

## Features

- Designed for General Purpose Amplifier and Low Speed Switching Applications
- Halogen Free. "Green" Device<sup>(Note 1)</sup>
- 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: -65°C to +150°C
- Storage Temperature Range: -65°C to +150°C
- Thermal Resistance: 9°C/W Junction to Case
- Thermal Resistance: 100°C/W Junction to Ambient<sup>(Note2)</sup>

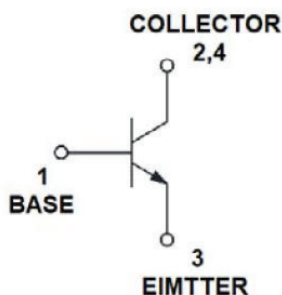
| Parameter                                  | Symbol    | Rating | Unit |
|--------------------------------------------|-----------|--------|------|
| Collector-Base Voltage                     | $V_{CBO}$ | 100    | V    |
| Collector-Emitter Voltage                  | $V_{CEO}$ | 100    | V    |
| Emitter-Base Voltage                       | $V_{EBO}$ | 5      | V    |
| Continuous Collector Current               | $I_C$     | 3      | A    |
| Power Dissipation @ $T_A=25^\circ\text{C}$ | $P_D$     | 1.25   | W    |
| Power Dissipation @ $T_C=25^\circ\text{C}$ | $P_D$     | 15     | W    |

Note:

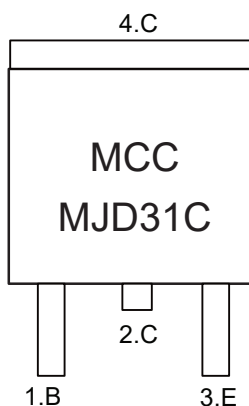
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated mounting pad for collector 1 cm<sup>2</sup>.

## Internal Structure

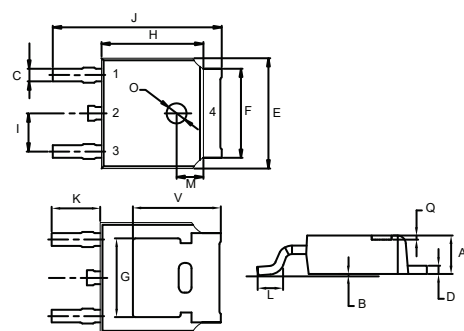


## Device Marking



# Silicon NPN epitaxial planer Transistors

## DPAK(TO-252)



1.BASE  
2,4.COLLECTOR  
3.EMITTER

| DIM | INCHES |       | MM   |       | NOTE |
|-----|--------|-------|------|-------|------|
|     | MIN    | MAX   | MIN  | MAX   |      |
| A   | 0.087  | 0.094 | 2.20 | 2.40  |      |
| B   | 0.000  | 0.005 | 0.00 | 0.13  |      |
| C   | 0.026  | 0.034 | 0.66 | 0.86  |      |
| D   | 0.018  | 0.023 | 0.46 | 0.58  |      |
| E   | 0.256  | 0.264 | 6.50 | 6.70  |      |
| F   | 0.201  | 0.215 | 5.10 | 5.46  |      |
| G   | 0.190  |       | 4.83 |       | TYP. |
| H   | 0.236  | 0.244 | 6.00 | 6.20  |      |
| I   | 0.086  | 0.094 | 2.18 | 2.39  |      |
| J   | 0.386  | 0.409 | 9.80 | 10.40 |      |
| K   | 0.114  |       | 2.90 |       | TYP. |
| L   | 0.055  | 0.067 | 1.40 | 1.70  |      |
| M   | 0.063  |       | 1.60 |       | TYP. |
| O   | 0.043  | 0.051 | 1.10 | 1.30  |      |
| Q   | 0.000  | 0.012 | 0.00 | 0.30  |      |
| V   | 0.211  |       | 5.35 |       | TYP. |

**Electrical Characteristics @  $T_A=25^{\circ}\text{C}$  Unless Otherwise Specified**

| Parameter                            | Symbol        | Min | Typ | Max | Units         | Conditions                                                |
|--------------------------------------|---------------|-----|-----|-----|---------------|-----------------------------------------------------------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | 100 |     |     | V             | $I_C=1\text{mA}$ , $I_E=0$                                |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | 100 |     |     | V             | $I_C=30\text{mA}$ , $I_B=0$                               |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | 5   |     |     | V             | $I_E=1\text{mA}$ , $I_C=0$                                |
| Collector Cutoff Current             | $I_{CEO}$     |     |     | 50  | $\mu\text{A}$ | $V_{CE}=60\text{V}$ , $I_B=0$                             |
| Collector Cutoff Current             | $I_{CES}$     |     |     | 20  | $\mu\text{A}$ | $V_{CE}=100\text{V}$ , $V_{EB}=0$                         |
| Emitter Cutoff Current               | $I_{EBO}$     |     |     | 1   | mA            | $V_{EB}=5\text{V}$ , $I_C=0$                              |
| DC Current Gain                      | $h_{FE(1)}$   | 25  |     |     |               | $V_{CE}=4\text{V}$ , $I_C=1\text{A}$                      |
|                                      | $h_{FE(2)}$   | 10  |     | 75  |               | $V_{CE}=4\text{V}$ , $I_C=3\text{A}$                      |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ |     |     | 1.2 | V             | $I_C=3\text{A}$ , $I_B=0.375\text{A}$                     |
| Base-Emitter Voltage                 | $V_{BE}$      |     |     | 1.8 | V             | $I_C=3\text{A}$ , $V_{CE}=4\text{V}$                      |
| Transition Frequency                 | $f_T$         | 3   |     |     | MHz           | $V_{CE}=10\text{V}$ , $I_C=0.5\text{A}$ , $f=1\text{KHz}$ |

## Curve Characteristics

Fig. 1 - Static Characteristics

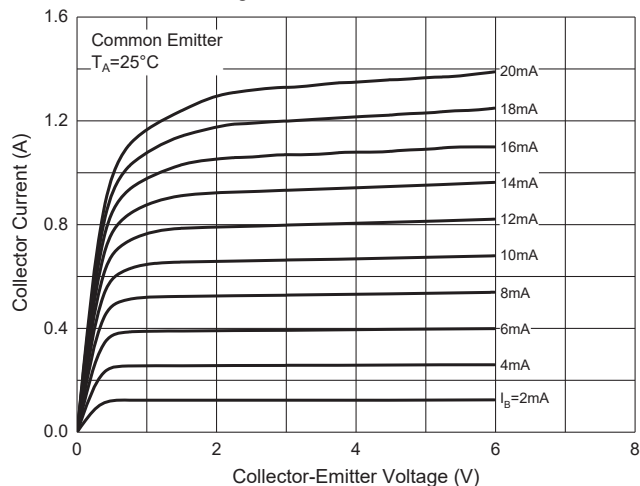


Fig. 2 - DC Current Gain Characteristics

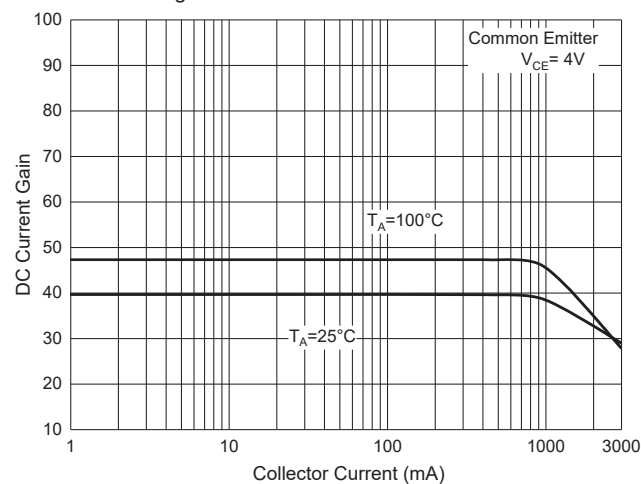


Fig. 3 - Base-Emitter Saturation Voltage Characteristics

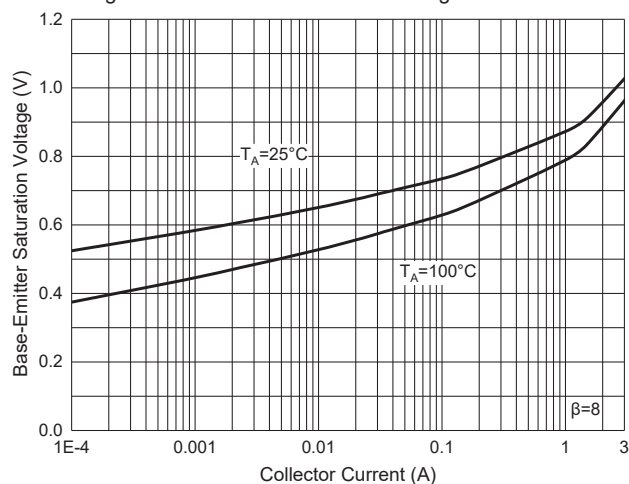


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

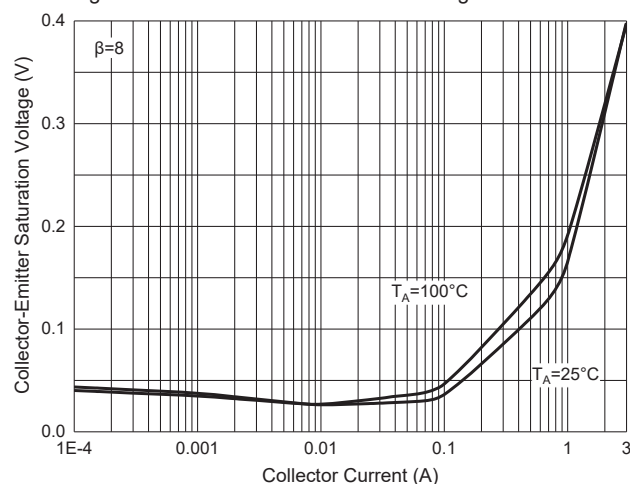


Fig. 5 - Base-Emitter Voltage Characteristics

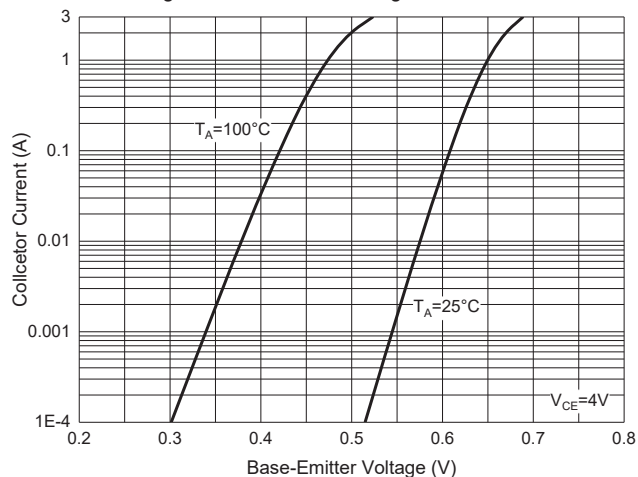
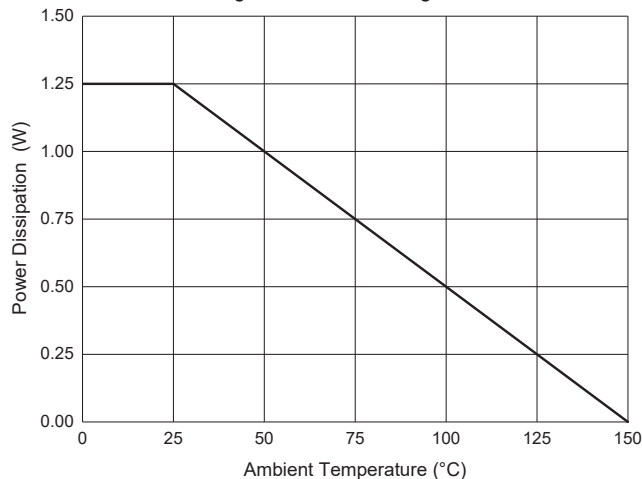


Fig. 6 - Power Derating Curve



## Curve Characteristics

Fig. 7 - Power Derating Curve

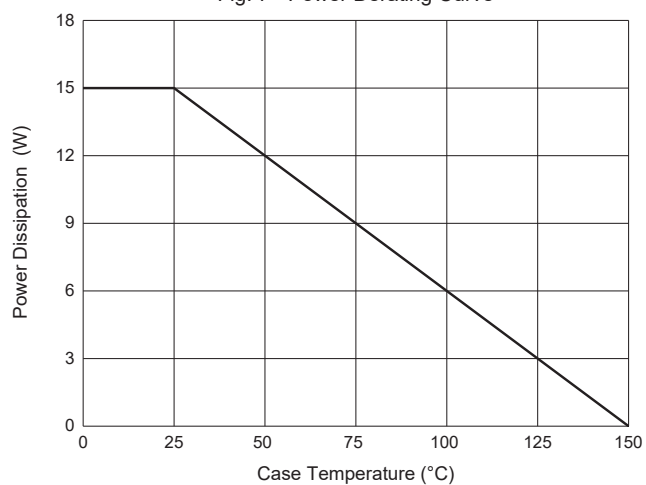
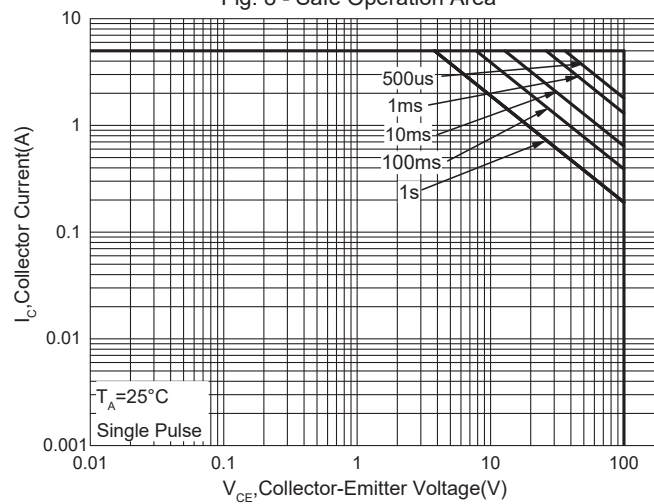


Fig. 8 - Safe Operation Area



## Ordering Information

| Device         | Packing                 |
|----------------|-------------------------|
| Part Number-TP | Tape&Reel: 2.5Kpcs/Reel |

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