



# HMP5A13

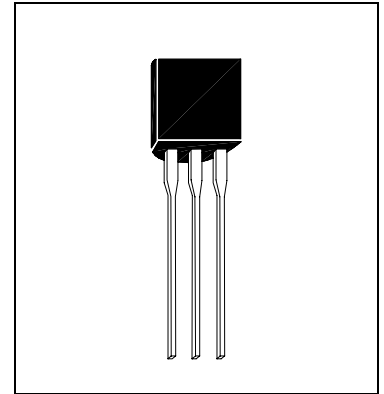
NPN SILICON DARLINGTON TRANSISTOR

## Description

The HMP5A13 is designed for applications requiring extremely high current gain at collector to 500mA.

## Features

- High D.C. Current Gain
- Complementary to HMP5A63



## Absolute Maximum Ratings

- Maximum Temperatures  
 Storage Temperature ..... -55 ~ +150 °C  
 Junction Temperature ..... +150 °C Maximum
- Maximum Power Dissipation  
 Total Power Dissipation (Ta=25°C) ..... 600 mW
- Maximum Voltages and Currents (Ta=25°C)  
 VCBO Collector to Base Voltage ..... 30 V  
 VCES Collector to Emitter Voltage..... 30 V  
 VEBO Emitter to Base Voltage ..... 10 V  
 IC Collector Current ..... 500 mA

## Characteristics (Ta=25°C)

| Symbol     | Min. | Typ. | Max. | Unit | Test Conditions           |
|------------|------|------|------|------|---------------------------|
| BVCBO      | 30   | -    | -    | V    | IC=100uA, IE=0            |
| BVCES      | 30   | -    | -    | V    | IC=100uA, VBE=0           |
| BVEBO      | 10   | -    | -    | V    | IE=10uA, IC=0             |
| ICBO       | -    | -    | 100  | nA   | VCB=30V, IE=0             |
| IEBO       | -    | -    | 100  | nA   | VEB=10V, IC=0             |
| *VCE(sat)1 | -    | -    | 1.5  | V    | IC=100mA, IB=0.1mA        |
| *VCE(sat)2 | -    | 1.0  | -    | V    | IC=500mA, IB=0.5mA        |
| *hFE1      | 5    | -    | -    | K    | VCE=5V, IC=10mA           |
| *hFE2      | 10   | -    | -    | K    | VCE=5V, IC=100mA          |
| *hFE3      | -    | 50   | -    | K    | VCE=5V, IC=500mA          |
| fT         | 125  | -    | -    | MHz  | VCE=5V, IC=10mA, f=100MHz |
| Cob        | -    | -    | 6    | pF   | VCB=10V, f=1MHz           |

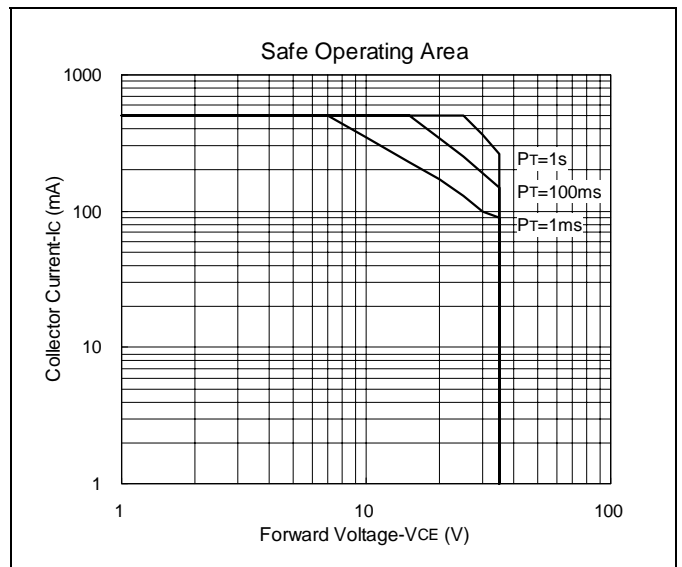
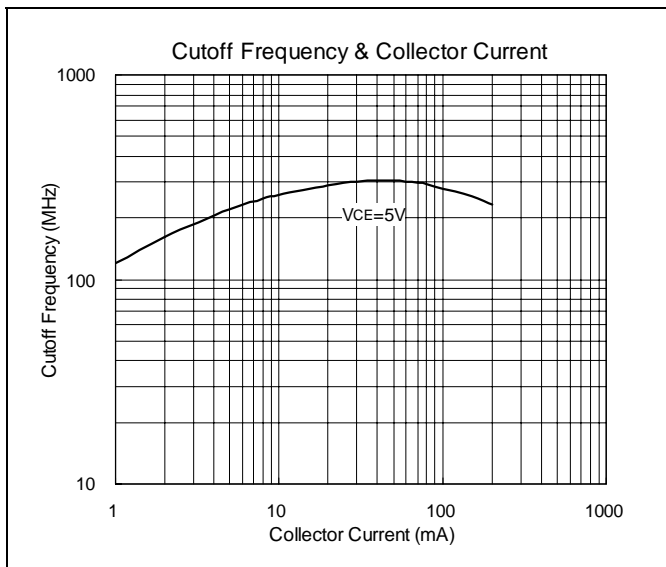
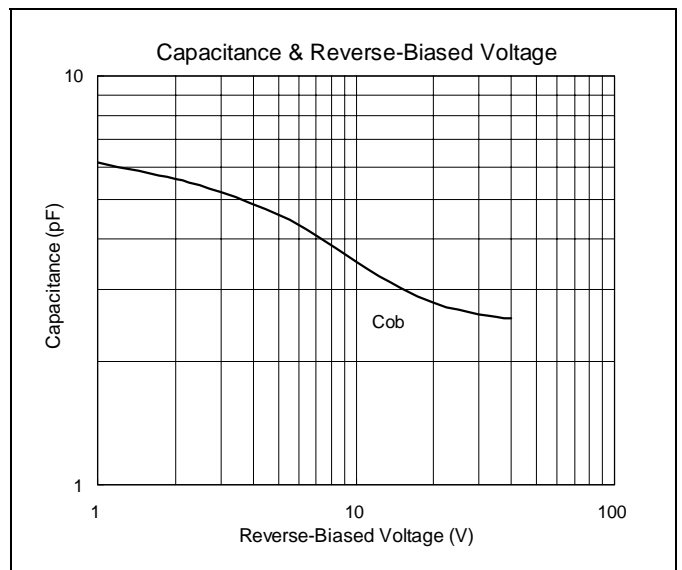
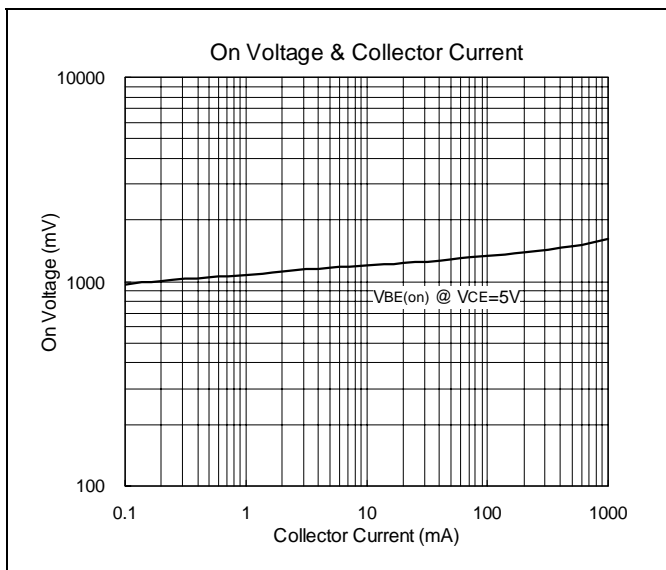
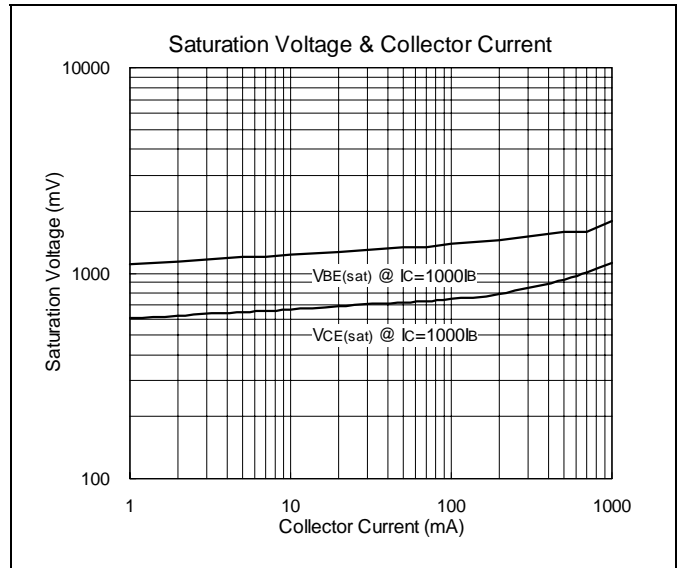
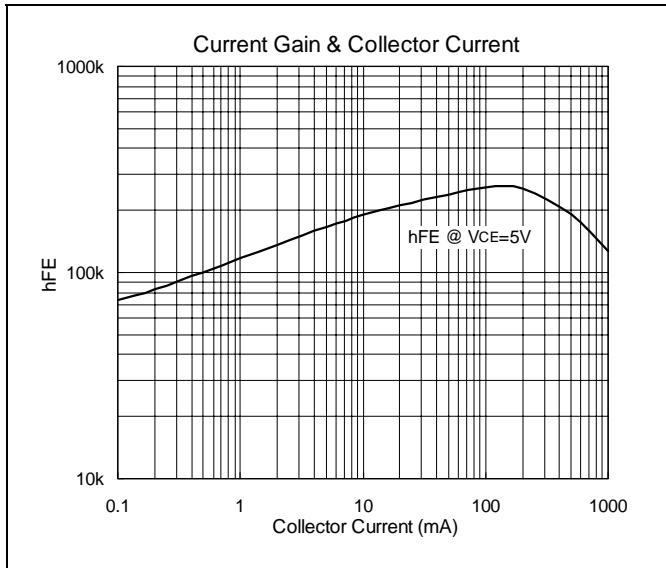
\*Pulse Test : Pulse Width ≤380us, Duty Cycle≤2%

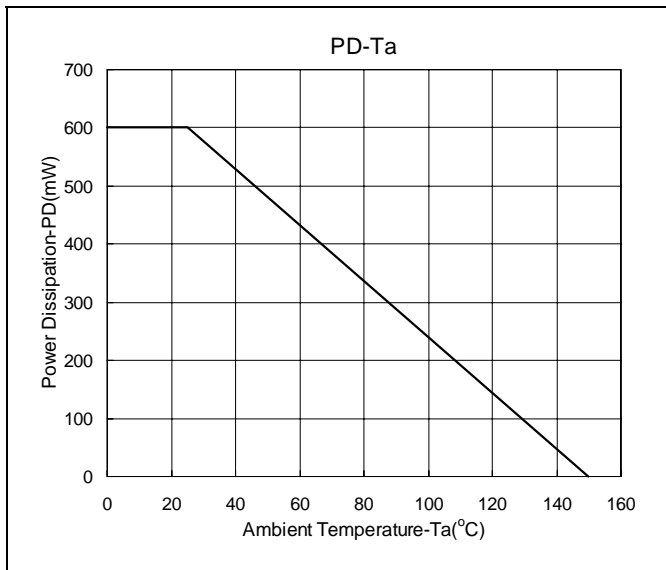
## Classification Of hFE3

| Rank | VCE(sat)2 | hFE3 |
|------|-----------|------|
| SUN  | <1.2V     | >20K |
| N    | VCE(sat)2 | hFE3 |



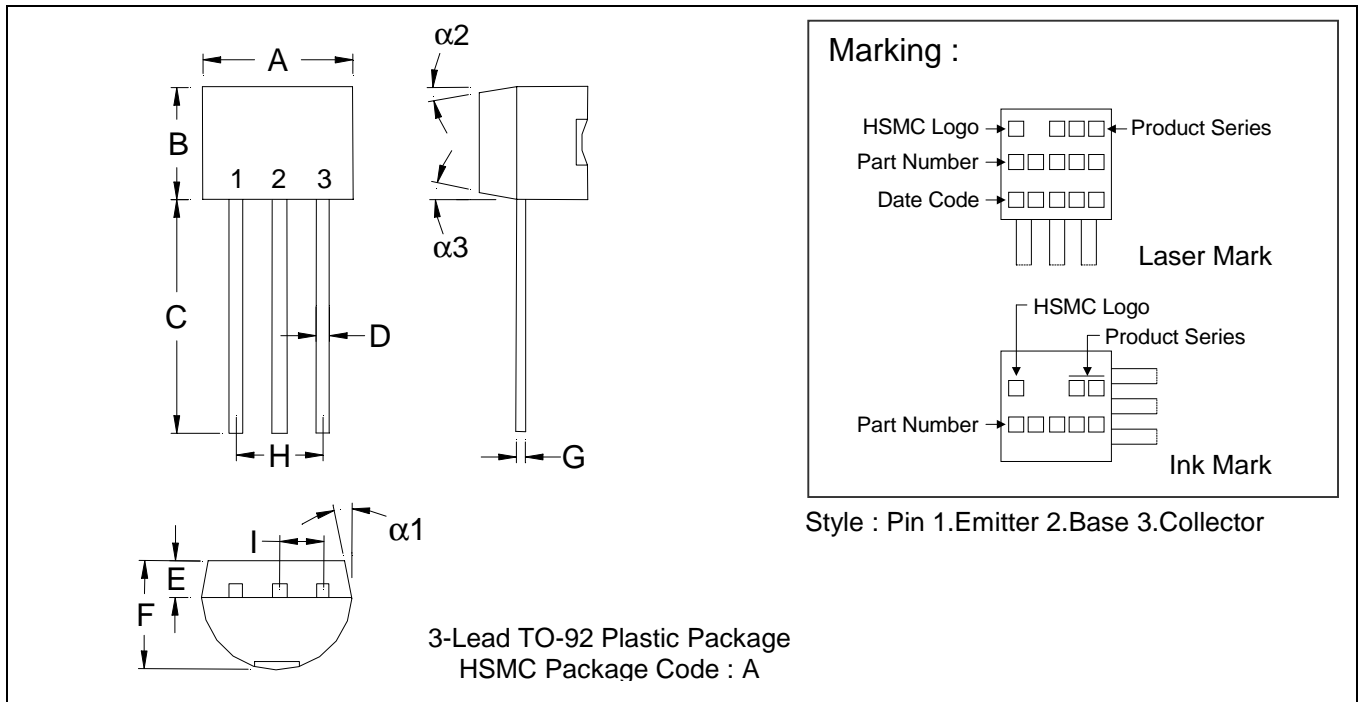
### Characteristics Curve







## TO-92 Dimension



\*:Typical

| DIM | Inches |         | Millimeters |       | DIM        | Inches |         | Millimeters |       |
|-----|--------|---------|-------------|-------|------------|--------|---------|-------------|-------|
|     | Min.   | Max.    | Min.        | Max.  |            | Min.   | Max.    | Min.        | Max.  |
| A   | 0.1704 | 0.1902  | 4.33        | 4.83  | G          | 0.0142 | 0.0220  | 0.36        | 0.56  |
| B   | 0.1704 | 0.1902  | 4.33        | 4.83  | H          | -      | *0.1000 | -           | *2.54 |
| C   | 0.5000 | -       | 12.70       | -     | I          | -      | *0.0500 | -           | *1.27 |
| D   | 0.0142 | 0.0220  | 0.36        | 0.56  | $\alpha 1$ | -      | *5°     | -           | *5°   |
| E   | -      | *0.0500 | -           | *1.27 | $\alpha 2$ | -      | *2°     | -           | *2°   |
| F   | 0.1323 | 0.1480  | 3.36        | 3.76  | $\alpha 3$ | -      | *2°     | -           | *2°   |

- Notes :**
1. Dimension and tolerance based on our Spec. dated Apr. 25, 1996.
  2. Controlling dimension : millimeters.
  3. Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
  4. If there is any question with packing specification or packing method, please contact your local HSMC sales office.

**Material :**

- Lead : 42 Alloy ; solder plating
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0

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