银河微电 Galaxy Microelectronics

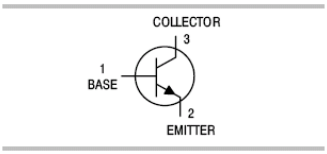
# NPN Silicon Epitaxial Planar Transistor

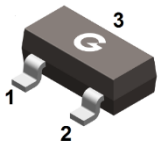
## MMBTA06-3L

## Features

- Epitaxial planar die construction
- Complementary PNP type available(MMBTA56-3L)
- RoHS compliant with Halogen-free

HF




SOT-23-3L

## Mechanical Data

- Case: SOT-23-3L
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

## Ordering Information

| Part Number | Package | Shipping Quantity | Marking Code |
|---|---|---|---|
| MMBTA06-3L | SOT-23-3L | 3000 pcs / Tape & Reel | 1GM |

## Maximum Ratings (@ $T_A$ = 25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 80 | V |
| Collector-Emitter Breakdown Voltage | $V_{CEO}$ | 80 | V |
| Emitter-Base Breakdown Voltage | $V_{EBO}$ | 4 | V |
| Collector Current (Continuous) | $I_C$ | 0.5 | A |
| Collector Current (Peak) | $I_{CM}$ | 1 | A |
| Base Current | $I_B$ | 0.2 | A |

## Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation | $P_D$ | 0.35 | W |
| Thermal Resistance Junction-to-Air *1 | $R_{\theta JA}$ | 258 | °C/W |
| Thermal Resistance Junction-to-Case *1 | $R_{\theta JC}$ | 142 | °C/W |
| Thermal Resistance Junction-to-Lead *1 | $R_{\theta JL}$ | 186 | °C/W |
| Junction Temperature Range | $T_J$ | -55 ~ +150 | °C |
| Storage Temperature Range | $T_{STG}$ | -55 ~ +150 | °C |

Note 1: The data tested by surface mounted on a 15mm * 15mm * 1mm FR4-epoxy P.C.B

## Electrical Characteristics (@ $T_A$ = 25°C unless otherwise specified)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$ = 100μA, $I_E$ = 0 | 80 | - | - | V |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$ = 1mA, $I_B$ = 0 | 80 | - | - | V |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$ = 10μA, $I_C$ = 0 | 4 | - | - | V |
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB}$ = 80V, $I_E$ = 0 | - | - | 100 | nA |
| Collector Cut-off Current | $I_{CES}$ | $V_{CE}$ = 60V, $I_B$ = 0 | - | - | 100 | nA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$ = 1V, $I_C$ = 10mA | 100 | - | - | - |
| | | $V_{CE}$ = 1V, $I_C$ = 100mA | 100 | - | - | - |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$ = 100mA, $I_B$ = 10mA | - | - | 0.25 | V |
| Base-emitter Voltage | $V_{BE(ON)}$ | $I_C$ = 100mA, $V_{CE}$ = 1V | - | - | 1.20 | V |
| Current-Gain— Bandwidth Product | $f_T$ | $I_C$ = 20mA, $V_{CE}$ = 5V<br>f = 20MHz | 100 | - | - | MHz |

## Ratings and Characteristics Curves (@ $T_A$ = 25°C unless otherwise specified)

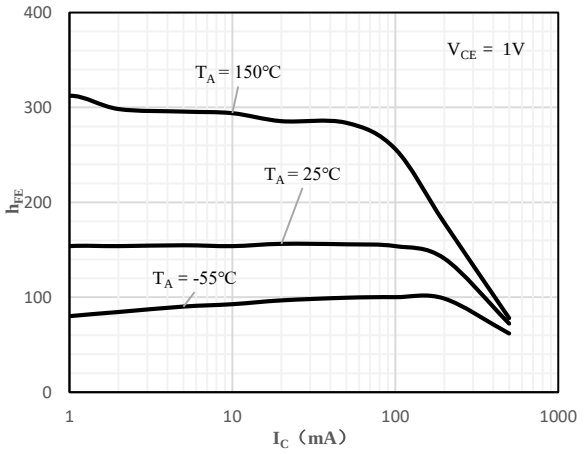



Fig 1 $h_{FE}$ vs. $I_C$

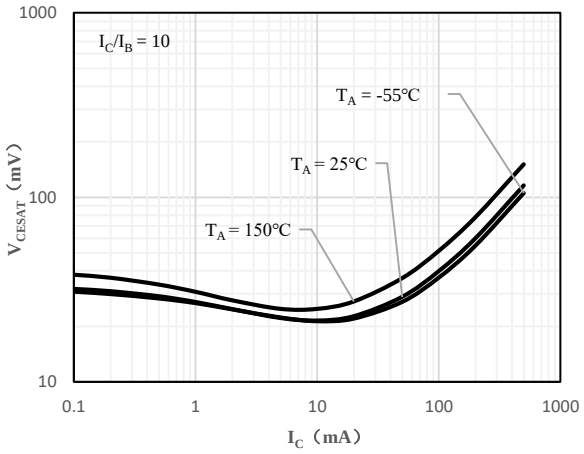



Fig 2 $V_{CE(sat)}$ vs. $I_C$

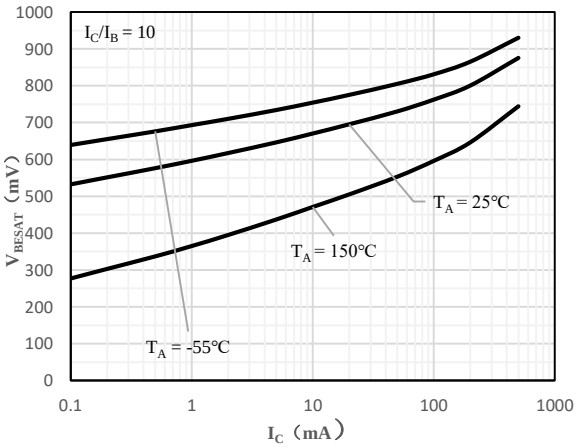



Fig 3 $V_{BE(sat)}$ vs. $I_C$

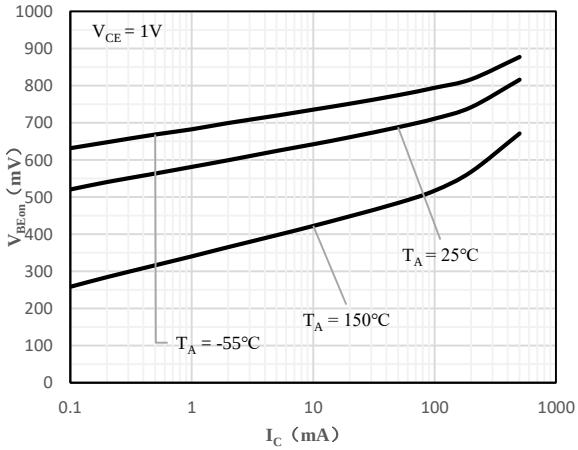



Fig 4 $V_{BE(ON)}$ vs. $I_C$

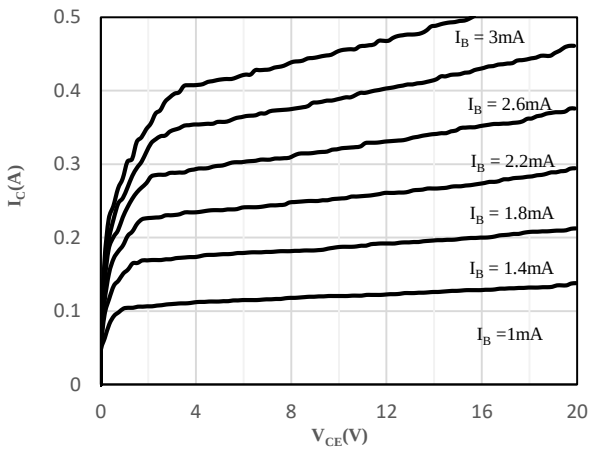



Fig 5 $I_C$ vs. $V_{CE}$

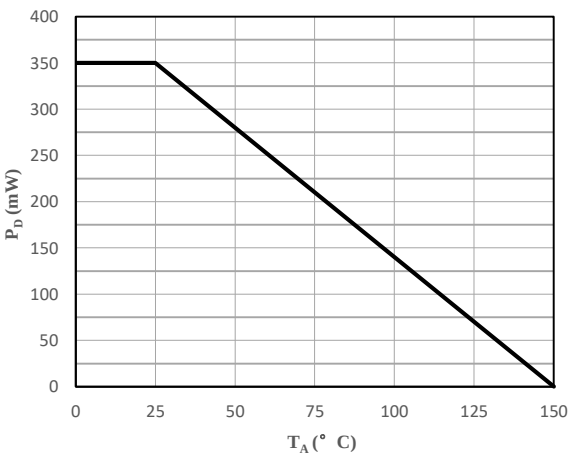



Fig 6 $P_D$ vs. $T_A$

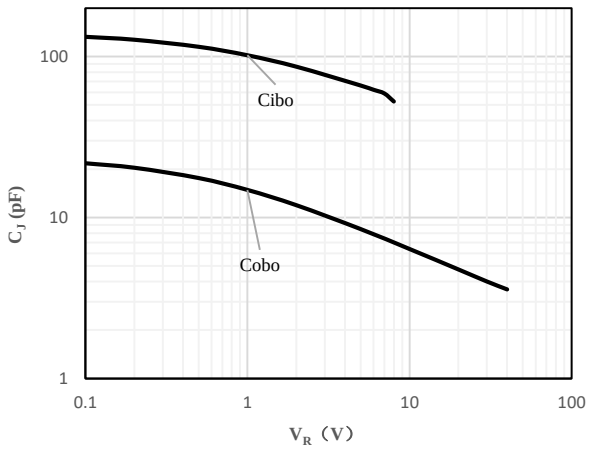
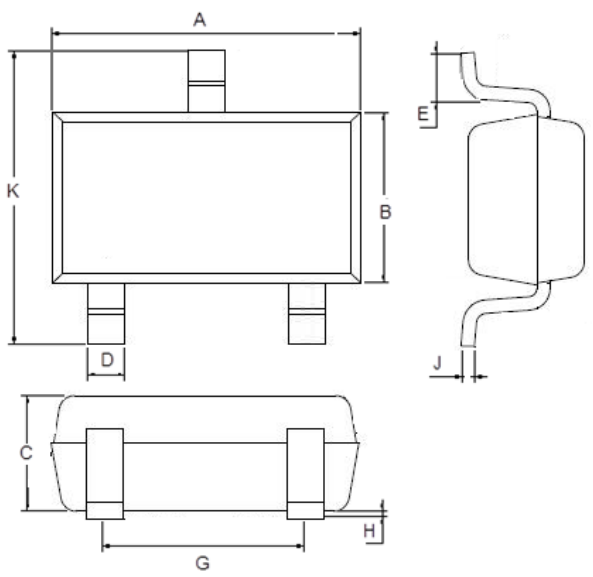



Fig 7 $C_J$ vs. $V_R$

## Package Outline Dimensions (Unit: mm)




| SOT-23-3L | | |
|---|---|---|
| **Dimension** | **Min.** | **Max.** |
| A | 2.80 | 3.00 |
| B | 1.50 | 1.70 |
| C | 1.00 | 1.20 |
| D | 0.35 | 0.45 |
| E | 0.35 | 0.55 |
| G | 1.80 | 2.00 |
| H | 0.02 | 0.10 |
| J | 0.10 | 0.20 |
| K | 2.60 | 3.00 |

## Mounting Pad Layout (Unit: mm)

### SOT-23-3L

