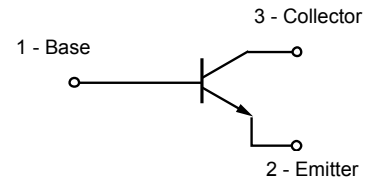


### Feature

- 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 (Resistor built-in type)

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$BV_{CBO}$	40	-	-	V	$I_C=100\mu A, I_E=0$
$BV_{CEO}$	20	-	-	V	$I_C=1mA, I_B=0$
$BV_{EBO}$	5	-	-	V	$I_E=100\mu A, I_C=0$
$I_{CBO}$	-	-	100	nA	$V_{CB}=25V, I_E=0$
$I_{EBO}$	-	-	100	nA	$V_{BE}=3V, I_C=0$
$V_{CE(sat)}$	-	-	0.6	V	$I_C=500mA, I_B=50mA$
$V_{BE(sat)}$	-	-	1.2	V	$I_C=500mA, I_B=50mA$
$V_{BE(on)}$	-	-	0.9	V	$V_{CE}=1V, I_C=10mA$
$h_{FE1}$	112	180	300		$V_{CE}=1V, I_C=50mA$
$h_{FE2}$	40	-	-		$V_{CE}=1V, I_C=500mA$
$f_T$	100	-	-	MHz	$V_{CE}=1V, I_C=10mA, f=100MHz$
Cob	-	-	8	pF	$V_{CB}=10V, f=1MHz$

Absolute maximum rating@25°C

Parameter	Symbol	Ratings	Units
Junction Temperature	$T_j$	+150	°C
Storage Temperature	$T_{stg}$	-55~+150	°C
Collector to Base Voltage	$V_{CB0}$	40	V
Collector to Emitter Voltage	$V_{CEO}$	20	V
Emitter to Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	500	mA
Total Power Dissipation	$P_D$	625	mW

Characteristics Curve

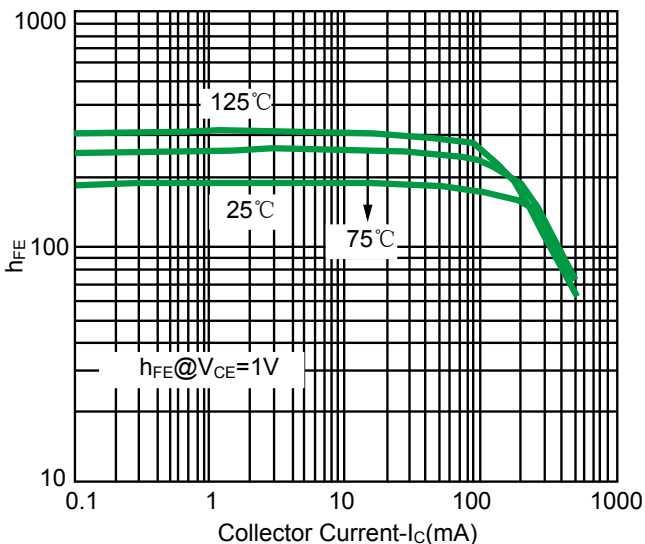


Fig 1. Current Gain & Collector Current

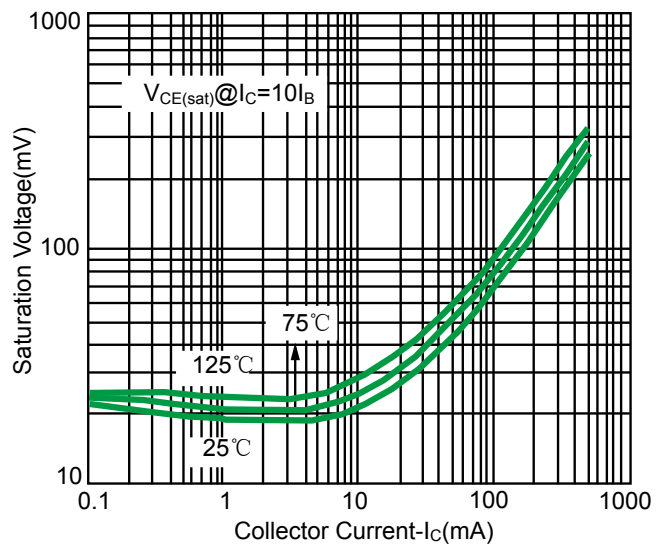


Fig 2. Saturation Voltage & Collector Current

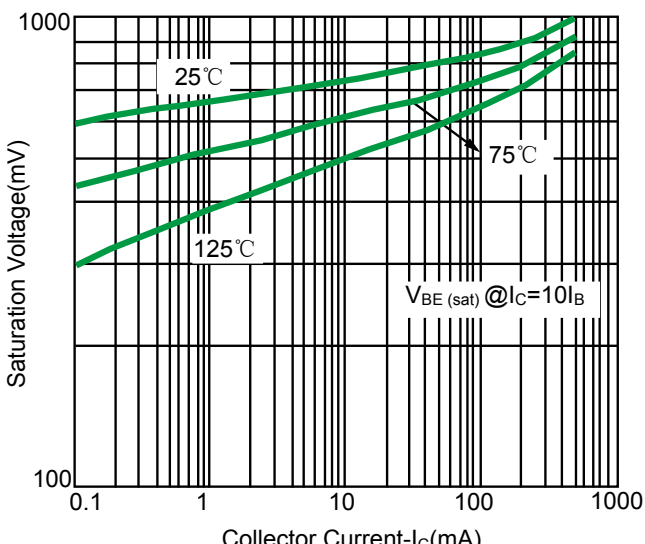


Fig 3. Saturation Voltage & Collector Current

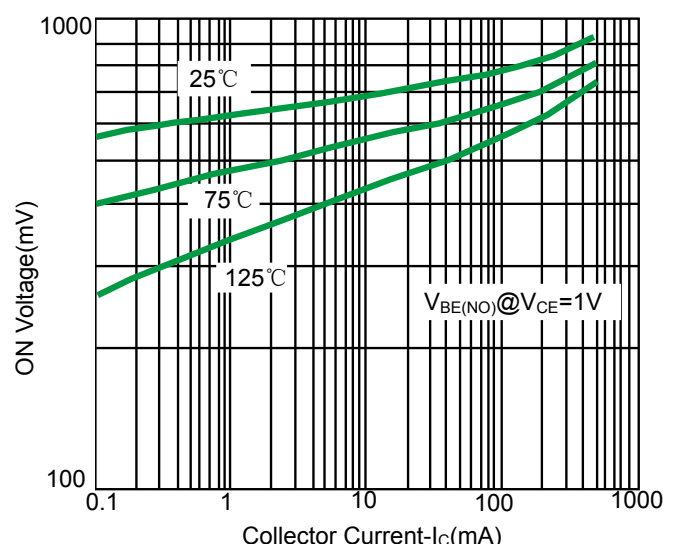


Fig 4. ON Voltage & Collector Current

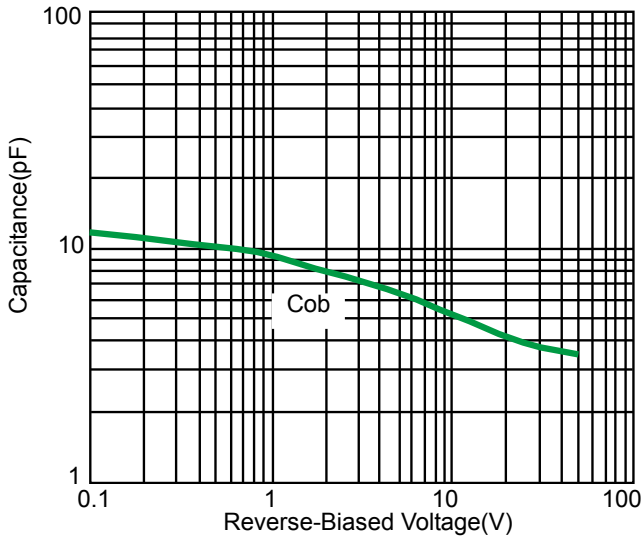


Fig 5. Capacitance & Reverse-Biased Voltage

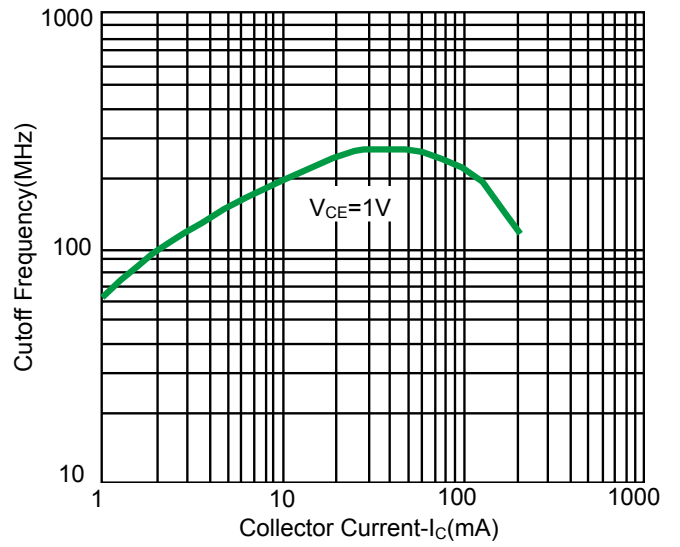


Fig 6. Cutoff Frequency & Collector Current

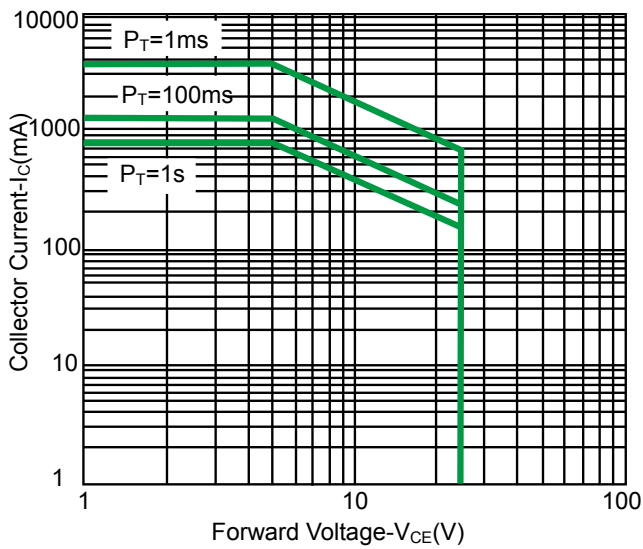


Fig 7. Safe Operating Area

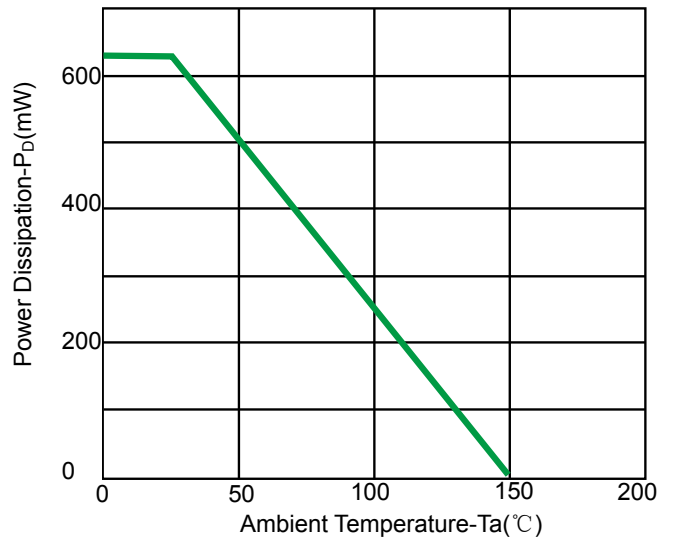
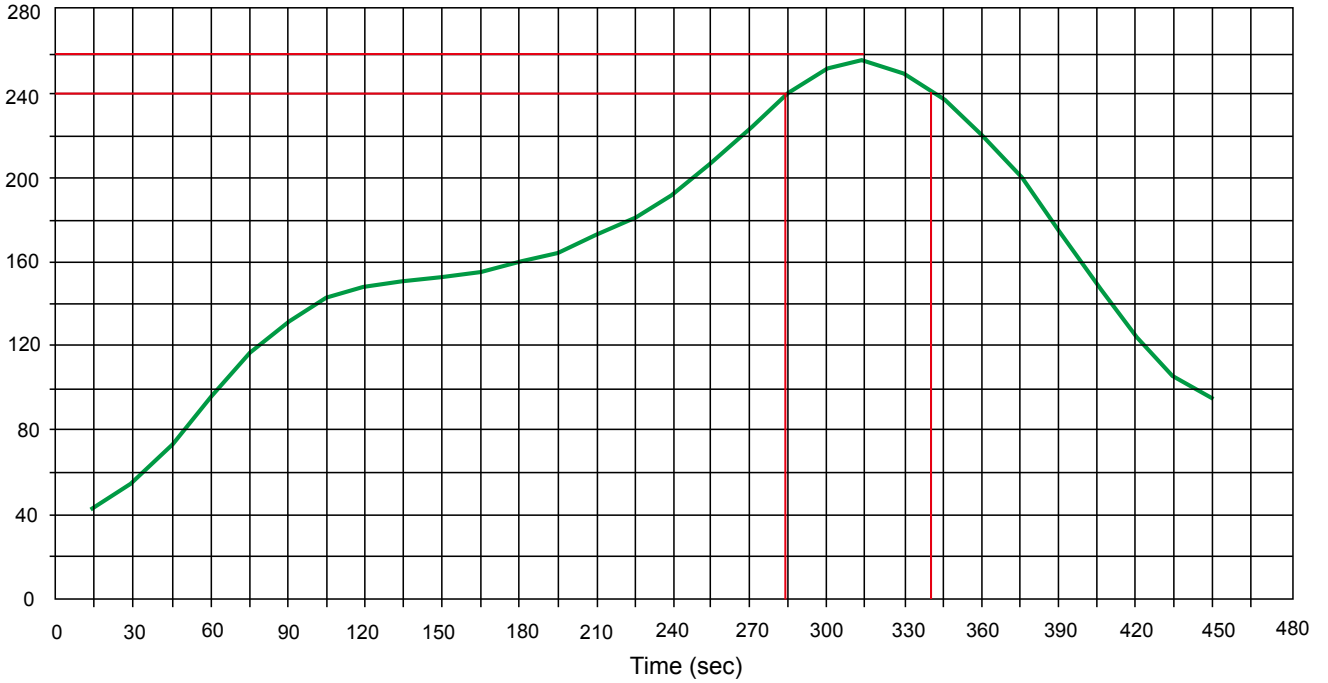


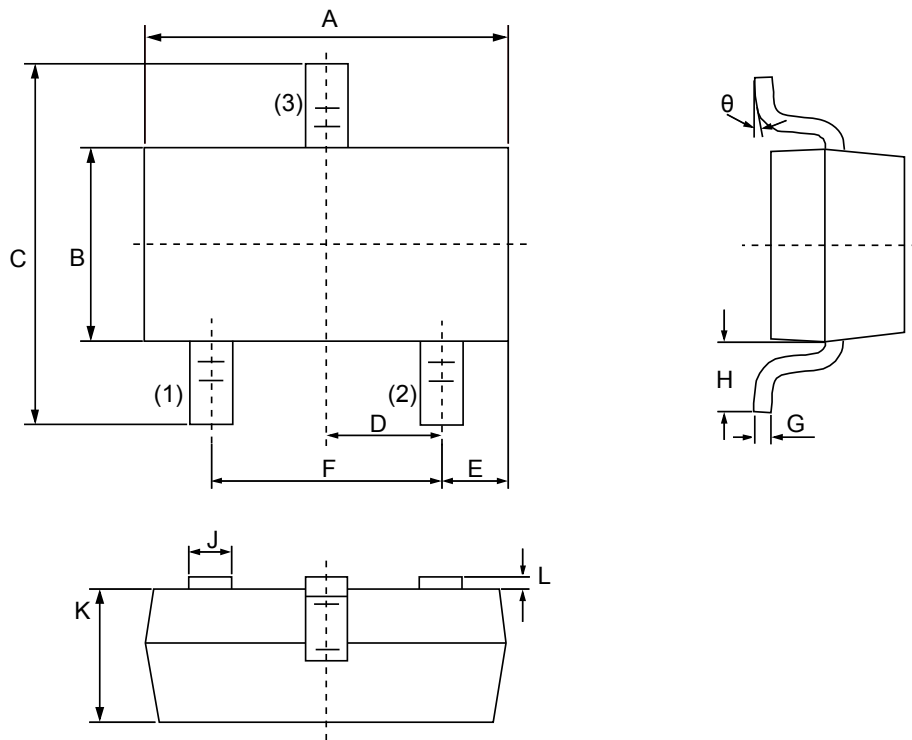
Fig 8. PD-Ta

Solder Reflow Recommendation

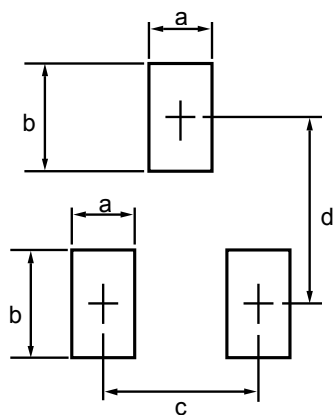
Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec



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
$\theta$	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
PT23T9013	SOT-23 (Pb-Free)	3000 / Tape & Reel


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