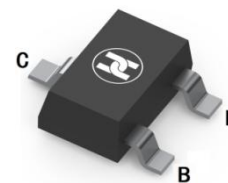
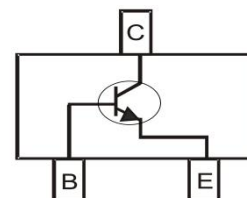


BIPOLAR TRANSISTOR (NPN)
FEATURES

- Complementary to MMST3906
- Epitaxial planar die construction
- Surface Mount device


SOT-323

MECHANICAL DATA

- Case: SOT-323
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 0.008 grams (approximate)

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~+150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

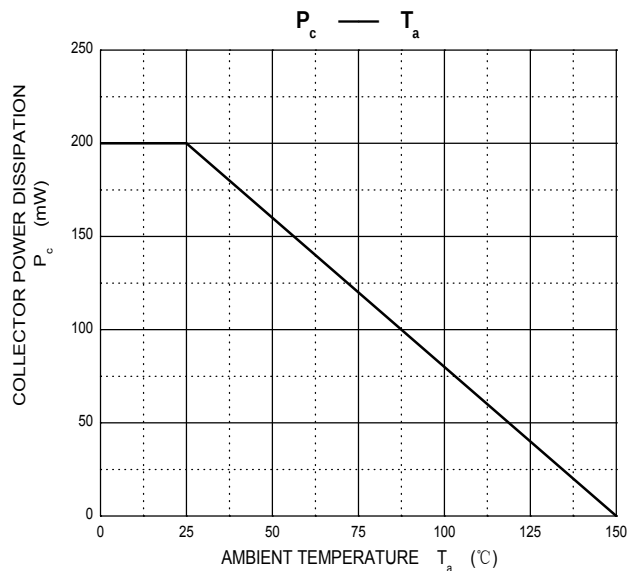
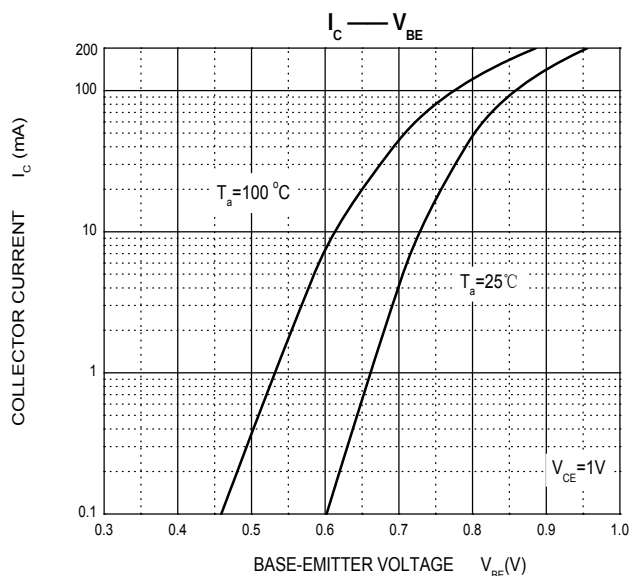
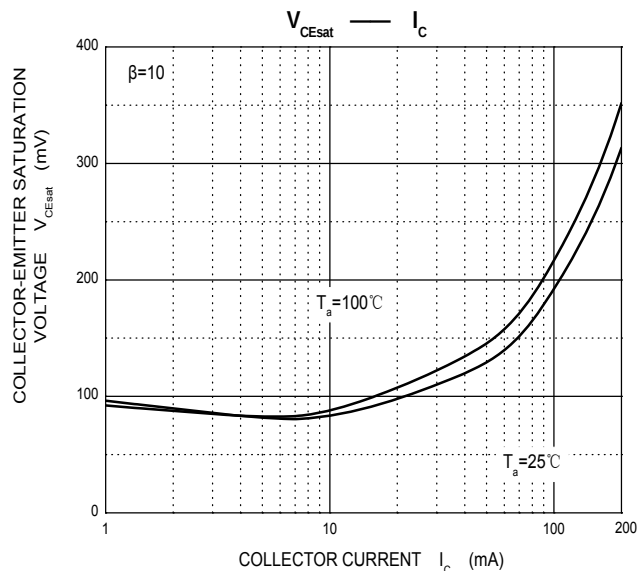
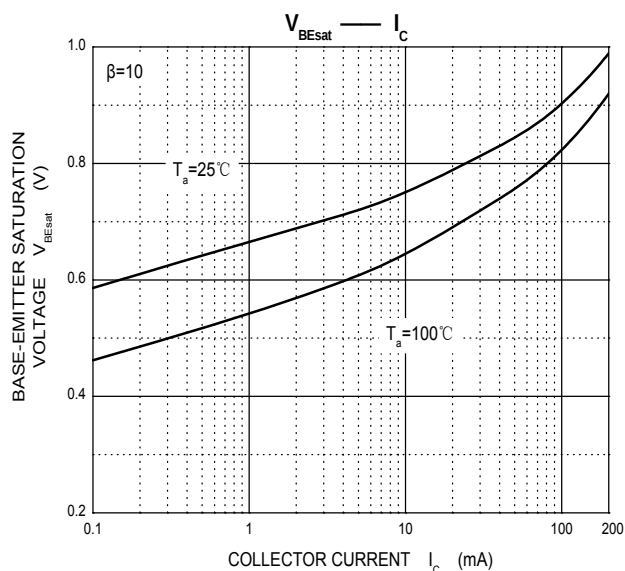
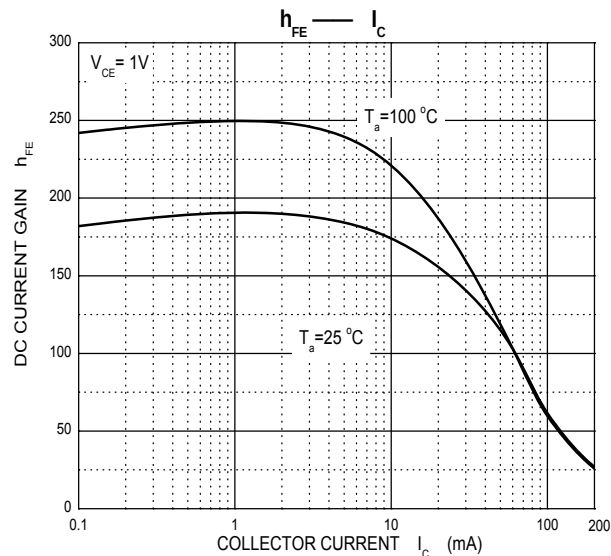
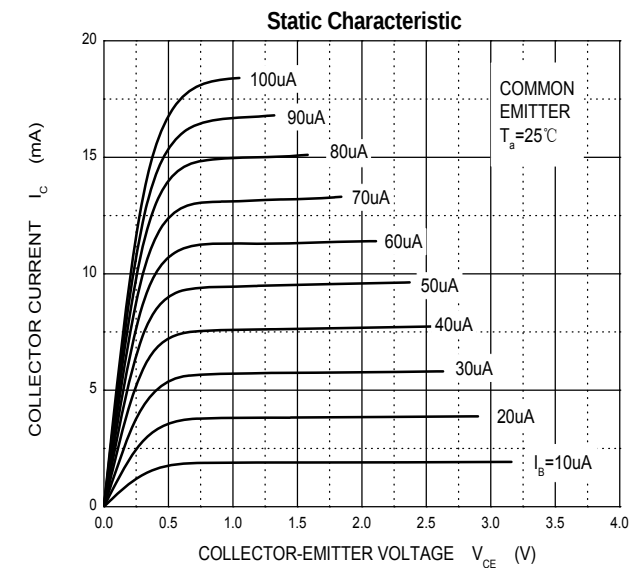
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}^*$	60			V	$I_C=10\mu\text{A}$, $I_E=0$
Collector-emitter breakdown voltage	$V_{(BR)CEO}^*$	40			V	$I_C=1\text{mA}$, $I_B=0$
Emitter-base breakdown voltage	$V_{(BR)EBO}^*$	5			V	$I_E=10\mu\text{A}$, $I_C=0$
Collector cut-off current	I_{CBO}^*			60	nA	$V_{CB}=60\text{V}$, $I_E=0$
Collector cut-off current	I_{CEX}^*			50	nA	$V_{CE}=30\text{V}$, $V_{BE(OFF)}=3\text{V}$
DC current gain	h_{FE}^*	40				$V_{CE}=1\text{V}$, $I_C=0.1\text{mA}$
		70				$V_{CE}=1\text{V}$, $I_C=1\text{mA}$
		100	300			$V_{CE}=1\text{V}$, $I_C=10\text{mA}$
		60				$V_{CE}=1\text{V}$, $I_C=50\text{mA}$
Collector-emitter saturation voltage	$V_{CE(sat)}^*$			0.25	V	$I_C=10\text{mA}$, $I_B=1\text{mA}$
				0.3	V	$I_C=50\text{mA}$, $I_B=5\text{mA}$
Base-emitter saturation voltage	$V_{BE(sat)}^*$			0.85	V	$I_C=10\text{mA}$, $I_B=1\text{mA}$
				0.95	V	$I_C=50\text{mA}$, $I_B=5\text{mA}$
Transition frequency	f_T	300			MHz	$V_{CE}=20\text{V}$, $I_C=10\text{mA}$, $f=100\text{MHz}$
Output capacitance	C_{ob}			4	pF	$V_{CB}=5\text{V}$, $I_E=0$, $f=1\text{MHz}$
Input capacitance	C_{ib}			8	pF	$V_{EB}=0.5\text{V}$, $I_E=0$, $f=1\text{MHz}$
Delay time	t_d			35	ns	$V_{CC}=3\text{V}$, $I_C=10\text{mA}$, $V_{BE(OFF)}=0.5\text{V}$, $I_{B1}=1\text{mA}$
Rise time	t_r			35	ns	
Storage time	t_s			225	ns	$V_{CC}=3\text{V}$, $I_C=10\text{mA}$
Fall time	t_f			75	ns	$I_{B1}=I_{B2}=1\text{mA}$

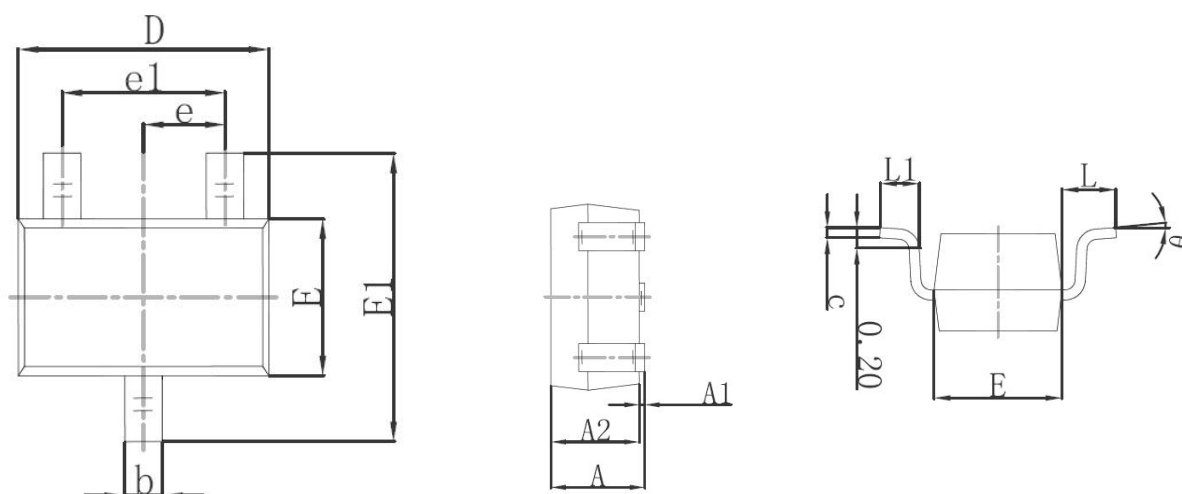
*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$;

Marking: K2N

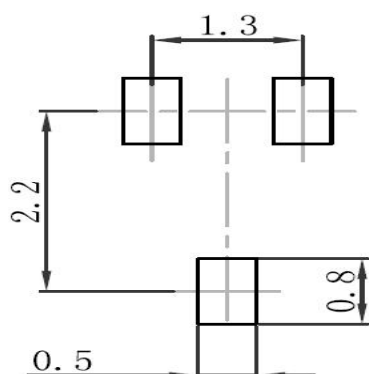
BIPOLAR TRANSISTOR (NPN)

Typical Characteristics

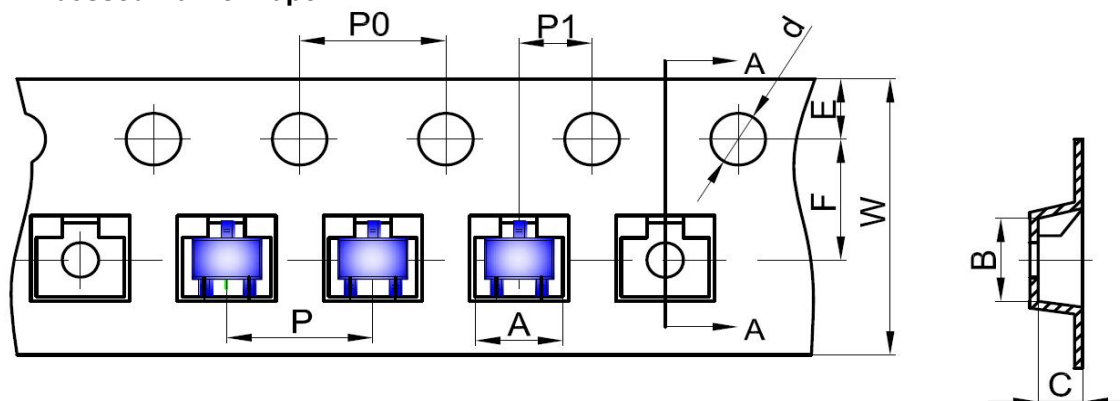


BIPOLAR TRANSISTOR (NPN)
SOT-323 Package Outline Dimensions


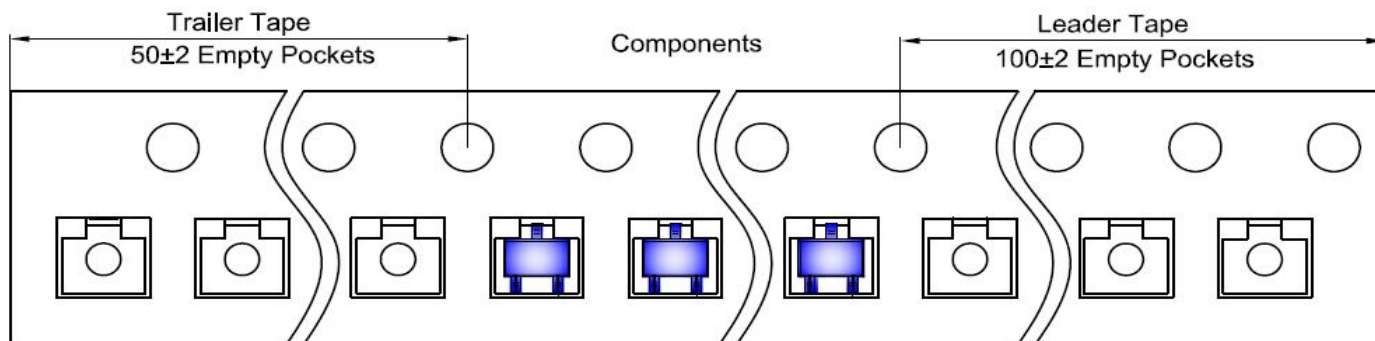
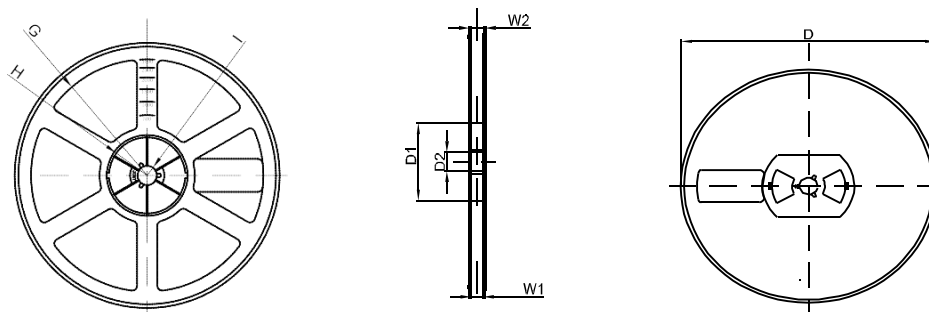
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650TYP		0.026TYP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

BIPOLAR TRANSISTOR (NPN)
SOT-323 Tape and Reel
SOT-323 Embossed Carrier Tape


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-323	2.25	2.55	1.19	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-323 Tape Leader and Trailer

SOT-323 Reel


DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø178	54.40	13.00	R78	R25.60	R6.50	9.50	12.30
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1