



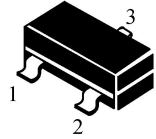
# 桂林斯壯桂微電子有限責任公司

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

### THERMAL CHARACTERISTICS 熱特性

Characteristic 特性參數	Symbol 符號	Max 最大值	Unit 單位
Total Device Dissipation 總耗散功率 FR-5 Board(1) $T_A=25^\circ\text{C}$ 溫度為 $25^\circ\text{C}$ Derate above $25^\circ\text{C}$ 超過 $25^\circ\text{C}$ 遞減	$P_D$	225 1.8	mW mW/ $^\circ\text{C}$
Total Device Dissipation 總耗散功率 Alumina Substrate 氧化鋁襯底,(2) $T_A=25^\circ\text{C}$ Derate above $25^\circ\text{C}$ 超過 $25^\circ\text{C}$ 遞減	$P_D$	300 2.4	mW 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 特性參數	Symbol 符號	Min 最小值	Max 最大值	Unit 單位
Collector-Emitter Breakdown Voltage(3) 集電極-發射極擊穿電壓( $I_c=-10\text{mA}$ , $I_B=0$ )	$V_{(BR)CEO}$ GMBT2907 GMBT2907A	-30 -60	— —	Vdc
Collector-Base Breakdown Voltage 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 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 ( $V_{CE}=-30\text{Vdc}$ , $V_{EB(om)}=-0.5\text{Vdc}$ )	$I_{CEX}$	—	-50	nAdc
Collector Cutoff Current 集電極截止電流 ( $V_{CB}=-50\text{Vdc}$ , $I_E=0$ )  ( $V_{CB}=-50\text{Vdc}$ , $I_E=0$ , $T_A=125^{\circ}\text{C}$ )	$I_{CBO}$  GMBT2907 GMBT2907A GMBT2907 GMBT2907A	— — — —	-0.02 -0.01 -20.0 -10.0	   $\mu\text{Adc}$
Base Cutoff Current 基極截止電流 ( $V_{CE}=-30\text{Vdc}$ , $V_{EB(om)}=-0.5\text{Vdc}$ )	$I_B$	—	-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 GMBT2907A	35 75	—	
( $I_c=-1.0\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )	GMBT2907 GMBT2907A	50 100	—	
( $I_c=-10\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )	GMBT2907 GMBT2907A	75 100	—	
( $I_c=-150\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )(3)		100	300	
( $I_c=-500\text{mA}$ , $V_{CE}=-10.0\text{Vdc}$ )(3)	GMBT2907 GMBT2907A	30 50	— —	
Collector-Emitter Saturation Voltage 集電極發射極飽和壓降 ( $I_c=-150\text{mA}$ , $I_B=-15\text{mA}$ ) ( $I_c=-500\text{mA}$ , $I_B=-50\text{mA}$ )	$V_{CE(sat)}$	— —	-0.4 -1.6	Vdc
Base-Emitter Saturation Voltage 基極發射極飽和壓降 ( $I_c=-150\text{mA}$ , $I_B=-15\text{mA}$ ) ( $I_c=-500\text{mA}$ , $I_B=-50\text{mA}$ )	$V_{BE(sat)}$	— —	-1.3 -2.6	Vdc

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■SMALL-SIGNAL CHARACTERISTICS 小信號特性

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

■SWITCHING CHARACTERISTICS 開關特性

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

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



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### ■ TYPICAL CHARACTERISTIC CURVE 典型特性曲线

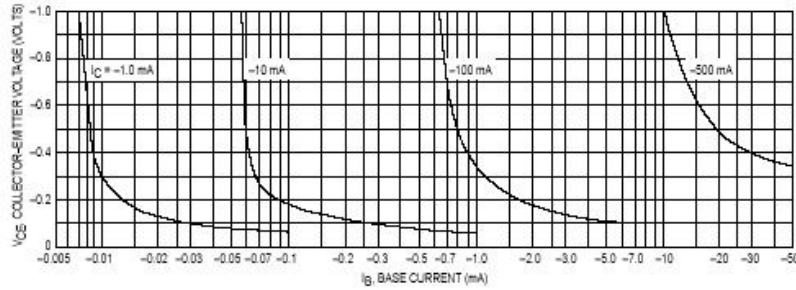


Figure 1 Dc Current Gain

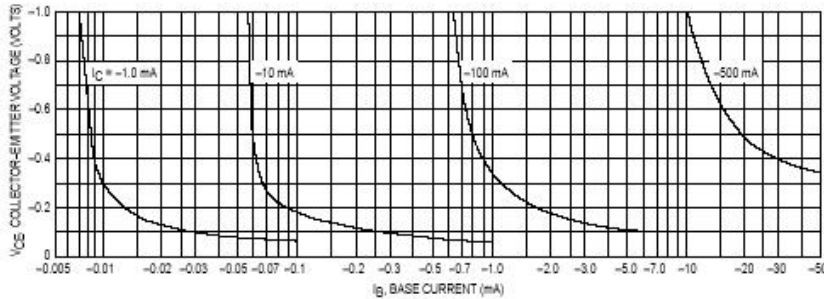


Figure 2 Collector Saturation Region

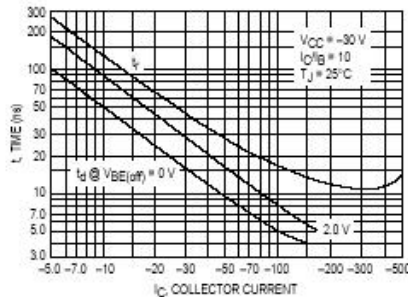


Figure 3 Turn-On Time

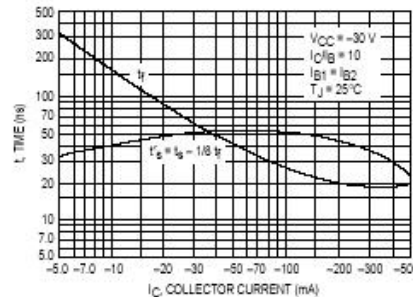


Figure 4 Turn-Off Time

#### TYPICAL SMALL-SIGNAL CHARACTERISTICS

#### NOISE FIGURE

VCE = 10 Vdc, TA = 25°C

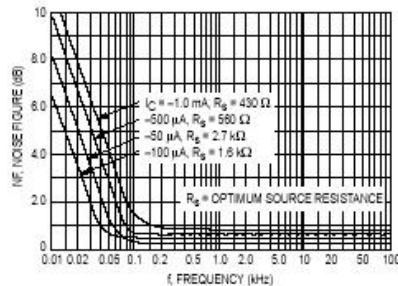


Figure 5 Frequency Effects

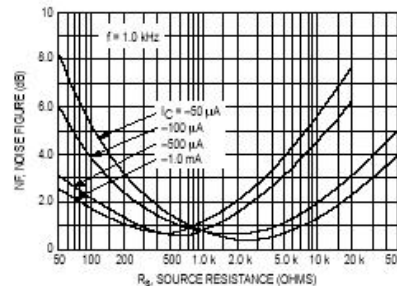


Figure 6 Source Resistance Effects