

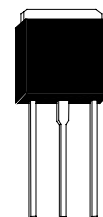


# HI13003

NPN EPITAXIAL PLANAR TRANSISTOR

## Description

These devices are designed for high-voltage, high-speed power switching inductive circuits where fall time is critical. They are particularly suited for 115 and 220V switchmode applications such as Switching Regulators, Inverters, Motor Controls, Solenoid/Relay drivers and Deflection circuits.



TO-251

## Absolute Maximum Ratings (Ta=25°C)

- Maximum Temperatures  
Storage Temperature ..... -55 ~ +150 °C  
Junction Temperature ..... 150 °C Maximum
- Maximum Power Dissipation  
Total Power Dissipation (Tc=25°C) ..... 40 W  
Total Power Dissipation (Ta=25°C) ..... 1.3 W
- Maximum Voltages and Currents (Ta=25°C)  
BVCEO Collector to Emitter Voltage ..... 700 V  
VCEO Collector to Emitter Voltage ..... 400 V  
VEBO Emitter to Base Voltage ..... 9 V  
IC Collector Current ..... 1.5 A

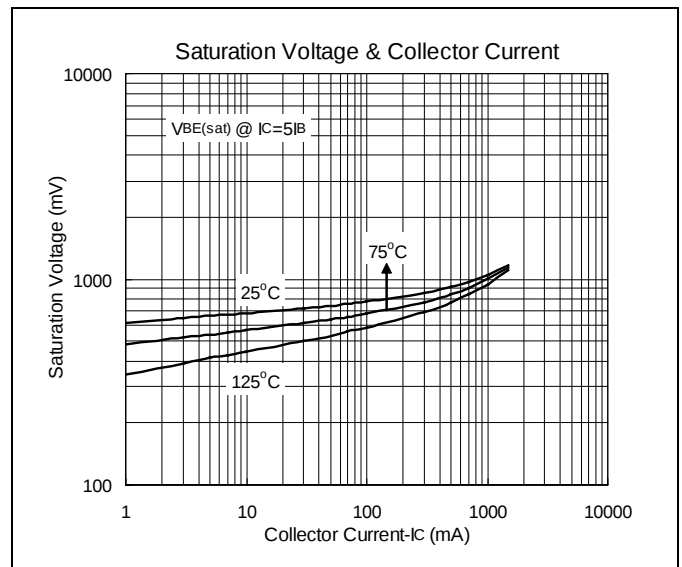
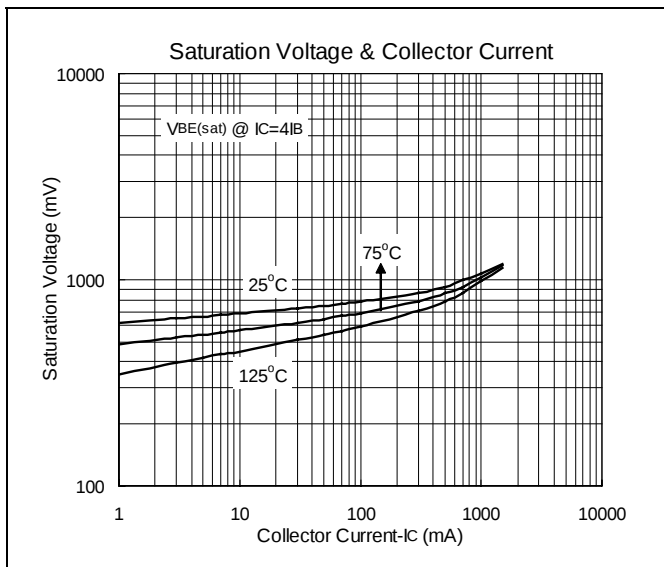
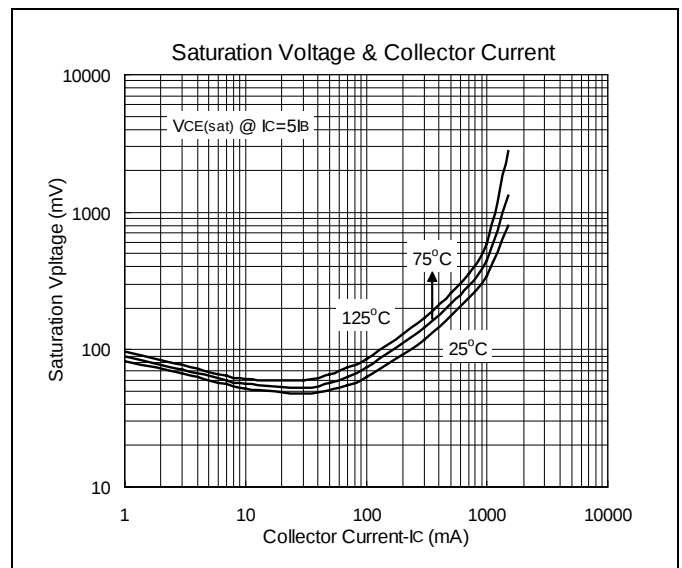
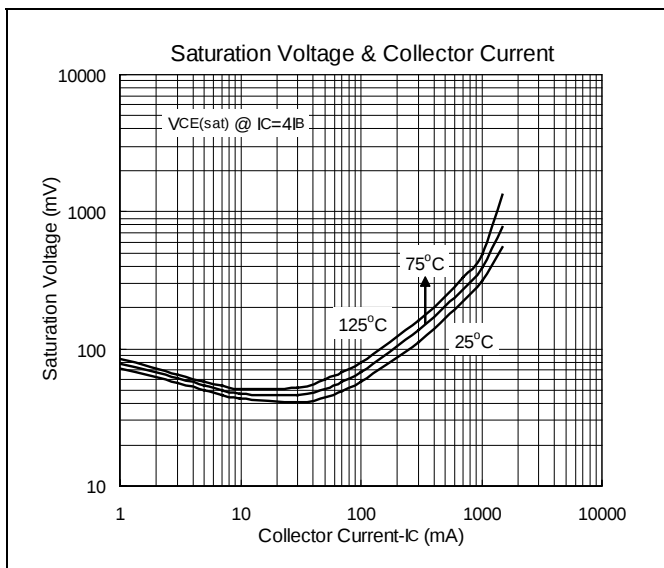
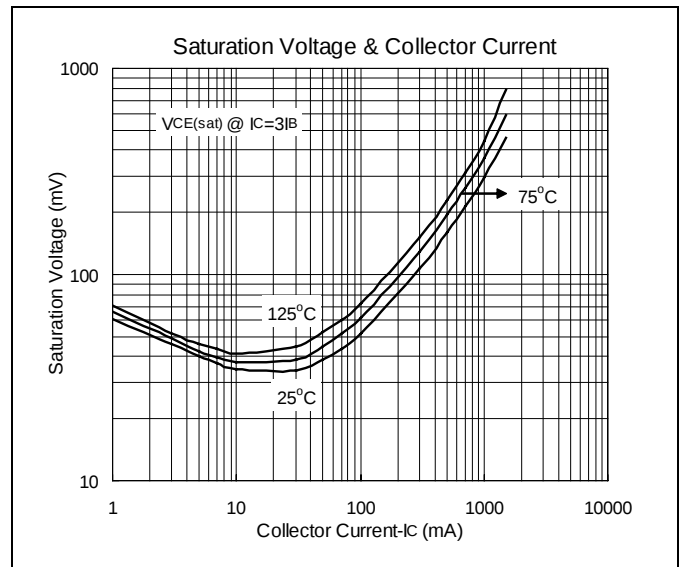
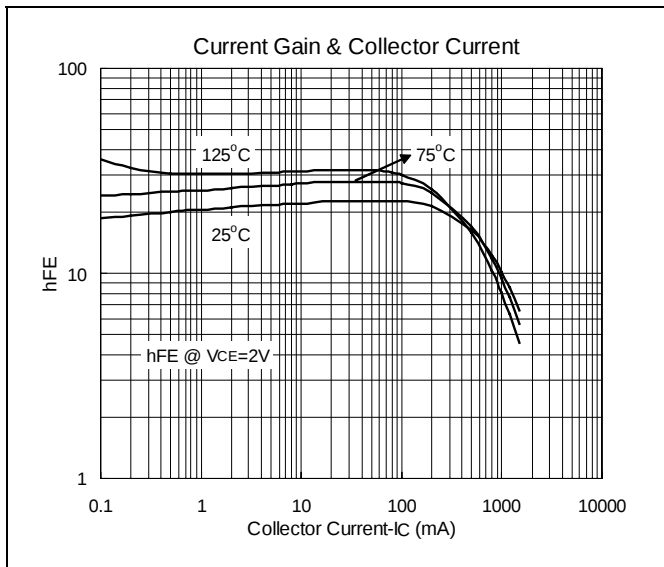
## Characteristics (Ta=25°C)

| Symbol     | Min. | Typ. | Max. | Unit | Test Conditions         |
|------------|------|------|------|------|-------------------------|
| BVCEO      | 400  | -    | -    | V    | IC=10mA                 |
| BVCEV      | 700  | -    | -    | V    | IC=1mA, VBE(OFF)=1.5V   |
| IEBO       | -    | -    | 1    | mA   | VEB=9V                  |
| ICEV       | -    | -    | 1    | mA   | VCE=700V, VBE(OFF)=1.5V |
| *VCE(sat)1 | -    | -    | 0.5  | V    | IC=0.5A, IB=0.1A        |
| *VCE(sat)2 | -    | -    | 1    | V    | IC=1A, IB=0.25A         |
| *VCE(sat)3 | -    | -    | 3    | V    | IC=1.5A, IB=0.5A        |
| *VBE(sat)1 | -    | -    | 1    | V    | IC=0.5A, IB=0.1A        |
| *VBE(sat)2 | -    | -    | 1.2  | V    | IC=1A, IB=0.25A         |
| *hFE1      | 8    | -    | 40   |      | IC=0.5A, VCE=2V         |
| *hFE2      | 5    | -    | 25   |      | VCE=2V, IC=1A           |
| Cob        | -    | 21   | -    | pF   | VCB=10V, IE=0, f=1MHz   |

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

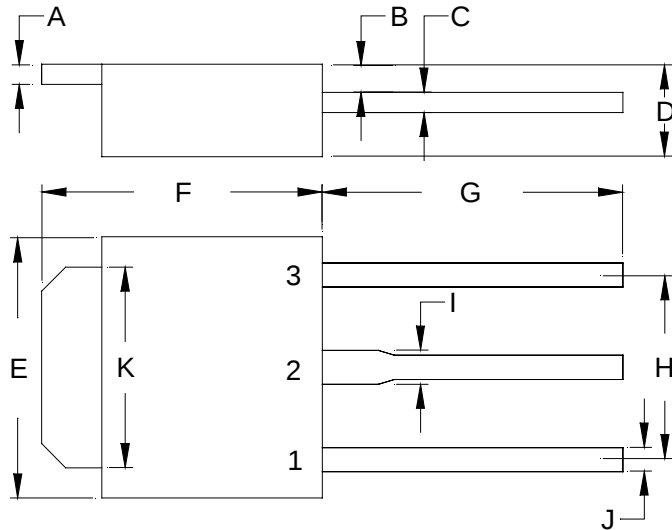


### Characteristics Curve



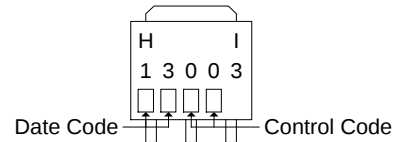


### TO-251 Dimension



3-Lead TO-251 Plastic Package  
HSMC Package Code: I

Marking:



Style: Pin 1.Base 2.Collector 3.Emitter

\*: Typical

| DIM | Inches |        | Millimeters |      | DIM | Inches |         | Millimeters |       |
|-----|--------|--------|-------------|------|-----|--------|---------|-------------|-------|
|     | Min.   | Max.   | Min.        | Max. |     | Min.   | Max.    | Min.        | Max.  |
| A   | 0.0177 | 0.0217 | 0.45        | 0.55 | G   | 0.2559 | -       | 6.50        | -     |
| B   | 0.0354 | 0.0591 | 0.90        | 1.50 | H   | -      | *0.1811 | -           | *4.60 |
| C   | 0.0177 | 0.0236 | 0.45        | 0.60 | I   | -      | 0.0354  | -           | 0.90  |
| D   | 0.0866 | 0.0945 | 2.20        | 2.40 | J   | -      | 0.0315  | -           | 0.80  |
| E   | 0.2520 | 0.2677 | 6.40        | 6.80 | K   | 0.2047 | 0.2165  | 5.20        | 5.50  |
| F   | 0.2677 | 0.2835 | 6.80        | 7.20 |     |        |         |             |       |

Notes: 1.Dimension and tolerance based on our Spec. dated May. 24,1995.  
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

#### Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of HSMC.
- HSMC reserves the right to make changes to its products without notice.
- **HSMC semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- HSMC assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.

#### Head Office And Factory:

- **Head Office** (Hi-Sincerity Microelectronics Corp.): 10F.,No. 61, Sec. 2, Chung-Shan N. Rd. Taipei Taiwan R.O.C.  
Tel: 886-2-25212056 Fax: 886-2-25632712, 25368454
- **Factory 1:** No. 38, Kuang Fu S. Rd., Fu-Kou Hsin-Chu Industrial Park Hsin-Chu Taiwan. R.O.C  
Tel: 886-3-5983621~5 Fax: 886-3-5982931