



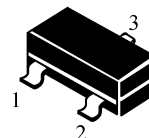
# 桂林斯壯微電子有限責任公司

## Guilin Strong Micro-Electronics Co.,Ltd.

GMBT2907(銷售型號 MMBT2907) GMBT2907A(銷售型號 MMBT2907A)

SOT—23

- 1. BASE
- 2. EMITTER
- 3. COLLECTOR



### ■FEATURES 特點

PNP Switching Transistor

### ■MAXIMUM RATINGS 最大額定值

| Characteristic<br>特性參數                   | Symbol<br>符號 | GMBT2907 | GMBT2907A | Unit<br>單位 |
|------------------------------------------|--------------|----------|-----------|------------|
| Collector-Emitter Voltage<br>集電極-發射極電壓   | $V_{CEO}$    | -40      | -60       | Vdc        |
| Collector-Base Voltage<br>集電極-基極電壓       | $V_{CBO}$    | -60      | -60       | Vdc        |
| Emitter-Base Voltage<br>發射極-基極電壓         | $V_{EBO}$    | -5.0     | -5.0      | Vdc        |
| Collector Current-Continuous<br>集電極電流-連續 | $I_c$        | -600     | -600      | mAdc       |

### ■THERMAL CHARACTERISTICS 熱特性

| Characteristic<br>特性參數                                                                                                                                               | Symbol<br>符號    | Max<br>最大值                   | Unit<br>單位                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------|------------------------------|
| Total Device Dissipation 總耗散功率<br>FR-5 Board(1)<br>$T_A=25^{\circ}\text{C}$ 溫度為 $25^{\circ}\text{C}$<br>Derate above $25^{\circ}\text{C}$ 超過 $25^{\circ}\text{C}$ 遞減 | $P_D$           | 225<br>1.8                   | mW<br>mW/ $^{\circ}\text{C}$ |
| Total Device Dissipation 總耗散功率<br>Alumina Substrate 氧化鋁襯底,(2) $T_A=25^{\circ}\text{C}$<br>Derate above $25^{\circ}\text{C}$ 超過 $25^{\circ}\text{C}$ 遞減               | $P_D$           | 300<br>2.4                   | mW<br>mW/ $^{\circ}\text{C}$ |
| Thermal Resistance Junction to Ambient 熱阻                                                                                                                            | $R_{\theta JA}$ | 417                          | $^{\circ}\text{C}/\text{W}$  |
| Junction and Storage Temperature 結溫和儲存溫度                                                                                                                             | $T_J, T_{stg}$  | -55to+150 $^{\circ}\text{C}$ |                              |

### ■DEVICE MARKING 打標

**GMBT2907**(銷售型號 MMBT2907)=**M2B**;**GMBT2907A**(銷售型號 MMBT2907A)=**2F**



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### ■ELECTRICAL CHARACTERISTICS 電特性

( $T_A=25^{\circ}\text{C}$  unless otherwise noted 如無特殊說明，溫度為  $25^{\circ}\text{C}$ )

| Characteristic<br>特性參數                                                                                                                             | Symbol<br>符號                                                    | Min<br>最小值       | Max<br>最大值                       | Unit<br>單位                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------|----------------------------------|-----------------------------|
| Collector-Emitter Breakdown Voltage(3)<br>集電極-發射極擊穿電壓( $I_C=-10\text{mA}$ , $I_B=0$ )                                                              | $V_{(BR)CEO}$ GMBT2907<br>GMBT2907A                             | -30<br>-60       | —<br>—                           | Vdc                         |
| Collector-Base Breakdown Voltage<br>集電極-基極擊穿電壓( $I_C=-10\mu\text{A}$ , $I_E=0$ )                                                                   | $V_{(BR)CBO}$                                                   | -60              | —                                | Vdc                         |
| Emitter-Base Breakdown Voltage<br>發射極-基極擊穿電壓( $I_E=-10\mu\text{A}$ , $I_C=0$ )                                                                     | $V_{(BR)EBO}$                                                   | -5.0             | —                                | Vdc                         |
| Collector Cutoff Current 集電極截止電流<br>( $V_{CE}=-30\text{Vdc}$ , $V_{EB(om)}=-0.5\text{Vdc}$ )                                                       | $I_{CEX}$                                                       | —                | -50                              | nAdc                        |
| Collector Cutoff Current 集電極截止電流<br>( $V_{CB}=-50\text{Vdc}$ , $I_E=0$ )<br><br>( $V_{CB}=-50\text{Vdc}$ , $I_E=0$ , $T_A=125^{\circ}\text{C}$ )   | $I_{CBO}$<br><br>GMBT2907<br>GMBT2907A<br>GMBT2907<br>GMBT2907A | —<br>—<br>—<br>— | -0.02<br>-0.01<br>-20.0<br>-10.0 | <br><br><br>$\mu\text{Adc}$ |
| Base Cutoff Current 基極截止電流<br>( $V_{CE}=-30\text{Vdc}$ , $V_{EB(om)}=-0.5\text{Vdc}$ )                                                             | $I_B$                                                           | —                | -50                              | nAdc                        |
| DC Current Gain 直流電流增益                                                                                                                             | $H_{FE}$                                                        |                  |                                  | —                           |
| ( $I_C=-0.1\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )                                                                                                 | GMBT2907<br>GMBT2907A                                           | 35<br>75         | —                                |                             |
| ( $I_C=-1.0\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )                                                                                                 | GMBT2907<br>GMBT2907A                                           | 50<br>100        | —                                |                             |
| ( $I_C=-10\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )                                                                                                  | GMBT2907<br>GMBT2907A                                           | 75<br>100        | —                                |                             |
| ( $I_C=-150\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )(3)                                                                                              |                                                                 | 100              | 300                              |                             |
| ( $I_C=-500\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )(3)                                                                                              | GMBT2907<br>GMBT2907A                                           | 30<br>50         | —<br>—                           |                             |
| Collector-Emitter Saturation Voltage<br>集電極發射極飽和壓降<br>( $I_C=-150\text{mA}$ , $I_B=-15\text{mA}$ )<br>( $I_C=-500\text{mA}$ , $I_B=-50\text{mA}$ ) | $V_{CE(sat)}$                                                   | —<br>—           | -0.4<br>-1.6                     | Vdc                         |
| Base-Emitter Saturation Voltage<br>基極發射極飽和壓降<br>( $I_C=-150\text{mA}$ , $I_B=-15\text{mA}$ )<br>( $I_C=-500\text{mA}$ , $I_B=-50\text{mA}$ )       | $V_{BE(sat)}$                                                   | —<br>—           | -1.3<br>-2.6                     | Vdc                         |



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### ■SMALL-SIGNAL CHARACTERISTICS 小信號特性

| Characteristic<br>特性參數                                                                                          | Symbol<br>符號 | Min<br>最小值 | Max<br>最大值 | Unit<br>單位 |
|-----------------------------------------------------------------------------------------------------------------|--------------|------------|------------|------------|
| Current-Gain-Bandwidth Product<br>電流增益帶寬乘積<br>( $I_C=-50\text{mA}$ , $V_{CE}=-20\text{V}$ , $f=100\text{MHz}$ ) | $f_T$        | 200        | —          | MHz        |
| Output Capacitance 輸出電容<br>( $V_{CB}=-10.0\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$ )                             | $C_{obo}$    | —          | 80         | pF         |
| Input Capacitance 輸入電容<br>( $V_{EB}=-2.0\text{V}$ , $I_C=0$ , $f=1.0\text{MHz}$ )                               | $C_{ibo}$    | —          | 30         | pF         |

### ■SWITCHING CHARACTERISTICS 開關特性

|                       |                                                                                                |           |   |     |    |
|-----------------------|------------------------------------------------------------------------------------------------|-----------|---|-----|----|
| Turn-On Time<br>導通時間  | (V <sub>cc</sub> =-30Vdc<br>I <sub>c</sub> =-150mA, I <sub>B1</sub> =-15mA)                    | $t_{on}$  | — | 45  | ns |
| Delay Time<br>延遲時間    |                                                                                                | $t_d$     | — | 10  |    |
| Rise Time<br>上升時間     |                                                                                                | $t_r$     | — | 40  |    |
| Turn-Off time<br>截止時間 | (V <sub>cc</sub> =-6.0Vdc, I <sub>c</sub> =-150mA,<br>I <sub>B1</sub> =I <sub>B2</sub> =-15mA) | $t_{off}$ | — | 100 | ns |
| Storage Time<br>儲存時間  |                                                                                                | $t_s$     | — | 80  |    |
| Fall Time<br>下降時間     |                                                                                                | $t_f$     | — | 30  |    |

1. FR-5=1.0×0.75×0.062in.
2. Alumina=0.4×0.3×0.024in.99.5%alumina.
3. Pulse Width≤300us;Duty Cycle≤2.0%.
4.  $f_T$  is defined as the frequency at which ( $h_{fe}$ ) extrapolates to unity.



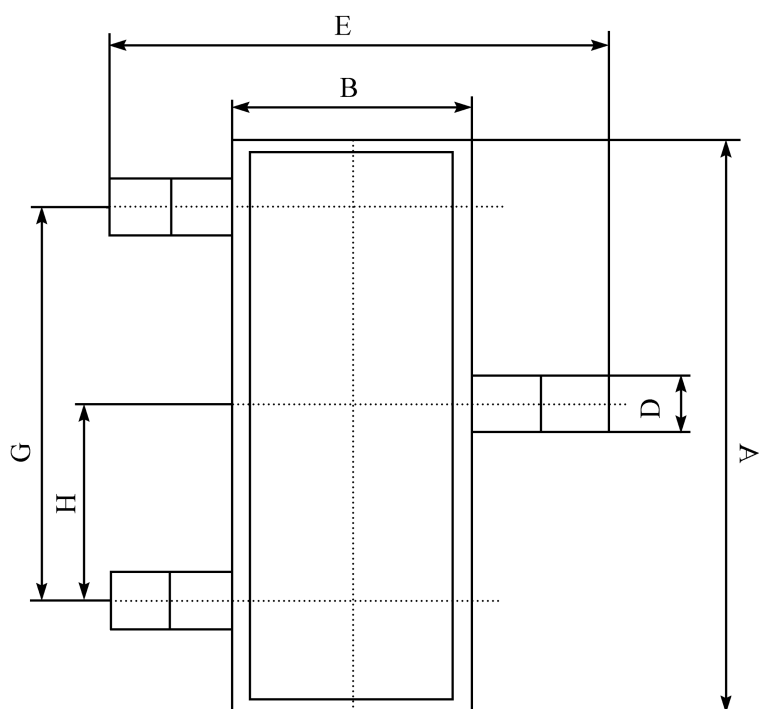
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### ■DIMENSION 外形封裝尺寸

單位(UNIT): mm



| 序號 | 數值及公差           |
|----|-----------------|
| A  | $2.90 \pm 0.10$ |
| B  | $1.30 \pm 0.10$ |
| C  | $1.00 \pm 0.10$ |
| D  | $0.40 \pm 0.10$ |
| E  | $2.40 \pm 0.20$ |
| G  | $1.90 \pm 0.10$ |
| H  | $0.95 \pm 0.05$ |
| J  | $0.13 \pm 0.05$ |
| K  | $0.00-0.10$     |
| M  | $\geq 0.2$      |
| N  | $0.60 \pm 0.10$ |
| P  | $7 \pm 2^\circ$ |

