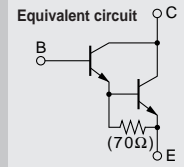


# Darlington 2SD2390



Silicon NPN Triple Diffused Planar Transistor (Complement to type 2SB1560)

Application : Audio, Series Regulator and General Purpose

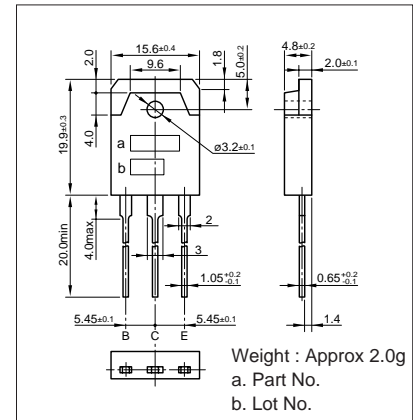
**Absolute maximum ratings** (Ta=25°C)

| Symbol           | Ratings                   | Unit |
|------------------|---------------------------|------|
| V <sub>CB0</sub> | 160                       | V    |
| V <sub>CE0</sub> | 150                       | V    |
| V <sub>EB0</sub> | 5                         | V    |
| I <sub>C</sub>   | 10                        | A    |
| I <sub>B</sub>   | 1                         | A    |
| P <sub>C</sub>   | 100(T <sub>C</sub> =25°C) | W    |
| T <sub>J</sub>   | 150                       | °C   |
| T <sub>stg</sub> | -55 to +150               | °C   |

**Electrical Characteristics** (Ta=25°C)

| Symbol               | Conditions                                | Ratings  | Unit |
|----------------------|---|----------|------|
| I <sub>CB0</sub>     | V <sub>CB</sub> =160V                     | 100max   | μA   |
| I <sub>EB0</sub>     | V <sub>EB</sub> =5V                       | 100max   | μA   |
| V <sub>(BR)CEO</sub> | I <sub>C</sub> =30mA                      | 150min   | V    |
| h <sub>FE</sub>      | V <sub>CE</sub> =4V, I <sub>C</sub> =7A   | 5000min* |      |
| V <sub>CE(sat)</sub> | I <sub>C</sub> =7A, I <sub>B</sub> =7mA   | 2.5max   | V    |
| V <sub>BE(sat)</sub> | I <sub>C</sub> =7A, I <sub>B</sub> =7mA   | 3.0max   | V    |
| f <sub>T</sub>       | V <sub>CE</sub> =12V, I <sub>E</sub> =-2A | 55typ    | MHz  |
| COB                  | V <sub>CB</sub> =10V, f=1MHz              | 95typ    | pF   |

**External Dimensions MT-100(TO3P)**

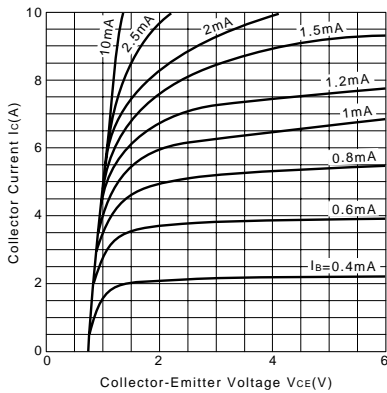


**Typical Switching Characteristics (Common Emitter)**

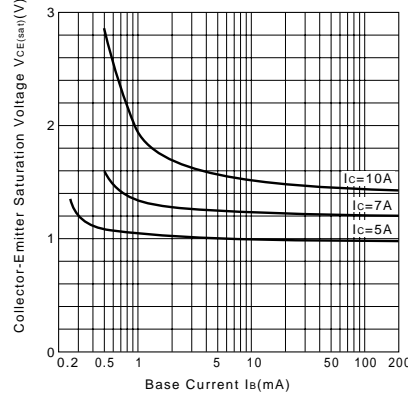
| V <sub>CC</sub> (V) | R <sub>L</sub> (Ω) | I <sub>C</sub> (A) | V <sub>BB1</sub> (V) | V <sub>BB2</sub> (V) | I <sub>B1</sub> (mA) | I <sub>B2</sub> (mA) | t <sub>on</sub> (μs) | t <sub>stg</sub> (μs) | t <sub>f</sub> (μs) |
|---------------------|--------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|---------------------|
| 70                  | 10                 | 7                  | 10                   | -5                   | 7                    | -7                   | 0.5typ               | 10.0typ               | 1.1typ              |

\*h<sub>FE</sub> Rank  $\bar{O}$ (5000 to 12000), P(6500 to 20000), Y(15000 to 30000)

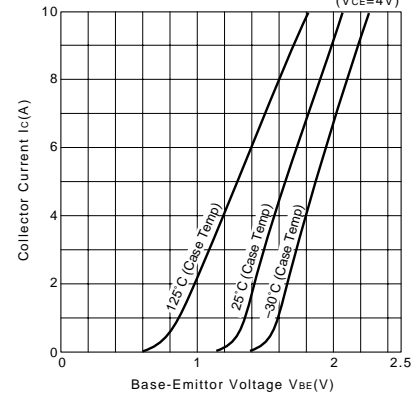
**I<sub>C</sub>-V<sub>CE</sub> Characteristics (Typical)**



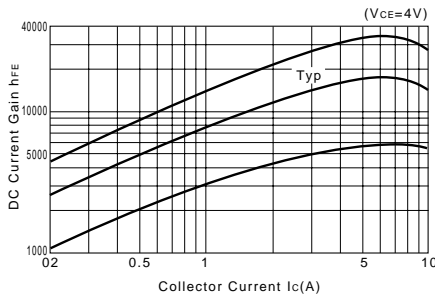
**V<sub>CE(sat)</sub>-I<sub>B</sub> Characteristics (Typical)**



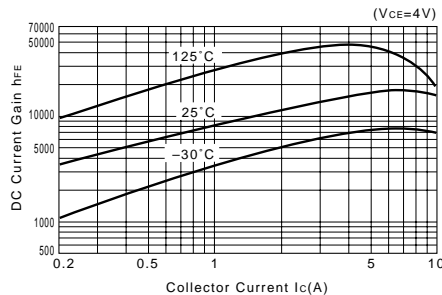
**I<sub>C</sub>-V<sub>BE</sub> Temperature Characteristics (Typical)**



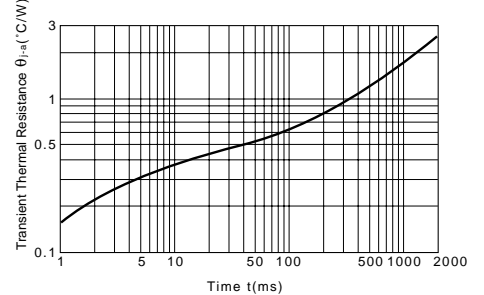
**h<sub>FE</sub>-I<sub>C</sub> Characteristics (Typical)**



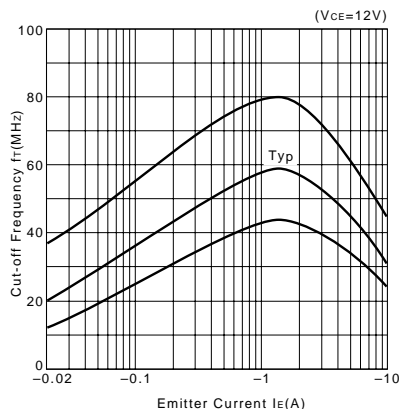
**h<sub>FE</sub>-I<sub>C</sub> Temperature Characteristics (Typical)**



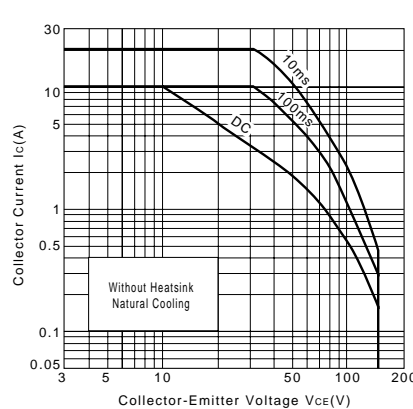
**θ<sub>j-a-t</sub> Characteristics**



**f<sub>T</sub>-I<sub>E</sub> Characteristics (Typical)**



**Safe Operating Area (Single Pulse)**



**P<sub>C</sub>-T<sub>a</sub> Derating**

