

## Features

- Halogen Free. "Green" Device (Note 1)
- AEC-Q101 Qualified
- 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

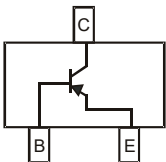
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C

| Parameter                   | Symbol    | Rating | Unit |
|-----------------------------|-----------|--------|------|
| Collector-Base Voltage      | $V_{CBO}$ | -60    | V    |
| Collector-Emitter Voltage   | $V_{CEO}$ | -60    | V    |
| Emitter-Base Voltage        | $V_{EBO}$ | -5     | V    |
| Collector Current           | $I_C$     | -600   | mA   |
| Collector Power Dissipation | $P_C$     | 200    | mW   |

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

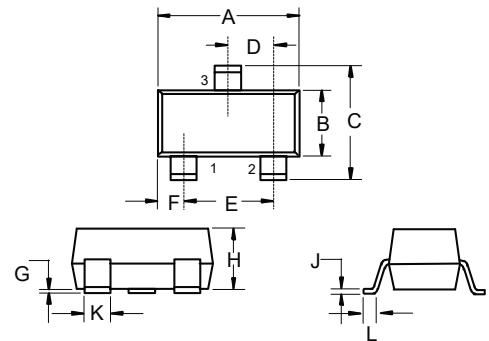
Marking: K3F

## Internal Structure



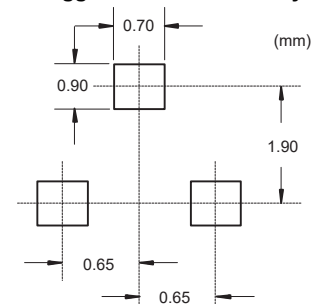
# PNP Small Signal Transistors

## SOT-323



| 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 |      |
| L   | 0.010  | 0.018 | 0.26 | 0.46 |      |

## 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     | $I_C = -10\mu A, I_E = 0$                |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | -60 |     |      | V     | $I_C = -10mA, I_B = 0$                   |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | -5  |     |      | V     | $I_E = -10\mu A, I_C = 0$                |
| Collector-Base Cutoff Current        | $I_{CBO}$     |     |     | -10  | nA    | $V_{CB} = -50V, I_E = 0$                 |
| Collector-Emitter Cutoff Current     | $I_{CEO}$     |     |     | -50  | nA    | $V_{CE} = -35V, I_B = 0$                 |
| Emitter-Base Cutoff Current          | $I_{EBO}$     |     |     | -10  | nA    | $V_{EB} = -3V, I_C = 0$                  |
| DC Current Gain (Note2)              | $h_{FE(1)}$   | 100 |     |      |       | $V_{CE} = -10V, I_C = -1mA$              |
|                                      | $h_{FE(2)}$   | 100 |     | 300  |       | $V_{CE} = -10V, I_C = -150mA$            |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ |     |     | -1.6 | V     | $I_C = -500mA, I_B = -50mA$              |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$ |     |     | -2.6 | V     | $I_C = -500mA, I_B = -50mA$              |
| Transition Frequency                 | $f_T$         | 200 |     |      | MHz   | $V_{CE} = -20V, I_C = -50mA, f = 100MHz$ |
| Output Capacitance                   | $C_{cbo}$     |     |     | 8    | pF    | $V_{CB} = -10V, I_E = 0, f = 1MHz,$      |
| Delay Time                           | $t_d$         |     |     | 10   | ns    | $V_{CC} = -30V, I_C = -150mA$            |
| Rise Time                            | $t_r$         |     |     | 25   | ns    | $V_{BE(off)} = -0.5V, I_{B1} = -15mA$    |
| Storage Time                         | $t_s$         |     |     | 80   | ns    | $V_{CC} = -30V, I_C = -150mA$            |
| Fall Time                            | $t_f$         |     |     | 30   | ns    | $I_{B1} = I_{B2} = -15mA$                |

 Note: 2.Pluse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

**Curve Characteristics**

Fig. 1 - Static Characteristics

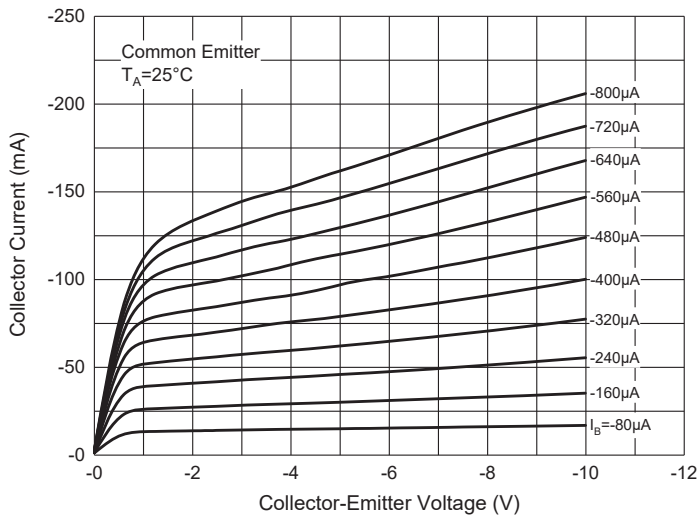


Fig. 2 - DC Current Gain Characteristics

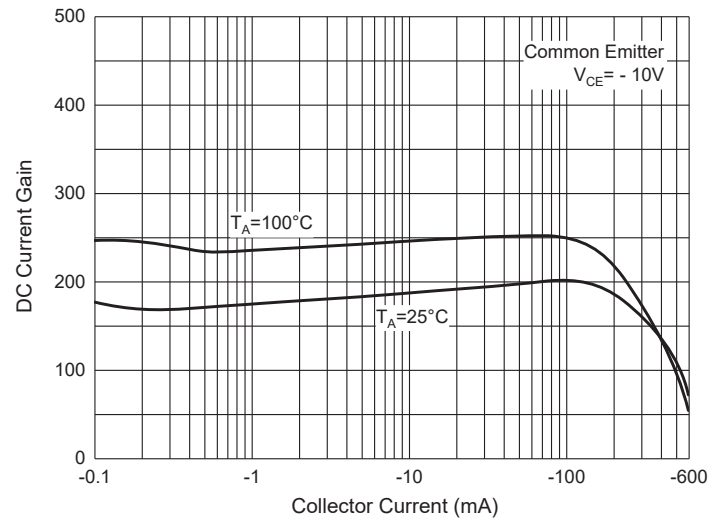


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

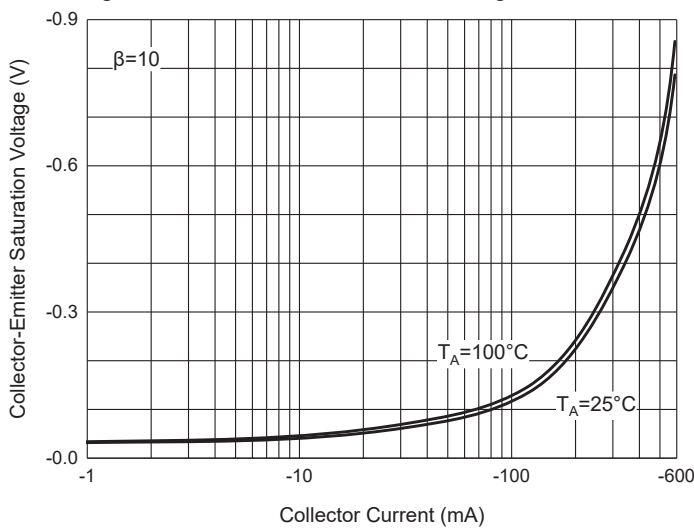


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

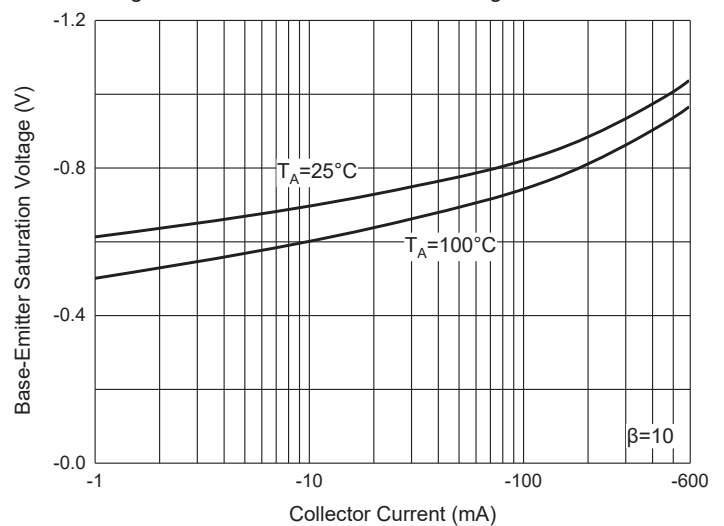


Fig. 5 - Base-Emitter Voltage Characteristics

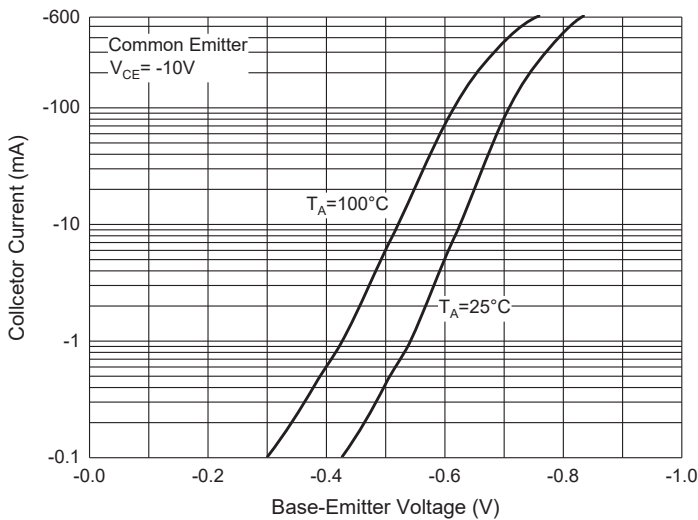
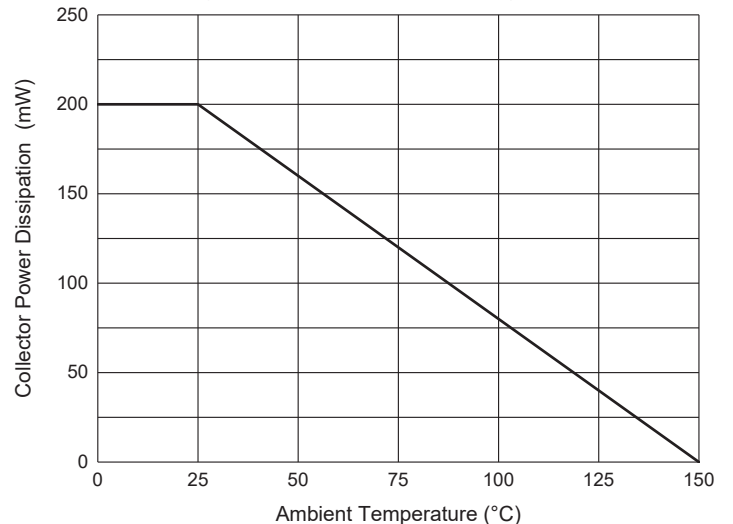


Fig. 6 - Collector Power Derating Curve



## Ordering Information

| Device          | Packing               |
|-----------------|-----------------------|
| MMST2907AHE3-TP | Tape&Reel: 3Kpcs/Reel |

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