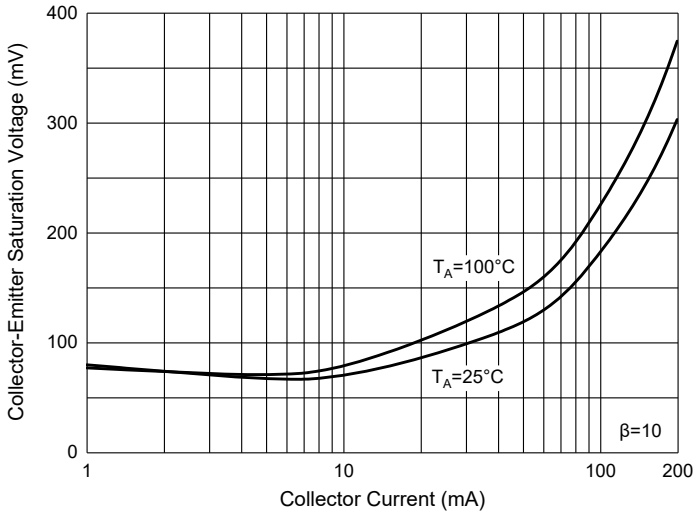



Fig. 4 - Base-Emitter Saturation Voltage Characteristics

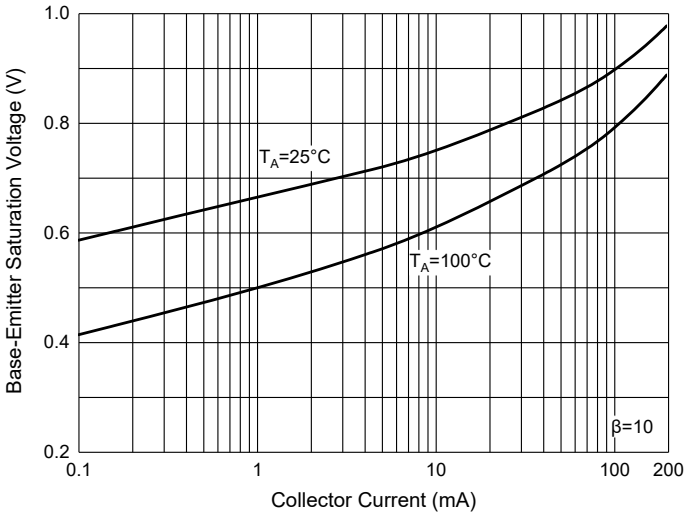



Fig. 5 - Base-Emitter Voltage Characteristics

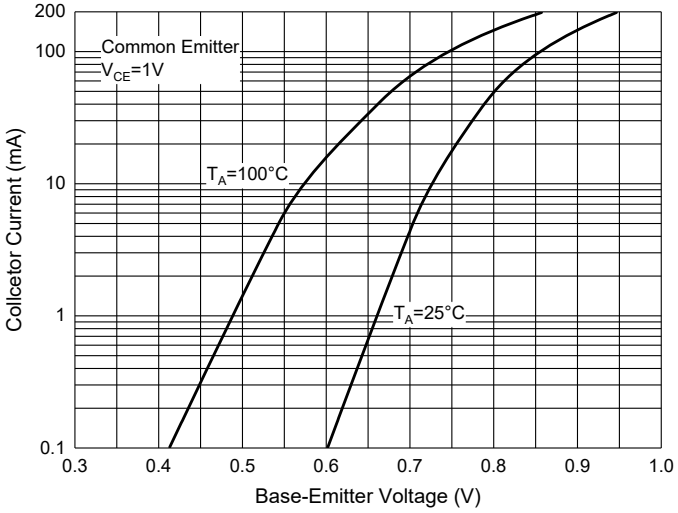
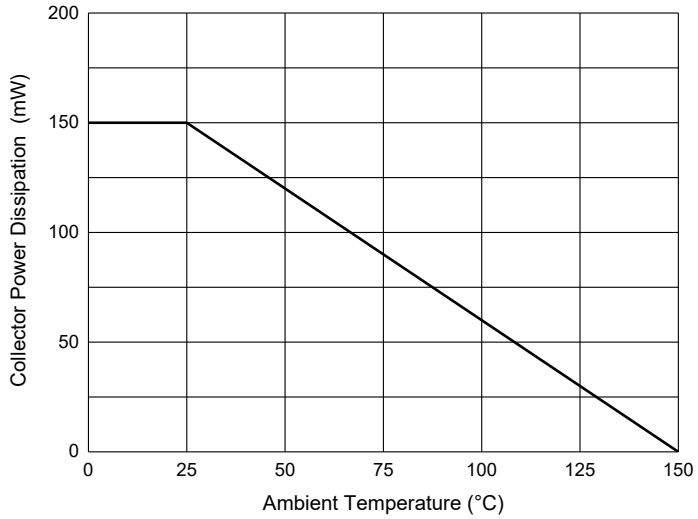



Fig. 6 - Collector Power Derating Curve



## Ordering Information

| Device | Packing |
|---|---|
| Part Number-TP | Tape&Reel: 10Kpcs/Reel |

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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