



THE DATASHEET OF MPS651-AP



Features

- Switching and Amplifier Applications
- 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)

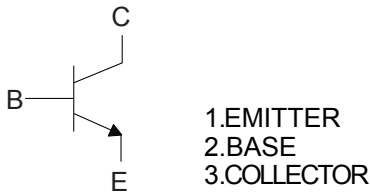
Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 200°C/W Junction to Ambient

| Parameter | Symbol | Rating | Unit |
|------------------------------|-----------|--------|------|
| Collector-Base Voltage | V_{CBO} | 80 | V |
| Collector-Emitter Voltage | V_{CEO} | 60 | V |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Continuous Collector Current | I_C | 2 | A |
| Power Dissipation | P_D | 625 | mW |

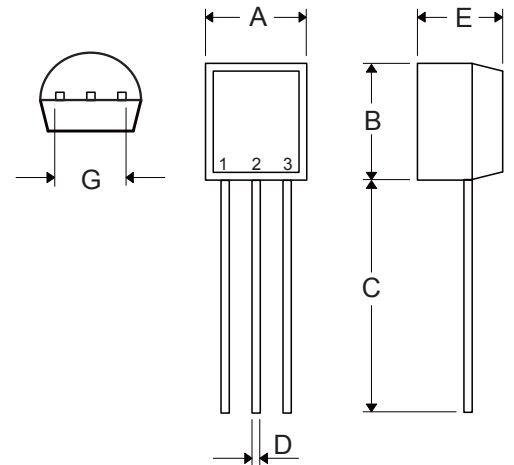
Marking Code: MPS651 or 051

Internal Structure



**NPN
Encapsulate
Transistors**

TO-92



| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|-------|-------|-------|---------------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.169 | 0.185 | 4.30 | 4.70 | |
| B | 0.169 | 0.185 | 4.30 | 4.70 | |
| C | 0.500 | ----- | 12.70 | ----- | |
| D | 0.015 | 0.022 | 0.38 | 0.55 | |
| E | 0.130 | 0.146 | 3.30 | 3.70 | |
| G | 0.095 | 0.105 | 2.42 | 2.67 | Straight Lead |
| | 0.173 | 0.220 | 4.40 | 5.60 | Bent |

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

| Parameter | Symbol | Min | Typ | Max | Units | Conditions |
|--------------------------------------|---------------|-----|-----|-----|---------------|--|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 80 | | | V | $I_C=100\mu\text{A}, I_E=0$ |
| Collector-Emitter Breakdown Voltage* | $V_{(BR)CEO}$ | 60 | | | V | $I_C=10\text{mA}, I_B=0$ |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 5 | | | V | $I_E=10\mu\text{A}, I_C=0$ |
| Collector Cut-off Current | I_{CBO} | | | 0.1 | μA | $V_{CB}=80\text{V}, I_E=0$ |
| Emitter Cut-off Current | I_{EBO} | | | 0.1 | μA | $V_{EB}=4\text{V}, I_C=0$ |
| DC Current Gain* | $h_{FE(1)}$ | 75 | | | | $V_{CE}=2\text{V}, I_C=50\text{mA}$ |
| | $h_{FE(2)}$ | 75 | | | | $V_{CE}=2\text{V}, I_C=100\text{mA}$ |
| | $h_{FE(3)}$ | 75 | | | | $V_{CE}=2\text{V}, I_C=1\text{A}$ |
| | $h_{FE(4)}$ | 40 | | | | $V_{CE}=2\text{V}, I_C=2\text{A}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | | | 0.5 | V | $I_C=2\text{A}, I_B=0.2\text{A}$ |
| | | | | 0.3 | V | $I_C=1\text{A}, I_B=0.1\text{A}$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | | | 1.2 | V | $I_C=1\text{A}, I_B=0.1\text{A}$ |
| Base-Emitter On Voltage | $V_{BE(on)}$ | | | 1 | V | $V_{CE}=2\text{V}, I_C=1\text{A}$ |
| Transition Frequency | f_T | 75 | | | MHz | $V_{CE}=5\text{V}, I_C=50\text{mA}, f=100\text{MHz}$ |

*.Pulse test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

Curve Characteristics

Fig. 1 - Static Characteristics

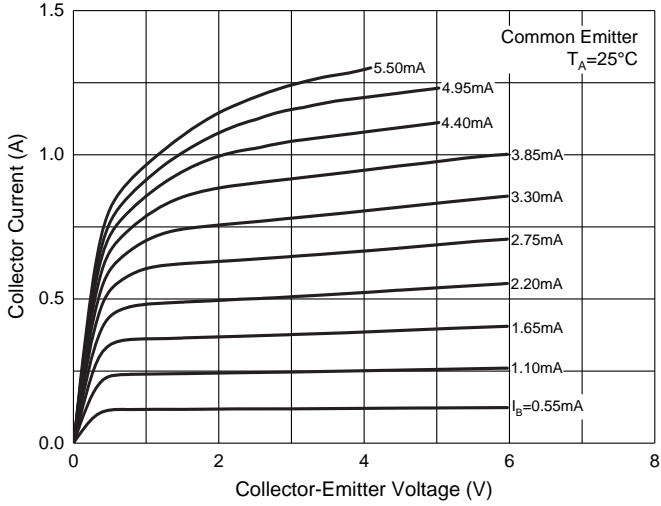


Fig. 2 - DC Current Gain Characteristics

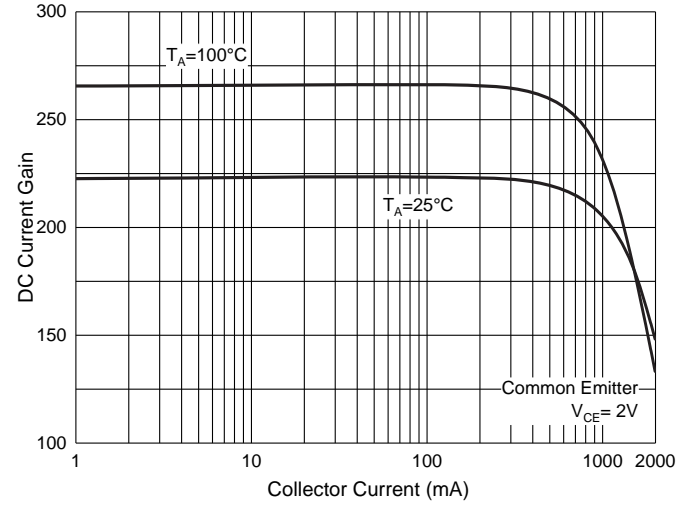


Fig. 3 - Base-Emitter Saturation Voltage Characteristics

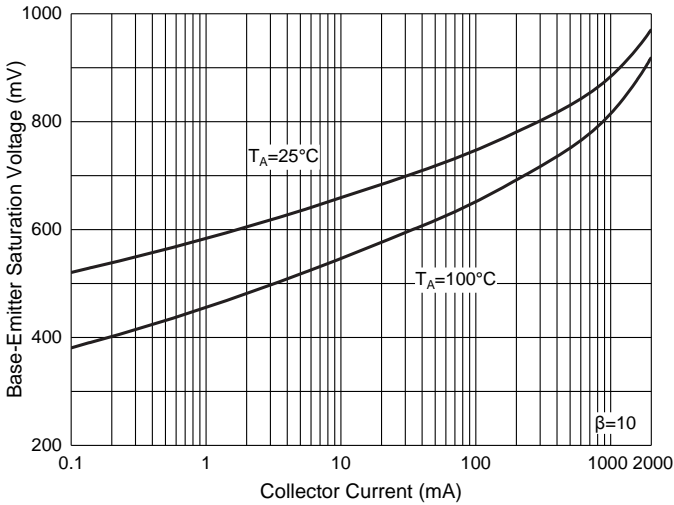


Fig. 4 - Collector-Emitter Saturation Voltage Characteristics

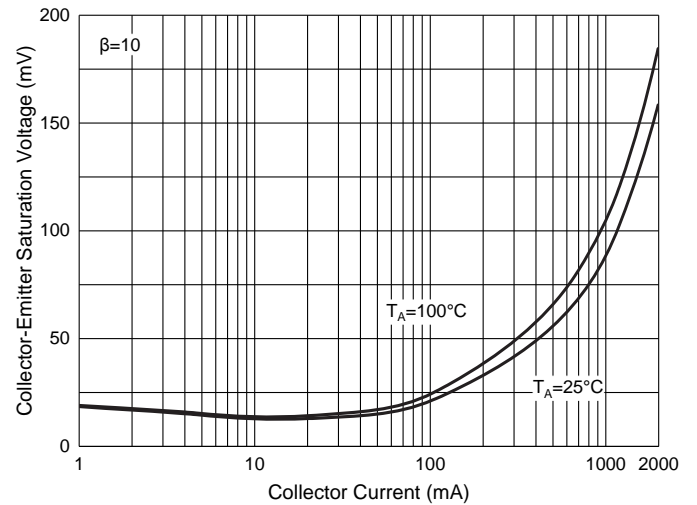


Fig. 5 - Base-Emitter Voltage Characteristics

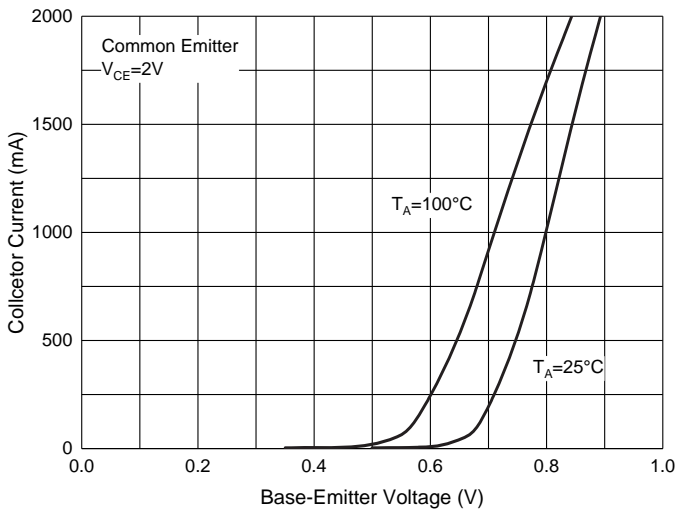
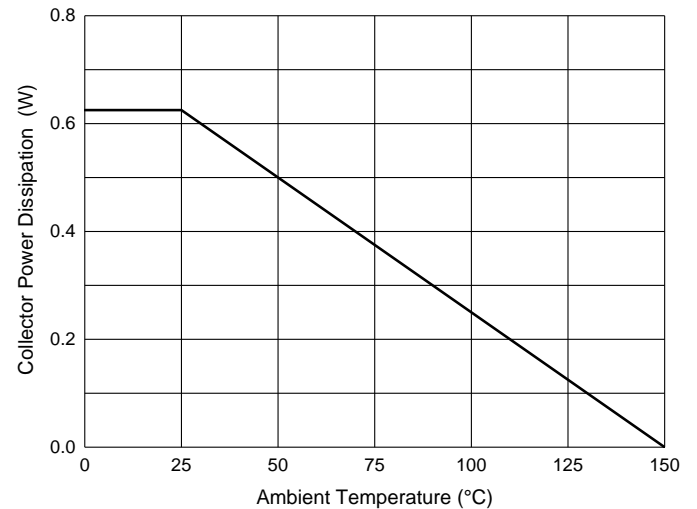


Fig. 6 - Collector Power Derating Curve



Ordering Information

| Device | Packing |
|----------------|-----------------------------|
| Part Number-AP | Ammo Packing: 20Kpcs/Carton |
| Part Number-BP | Bulk: 100Kpcs/Carton |

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

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