

# **Features**

- Complement to MMBT1815
- High h<sub>FE</sub> Linearity
- Halogen Free. "Green" Device (Note 1)
- · 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

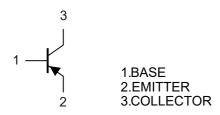
- Operating Junction Temperature Range: -55°C to +125°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 400°C/W Junction to Ambient

| Parameter                    | Symbol           | Rating | Unit |
|------------------------------|------------------|--------|------|
| Collector-Base Voltage       | V <sub>CBO</sub> | -50    | V    |
| Collector-Emitter Voltage    | $V_{CEO}$        | -50    | V    |
| Emitter-Base Voltage         | V <sub>EBO</sub> | -5     | V    |
| Continuous Collector Current | I <sub>C</sub>   | -150   | mA   |
| Continuous Base Current      | I <sub>B</sub>   | -50    | mA   |
| Power Dissipation            | $P_D$            | 250    | mW   |

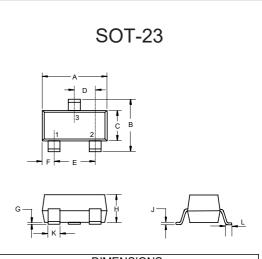
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

# Marking: BA

# **Internal Structure**

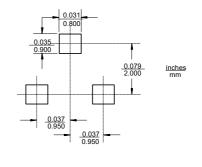


# PNP EPITAXIAL SILICON TRANSISTOR



| DIMENSIONS |        |       |      |      |      |
|------------|--------|-------|------|------|------|
| DIM INC    |        | HES   | MM   |      | NOTE |
| DIIVI      | MIN    | MAX   | MIN  | MAX  | NOTE |
| Α          | 0.110  | 0.120 | 2.80 | 3.04 |      |
| В          | 0.083  | 0.104 | 2.10 | 2.64 |      |
| С          | 0.047  | 0.055 | 1.20 | 1.40 |      |
| D          | 0.034  | 0.041 | 0.85 | 1.05 |      |
| E          | 0.067  | 0.083 | 1.70 | 2.10 |      |
| F          | 0.018  | 0.024 | 0.45 | 0.60 |      |
| G          | 0.0004 | 0.006 | 0.01 | 0.15 |      |
| Н          | 0.035  | 0.043 | 0.90 | 1.10 |      |
| J          | 0.003  | 0.007 | 0.08 | 0.18 |      |
| K          | 0.012  | 0.020 | 0.30 | 0.51 |      |
| L          | 0.007  | 0.020 | 0.20 | 0.50 |      |

# **Suggested Solder Pad Layout**





# Electrical Characteristics @ T<sub>A</sub>=25°C Unless Otherwise Specified

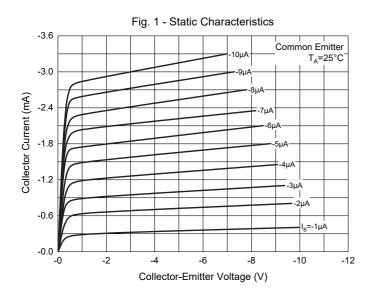
| Parameter                            | Symbol               | Min | Тур  | Max  | Units | Conditions   |
|--------------------------------------|----------------------|-----|------|------|-------|--|
| Collector-Base Breakdown Voltage     | V <sub>(BR)CBO</sub> | -50 |      |      | V     | I <sub>C</sub> =-100μA, I <sub>E</sub> =0                        |
| Collector-Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub> | -50 |      |      | V     | I <sub>C</sub> =-10mA, I <sub>B</sub> =0                         |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$        | -5  |      |      | V     | I <sub>E</sub> =-10μA, I <sub>C</sub> =0                         |
| Collector-Base Cutoff Current        | I <sub>CBO</sub>     |     |      | -0.1 | μA    | V <sub>CB</sub> =-50V, I <sub>E</sub> =0                         |
| Emitter-Base Cutoff Current          | I <sub>EBO</sub>     |     |      | -0.1 | μA    | V <sub>EB</sub> =-5V, I <sub>C</sub> =0                          |
| DC Current Gain                      | h <sub>FE(1)</sub>   | 130 |      | 400  |       | $V_{CE}$ =-6V, $I_{C}$ =-2mA                                     |
|                                      | h <sub>FE(2)</sub>   | 25  |      |      |       | V <sub>CE</sub> =-6V, I <sub>C</sub> =-150mA                     |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub> |     | -0.1 | -0.3 | V     | I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA                    |
| Base-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> |     |      | -1.1 | V     | I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA                    |
| Transition Frequency                 | f <sub>T</sub>       | 80  |      |      | MHz   | $V_{CE}$ =-10V, $I_{C}$ =-1mA                                    |
| Collector Output Capacitance         | C <sub>ob</sub>      |     | 4    | 7    | pF    | V <sub>CB</sub> =-10V,I <sub>E</sub> =0,f=1MHz                   |
| Noise Figure                         | N <sub>F</sub>       |     | 0.5  | 6    | dB    | $V_{CE}$ =-6V, $I_{C}$ =-0.1mA, $f$ =100Hz, $R_{g}$ =1K $\Omega$ |

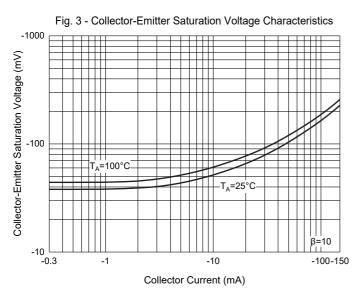
# Classification of $h_{\text{FE}(1)}$

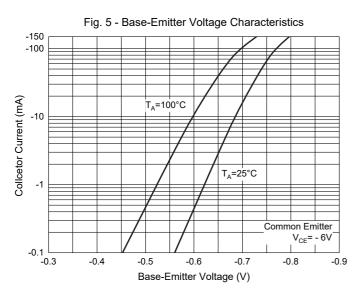
| Rank  | L       | Н       |  |
|-------|---------|---------|--|
| Range | 130-200 | 200-400 |  |

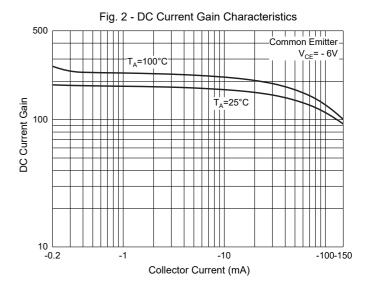


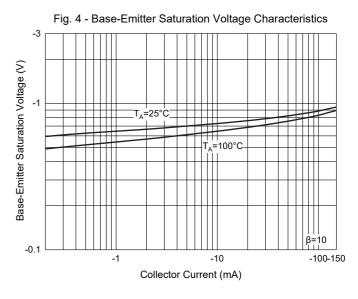
# **Curve Characteristics**

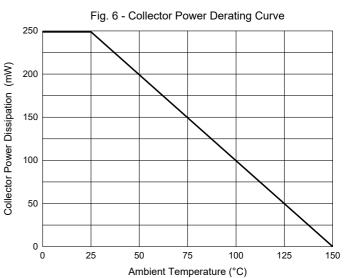














# **Ordering Information**

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

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