

2SD1751

Silicon NPN triple diffusion planar type

For power amplification

Complementary to 2SB1170

Features

- High forward current transfer ratio h_{FE} which has satisfactory linearity
- Low collector to emitter saturation voltage $V_{CE(sat)}$
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

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

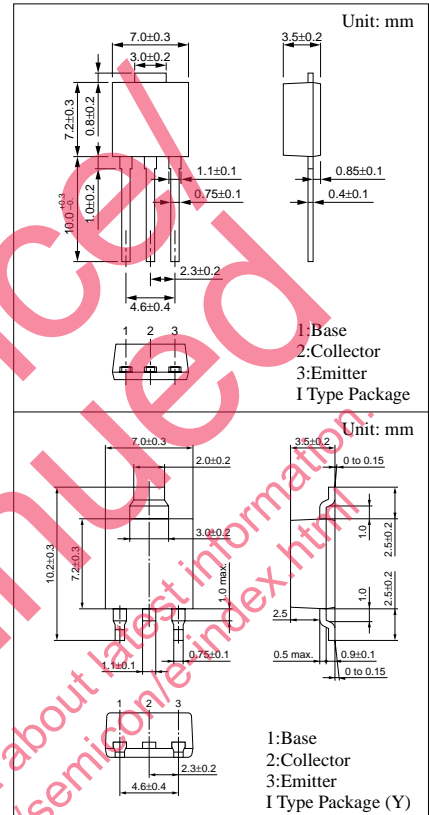
| Parameter | Symbol | Rated | Unit |
|------------------------------|-----------|------------------------|------------------|
| Collector to base voltage | V_{CBO} | 60 | V |
| Collector to emitter voltage | V_{CEO} | 60 | V |
| Emitter to base voltage | V_{EBO} | 6 | V |
| Peak collector current | I_{CP} | 4 | A |
| Collector current | I_C | 2 | A |
| Collector power dissipation | P_C | $T_C=25^\circ\text{C}$ | 15 |
| | | $T_a=25^\circ\text{C}$ | 1.3 |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

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

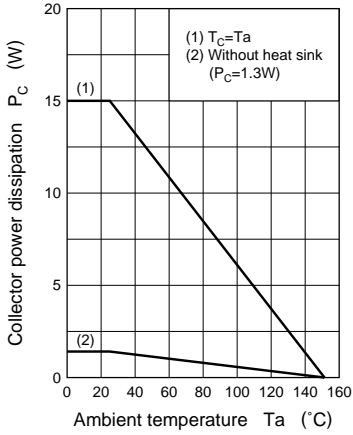
| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---------------|--|-----|-----|-----|---------------|
| Collector cutoff current | I_{CES} | $V_{CE} = 60\text{V}, V_{BE} = 0$ | | | 200 | μA |
| | I_{CEO} | $V_{CE} = 30\text{V}, I_B = 0$ | | | 300 | μA |
| Emitter cutoff current | I_{EBO} | $V_{EB} = 6\text{V}, I_C = 0$ | | | 1 | mA |
| Collector to emitter voltage | V_{CEO} | $I_C = 30\text{mA}, I_B = 0$ | 60 | | | V |
| Forward current transfer ratio | h_{FE1} | $V_{CE} = 4\text{V}, I_C = 0.1\text{A}$ | 35 | | | |
| | h_{FE2} | $V_{CE} = 4\text{V}, I_C = 1\text{A}$ | 70 | | 250 | |
| Base to emitter voltage | V_{BE} | $V_{CE} = 4\text{V}, I_C = 1\text{A}$ | | | 1.2 | V |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 2\text{A}, I_B = 0.2\text{A}$ | | | 2 | V |
| Transition frequency | f_T | $V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$ | | 20 | | MHz |
| Turn-on time | t_{on} | $I_C = 1\text{A}, I_{B1} = 0.1\text{A}, I_{B2} = -0.1\text{A}$ | | 0.2 | | μs |
| Storage time | t_{stg} | | | 3.5 | | μs |
| Fall time | t_f | | | 0.7 | | μs |

* h_{FE2} Rank classification

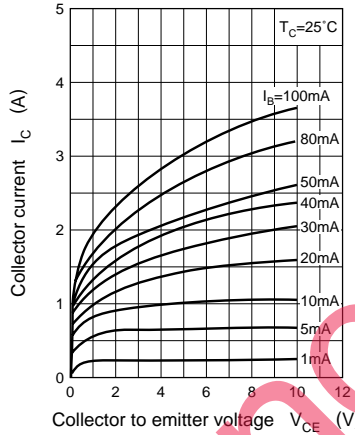
| Rank | Q | P |
|-----------|-----------|------------|
| h_{FE2} | 70 to 150 | 120 to 250 |



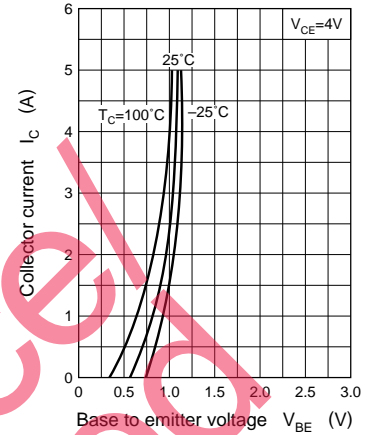
$P_C - T_a$



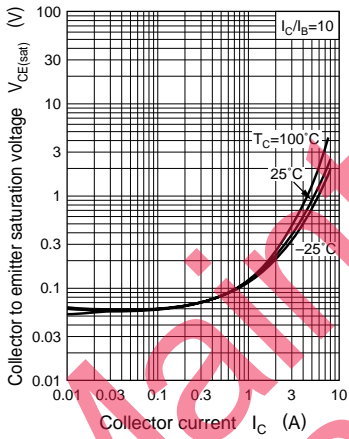
$I_C - V_{CE}$



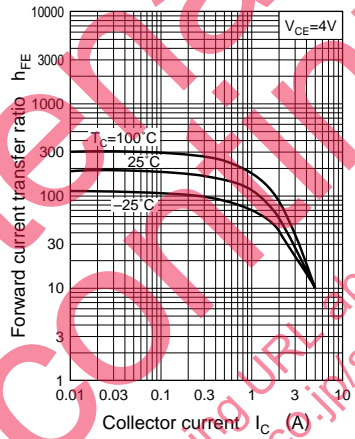
$I_C - V_{BE}$



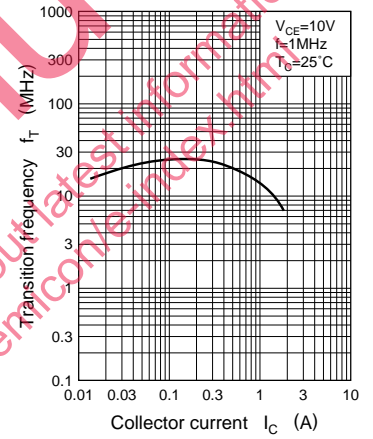
$V_{CE(sat)} - I_C$



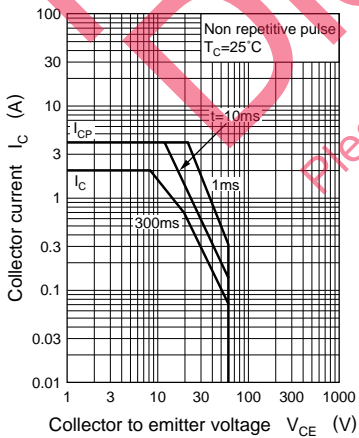
$h_{FE} - I_C$



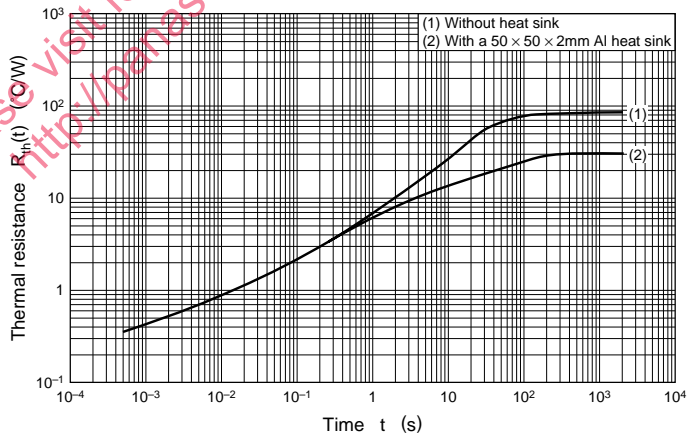
$f_T - I_C$



Area of safe operation (ASO)



$R_{th(t)} - t$



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