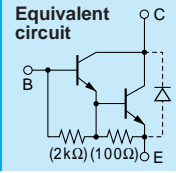


# Darlington 2SD2083



Silicon NPN Triple Diffused Planar Transistor (Complement to type 2SB1383)

Application : Driver for Solenoid, Motor and General Purpose

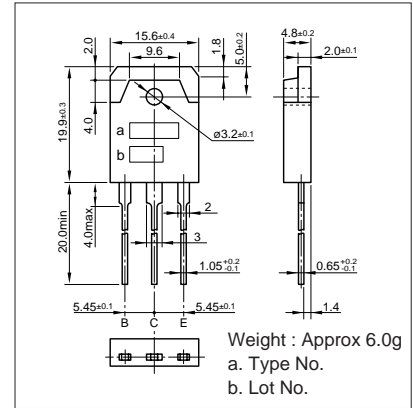
**Absolute maximum ratings** (Ta=25°C)

| Symbol           | 2SD2083                   | Unit |
|------------------|---------------------------|------|
| V <sub>CB0</sub> | 120                       | V    |
| V <sub>CEO</sub> | 120                       | V    |
| V <sub>EB0</sub> | 6                         | V    |
| I <sub>C</sub>   | 25(Pulse40)               | A    |
| I <sub>B</sub>   | 2                         | A    |
| P <sub>c</sub>   | 120(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                                | 2SD2083 | Unit |
|----------------------|---|---------|------|
| I <sub>CB0</sub>     | V <sub>CB</sub> =120V                     | 10max   | μA   |
| I <sub>EB0</sub>     | V <sub>EB</sub> =6V                       | 10max   | mA   |
| V <sub>(BR)CEO</sub> | I <sub>C</sub> =25mA                      | 120min  | V    |
| h <sub>FE</sub>      | V <sub>CE</sub> =4V, I <sub>C</sub> =12A  | 2000min |      |
| V <sub>CE(sat)</sub> | I <sub>C</sub> =12A, I <sub>B</sub> =24mA | 1.8max  | V    |
| V <sub>BE(sat)</sub> | I <sub>C</sub> =12A, I <sub>B</sub> =24mA | 2.5max  | V    |
| f <sub>T</sub>       | V <sub>CE</sub> =12V, I <sub>E</sub> =-1A | 20typ   | MHz  |
| COB                  | V <sub>CB</sub> =10V, f=1MHz              | 340typ  | pF   |

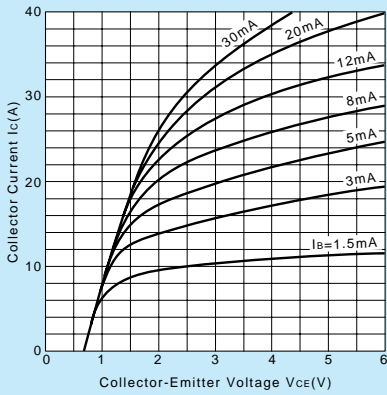
**External Dimensions MT-100(TO3P)**



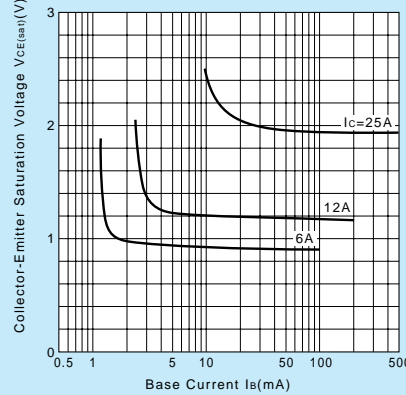
**Typical Switching Characteristics (Common Emitter)**

| 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) |
|---------------------|--------------------|--------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|---------------------|
| 24                  | 2                  | 12                 | 10                   | -5                   | 24                   | -24                  | 1.0typ               | 6.0typ                | 1.0typ              |

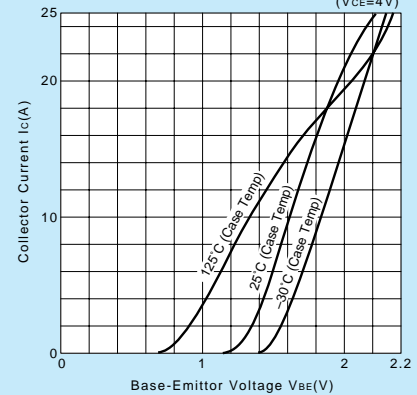
**I<sub>C</sub>-V<sub>CE</sub> Characteristics (Typical)**



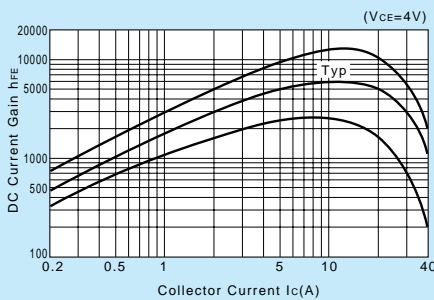
**V<sub>CE(sat)</sub>-I<sub>B</sub> Characteristics (Typical)**



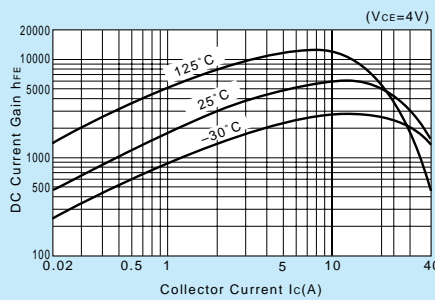
**I<sub>C</sub>-V<sub>BE</sub> Temperature Characteristics (Typical)**



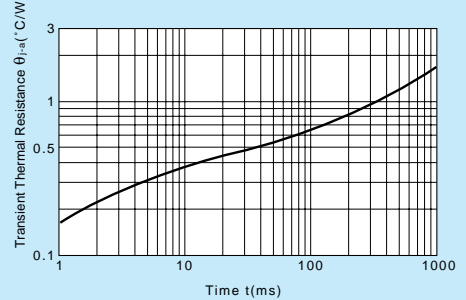
**h<sub>FE</sub>-I<sub>C</sub> Characteristics (Typical)**



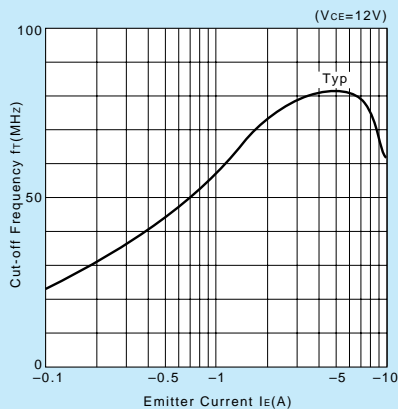
**h<sub>FE</sub>-I<sub>C</sub> Temperature Characteristics (Typical)**



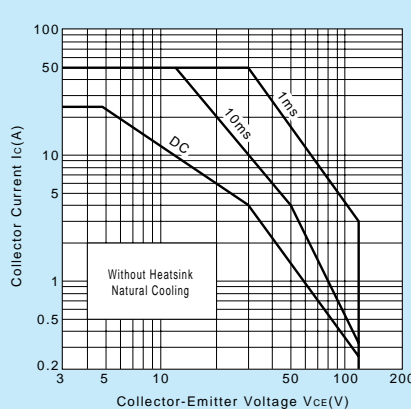
**θ<sub>j-a</sub>-t Characteristics**



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



**Safe Operating Area (Single Pulse)**



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

