

High Voltage PNP Epitaxial Planar Transistor

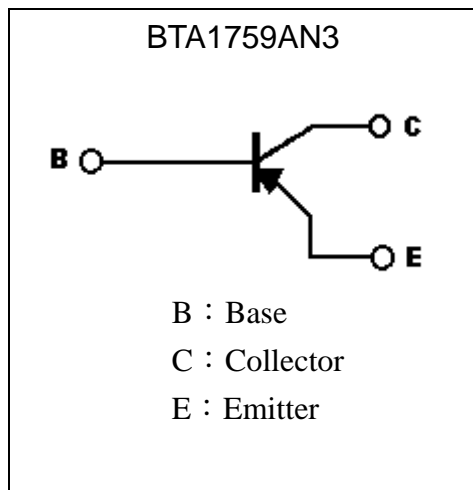
BTA1759AN3

| | |
|------------------|--------|
| BV_{CEO} | -500V |
| I_C | -0.3A |
| $V_{CESAT(TYP)}$ | -0.18V |

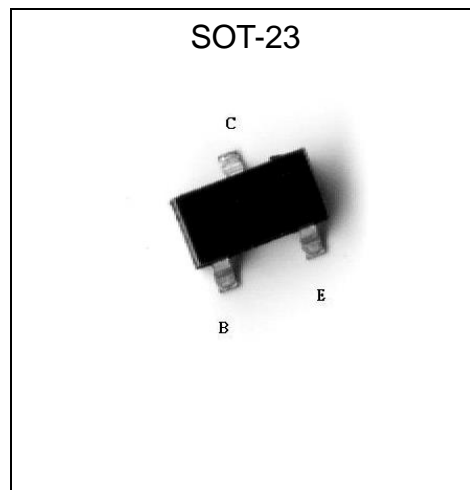
Description

- High breakdown voltage. ($BV_{CBO}=-500V$)
- Low saturation voltage, typical $V_{CE(sat)} = -0.18V$ at $I_C/I_B = -20mA/-1mA$.
- Wide SOA (safe operation area).
- Complementary to BTC4505N3.
- Pb-free lead plating and halogen-free package

Symbol

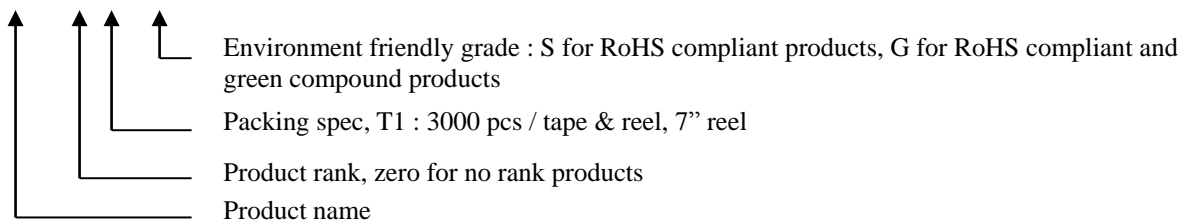


Outline



Ordering Information

| Device | Package | Shipping |
|-------------------|---|------------------------|
| BTA1759AN3-0-T1-G | SOT-23 (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 _{CB0} | -500 | V |
| Collector-Emitter Voltage | V _{CEO} | -500 | V |
| Emitter-Base Voltage | V _{EBO} | -6 | V |
| Collector Current | I _C | -300 | mA |
| Power Dissipation | P _D | 225 | mW |
| Operating Junction Temperature Range | T _j | -55~+150 | °C |
| Storage Temperature Range | T _{stg} | -55~+150 | °C |

Thermal Data

| Parameter | Symbol | Value | Unit |
|--|---------------------|-------|------|
| Thermal Resistance, Junction-to-case, max | R _{th,j-c} | 180 | °C/W |
| Thermal Resistance, Junction-to-ambient, max | R _{th,j-a} | 556 | |

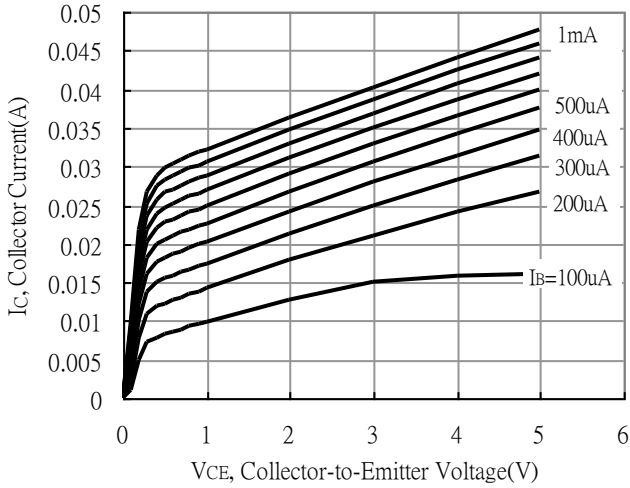
Characteristics (Ta=25°C)

| Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|-----------------------|------|-------|------|------|--|
| BV _{CB0} | -500 | - | - | V | I _C =-50μA |
| BV _{CEO} | -500 | - | - | V | I _C =-1mA |
| BV _{EBO} | -6 | - | - | V | I _E =-50μA |
| I _{CB0} | - | - | -100 | nA | V _{CB} =-500V |
| I _{CER} | - | - | -10 | nA | V _{CE} =-250V, R _{EB} =4kΩ |
| I _{EBO} | - | - | -100 | nA | V _{EB} =-6V |
| *V _{CE(sat)} | - | -0.18 | -0.5 | V | I _C =-20mA, I _B =-1mA |
| *V _{CE(sat)} | - | -0.22 | -1 | V | I _C =-50mA, I _B =-5mA |
| *V _{BE(sat)} | - | -0.73 | -1.2 | V | I _C =-20mA, I _B =-2mA |
| *h _{FE} | 100 | - | 270 | - | V _{CE} =-10V, I _C =-10mA |
| f _T | - | 12 | - | MHz | V _{CE} =-10V, I _C =-10mA, f=5MHz |
| C _{ob} | - | 3.5 | - | pF | V _{CB} =-10V, I _E =0A, f=1MHz |

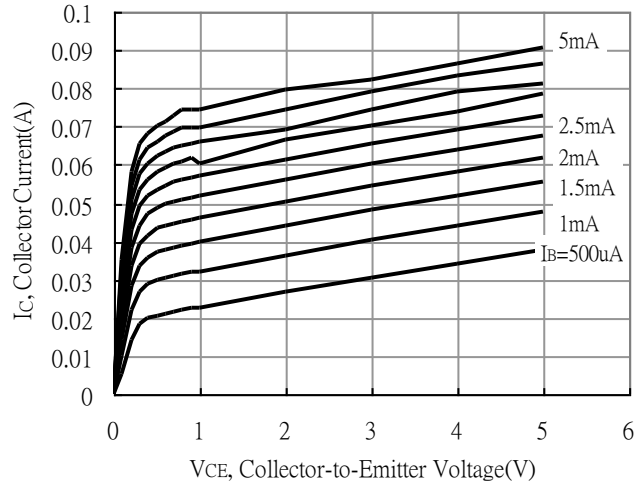
*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

Typical Characteristics

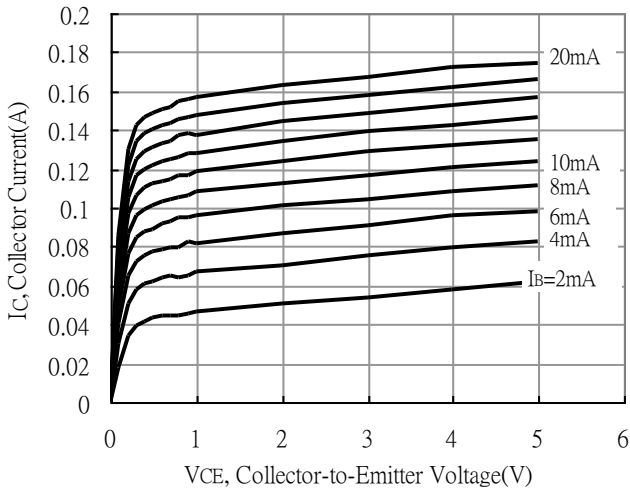
Emitter Grounded Output Characteristics



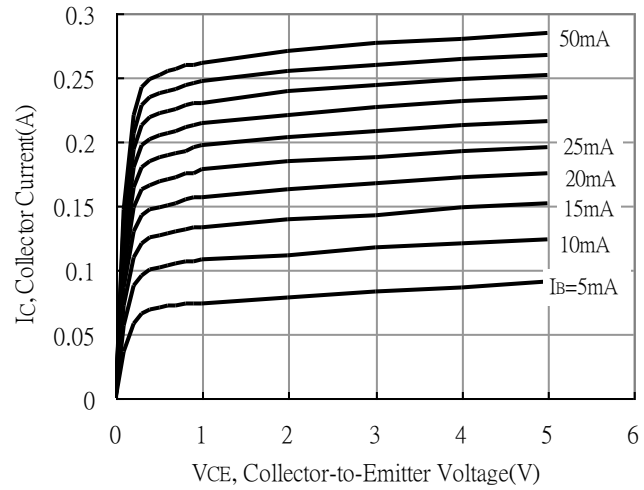
Emitter Grounded Output Characteristics



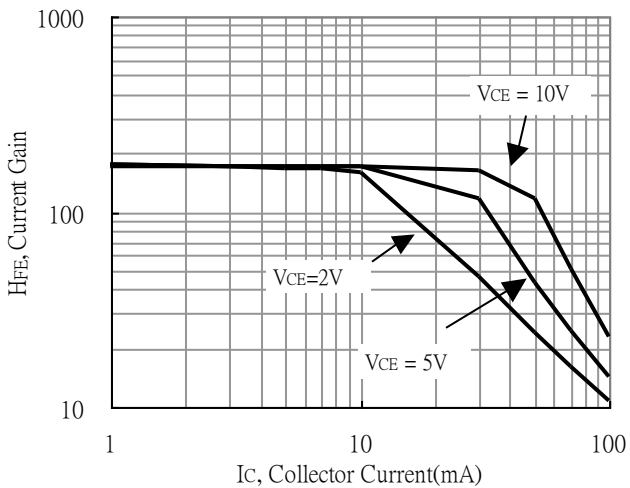
Emitter Grounded Output Characteristics



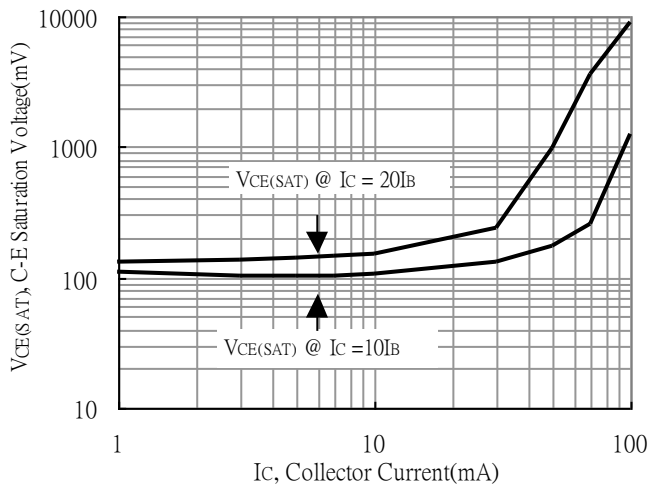
Emitter Grounded Output Characteristics



Current Gain vs Collector Current

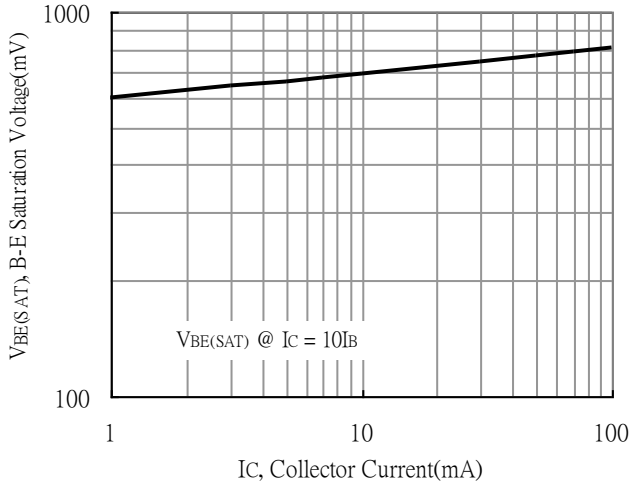


Saturation Voltage vs Collector Current

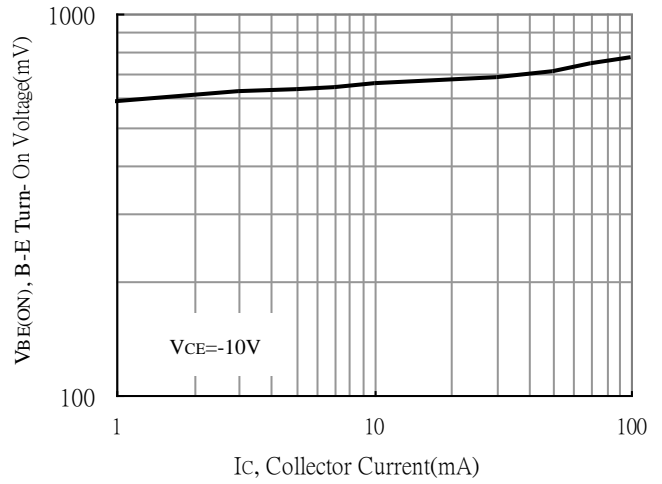


Typical Characteristics (Cont.)

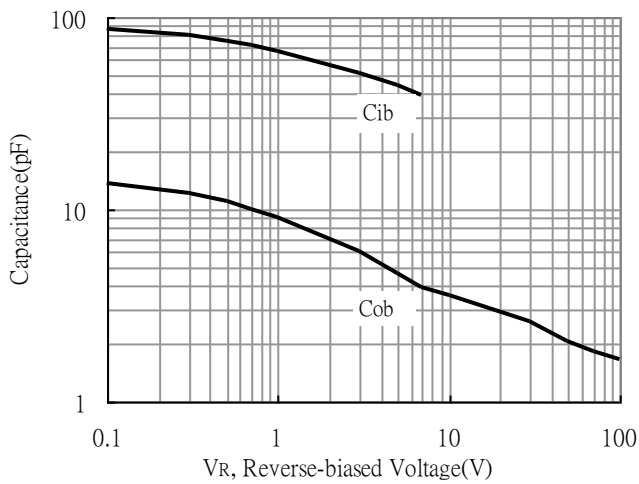
Saturation Voltage vs Collector Current



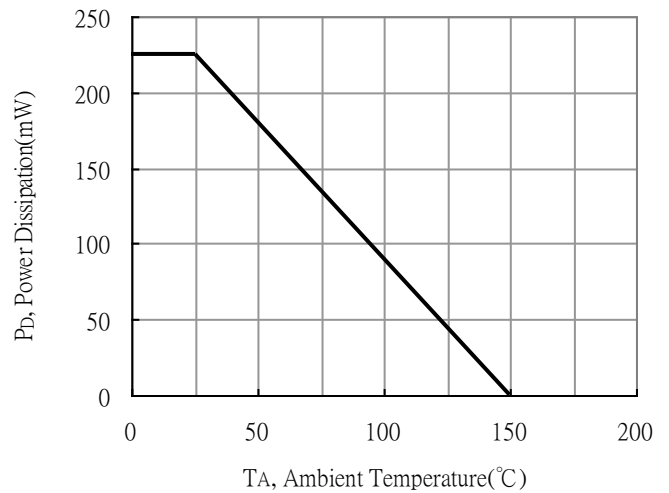
On Voltage vs Collector Current



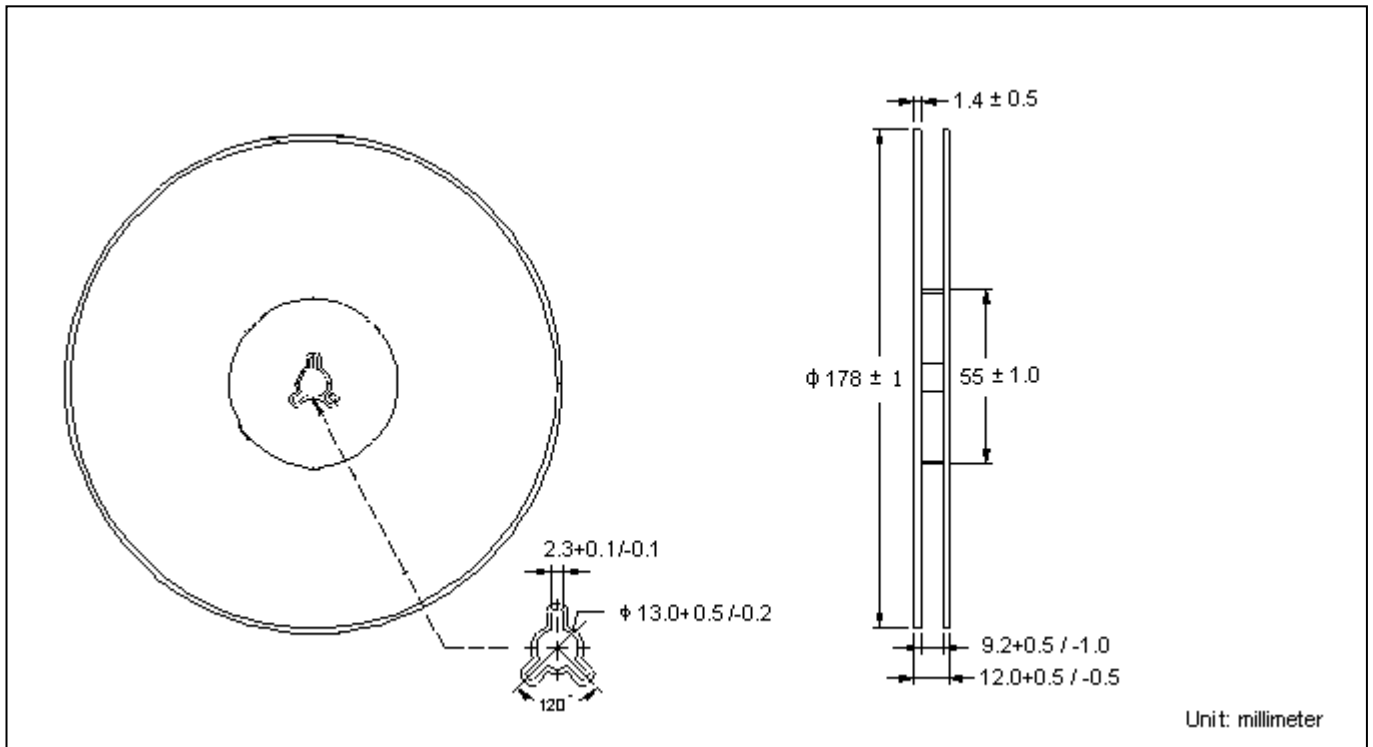
Capacitance vs Reverse-biased Voltage



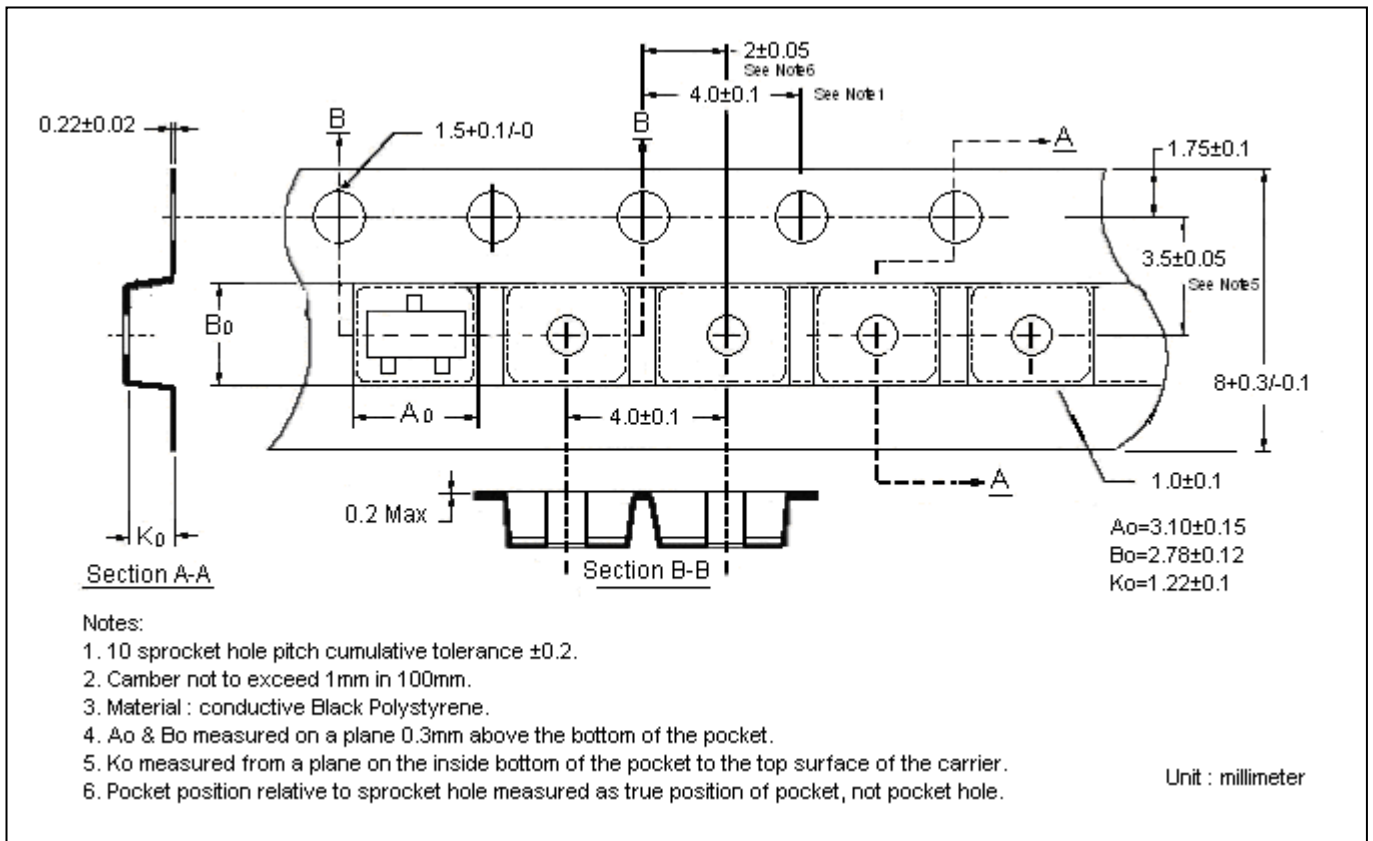
Power Derating Curve



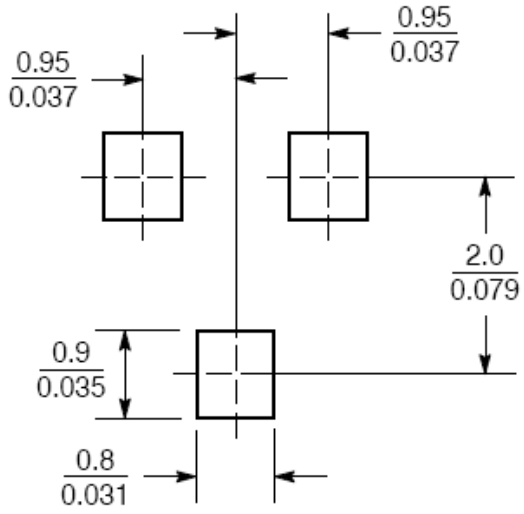
Reel Dimension



Carrier Tape Dimension



Recommended Soldering Footprint

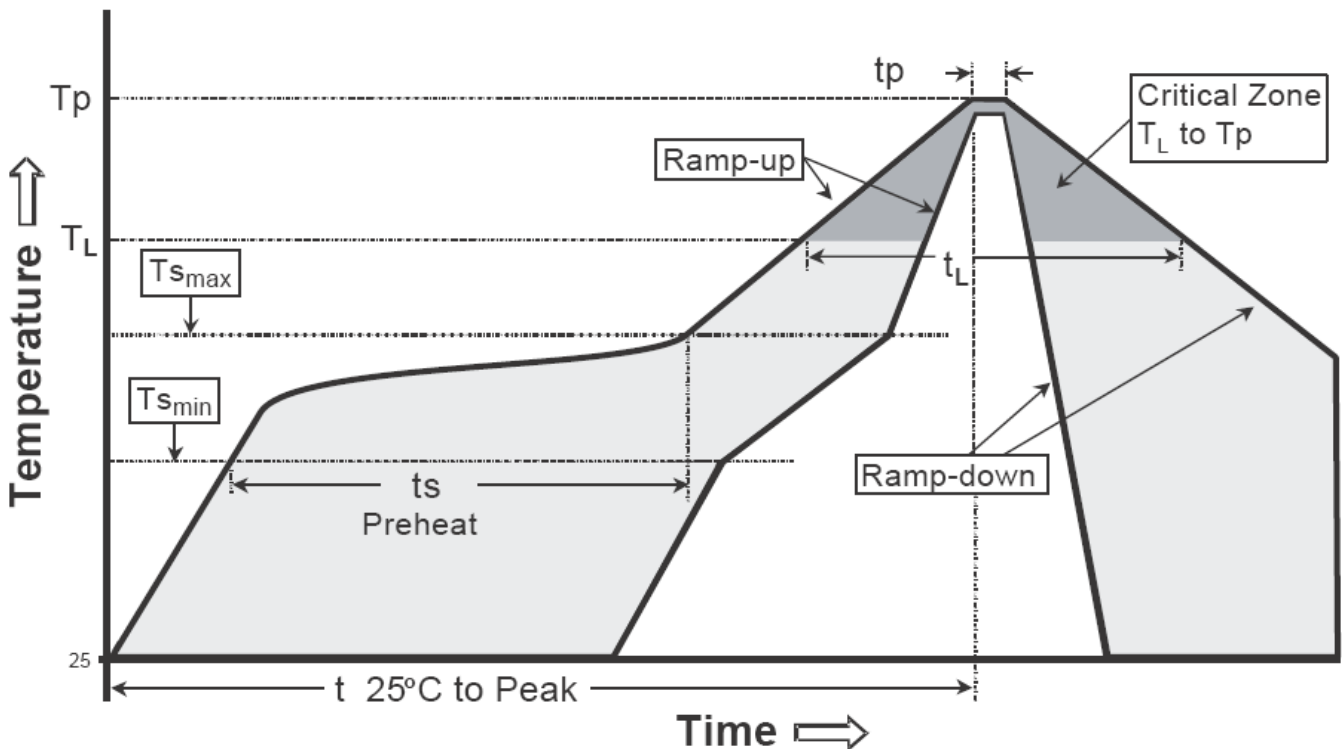


Unit : $\frac{\text{mm}}{\text{inches}}$

Recommended wave soldering condition

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

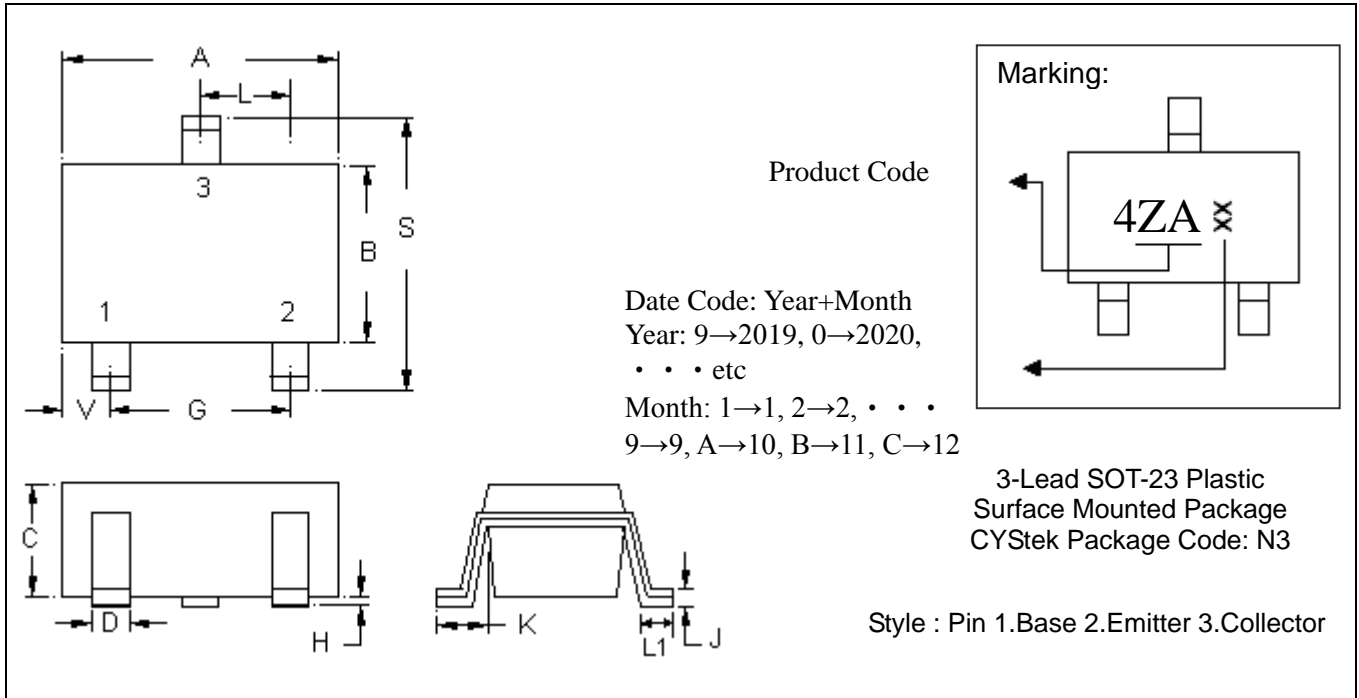
Recommended temperature profile for IR reflow



| 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 Dimension



*:Typical

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|--------|-------------|------|-----|--------|--------|-------------|------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.1102 | 0.1204 | 2.80 | 3.04 | J | 0.0032 | 0.0079 | 0.08 | 0.20 |
| B | 0.0472 | 0.0669 | 1.20 | 1.70 | K | 0.0118 | 0.0266 | 0.30 | 0.67 |
| C | 0.0335 | 0.0512 | 0.89 | 1.30 | L | 0.0335 | 0.0453 | 0.85 | 1.15 |
| D | 0.0118 | 0.0197 | 0.30 | 0.50 | S | 0.0830 | 0.1161 | 2.10 | 2.95 |
| G | 0.0669 | 0.0910 | 1.70 | 2.30 | V | 0.0098 | 0.0256 | 0.25 | 0.65 |
| H | 0.0000 | 0.0040 | 0.00 | 0.10 | L1 | 0.0118 | 0.0197 | 0.30 | 0.50 |

- 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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