

## Silicon PNP Power Transistors

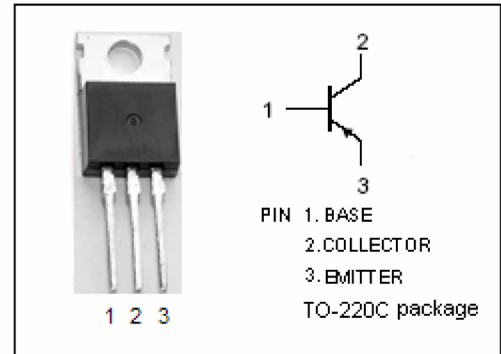
## TIP42/42A/42B/42C

### DESCRIPTION

- DC Current Gain  $-h_{FE} = 30(\text{Min})@ I_C = -0.3\text{A}$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(\text{SUS})} = -40\text{V}(\text{Min})$ - TIP42;  $-60\text{V}(\text{Min})$ - TIP42A  
 $-80\text{V}(\text{Min})$ - TIP42B;  $-100\text{V}(\text{Min})$ - TIP42C
- Complement to Type TIP41/41A/41B/41C

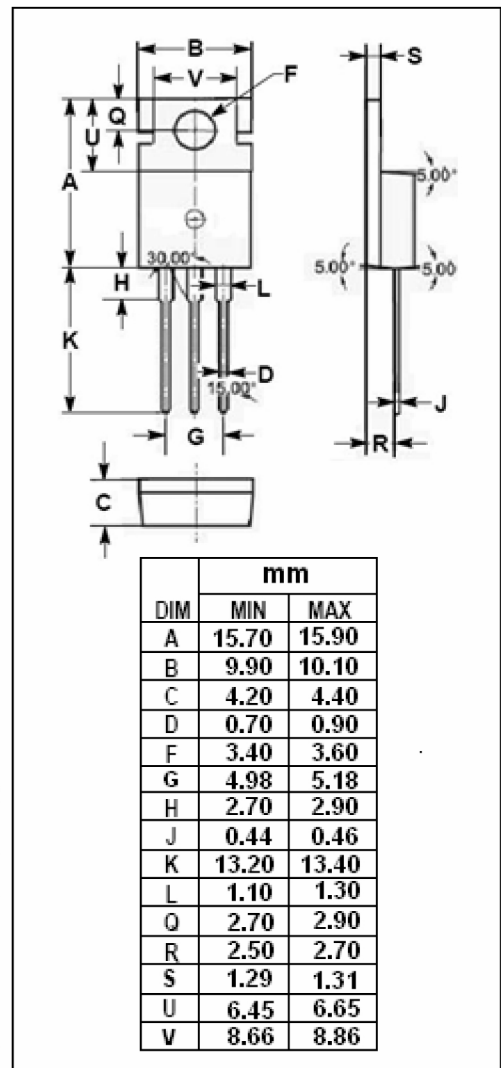
### APPLICATIONS

- Designed for use in general purpose amplifier and switching applications



### ABSOLUTE MAXIMUM RATINGS( $T_a=25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                                             | VALUE   | UNIT             |   |
|-----------|-------------------------------------------------------|---------|------------------|---|
| $V_{CBO}$ | Collector-Base Voltage                                | TIP42   | -40              | V |
|           |                                                       | TIP42A  | -60              |   |
|           |                                                       | TIP42B  | -80              |   |
|           |                                                       | TIP42C  | -100             |   |
| $V_{CEO}$ | Collector-Emitter Voltage                             | TIP42   | -40              | V |
|           |                                                       | TIP42A  | -60              |   |
|           |                                                       | TIP42B  | -80              |   |
|           |                                                       | TIP42C  | -100             |   |
| $V_{EBO}$ | Emitter-Base Voltage                                  | -5      | V                |   |
| $I_C$     | Collector Current-Continuous                          | -6      | A                |   |
| $I_{CM}$  | Collector Current-Peak                                | -10     | A                |   |
| $I_B$     | Base Current                                          | -2      | A                |   |
| $P_C$     | Collector Power Dissipation<br>$T_C=25^\circ\text{C}$ | 65      | W                |   |
|           | Collector Power Dissipation<br>$T_a=25^\circ\text{C}$ | 2       |                  |   |
| $T_j$     | Junction Temperature                                  | 150     | $^\circ\text{C}$ |   |
| $T_{stg}$ | Storage Temperature Range                             | -65~150 | $^\circ\text{C}$ |   |



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#### ELECTRICAL CHARACTERISTICS

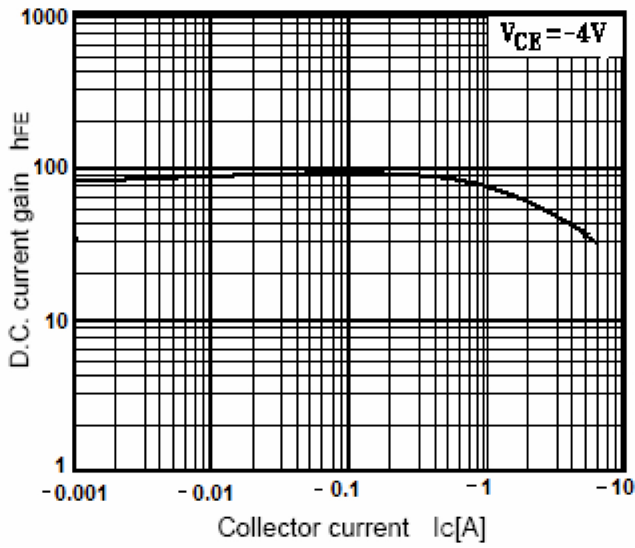
$T_C=25^\circ\text{C}$  unless otherwise specified

| SYMBOL        | PARAMETER                            | CONDITIONS                                 | MIN                           | MAX  | UNIT |                                     |
|---------------|--------------------------------------|--------------------------------------------|-------------------------------|------|------|-------------------------------------|
| $V_{CE(SUS)}$ | Collector-Emitter Sustaining Voltage | TIP42                                      | $I_C = -30\text{mA}; I_B = 0$ | -40  | V    |                                     |
|               |                                      | TIP42A                                     |                               | -60  |      |                                     |
|               |                                      | TIP42B                                     |                               | -80  |      |                                     |
|               |                                      | TIP42C                                     |                               | -100 |      |                                     |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = -6\text{A}; I_B = -0.6\text{A}$     |                               | -1.5 | V    |                                     |
| $V_{BE(on)}$  | Base-Emitter On Voltage              | $I_C = -6\text{A}; V_{CE} = -4\text{V}$    |                               | -2.0 | V    |                                     |
| $I_{CES}$     | Collector Cutoff Current             | TIP42                                      |                               | -0.4 | mA   |                                     |
|               |                                      | TIP42A                                     |                               |      |      | $V_{CE} = -60\text{V}; V_{EB} = 0$  |
|               |                                      | TIP42B                                     |                               |      |      | $V_{CE} = -80\text{V}; V_{EB} = 0$  |
|               |                                      | TIP42C                                     |                               |      |      | $V_{CE} = -100\text{V}; V_{EB} = 0$ |
| $I_{CEO}$     | Collector Cutoff Current             | TIP42/42A                                  |                               | -0.7 | mA   |                                     |
|               |                                      | TIP42B/42C                                 |                               |      |      | $V_{CE} = -60\text{V}; I_B = 0$     |
| $I_{EBO}$     | Emitter Cutoff Current               | $V_{EB} = -5\text{V}; I_C = 0$             |                               | -1.0 | mA   |                                     |
| $h_{FE-1}$    | DC Current Gain                      | $I_C = -0.3\text{A}; V_{CE} = -4\text{V}$  | 30                            |      |      |                                     |
| $h_{FE-2}$    | DC Current Gain                      | $I_C = -3\text{A}; V_{CE} = -4\text{V}$    | 15                            | 75   |      |                                     |
| $f_T$         | Current-Gain—Bandwidth Product       | $I_C = -0.5\text{A}; V_{CE} = -10\text{V}$ | 3                             |      | MHz  |                                     |

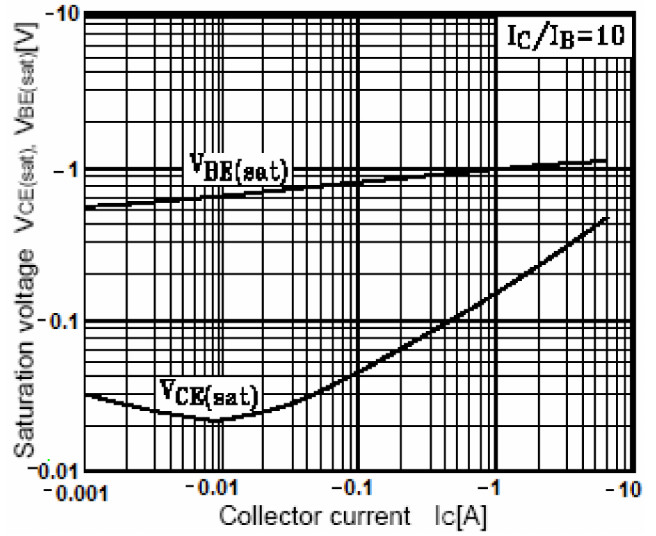
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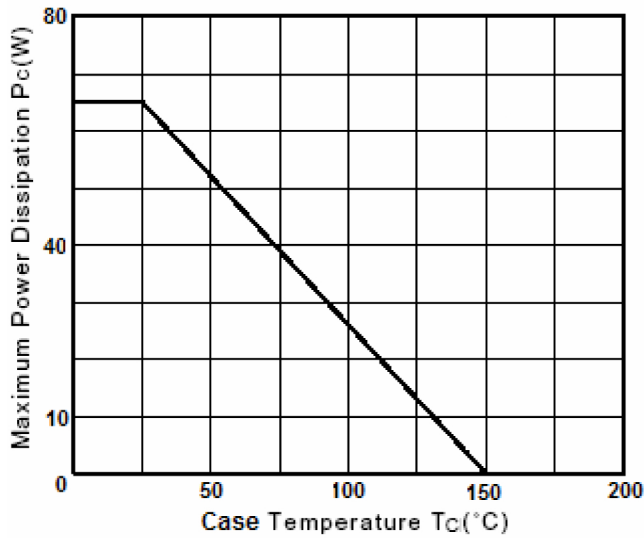
**$h_{FE}$ - $I_C$  Characteristics**



**$V_{CE(sat)}$ - $I_C$  &  $V_{BE(sat)}$ - $I_C$  Characteristics**



**Power Derating**



**Safe Operating Area**

