

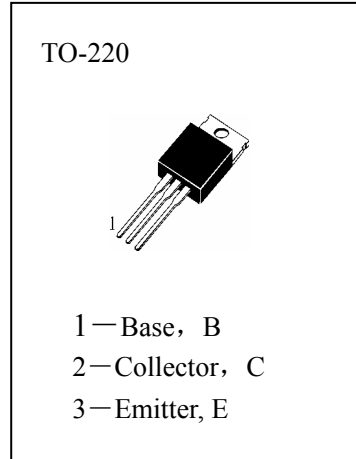
# HP142TS

## APPLICATIONS

High DC Current Gain

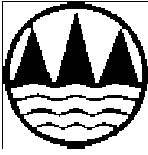
## ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C)

|  |           |
|--|-----------|
| T <sub>stg</sub> —Storage Temperature                        | −55~150°C |
| T <sub>j</sub> —Junction Temperature                         | 150°C     |
| P <sub>C</sub> —Collector Dissipation (T <sub>c</sub> =25°C) | 70W       |
| V <sub>CBO</sub> —Collector-Base Voltage                     | 100V      |
| V <sub>CEO</sub> —Collector-Emitter Voltage                  | 100V      |
| V <sub>EBO</sub> —Emitter-Base Voltage                       | 5V        |
| I <sub>C</sub> —Collector Current (DC)                       | 8A        |
| I <sub>B</sub> —Base Current                                 | 0.5A      |



## ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C)

| Symbol                 | Characteristics                       | Min  | Typ  | Max | Unit | Test Conditions   |
|------------------------|---------------------------------------|------|------|-----|------|---|
| BV <sub>CEO(SUS)</sub> | Collector-Emitter Sustaining Voltage  | 100  |      |     | V    | I <sub>C</sub> =30mA, I <sub>B</sub> =0   |
| I <sub>CEO</sub>       | Collector Cutoff Current              |      |      | 2   | mA   | V <sub>CE</sub> =50V, I <sub>B</sub> =0   |
| I <sub>CBO</sub>       | Collector Cutoff Current              |      |      | 1   | mA   | V <sub>CB</sub> =100V, I <sub>E</sub> =0  |
| I <sub>EBO</sub>       | Emitter-Base Cutoff Current           |      |      | 2   | mA   | V <sub>EB</sub> =5V, I <sub>C</sub> =0  |
| H <sub>FE</sub> (1)    | DC Current Gain                       | 1000 |      |     |      | V <sub>CE</sub> =4V, I <sub>C</sub> =0.5A   |
| H <sub>FE</sub> (2)    |                                       | 1000 |      |     |      | V <sub>CE</sub> =4V, I <sub>C</sub> =3A   |
| V <sub>CE(sat1)</sub>  | Collector- Emitter Saturation Voltage |      |      | 2   | V    | I <sub>C</sub> =5A, I <sub>B</sub> =10mA  |
| V <sub>CE(sat2)</sub>  |                                       |      |      | 3   | V    | I <sub>C</sub> =10A, I <sub>B</sub> =40mA   |
| V <sub>BE(sat)</sub>   | Base- Emitter Saturation Voltage      |      |      | 3.5 | V    | I <sub>C</sub> =10A, I <sub>B</sub> =40mA   |
| V <sub>BE(on)</sub>    | Base- Emitter On Voltage              |      |      | 3   | V    | V <sub>CE</sub> =4V, I <sub>C</sub> =10A,   |
| t <sub>D</sub>         | Deiay time                            |      | 0.15 |     | uS   | V <sub>CC</sub> =30V, I <sub>C</sub> =5A<br>I <sub>B1</sub> =20mA<br>I <sub>B2</sub> =-20mA |
| t <sub>R</sub>         | Rise Time                             |      | 0.55 |     | uS   |   |
| t <sub>S</sub>         | Storage Time                          |      | 2.5  |     | uS   |   |
| t <sub>F</sub>         | Fall Time                             |      | 2.5  |     | uS   |   |



# HP142TS

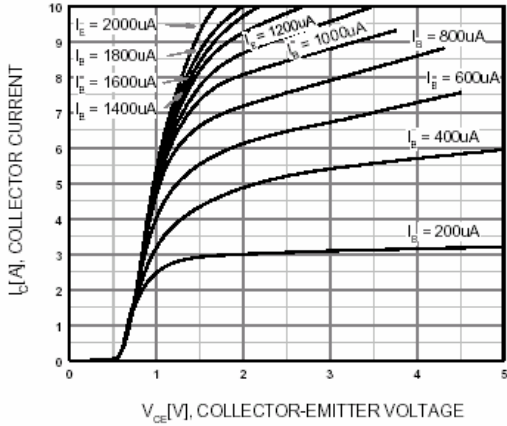


Figure 1. Static Characteristic

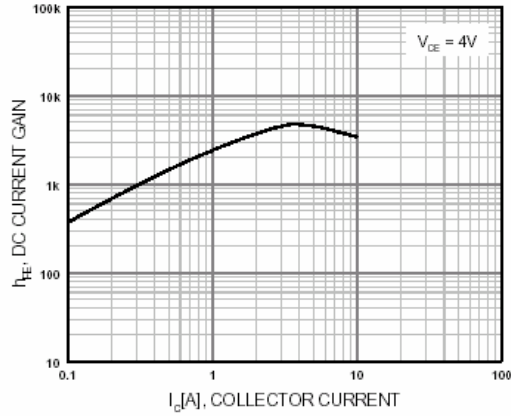


Figure 2. DC current Gain

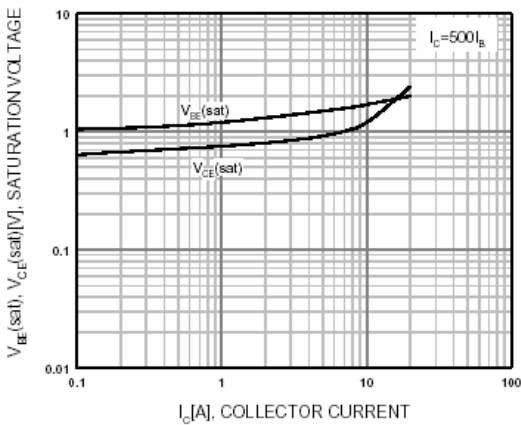


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

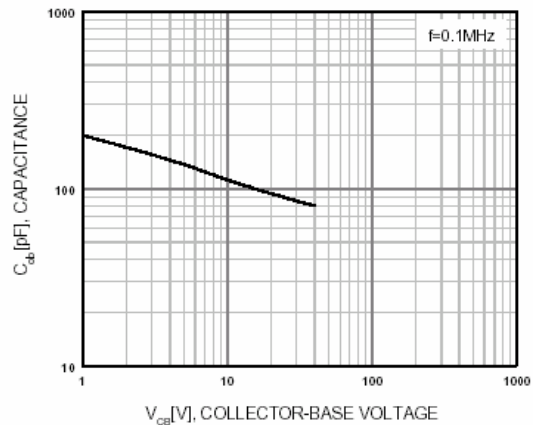


Figure 4. Collector Output Capacitance

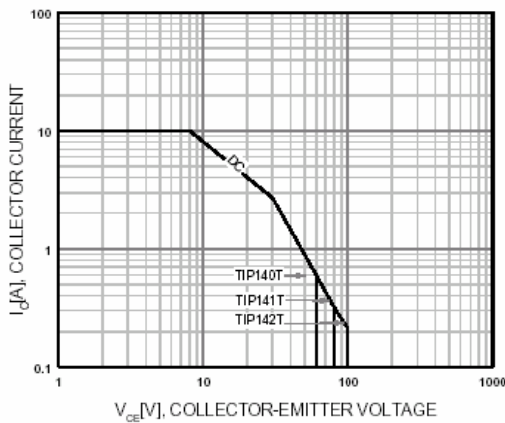


Figure 5. Safe Operating Area

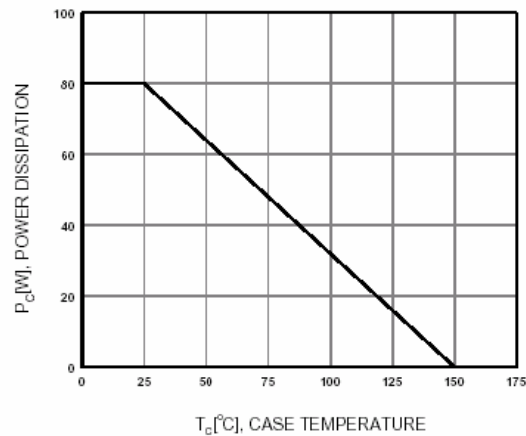


Figure 6. Power Derating