

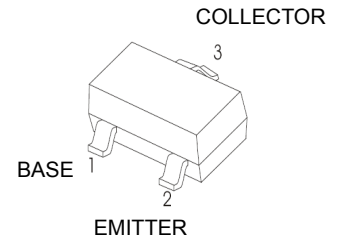


## MMBT2907E/AE TRANSISTOR (PNP)

### FEATURES

Epitaxial planar die construction

Complementary NPN Type available(MMBT2222E /AE)



**Marking:** MMBT2907E    **M2B**

MMBT2907AE    **2F**

**SOT-523**

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	60	V
Collector Emitter Voltage	$-V_{CEO}$	40 60	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current	$-I_C$	600	mA
Power Dissipation	$P_{tot}$	350	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

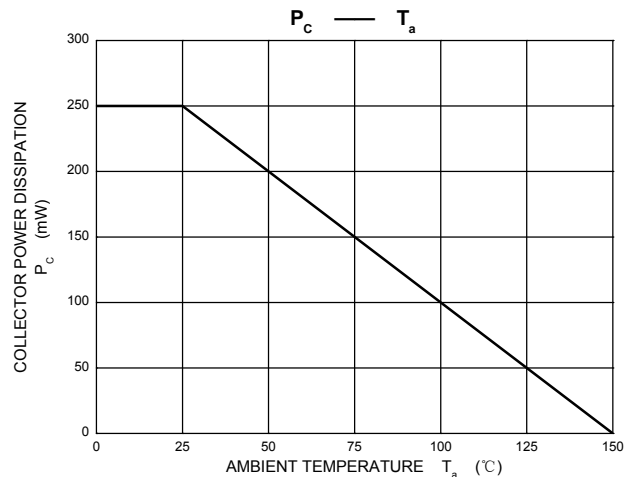
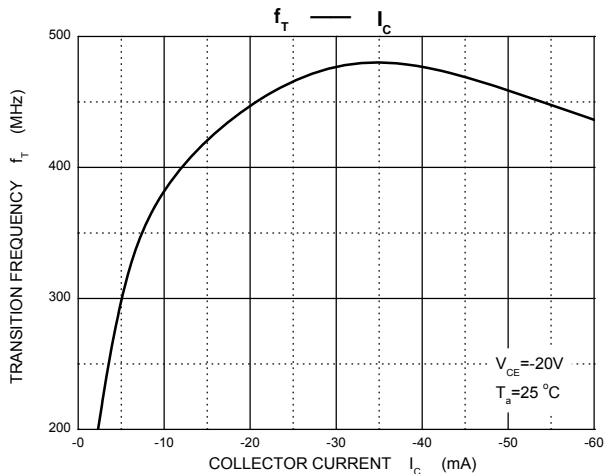
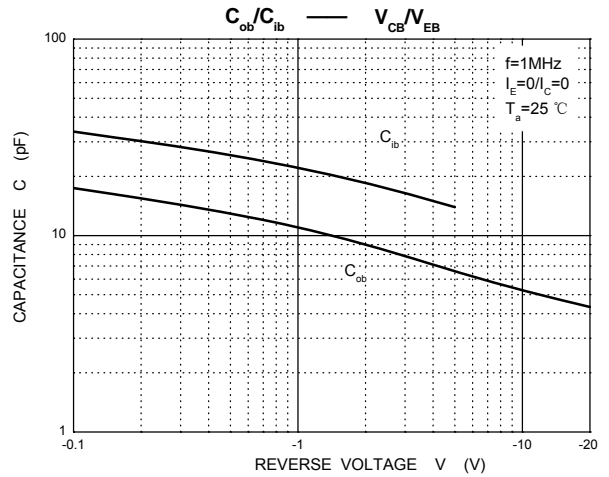
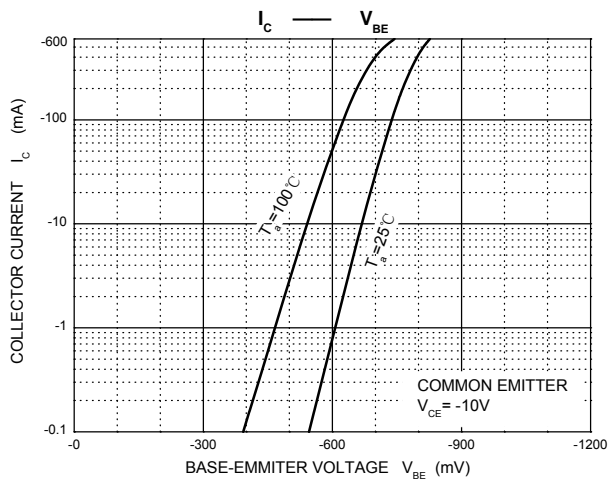
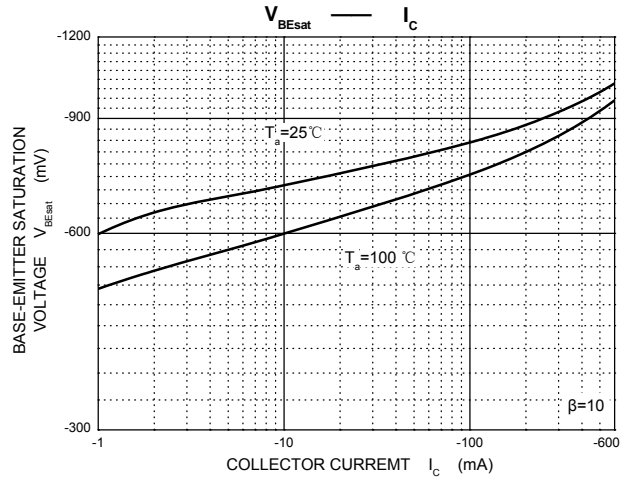
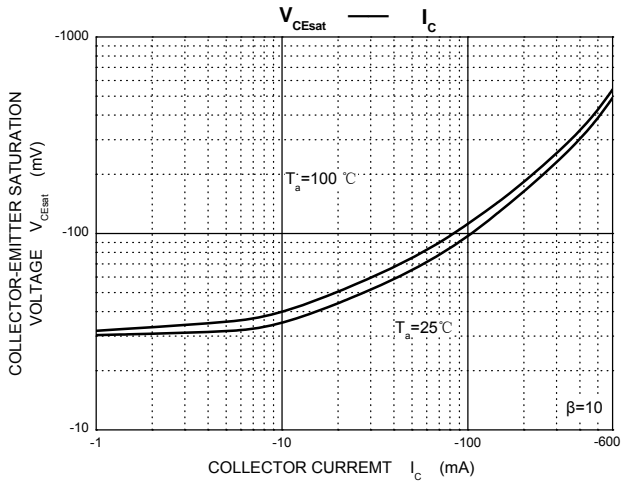
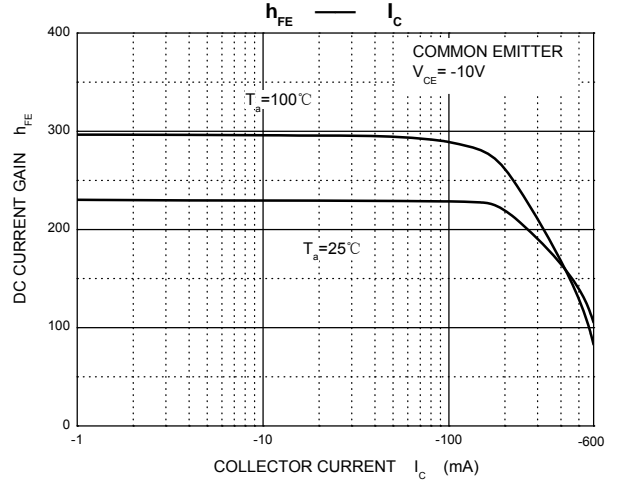
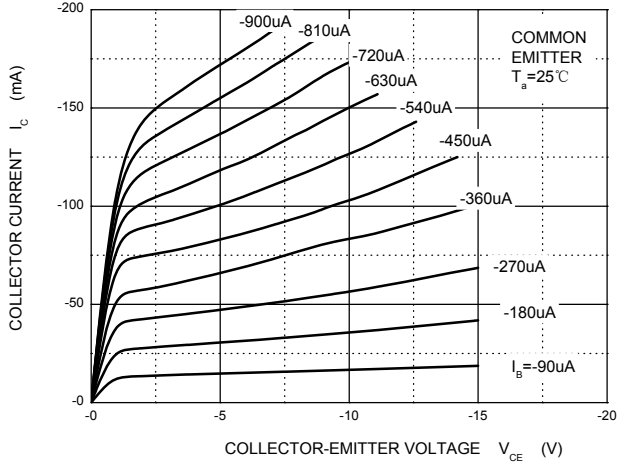


## Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $-I_C = 0.1\text{ mA}$ , $-V_{CE} = 10\text{ V}$	MMBT2907 E $h_{FE}$	35	-	-
	MMBT2907AE $h_{FE}$	75	-	-
at $-I_C = 1\text{ mA}$ , $-V_{CE} = 10\text{ V}$	MMBT2907 E $h_{FE}$	50	-	-
	MMBT2907AE $h_{FE}$	100	-	-
at $-I_C = 10\text{ mA}$ , $-V_{CE} = 10\text{ V}$	MMBT2907 E $h_{FE}$	75	-	-
	MMBT2907AE $h_{FE}$	100	-	-
at $-I_C = 150\text{ mA}$ , $-V_{CE} = 10\text{ V}$	$h_{FE}$	100	300	-
at $-I_C = 500\text{ mA}$ , $-V_{CE} = 10\text{ V}$	MMBT2907E $h_{FE}$	30	-	-
	MMBT2907AE $h_{FE}$	50	-	-
Collector Base Cutoff Current at $-V_{CB} = 50\text{ V}$	MMBT2907E $-I_{CBO}$	-	20	nA
	MMBT2907AE $-I_{CBO}$	-	10	nA
Collector Base Breakdown Voltage at $-I_C = 10\text{ }\mu\text{A}$	$-V_{(BR)CBO}$	60	-	V
Collector Emitter Breakdown Voltage at $-I_C = 10\text{ mA}$	MMBT2907E $-V_{(BR)CEO}$	40	-	V
	MMBT2907AE $-V_{(BR)CEO}$	60	-	V
Emitter Base Breakdown Voltage at $-I_E = 10\text{ }\mu\text{A}$	$-V_{(BR)EBO}$	5	-	V
Collector Saturation Voltage at $-I_C = 150\text{ mA}$ , $-I_B = 15\text{ mA}$	$-V_{CE(sat)}$	-	0.4	V
at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$	$-V_{CE(sat)}$	-	1.6	V
Base Saturation Voltage at $-I_C = 150\text{ mA}$ , $-I_B = 15\text{ mA}$	$-V_{BE(sat)}$	-	1.3	V
at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$	$-V_{BE(sat)}$	-	2.6	V
Gain Bandwidth Product at $-I_C = 50\text{ mA}$ , $-V_{CE} = 20\text{ V}$ , $f = 100\text{ MHz}$	$f_T$	200	-	MHz
Collector Output Capacitance at $-V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	8	pF
Turn-on Time at $-V_{CC} = 30\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = 15\text{ mA}$	$t_{on}$	-	45	ns
Delay Time at $-V_{CC} = 30\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = 15\text{ mA}$	$t_d$	-	10	ns
Rise Time at $-V_{CC} = 30\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = 15\text{ mA}$	$t_r$	-	40	ns
Turn-off Time at $-V_{CC} = 6\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = -I_{B2} = 15\text{ mA}$	$t_{off}$	-	100	ns
Storage Time at $-V_{CC} = 6\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = -I_{B2} = 15\text{ mA}$	$t_s$	-	80	ns
Fall Time at $-V_{CC} = 6\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = -I_{B2} = 15\text{ mA}$	$t_f$	-	30	ns

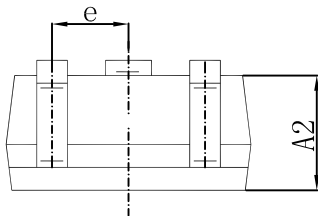
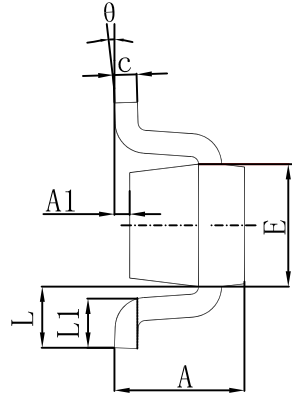
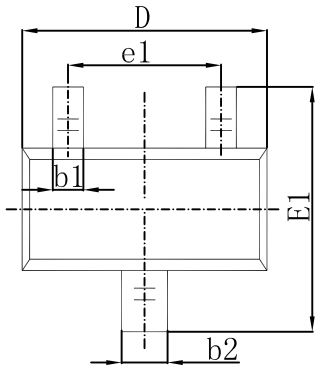


### Static Characteristic



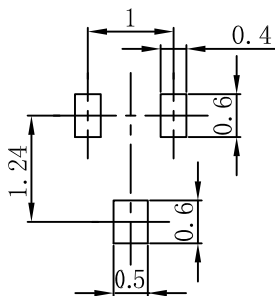


### SOT-523 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

### SOT-523 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.