

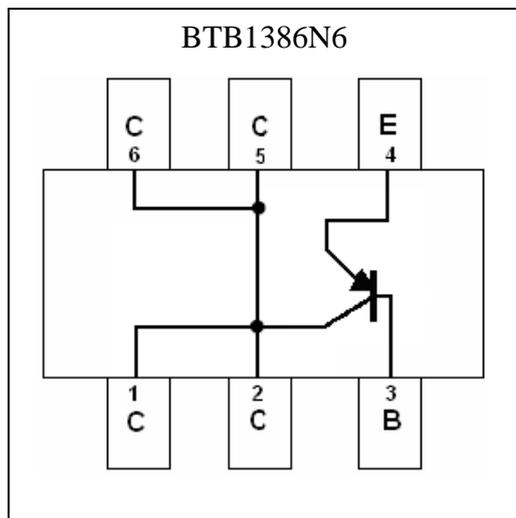
Low Vcesat PNP Epitaxial Planar Transistor

BTB1386N6

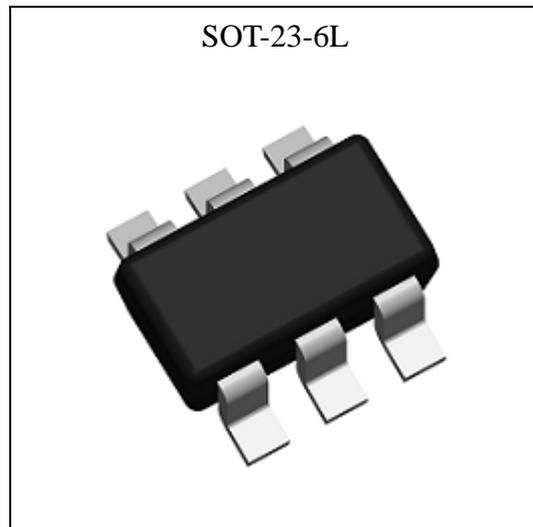
Features

- Low $V_{CE(sat)}$, $V_{CE(sat)} = -0.18V$ (typical), at $I_C / I_B = -3A / -60mA$
- Pb-free package

Equivalent Circuit

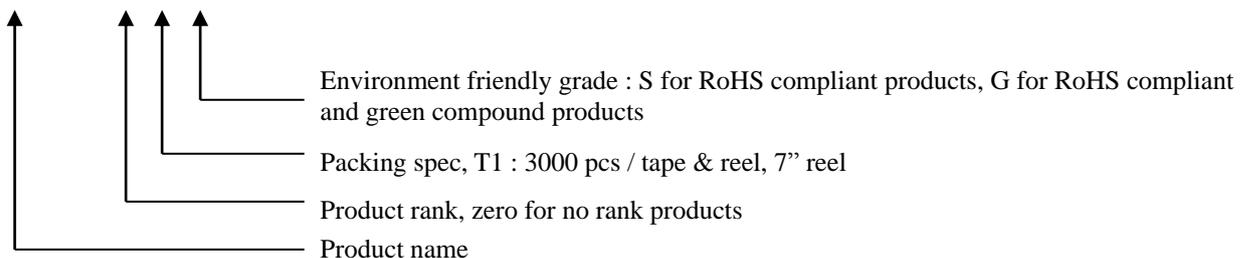


Outline



Ordering Information

Device	Package	Shipping
BTB1386N6-0-T1-G	SOT-23-6L (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel





Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CBO}	-30	V
Collector-Emitter Voltage	V _{CEO}	-20	
Emitter-Base Voltage	V _{EBO}	-6	
Collector Current(DC)	I _C	-6	A
Peak Collector Current	I _{CM}	-10 *1	
Peak Base Current	I _{BM}	-1	
Power Dissipation	P _D	0.5 *2	W
		1.25 *3	
Operating Junction and Storage Temperature Range	T _j ;T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-ambient, max	R _{θJA}	250 *2	°C/W
Thermal Resistance, Junction-to-case, max	R _{θJC}	100 *3	

Note :1 Single pulse, Pw=10ms

2. When mounted on single sided FR-4 PCB with minimum pad size, in still air condition.

3. When mounted on 25mm×25mm×1.6 mm FR-4 PCB with high coverage of single sided 1 oz copper, in still air condition.

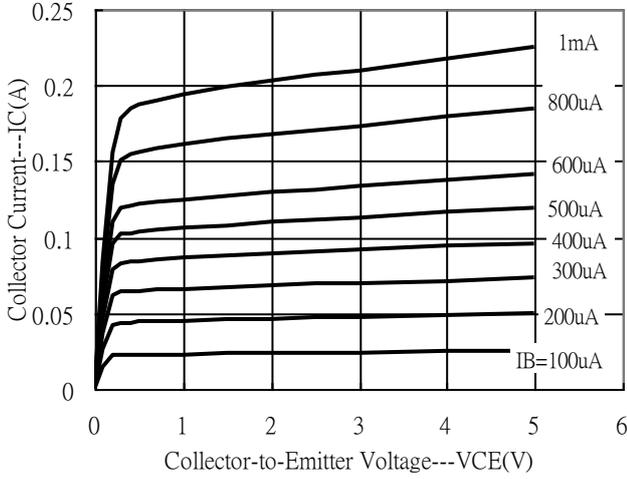
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	-30	-	-	V	I _C =-50μA, I _E =0
BV _{CEO}	-20	-	-	V	I _C =-1mA, I _B =0
BV _{EBO}	-6	-	-	V	I _E =-50μA, I _C =0
I _{CBO}	-	-	-100	nA	V _{CB} =-20V, I _E =0
I _{EBO}	-	-	-100	nA	V _{EB} =-6V, I _C =0
*V _{CE(sat)}	-	-180	-250	mV	I _C =-3A, I _B =-60mA
*V _{BE(sat)}	-	-0.87	-1.2	V	I _C =-3A, I _B =-60mA
*V _{BE(on)}	-	-0.8	-1.2	V	V _{CE} =-2V, I _C =-3A
*h _{FE}	180	-	560	-	V _{CE} =-2V, I _C =-500mA
f _T	-	120	-	MHz	V _{CE} =-6V, I _C =-50mA, f=100MHz
Cob	-	93	-	pF	V _{CB} =-10V, f=1MHz

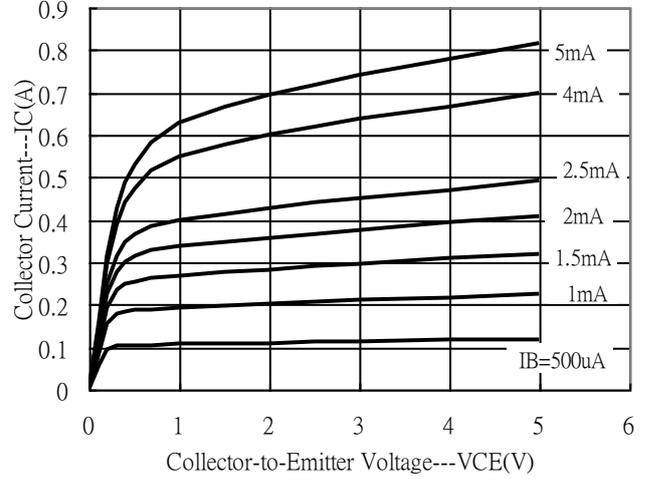
*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

Typical Characteristics

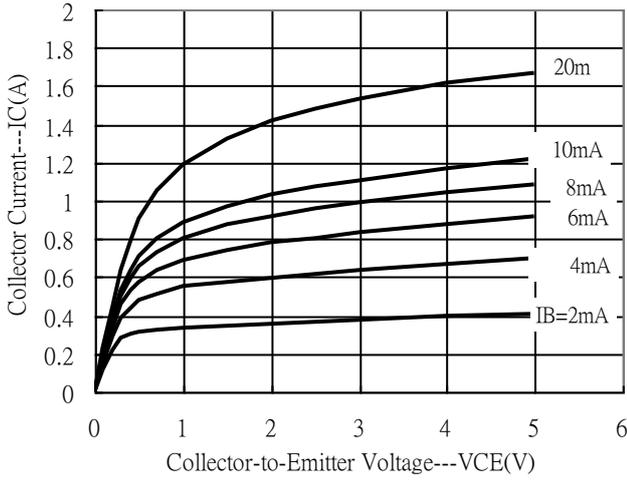
Emitter Grounded Output Characteristics



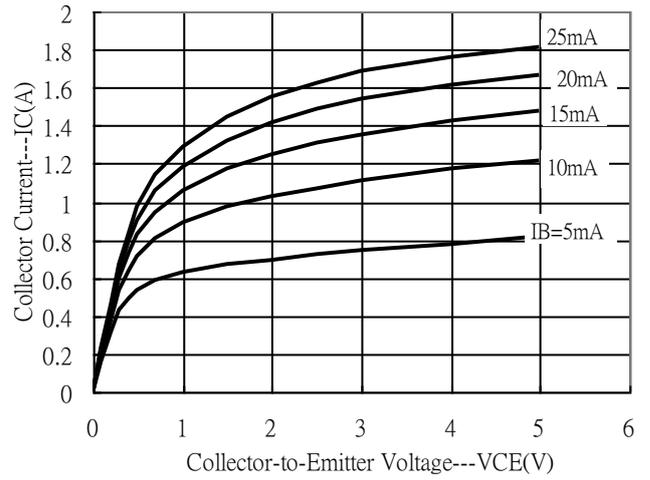
Emitter Grounded Output Characteristics



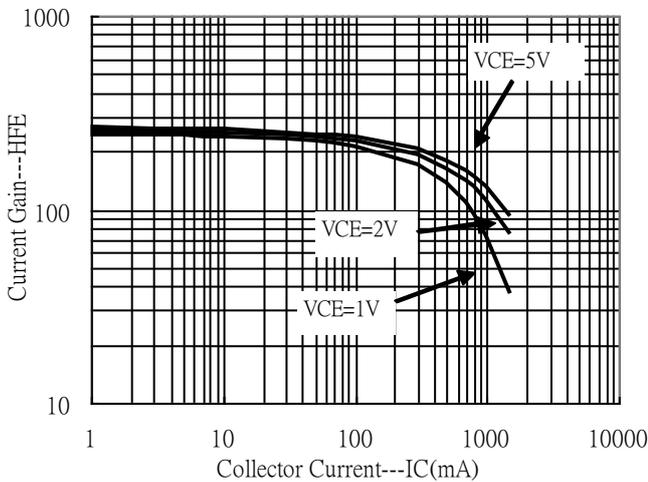
Emitter Grounded Output Characteristics



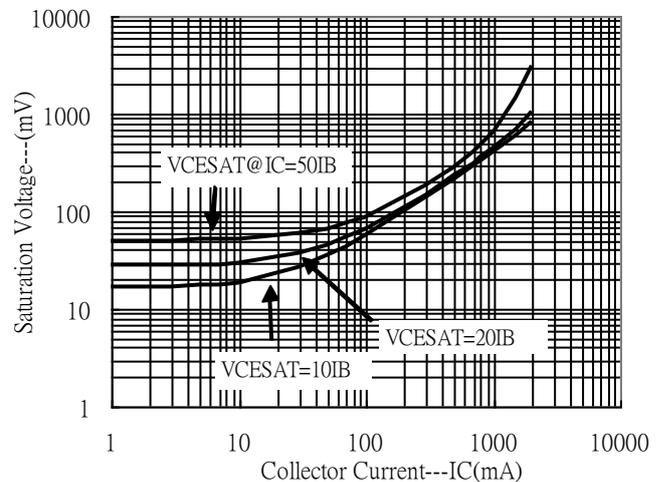
Emitter Grounded Output Characteristics



Current Gain vs Collector Current

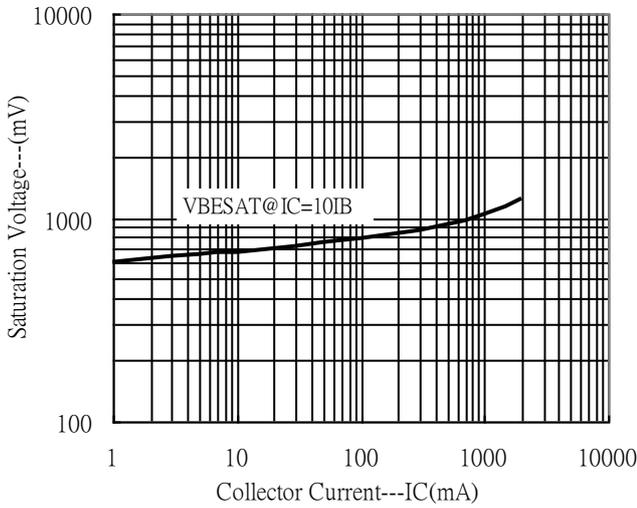


Saturation Voltage vs Collector Current

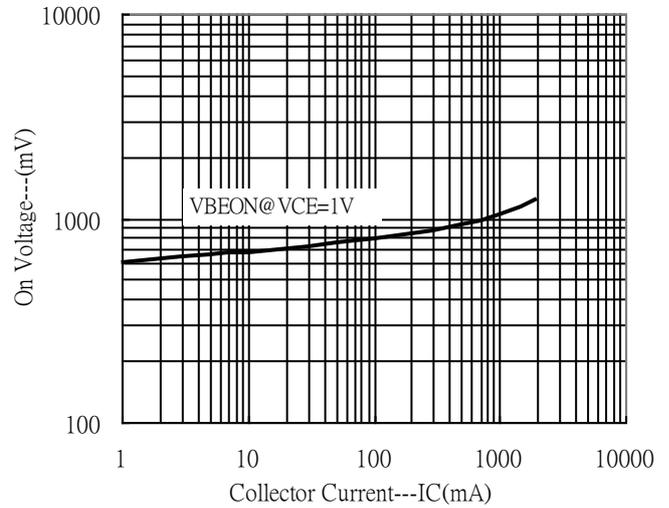


Typical Characteristics(Cont.)

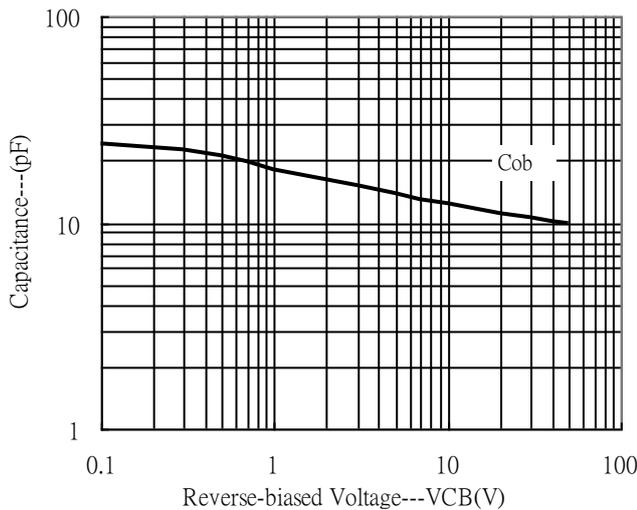
Saturation Voltage vs Collector Current



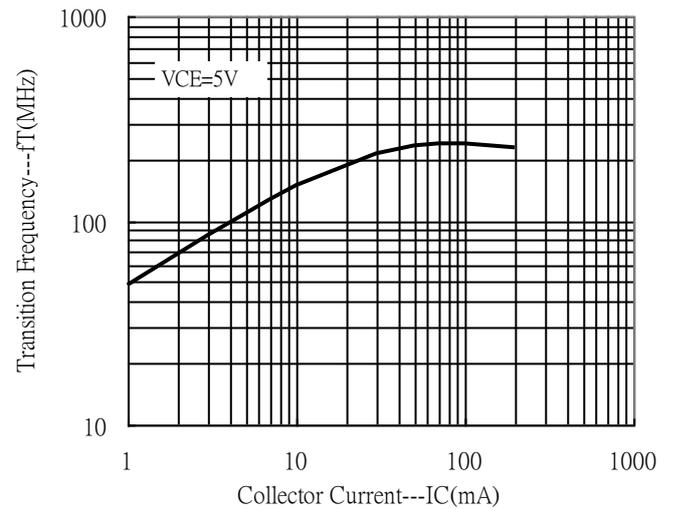
On Voltage vs Collector Current



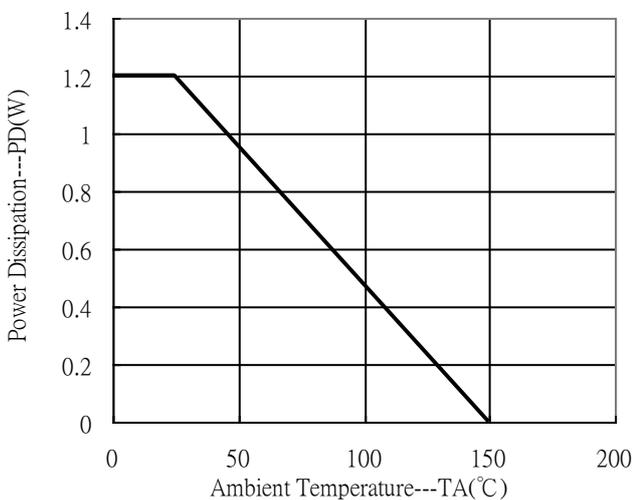
Capacitance vs Reverse-biased Voltage



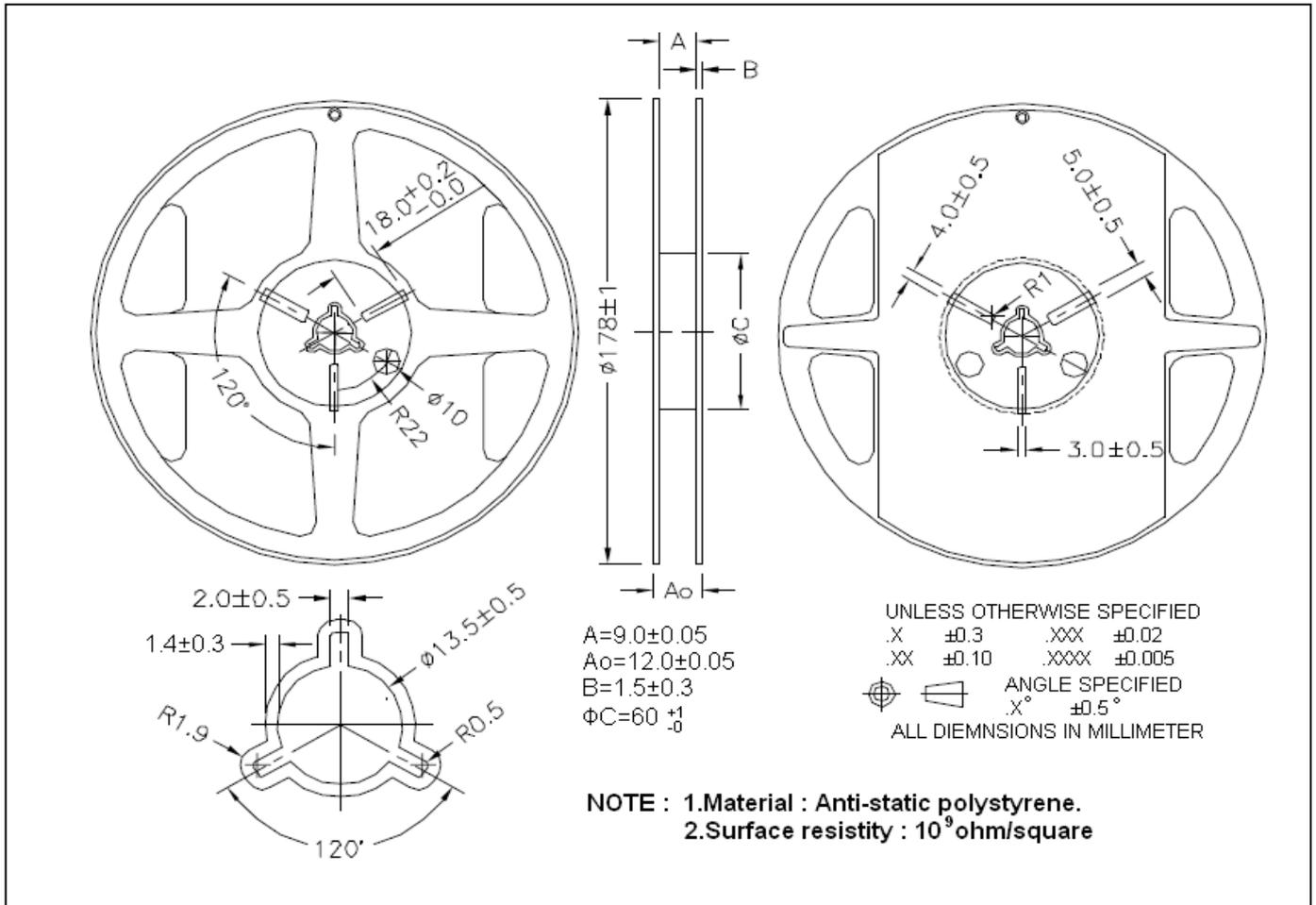
Transition Frequency vs Collector Current



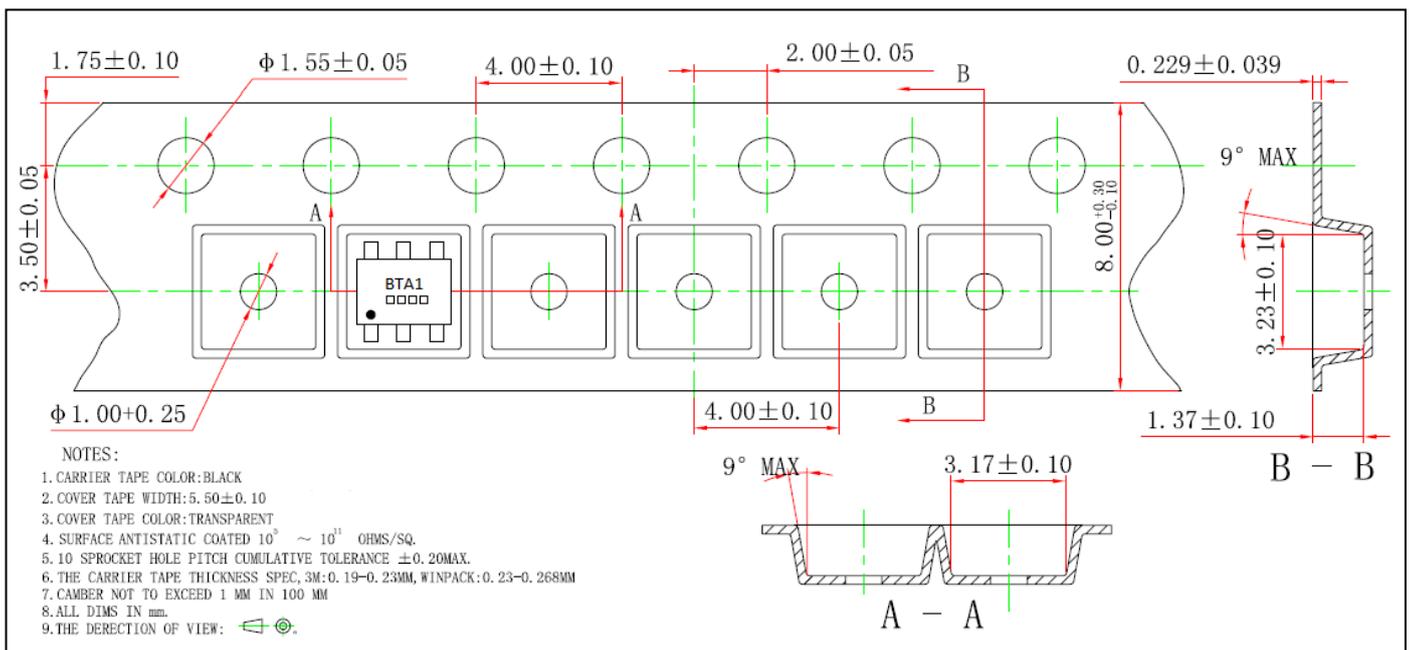
Power Derating Curve



Reel Dimension



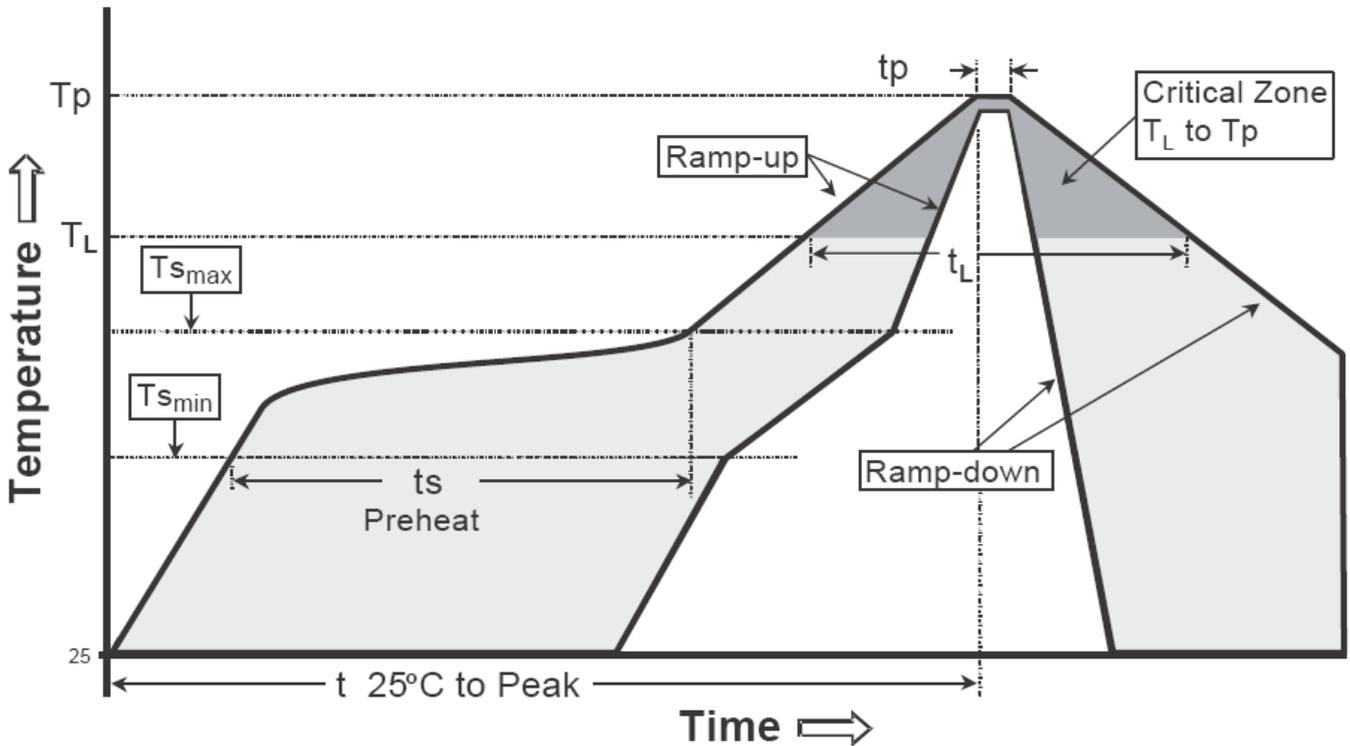
Carrier Tape Dimension



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

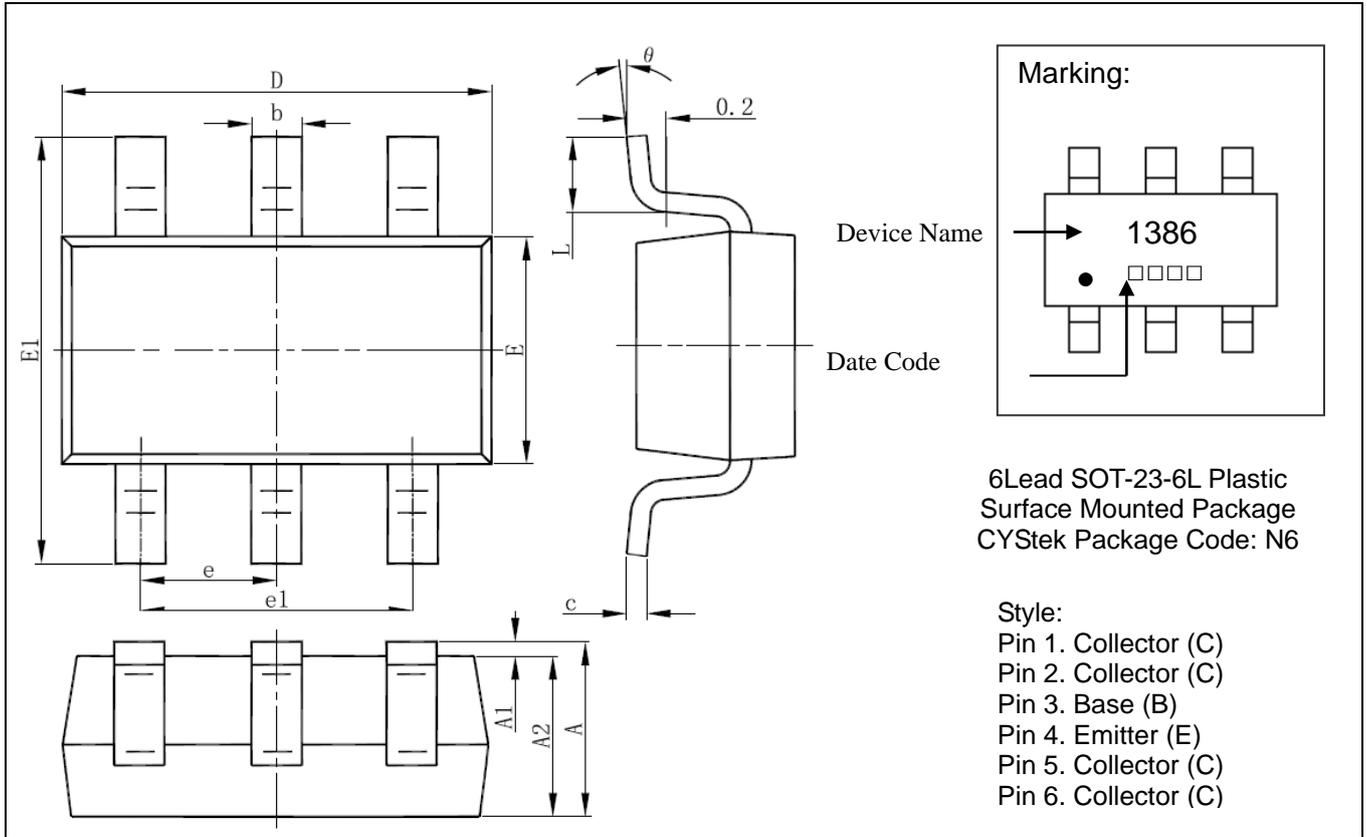
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	60-150 seconds
Peak Temperature(T _p)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-23-6L Dimension



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049	E	1.500	1.700	0.059	0.067
A1	0.000	0.100	0.000	0.004	E1	2.650	2.950	0.104	0.116
A2	1.050	1.150	0.041	0.045	e	0.950 (BSC)		0.037 (BSC)	
b	0.300	0.500	0.012	0.020	e1	1.800	2.000	0.071	0.079
c	0.100	0.200	0.004	0.008	L	0.300	0.600	0.012	0.024
D	2.820	3.020	0.111	0.119	θ	0°	8°	0°	8°

Notes : 1.Controlling dimension : millimeters.
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : Pure tin plated.
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0.

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