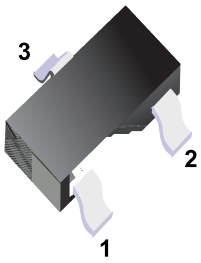
NPN Silicon Epitaxial Planar Transistor



1.Base
2.Emitter
3.Collector

SOT-323

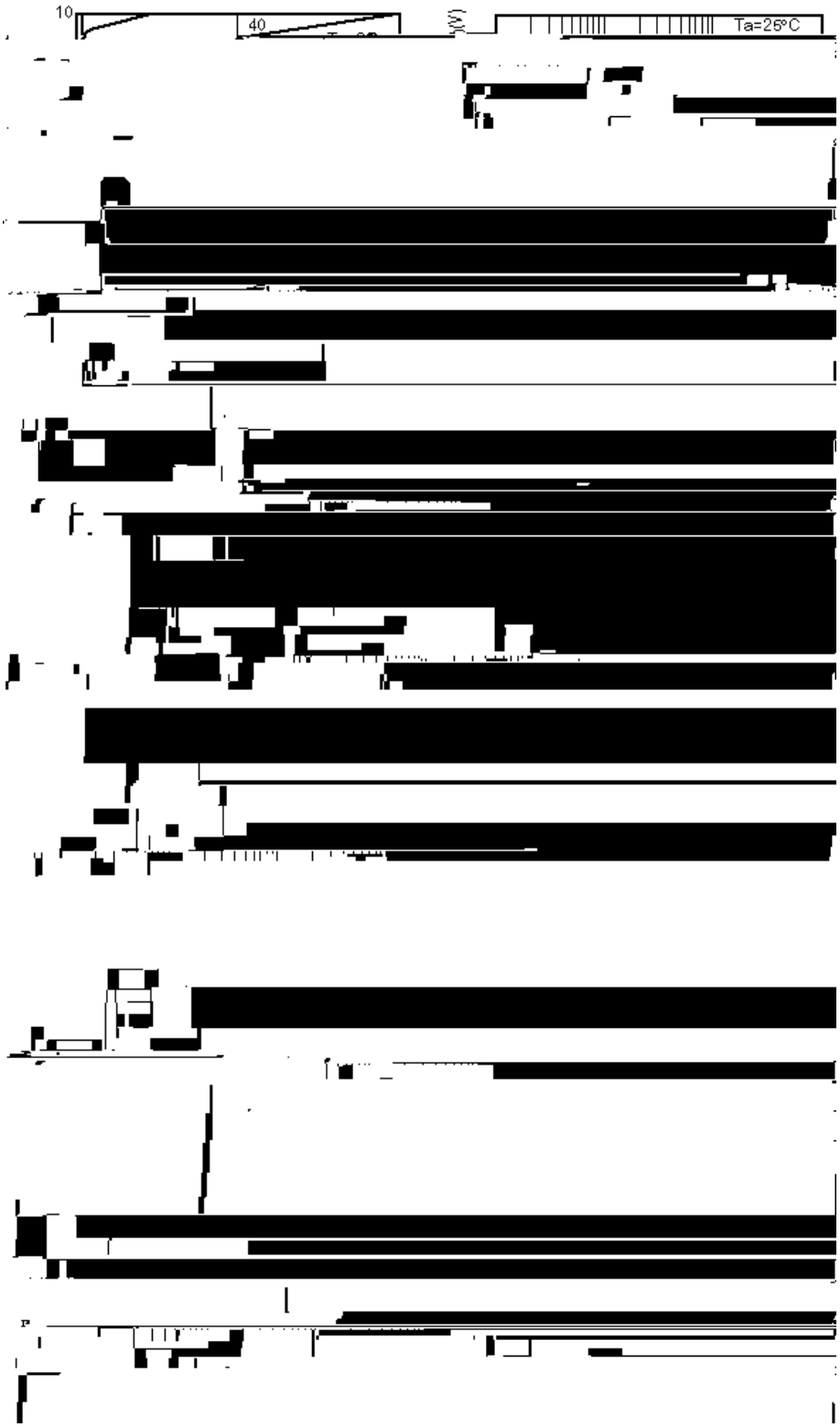
Marking Code	
MMBT3904W	**1E**

Absolute Maximum Ratings (Ta = 25°C)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	60	V
Collector Emitter Voltage	V_{CEO}	40	V
Emitter Base Voltage	V_{EBO}	6	V
Collector Current	I_C	200	mA
Total Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	- 55 to + 150	°C

Characteristics at Ta = 25°C

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at V_{CE} = 1 V, I_C = 0.1 mA at V_{CE} = 1 V, I_C = 1 mA at V_{CE} = 1 V, I_C = 10 mA at V_{CE} = 1 V, I_C = 50 mA at V_{CE} = 1 V, I_C = 100 mA	 h_{FE} h_{FE} h_{FE} h_{FE} h_{FE}	 40 70 100 60 30	 - - 300 - -	 - - - - -
Collector Emitter Cutoff Current at V_{CE} = 30 V	I_{CES}	-	50	nA
Emitter Base Cutoff Current at V_{EB} = 3 V	I_{EBO}	-	50	nA
Collector Base Breakdown Voltage at I_C = 10 µA	$V_{(BR)CBO}$	60	-	V
Collector Emitter Breakdown Voltage at I_C = 1 mA	$V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage at I_E = 10 µA	$V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage at I_C = 10 mA, I_B = 1 mA at I_C = 50 mA, I_B = 5 mA	$V_{CE(sat)}$	- -	0.2 0.3	V
Base Emitter Saturation Voltage at I_C = 10 mA, I_B = 1 mA at I_C = 50 mA, I_B = 5 mA	$V_{BE(sat)}$	0.65 -	0.85 0.95	V
Transition Frequency at V_{CE} = 20 V, $-I_E$ = 10 mA, f = 100 MHz	f_T	300	-	MHz
Collector Output Capacitance at V_{CB} = 10 V, f = 100 KHz	C_{ob}	-	4	pF
Delay Time at V_{CC} = 3 V, $V_{BE(OFF)}$ = 0.5 V, I_C = 10 mA, I_{B1} = 1 mA	t_d	-	35	ns
Rise Time at V_{CC} = 3 V, $V_{BE(OFF)}$ = 0.5 V, I_C = 10 mA, I_{B1} = 1 mA	t_r	-	35	ns
Storage Time at V_{CC} = 3 V, I_C = 10 mA, I_{B1} = $-I_{B2}$ = 1 mA	t_{stg}	-	200	ns

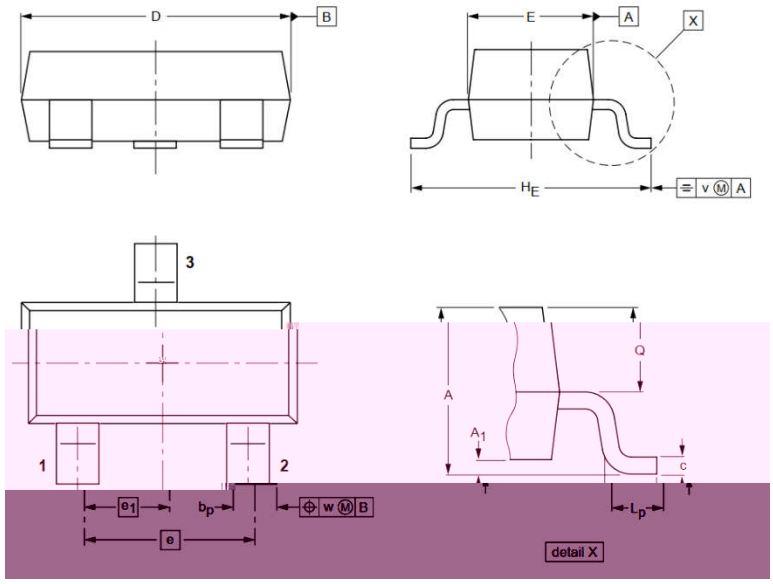

10
40
Ta=25°C

Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-323	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

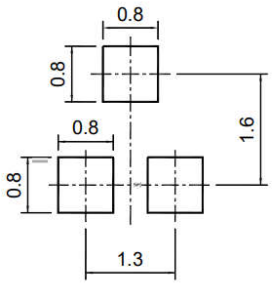
Package Dimensions

SOT-323



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.8	1.1	32	43
A1	0.1		4	
bp	0.3	0.4	12	16
C	0.10	0.25	4	10
D	1.8	2.2	71	87
E	1.15	1.35	45	53
E	1.3		51	

The recommended mounting pad size



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