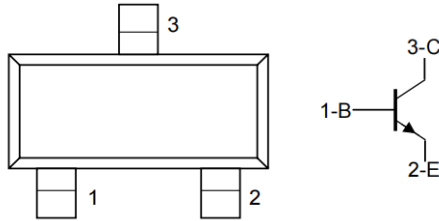


SOT-323



PIN1:Base PIN2:Emitter PIN3:Collector

Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (MMBT2907AW)
- Ideal for Low Power Amplification and Switching
- Marking Code:K3P

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

Parameter		Symbol	Value	Unit
Collector Base Voltage	MMBT2222W MMBT2222AW	V_{CBO}	60 75	V
Collector Emitter Voltage	MMBT2222W MMBT2222AW	V_{CEO}	30 40	V
Emitter Base Voltage	MMBT2222W MMBT2222AW	V_{EBO}	5 6	V
Collector Current		I_C	600	mA
Power Dissipation		P_{tot}	150	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 $V_{CE} = 10\text{ V}$, $I_C = 0.1\text{ mA}$ at $V_{CE} = 10\text{ V}$, $I_C = 1\text{ mA}$ at $V_{CE} = 10\text{ V}$, $I_C = 10\text{ mA}$ at $V_{CE} = 1\text{ V}$, $I_C = 150\text{ mA}$ at $V_{CE} = 10\text{ V}$, $I_C = 150\text{ mA}$ at $V_{CE} = 10\text{ V}$, $I_C = 500\text{ mA}$ MMBT2222W MMBT2222AW	h_{FE} h_{FE} h_{FE} h_{FE} h_{FE} h_{FE} h_{FE}	35 50 75 50 100 30 40	- - - - 300 - -	- - - - - - -
Collector Base Cutoff Current at $V_{CB} = 50\text{ V}$ at $V_{CB} = 60\text{ V}$ MMBT2222W MMBT2222AW	I_{CBO}	- -	100 100	nA
Emitter Base Cutoff Current at $V_{EB} = 3\text{ V}$	I_{EBO}	-	100	nA
Collector Base Breakdown Voltage at $I_C = 10\text{ }\mu\text{A}$ MMBT2222W MMBT2222AW	$V_{(BR)CBO}$	60 75	- -	V
Collector Emitter Breakdown Voltage at $I_C = 10\text{ mA}$ MMBT2222W MMBT2222AW	$V_{(BR)CEO}$	30 40	- -	V
Emitter Base Breakdown Voltage at $I_E = 10\text{ }\mu\text{A}$ MMBT2222W MMBT2222AW	$V_{(BR)EBO}$	5 6	- -	V
Collector Emitter Saturation Voltage at $I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$ at $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$ MMBT2222W MMBT2222AW MMBT2222W MMBT2222AW	$V_{CE(sat)}$	- - - -	0.4 0.3 1.6 1	V
Base Emitter Saturation Voltage at $I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$ at $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$ MMBT2222W MMBT2222AW MMBT2222W MMBT2222AW	$V_{BE(sat)}$	- 0.6 - -	1.3 1.2 2.6 2	V
Transition Frequency at $V_{CE} = 20\text{ V}$, $-I_E = 20\text{ mA}$, $f = 100\text{ MHz}$	f_T	300	-	MHz
Collector Output Capacitance at $V_{CB} = 10\text{ V}$, $f = 100\text{ KHz}$	C_{ob}	-	8	pF
Delay Time at $V_{CC} = 30\text{ V}$, $V_{BE(OFF)} = 0.5\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = 15\text{ mA}$	t_d	-	10	ns
Rise Time at $V_{CC} = 30\text{ V}$, $V_{BE(OFF)} = 0.5\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = 15\text{ mA}$	t_r	-	25	ns
Storage Time at $V_{CC} = 30\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = -I_{B2} = 15\text{ mA}$	t_{stg}	-	225	ns
Fall Time at $V_{CC} = 30\text{ V}$, $I_C = 150\text{ mA}$, $I_{B1} = -I_{B2} = 15\text{ mA}$	t_f	-	60	ns

Typical Characteristics

Fig. 1 Output Characteristics Curve

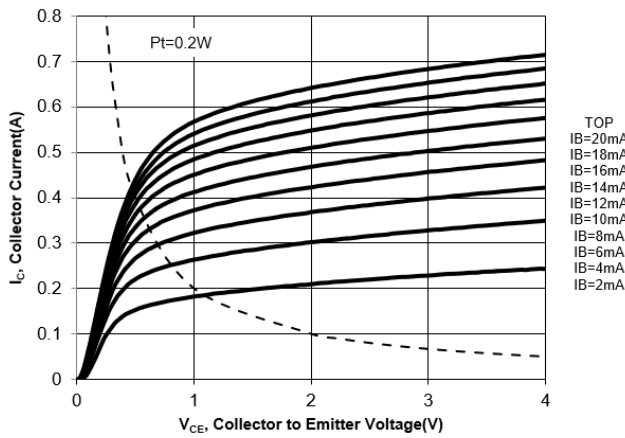


Fig. 2 Output Characteristics Curve

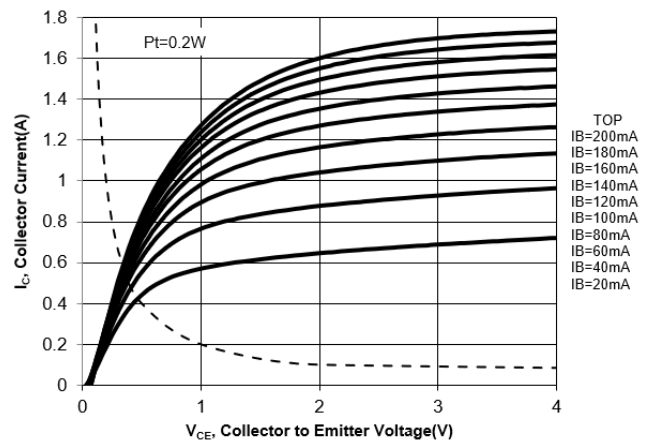


Fig. 3 Collector Current vs. Base to Emitter Voltage

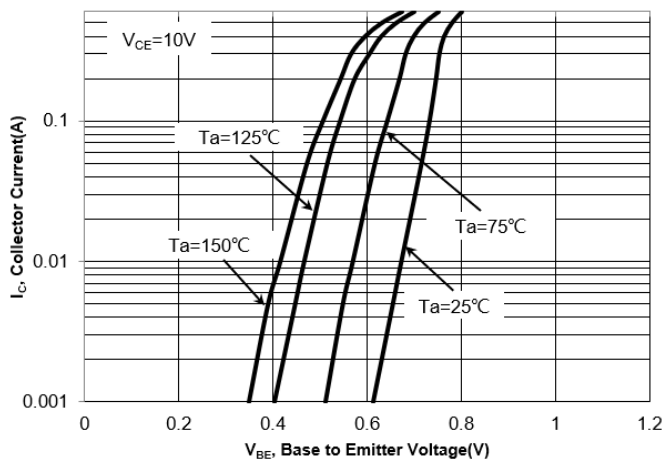


Fig. 4 h_{FE} , DC Current Gain vs. Collector Current

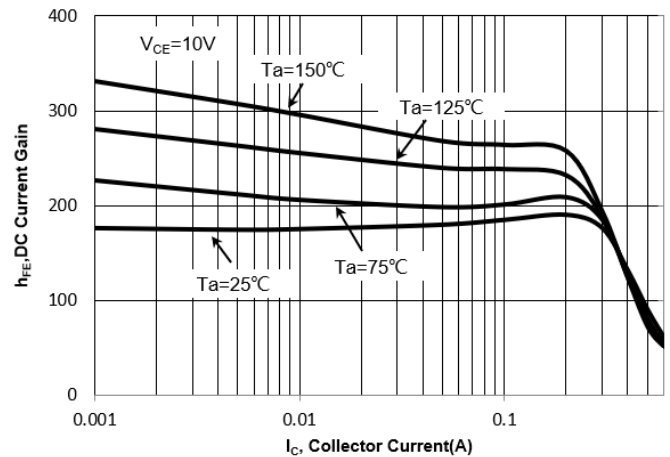


Fig. 5 $V_{BE(sat)}$ vs. Collector Current

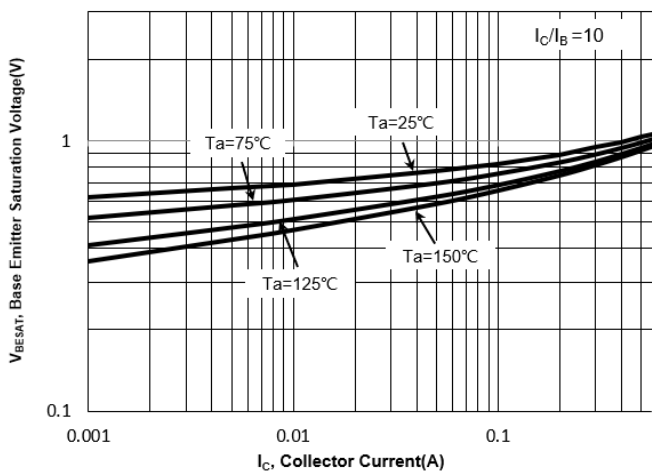
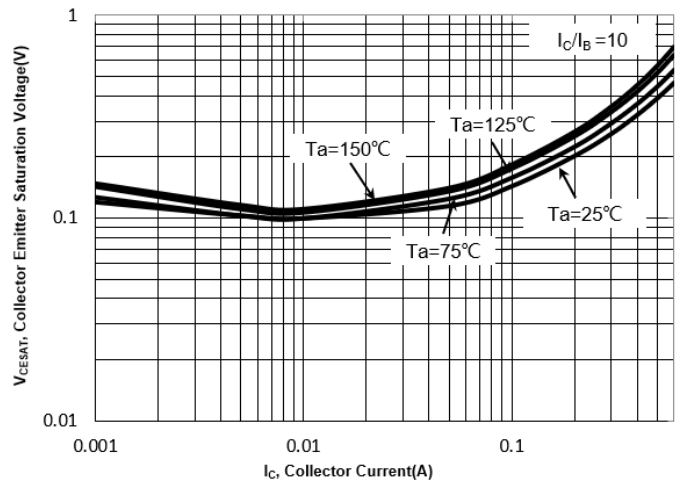
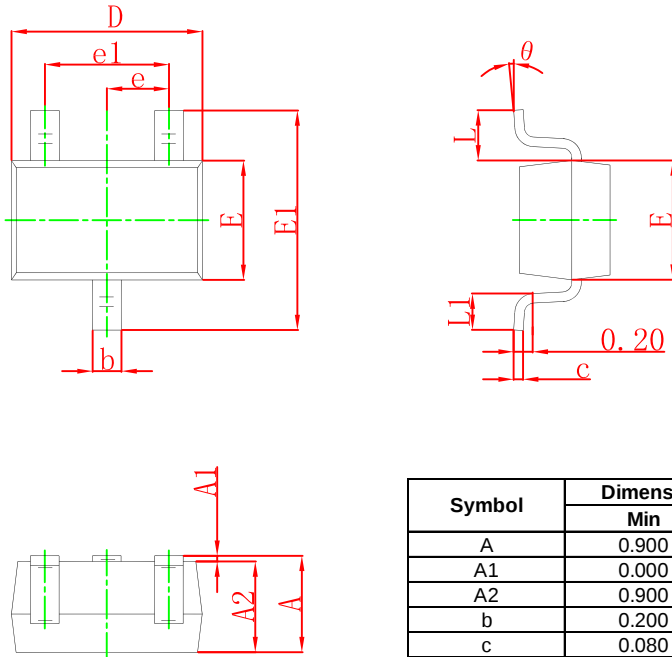


Fig. 6 $V_{CE(sat)}$ vs. Collector Current

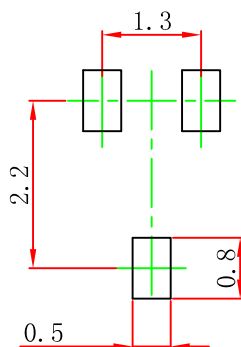


SOT-323 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
theta	0°	8°	0°	8°

SOT-323 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.