MHCHXM®

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# TIP122S

## NPN Silicon Darlington Transistor

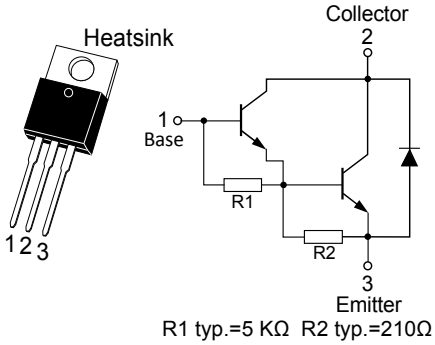
### ■ Productor Character

- Darlington Transistor.
- Built-in a Damper Diode at E-C.
- Halogen Free Available Upon Request By Adding Suffix "-HF".
- RohS Product.
- Compliance With Eu Reach.

### ■ Mehanical Data

- Package: TO-220AB.
- Terminals:Tin Plated Leads, Solderable Per J-STD-002 and JESD22-B102.

### ■ Equivalent Circuit




R1 typ.=5 KΩ R2 typ.=210Ω

**Package: TO-220AB**

**TIP122S(NPN)**

RoHS

Reach

## Absolute Maximum Ratings(Ta=25°C unless otherwise noted)

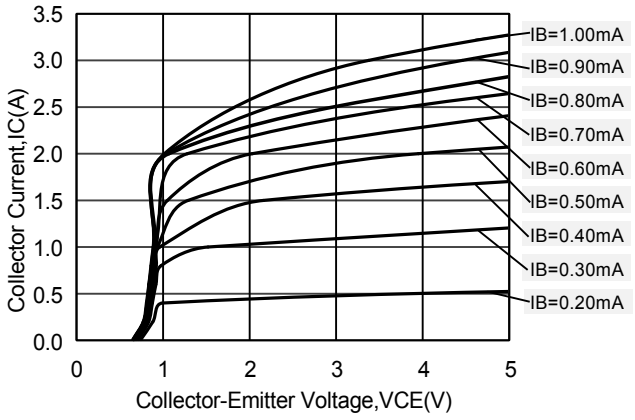
| Item | Symbol | Data | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 100 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 100 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 5 | V |
| Collector Current -Continuous | $I_C$ | 5 | A |
| Operating Junction Temperature | $T_J$ | -40～150 | °C |
| Storage Temperature | $T_{STG}$ | -40～150 | °C |
| Total Device Dissipation(TA=25°C) | $P_{TOT}$ | 2 | W |
| Thermal Resistance-Junction to Case | $R_{\theta JC}$ | 1.92 | °C/W |
| Thermal Resistance-Junction to Air | $R_{\theta JA}$ | 62.5 | °C/W |

## Electricity Character Per Diode(Ta=25°C unless otherwise noted)

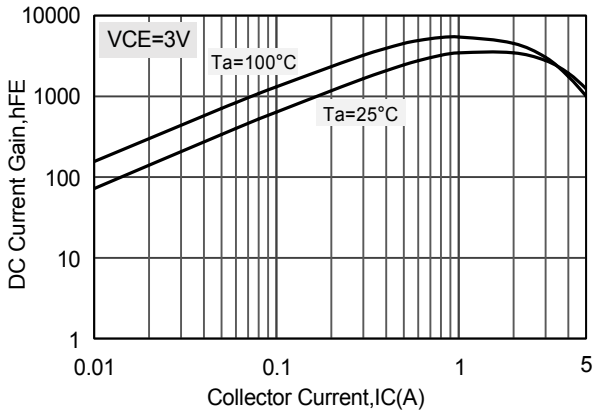
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | IC=1mA,IE=0 | 100 | — | — | V |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | IC=10mA,IB=0 | 100 | — | — | V |
| Collector-Base Cut-off Current | $I_{CBO}$ | VCB=100V,IB=0 | — | — | 200 | μA |
| Collector-Emitter Cut-off Current | $I_{CEO}$ | VCE=50V,IB=0 | — | — | 500 | μA |
| Emitter-Base Cut-off Current | $I_{EBO}$ | VEB=5V,IC=0 | — | — | 2 | mA |
| DC Current Gain | $h_{FE(1)}$ | VCE=3V,IC=0.5A | 1000 | — | — | — |
| | $h_{FE(2)}$ | VCE=3V,IC=3A | 1000 | — | 12000 | — |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)(1)}$ | IC=3A,IB=12mA | — | — | 2 | V |
| | $V_{CE(sat)(2)}$ | IC=5A,IB=20mA | — | — | 4 | V |
| Base-Emitter Voltage | $V_{BE}$ | VCE=3V,IC=3A | — | — | 2.5 | V |
| Collector output capacitance | $C_{ob}$ | VCB=10V,IE=0,f=1MHz | — | 25 | — | pF |

## Typical Characteristics Curves

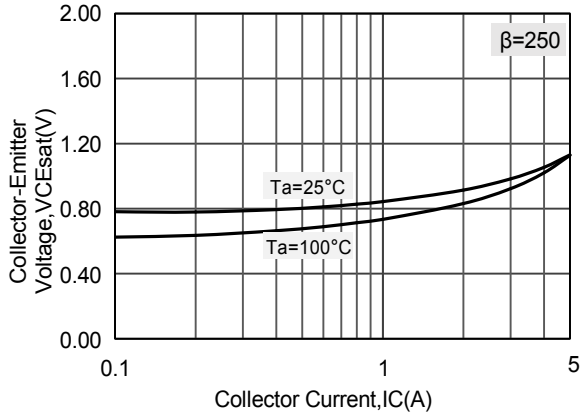
### Fig1.Static Characteristics



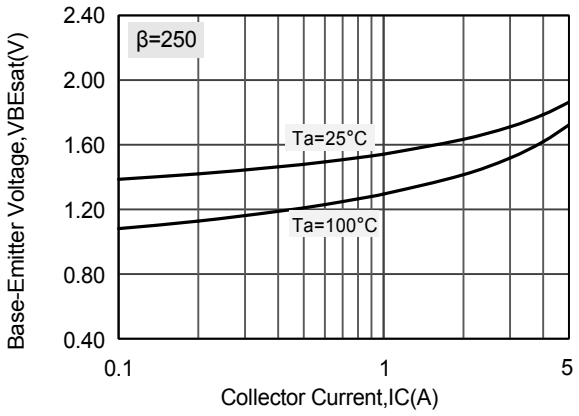

### Fig2.DC Current Gain Characteristics



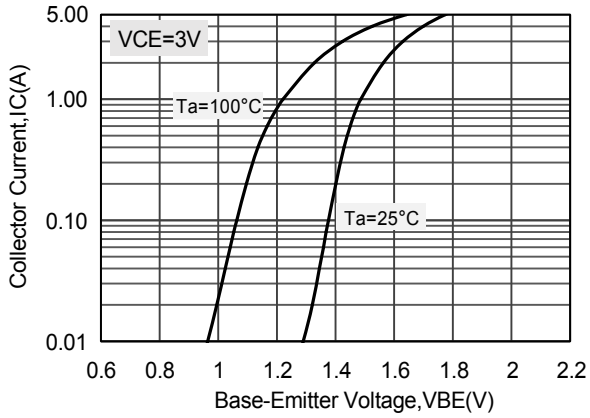

### Fig3.Collector-Emitter Saturation Voltage Characteristics




### Fig4.Base-Emitter Saturation Voltage Characteristics




### Fig5.Base-Emitter Voltage Characteristics




### Fig6.Total Device Dissipation Derating Curve

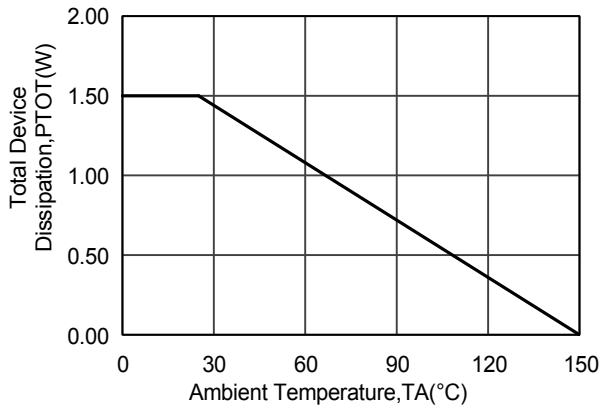
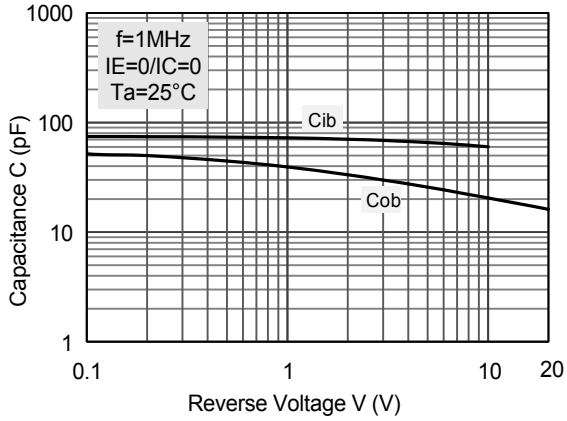
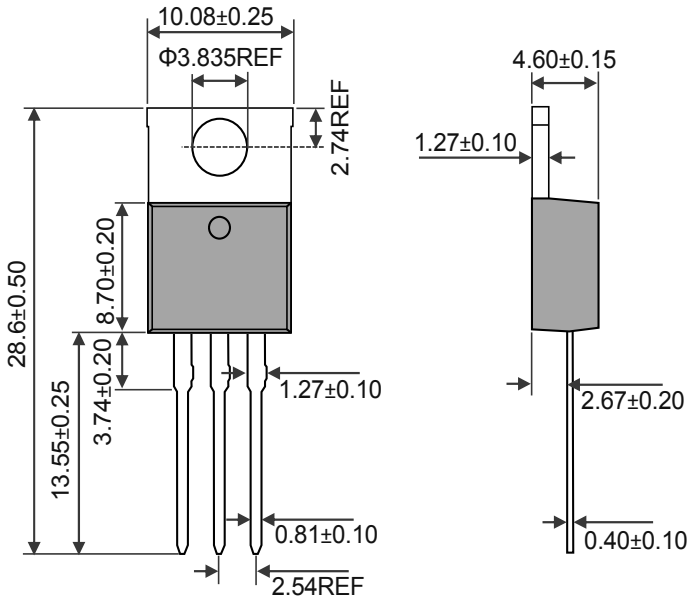


**Fig7.Cob/ Cib —— VCB/ VEB**



## Package Outline Dimensions




TO-220AB
Unit:mm

## Marking Information

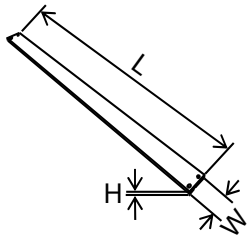

**"MHCHXM"**= Product Logo
**"Marking Code"**= The Following
**"XXXX"**= Date Code Marking

| Marking Code | Part Number |
|---|---|
| TIP122S | TIP122S |

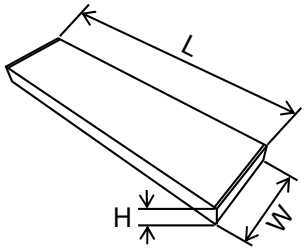
## Packing Information

| Packaging | Part Number | Quantity(pcs) | Size(mm) |
|---|---|---|---|
| Tube | Tube | 50 | L534×W33×H7 |
| | Inner Box | 1000 | L560×W150×H40 |
| | Outer Box | 5000 | L580×W235×H175 |

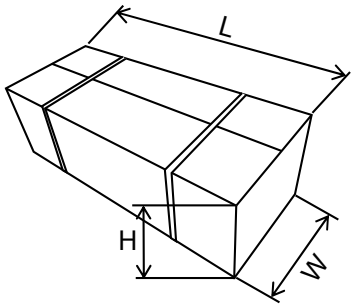
**Packaging:Tube**




Tube




Tube Inner Box




Tube Outer Box

## Notes

### Lead Forming

1.During lead frame bending, the lead frame should be bent at a distance more than 3mm from bottom of the epoxy.And the bending degree should not exceed 90°.
Note: The lead frame must be secured and do not touch the epoxy before bending to avoid damage to the transistor.In addition, when using a mold for a large number of lead molding, the structure of the fixed lead must be set, and it should be noted that the lead pressure rod structure cannot exert pressure on the epoxy resin body.

2. Do not bend the lead repeatedly. Do not bend the lead outward

### Heat sink mounting

For power devices, in order to reduce junction temperature, heat dissipation blocks are usually used to disperse heat to the outside, and semiconductor power devices installed on the heat dissipation blocks can effectively dissipate heat without losing the reliability of the semiconductor, so the following matters should be noted when using:

1. Pay attention to the selection of silicone cream
In order to improve the thermal conductivity and heat dissipation effect of the device and the heat dissipation block, generally apply a thin layer of silicone grease evenly on the contact surface of the device and the heat dissipation block. Choose a silicone grease with low oil separation degree. Do not overapply it, otherwise it will attach too much stress to the resin.

2. Optimum torque is required
When using the fastening torque, pay attention not to use too much torque, so as not to damage the epoxy resin body, pay attention to the smooth cooling block body, no file chips and other foreign bodies between the transistor and the cooling block, pay attention to the selection of screws, nuts, gaskets and washers, so as not to cause damage to the transistor due to improper selection.

### Soldering

1. Pay special attention to welding. When welding, the distance between the solder joint and the epoxy ball should be greater than 3mm, and it is recommended to weld it outside the tie rod base.

2. Avoid applying any pressure to the lead frame while the transistor is at high temperatures, especially when welding. Dip welding and manual welding should not be done more than once

**Notes:**

For specific precautions, please refer to our company's relevant technical documents or visit our official website at **http://www.jshxm.com**

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