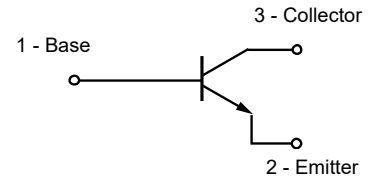


Feature

- This device is Pb-Free, Halogen Free/BFR Free and Rohs compliant.



Mechanical Characteristics

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260°C
- Device meets MSL 1 requirements
- Pure tin plating: 7 ~ 17 um
- Pin flatness : ≤3mil

Structure

NPN epitaxial planar silicon transistor

Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter -Base Voltage	V_{EBO}	6	V
Collector Current-Continuous	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-55~+150	°C
Thermal resistance From junction to ambient	$R_{\theta JA}$	625	°C/W

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Max.	Units
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	60		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1mA, I_B=0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6		V
Collector cut-off current	I_{CEX}	$V_{CE}=30V, V_{EB(off)}=3V$		50	nA
Collector cut-off current	I_{CBO}	$V_{CB}=60V, I_E=0$		100	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=5V, I_C=0$		100	nA
DC current gain	$h_{FE(1)}$	$V_{CE}=1V, I_C=10mA$	100	300	
	$h_{FE(2)}$	$V_{CE}=1V, I_C=50mA$	60		
	$h_{FE(3)}$	$V_{CE}=1V, I_C=100mA$	30		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=50mA, I_B=5mA$		0.30	V
Base -emitter saturation voltage	$V_{BE(sat)}$	$I_C=50mA, I_B=5mA$		0.95	V
Transition frequency	f_T	$V_{CE}=20V, I_C=10mA, f=100MHz$	300		MHz
Delay time	t_d	$V_{CC}=3V, V_{BE(off)}=-0.5V, I_C=10mA, I_{B1}=1mA$		35	nS
Rise time	t_r	$V_{CC}=3V, V_{BE(off)}=-0.5V, I_C=10mA, I_{B1}=1mA$		35	nS
Storage time	t_s	$V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA$		200	nS
Fall time	t_f	$V_{CC}=3V, I_C=10mA, I_{B1}=I_{B2}=1mA$		50	nS

Typical Characteristics

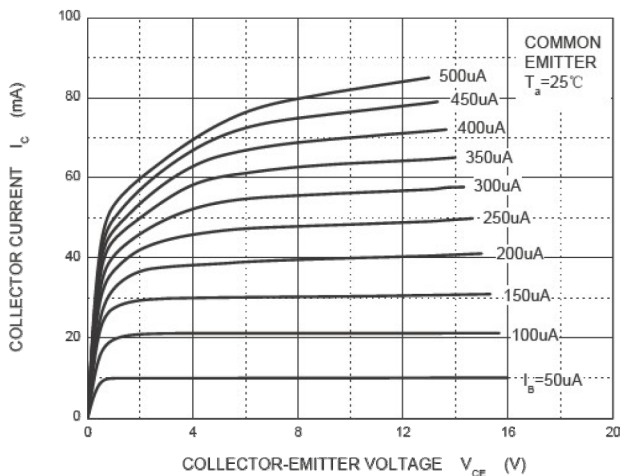


Fig 1. Static Characteristic

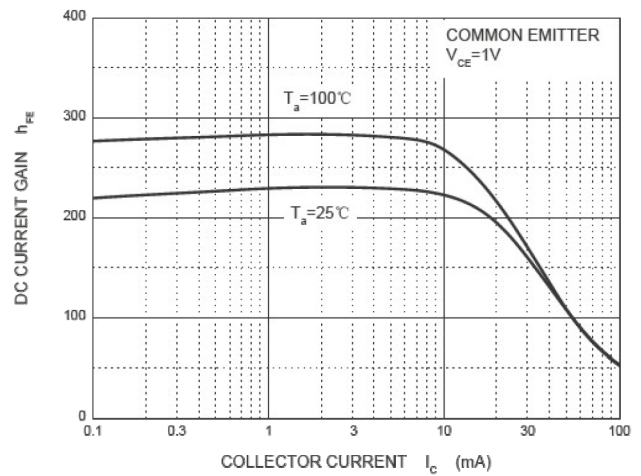


Fig 2. h_{FE} ----- I_C

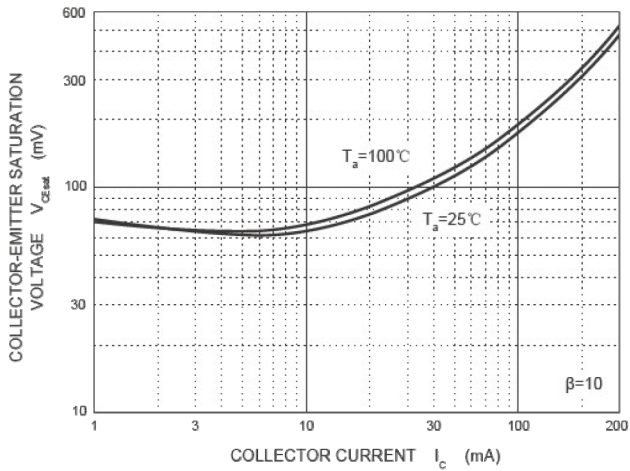


Fig 3. V_{CEsat} — I_c

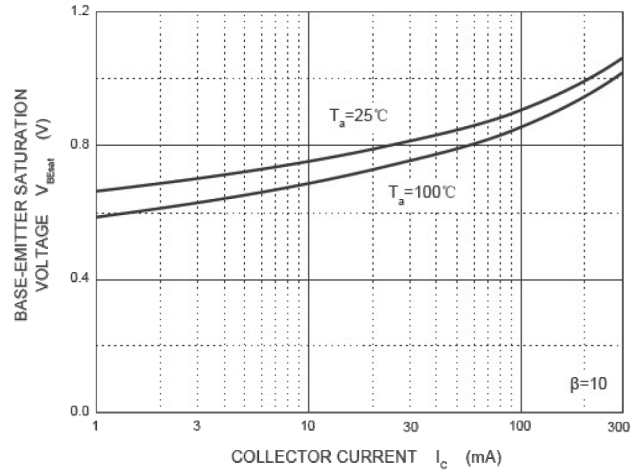


Fig 4. V_{BEsat} — I_c

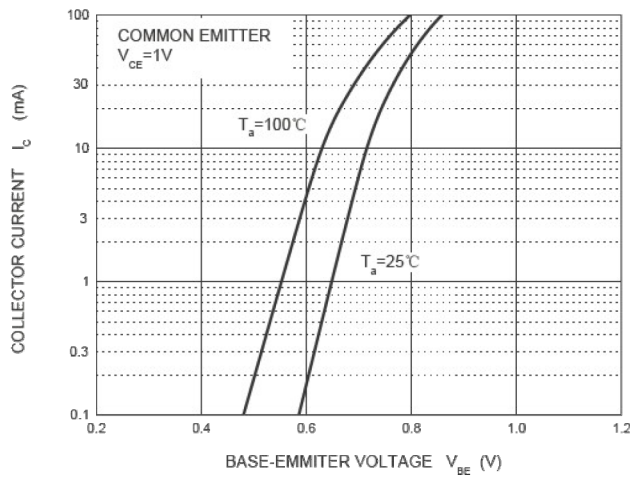


Fig 5. I_c — V_{BE}

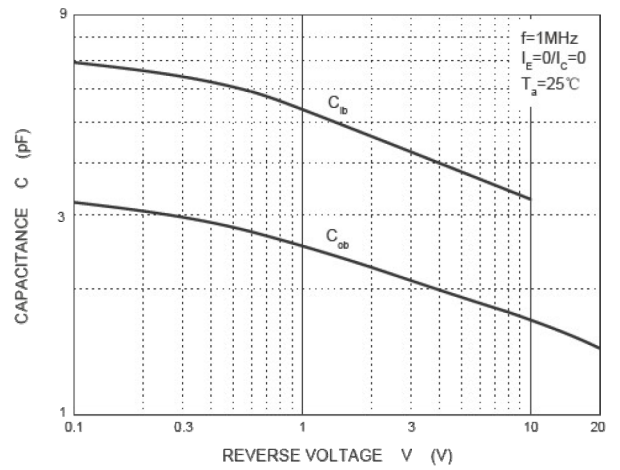


Fig 6. C_{ob}/C_{ib} — V_{CB}/V_{EB}

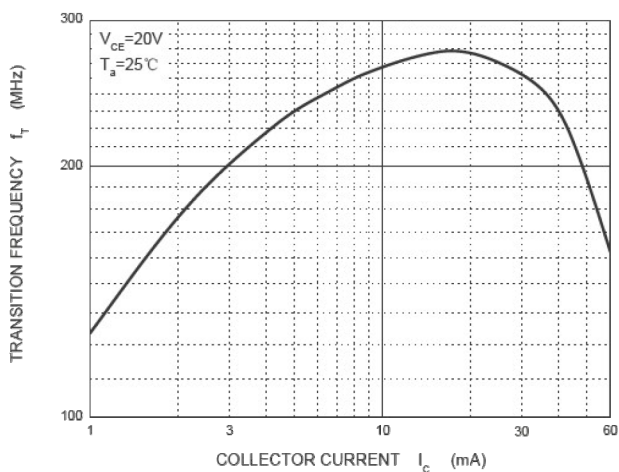


Fig 7. f_T — I_c

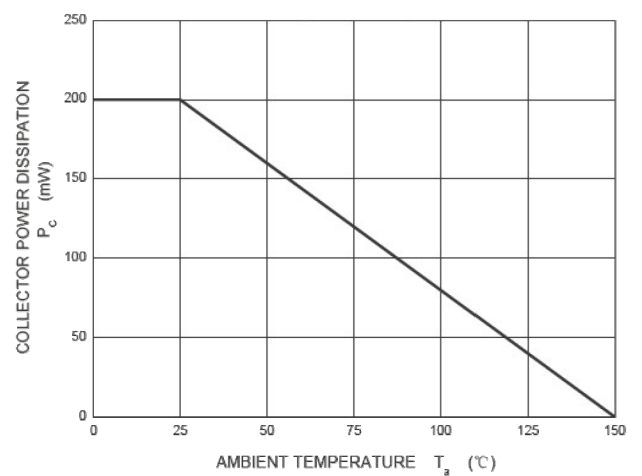
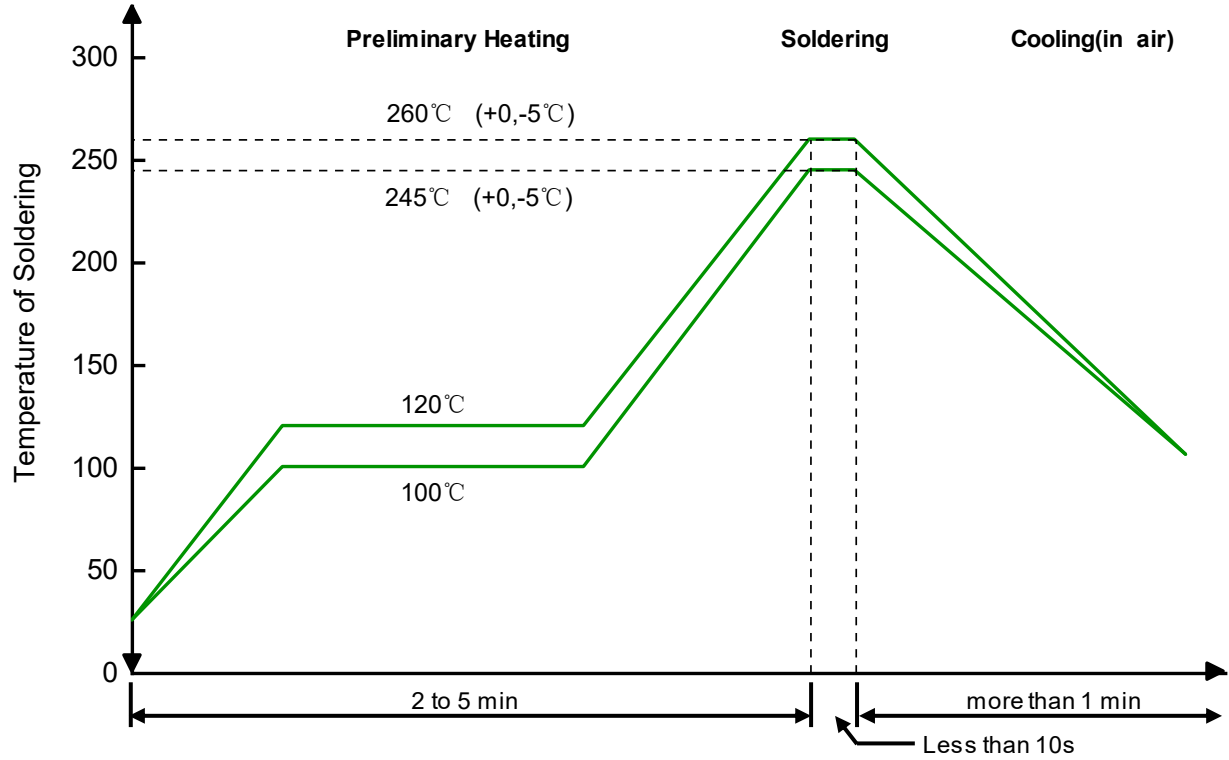


Fig 8. P_c — T_a

Solder Reflow Recommendation

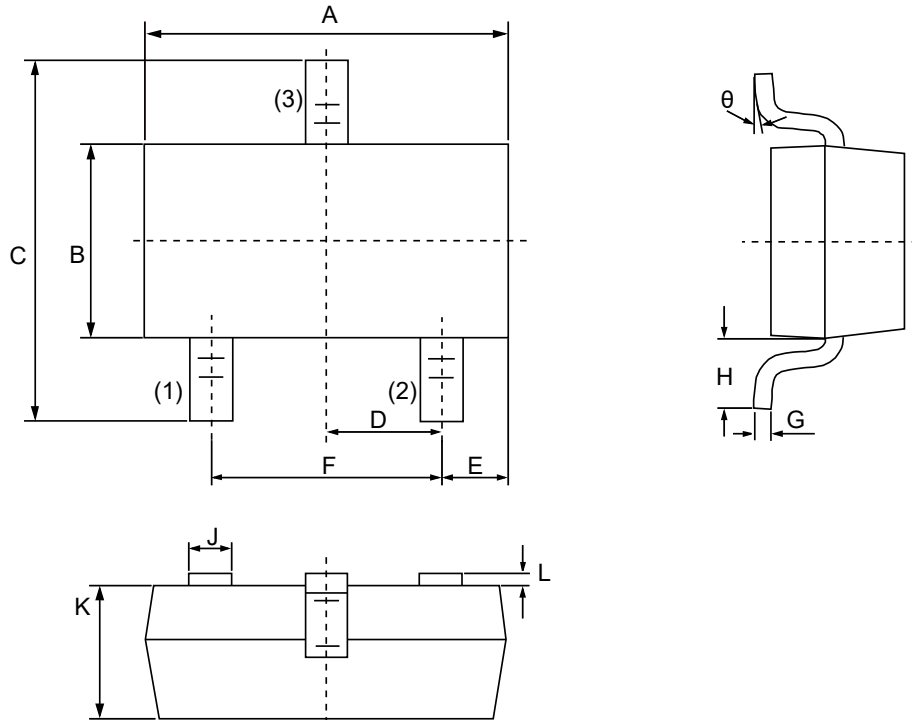


Remark: Pb free for 260°C; Pb for 245°C.

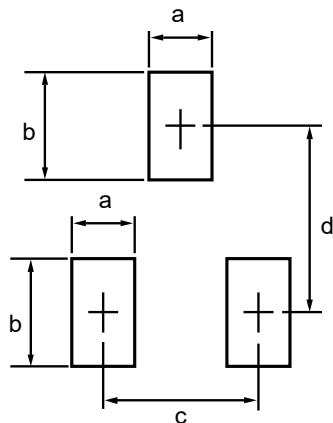
Ordering information

Device	Package	Reel	Shipping
PT23T3904	SOT-23 (Pb-Free)	7"	3000 / Tape & Reel

Product dimension(SOT-23)

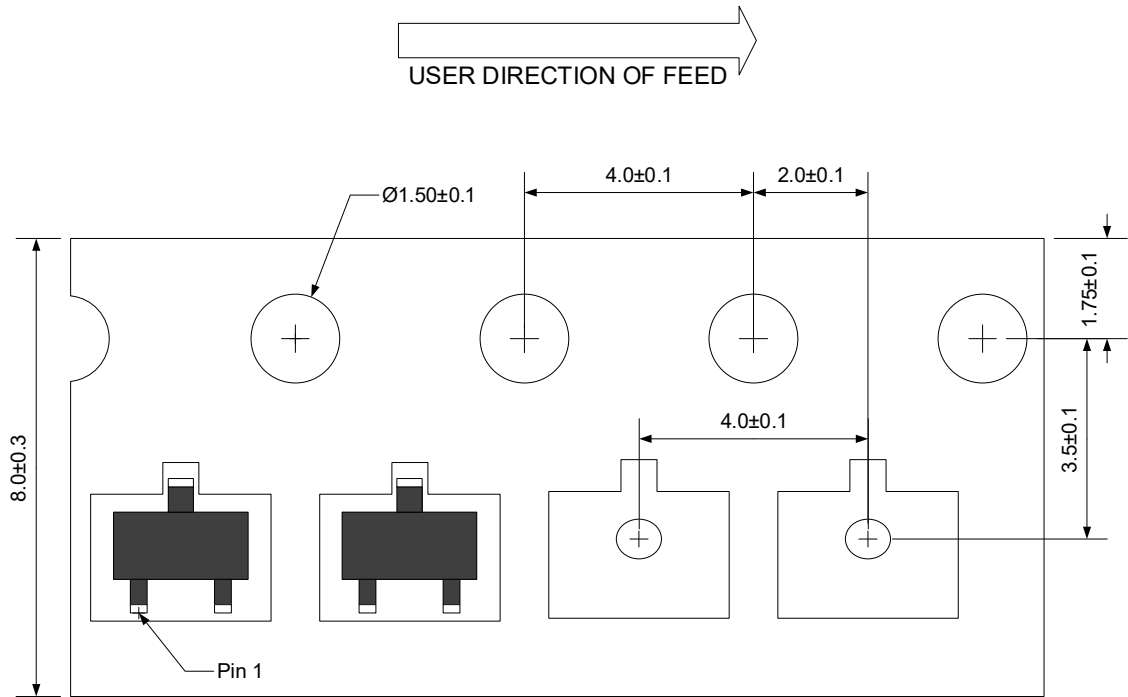


Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.80	3.00	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	2.10	2.55	0.0830	0.1004
D	0.89	1.02	0.0350	0.0401
E	0.45	0.60	0.0177	0.0236
F	1.78	2.04	0.0701	0.0807
G	0.08	0.177	0.0031	0.0070
H	0.45	0.60	0.0180	0.0236
J	0.37	0.50	0.0150	0.0200
K	0.89	1.15	0.0350	0.0452
L	0.000	0.100	0.0000	0.0040
θ	0°	10°	0°	10°



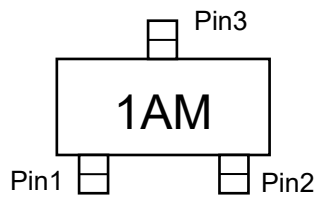
Dim	Millimeters	
	MIN	MAX
a	--	0.7
b	--	1.2
c	--	2.04
d	--	2.2

Load with information




Unit:mm

Marking information




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