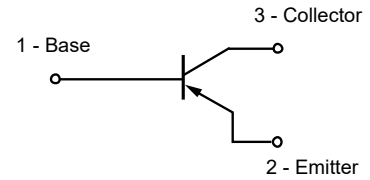


Feature

- 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

PNP epitaxial planar silicon transistor

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1.0mA, I_B=0$	-40			V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10uA, I_E=0$	-60			V
Emitter -Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10uA, I_C=0$	-6.0			V
Collector Current DC	I_C			-200		mA
Base Cutoff Current	I_{BL}	$V_{CE}=-30V, V_{EB}=-3.0V$			-50	nA
Collector Cutoff Current	I_{CEX}	$V_{CE}=-30V, V_{EB}=-3.0V$			-50	nA

Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Total Device Dissipation $T_A=25^\circ C$	P_D	150	mW
Operating Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal resistance From junction to ambient	$R_{\theta JA}$	625	°C/W

Absolute maximum rating@25°C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
DC Current Gain	H _{FE}	I _C =-0.1mA, V _{CE} =-1.0V	60		-	-
		I _C =-1.0mA, V _{CE} =-1.0V	80		-	
		I _C =-10mA, V _{CE} =-1.0V	100		300	
		I _C =-50mA, V _{CE} =-1.0V	60		-	
		I _C =-100mA, V _{CE} =-1.0V	30		-	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =-10mA, I _B =-1.0mA	-		-0.25	V
		I _C =-50mA, I _B =-5.0mA	-		-0.4	
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C =-10mA, I _B =-1.0mA	-0.65		-0.85	V
		I _C =-50mA, I _B =-5.0mA	-		-0.95	

Small-Signal Characteristics

Parameter	Symbol	Conditions	Min.	Max.	Units
Current-Gain-Bandwidth Product	f _T	I _C =-10mA, V _{CE} =-20V, f=100MHz	250	-	MHz
Output Capacitance	C _{obo}	V _{CB} =-5.0V, I _E =0, f=1.0MHz	-	4.5	pF
Input Capacitance	C _{ibo}	V _{EB} =-0.5V, I _C =0, f=1.0MHz	-	10	pF
Input Impedance	h _{ie}	I _C =-1.0mA, V _{CE} =-10V, f=1.0kHz	2.0	12	kΩ
Voltage Feedback Ratio	h _{re}	I _C =-1.0mA, V _{CE} =-10V, f=1.0kHz	0.1	10	X 10 ⁻⁴
Small-Signal Current Gain	h _{fe}	I _C =-1.0mA, V _{CE} =-10V, f=1.0kHz	100	400	-
Output Admittance	h _{oe}	I _C =-1.0mA, V _{CE} =-10V, f=1.0kHz	3.0	60	umhos
Noise Figure	NF	V _{CE} =5.0V, I _C =0.1mA, f=1.0kHz R _S =1.0kΩ	-	4.0	dB

Switching Characteristics

Parameter	Symbol	Conditions	Min.	Max.	Units
Delay Time	t _d	V _{CC} =-3.0V, V _{BE} =0.5V.	-	35	ns
Rise Time	t _r	I _C =-10mA, I _{B1} =-1.0mA	-	35	
Storage Time	t _s	V _{CC} =-3.0V	-	225	
Fall Time	t _f	I _C =-10mA, I _{B1} =I _{B2} =-1.0mA	-	75	

Typical Characteristics

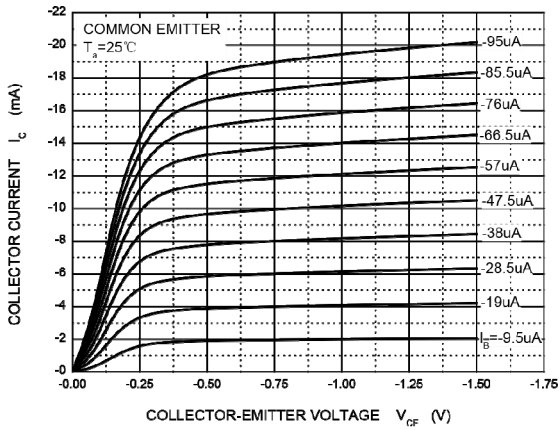


Fig 1. Static Characteristic

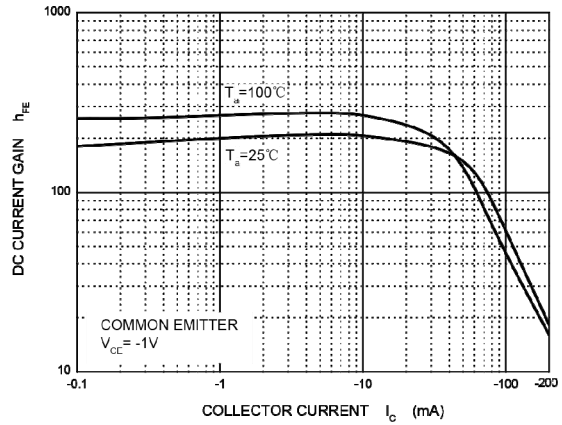


Fig 2. h_{FE} — I_c

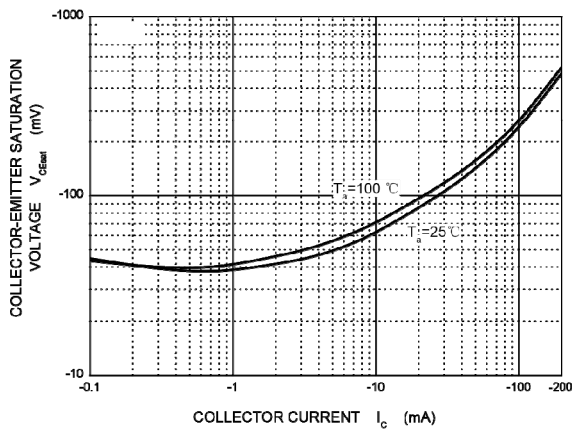


Fig 3. $V_{CE(sat)}$ — I_c

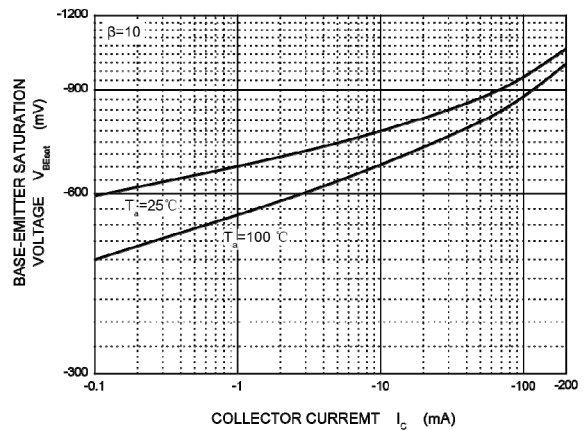


Fig 4. $V_{BE(sat)}$ — I_c

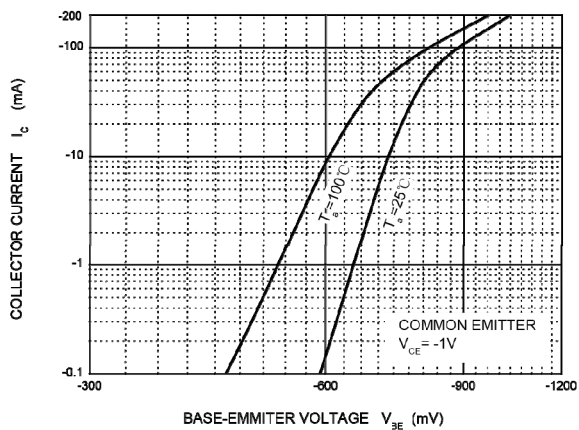


Fig 5. I_c — V_{BE}

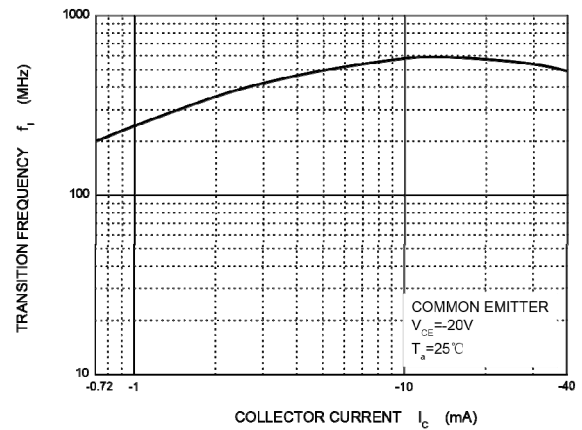


Fig 6. f_T — I_c

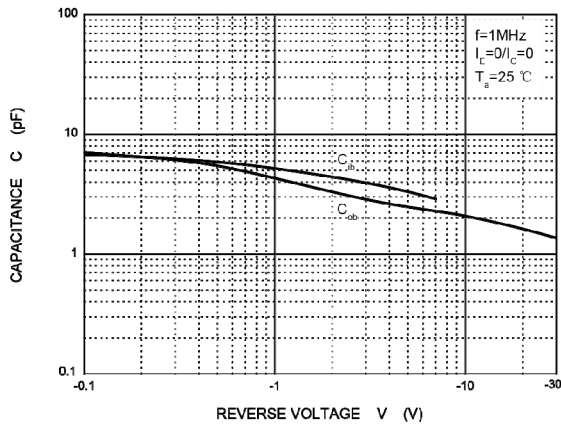


Fig 7. C_{ob}/C_{ib} — V_{CB}/V_{EB}

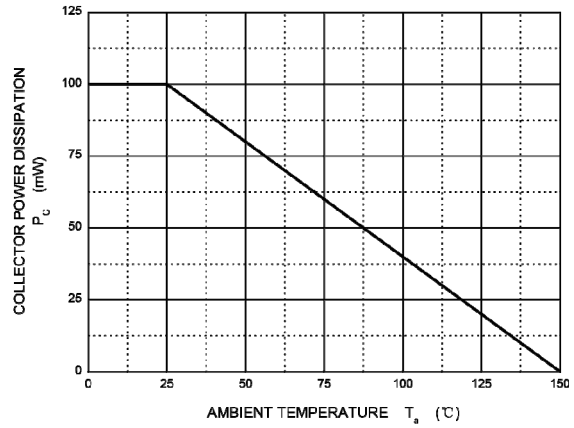
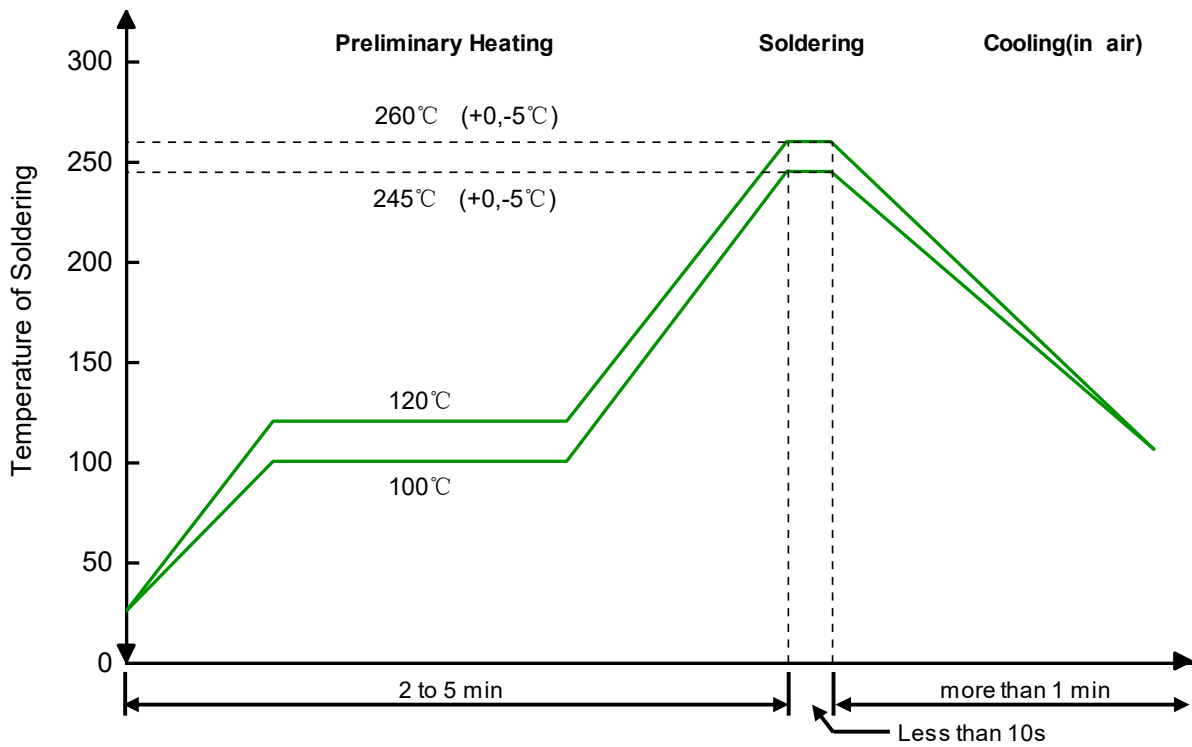


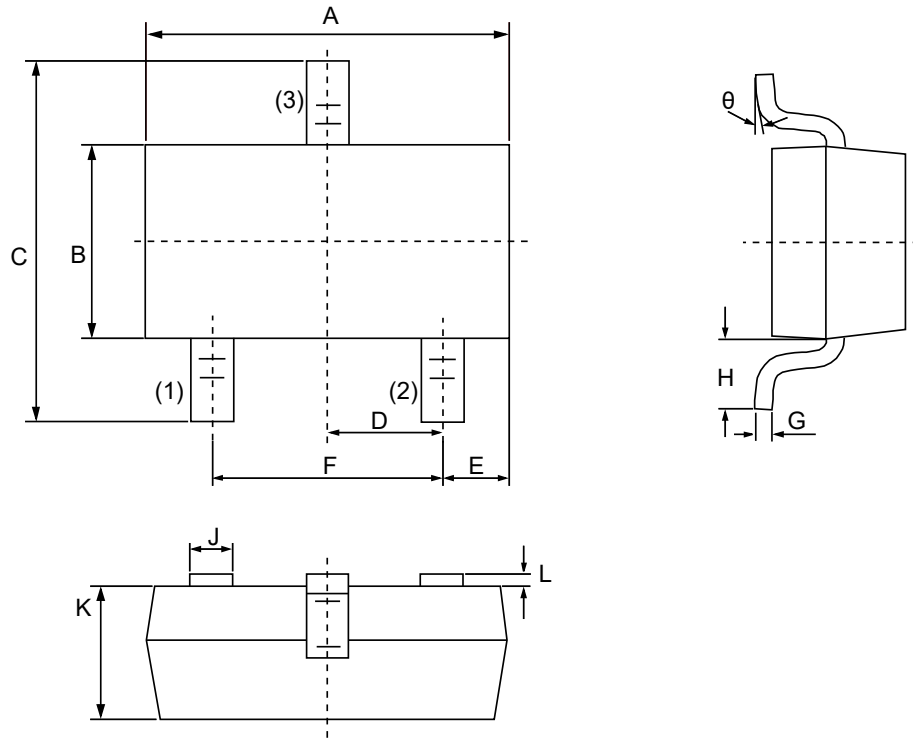
Fig 8. P_c — T_a

Solder Reflow Recommendation

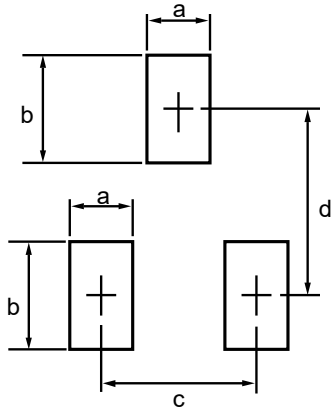


Remark: Pb free for 260°C; Pb for 245°C.

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	2.50	0.0830	0.0984
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	0.085	0.177	0.0034	0.0070
H	0.45	0.60	0.0180	0.0236
J	0.37	0.50	0.0150	0.0200
K	0.89	1.11	0.0350	0.0440
L	0.013	0.100	0.0005	0.0040
θ	0°	10°	0°	10°

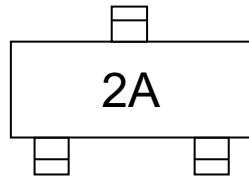


Dim	Millimeters	
	MIN	MAX
a	--	0.7
b	--	1.2
c	--	2.04
d	--	2.2

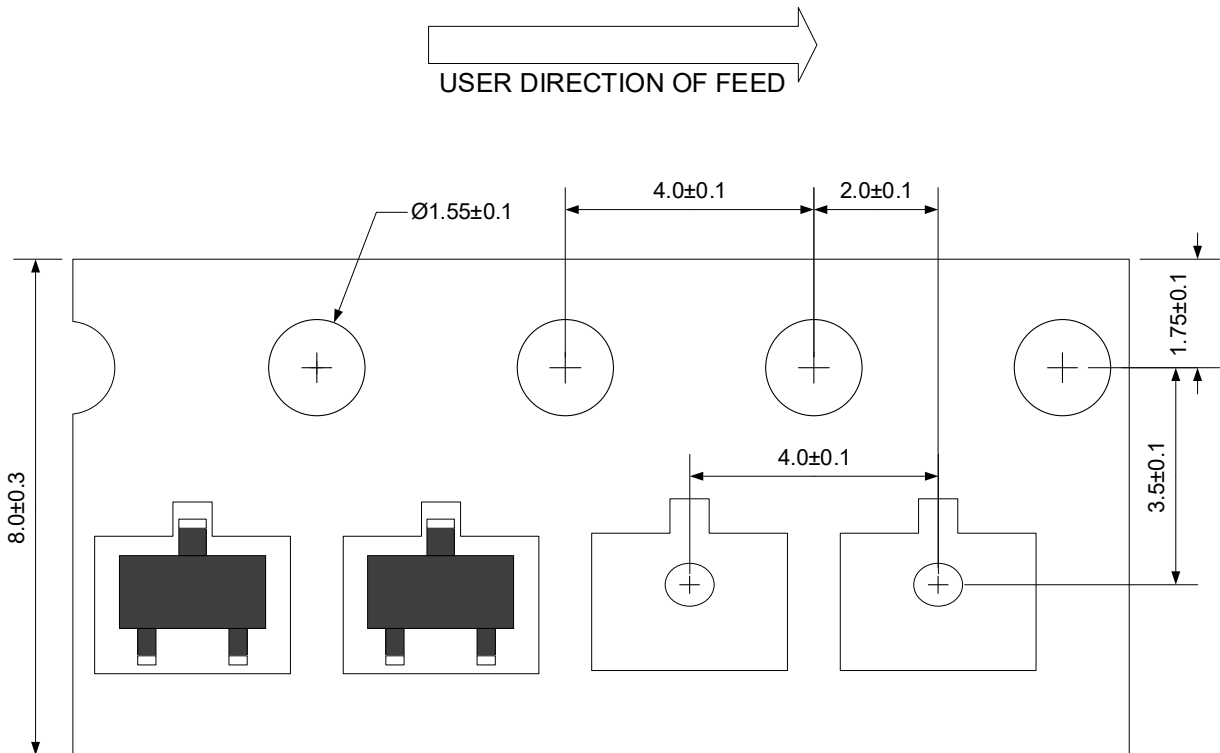
Ordering information

Device	Package	Shipping
PT23T3906	SOT-23	3000 / Tape & Reel

Marking information




Load with information



Unit: mm


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