

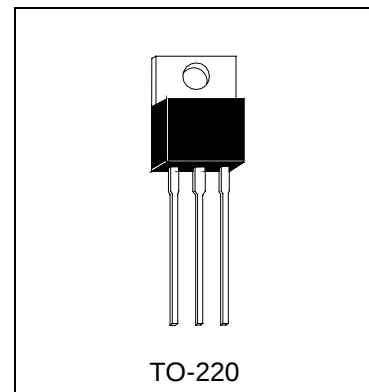


# HTIP42C

PNP EPITAXIAL PLANAR TRANSISTOR

## Description

The HTIP42C is designed for use in general purpose amplifier and switching applications.



TO-220

## Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ )

- Maximum Temperatures  
Storage Temperature .....  $-55 \sim +150^\circ\text{C}$   
Junction Temperature .....  $+150^\circ\text{C}$  Maximum
- Maximum Power Dissipation  
Total Power Dissipation ( $T_C=25^\circ\text{C}$ ) ..... 65 W  
Total Power Dissipation ( $T_A=25^\circ\text{C}$ ) ..... 2 W
- Maximum Voltages and Currents  
 $BV_{CBO}$  Collector to Base Voltage ..... -100 V  
 $BV_{CEO}$  Collector to Emitter Voltage ..... -100 V  
 $BV_{EBO}$  Emitter to Base Voltage ..... -5 V  
 $I_C$  Collector Current ..... -6 A

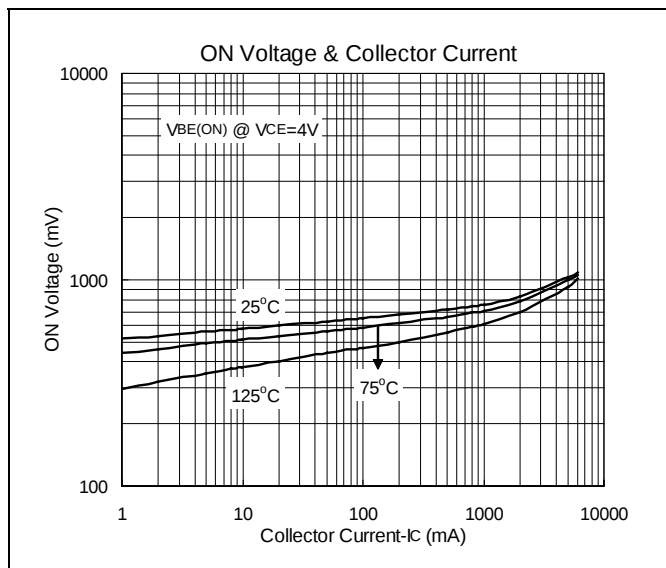
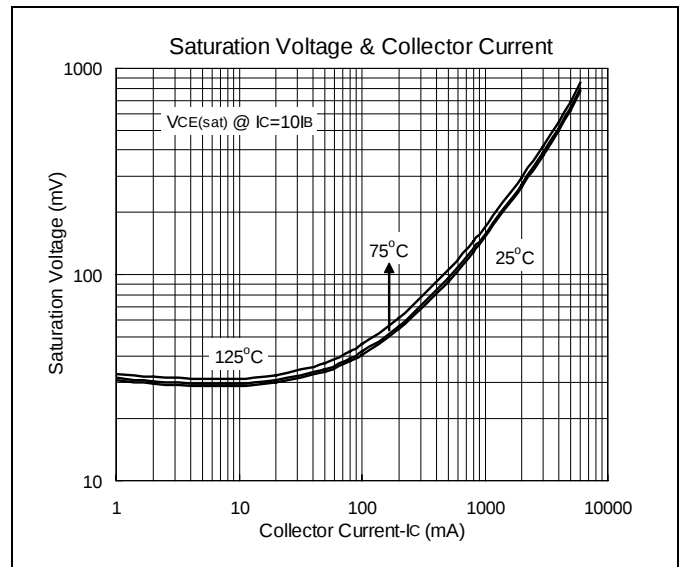
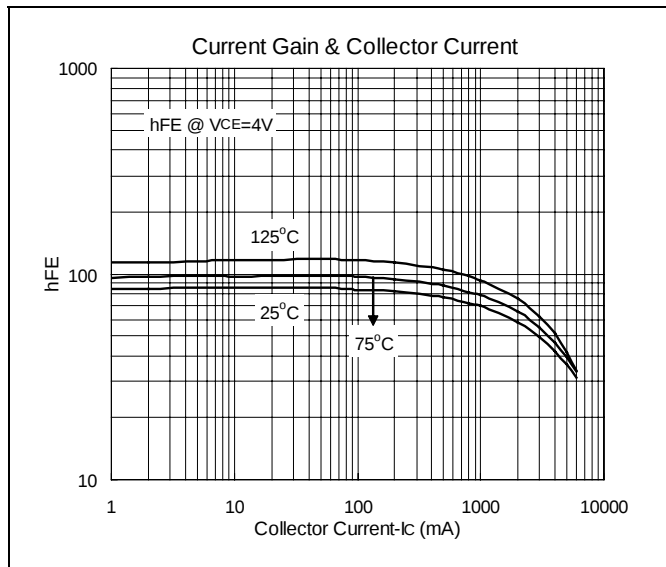
## Electrical Characteristics ( $T_A=25^\circ\text{C}$ )

| Symbol         | Min. | Typ. | Max. | Unit          | Test Conditions                                            |
|----------------|------|------|------|---------------|------------------------------------------------------------|
| $BV_{CBO}$     | -100 | -    | -    | V             | $I_C=-1\text{mA}$ , $I_E=0$                                |
| $BV_{CEO}$     | -100 | -    | -    | V             | $I_C=-30\text{mA}$ , $I_B=0$                               |
| $I_{CES}$      | -    | -    | -400 | $\mu\text{A}$ | $V_{CE}=-100\text{V}$                                      |
| $I_{CEO}$      | -    | -    | -700 | $\mu\text{A}$ | $V_{CE}=-60\text{V}$                                       |
| $I_{EBO}$      | -    | -    | -1   | mA            | $V_{EB}=-5\text{V}$                                        |
| $*V_{CE(sat)}$ | -    | -    | -1.5 | V             | $I_C=-6\text{A}$ , $I_B=-600\text{mA}$                     |
| $*V_{BE(on)}$  | -    | -    | -2   | V             | $I_C=-6\text{A}$ , $V_{CE}=-4\text{V}$                     |
| $*h_{FE1}$     | 30   | -    | -    |               | $I_C=-0.3\text{A}$ , $V_{CE}=-4\text{V}$                   |
| $*h_{FE2}$     | 15   | -    | 75   |               | $I_C=-3\text{A}$ , $V_{CE}=-4\text{V}$                     |
| $f_T$          | 3    | -    | -    | MHz           | $I_C=-0.1\text{A}$ , $V_{CE}=-5\text{V}$ , $f=1\text{MHz}$ |

\*Pulse Test: Pulse Width  $\leq 380\mu\text{s}$ , Duty Cycle  $\leq 2\%$

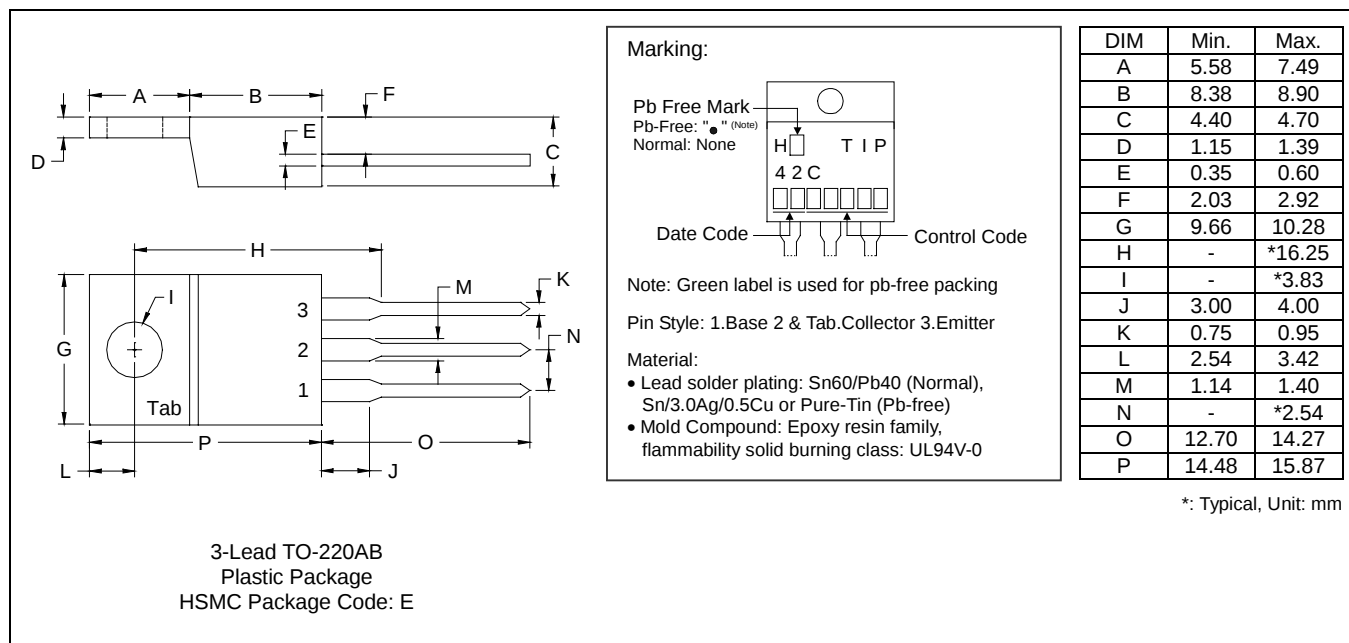


## Characteristics Curve





### TO-220AB Dimension



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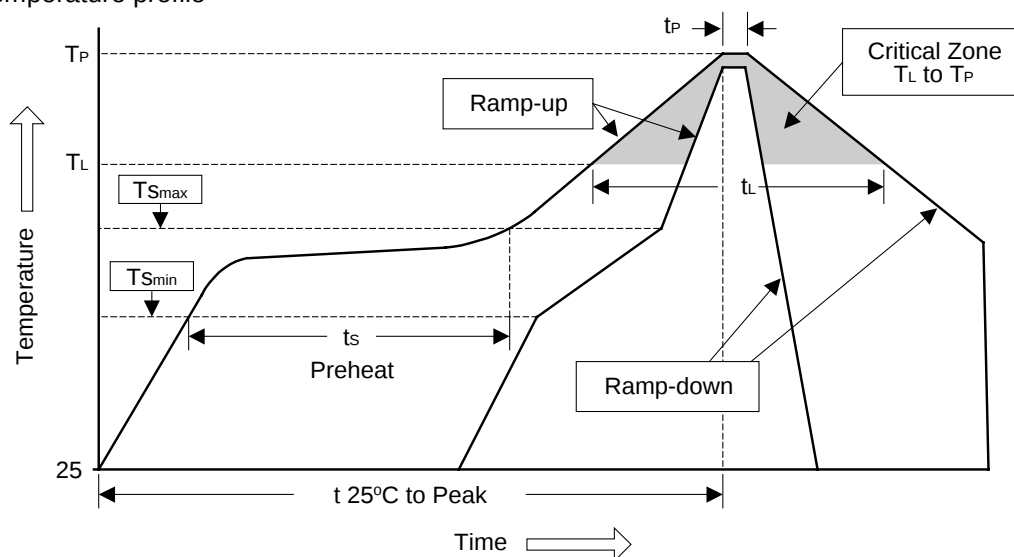
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## Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



| Profile Feature                                      | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|------------------------------------------------------|-------------------------|------------------|
| Average ramp-up rate ( $T_L$ to $T_P$ )              | <3°C/sec                | <3°C/sec         |
| Preheat                                              |                         |                  |
| - Temperature Min ( $T_{Smin}$ )                     | 100°C                   | 150°C            |
| - Temperature Max ( $T_{Smax}$ )                     | 150°C                   | 200°C            |
| - Time (min to max) ( $t_s$ )                        | 60~120 sec              | 60~180 sec       |
| $T_{Smax}$ to $T_L$                                  |                         |                  |
| - Ramp-up Rate                                       | <3°C/sec                | <3°C/sec         |
| Time maintained above:                               |                         |                  |
| - Temperature ( $T_L$ )                              | 183°C                   | 217°C            |
| - Time ( $t_L$ )                                     | 60~150 sec              | 60~150 sec       |
| Peak Temperature ( $T_P$ )                           | 240°C +0/-5°C           | 260°C +0/-5°C    |
| Time within 5°C of actual Peak Temperature ( $t_P$ ) | 10~30 sec               | 20~40 sec        |
| Ramp-down Rate                                       | <6°C/sec                | <6°C/sec         |
| Time 25°C to Peak Temperature                        | <6 minutes              | <8 minutes       |

3. Flow (wave) soldering (solder dipping)

| Products         | Peak temperature | Dipping time |
|------------------|------------------|--------------|
| Pb devices.      | 245°C ±5°C       | 5sec ±1sec   |
| Pb-Free devices. | 260°C +0/-5°C    | 5sec ±1sec   |