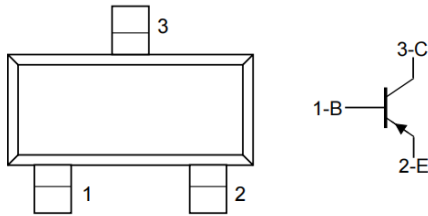


SOT-323



PIN1:Base PIN2:Emitter PIN3:Collector

Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (MMBT3904W)
- Ideal for Low Power Amplification and Switching
- Marking Code:K5N

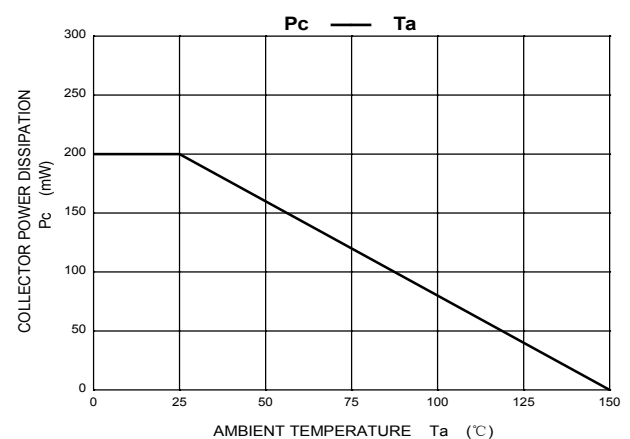
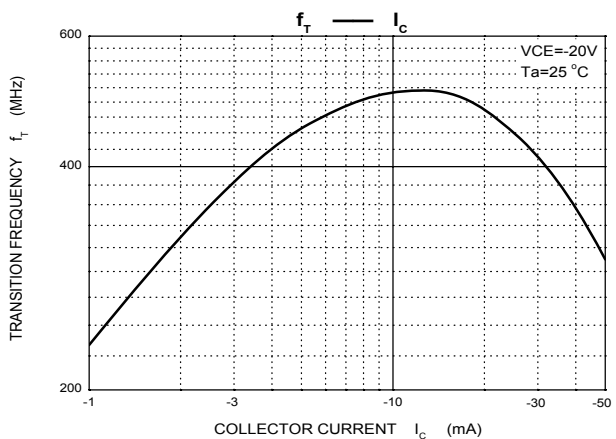
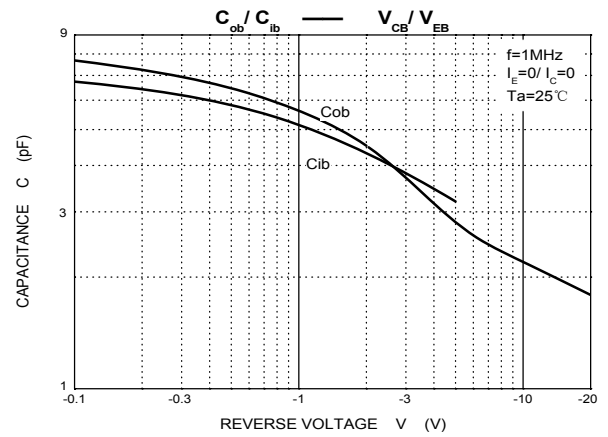
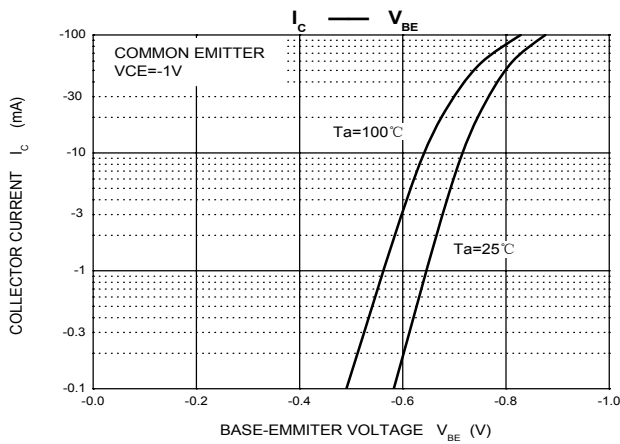
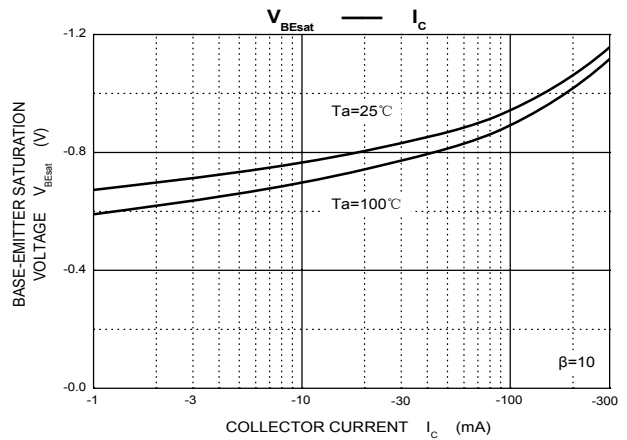
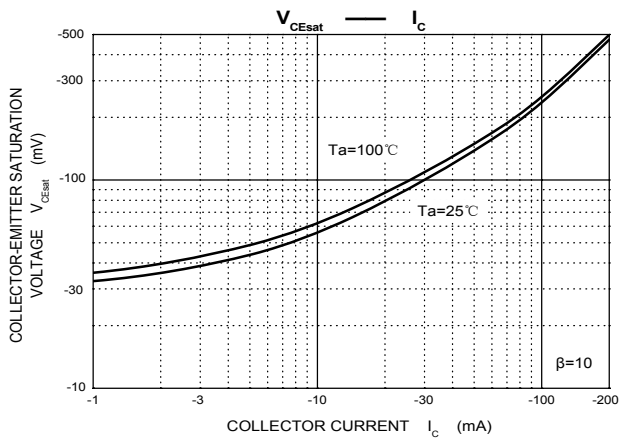
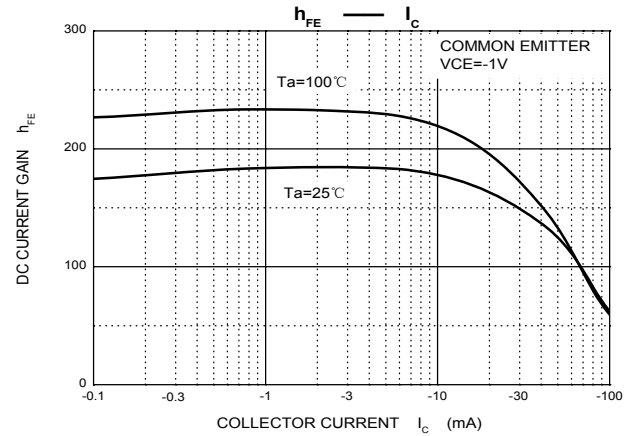
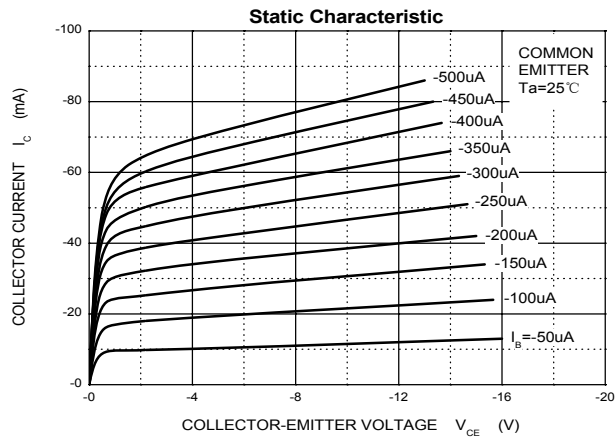
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CB0}$	40	V
Collector Emitter Voltage	$-V_{CEO}$	40	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current	$-I_C$	200	mA
Total Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to +150	$^\circ\text{C}$

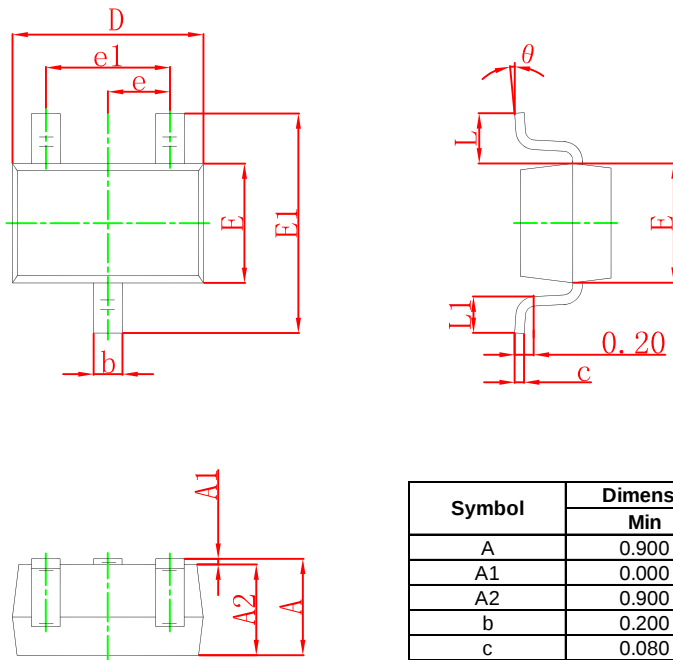
Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $-V_{CE} = 1\text{ V}$, $-I_C = 0.1\text{ mA}$	h_{FE}	60	-	-
at $-V_{CE} = 1\text{ V}$, $-I_C = 1\text{ mA}$	h_{FE}	80	-	-
at $-V_{CE} = 1\text{ V}$, $-I_C = 10\text{ mA}$	h_{FE}	100	300	-
at $-V_{CE} = 1\text{ V}$, $-I_C = 50\text{ mA}$	h_{FE}	60	-	-
at $-V_{CE} = 1\text{ V}$, $-I_C = 100\text{ mA}$	h_{FE}	30	-	-
Collector Emitter Cutoff Current at $-V_{CE} = 30\text{ V}$	$-I_{CES}$	-	50	nA
Emitter Base Cutoff Current at $-V_{EB} = 3\text{ V}$	$-I_{EBO}$	-	50	nA
Collector Base Breakdown Voltage at $-I_C = 10\text{ }\mu\text{A}$	$-V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage at $-I_C = 1\text{ mA}$	$-V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage at $-I_E = 10\text{ }\mu\text{A}$	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage at $-I_C = 10\text{ mA}$, $-I_B = 1\text{ mA}$ at $-I_C = 50\text{ mA}$, $-I_B = 5\text{ mA}$	$-V_{CE(sat)}$	- -	0.25 0.4	V
Base Emitter Saturation Voltage at $-I_C = 10\text{ mA}$, $-I_B = 1\text{ mA}$ at $-I_C = 50\text{ mA}$, $-I_B = 5\text{ mA}$	$-V_{BE(sat)}$	0.65 -	0.85 0.95	V
Transition Frequency at $-V_{CE} = 20\text{ V}$, $I_E = 10\text{ mA}$, $f = 100\text{ MHz}$	f_T	250	-	MHz
Collector Output Capacitance at $-V_{CB} = 10\text{ V}$, $f = 100\text{ KHz}$	C_{ob}	-	4.5	pF
Delay Time at $-V_{CC} = 3\text{ V}$, $-V_{BE(OFF)} = 0.5\text{ V}$, $-I_C = 10\text{ mA}$, $-I_{B1} = 1\text{ mA}$	t_d	-	35	ns
Rise Time at $-V_{CC} = 3\text{ V}$, $-V_{BE(OFF)} = 0.5\text{ V}$, $-I_C = 10\text{ mA}$, $-I_{B1} = 1\text{ mA}$	t_r	-	35	ns
Storage Time at $-V_{CC} = 3\text{ V}$, $-I_C = 10\text{ mA}$, $I_{B1} = -I_{B2} = -1\text{ mA}$	t_{stg}	-	225	ns
Fall Time at $-V_{CC} = 3\text{ V}$, $-I_C = 10\text{ mA}$, $I_{B1} = -I_{B2} = -1\text{ mA}$	t_f	-	75	ns

Typical Characteristics

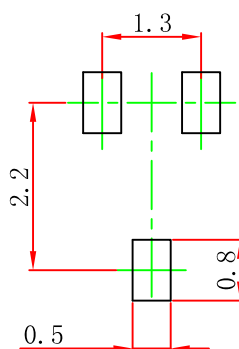


SOT-323 Package Outline Dimensions



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°	

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.