

2SD1895

Silicon NPN triple diffusion planar type Darlington

For power amplification

Complementary to 2SB1255

Features

- Optimum for 90W HiFi output
- High forward current transfer ratio h_{FE} : 5000 to 30000
- Low collector to emitter saturation voltage $V_{CE(sat)}$: <2.5V
- Full-pack package which can be installed to the heat sink with one screw

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

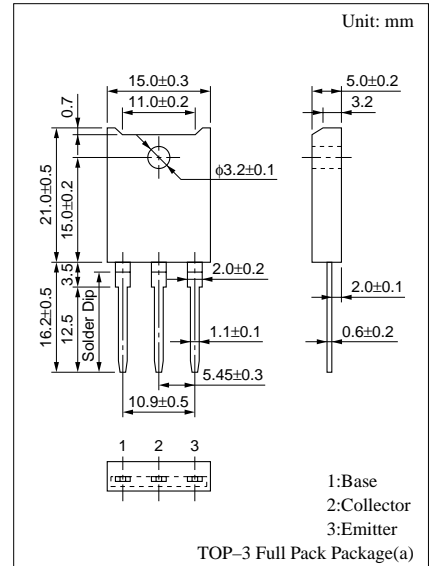
| Parameter | Symbol | Ratings | Unit |
|------------------------------|-----------|------------------------|------------------|
| Collector to base voltage | V_{CBO} | 160 | V |
| Collector to emitter voltage | V_{CEO} | 140 | V |
| Emitter to base voltage | V_{EBO} | 5 | V |
| Peak collector current | I_{CP} | 15 | A |
| Collector current | I_C | 8 | A |
| Collector power dissipation | P_C | $T_C=25^\circ\text{C}$ | 100 |
| | | $T_a=25^\circ\text{C}$ | 3 |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

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

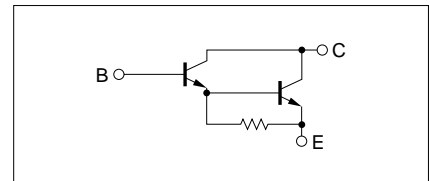
| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---------------|---|------|-----|-------|---------------|
| Collector cutoff current | I_{CBO} | $V_{CB} = 160\text{V}, I_E = 0$ | | | 100 | μA |
| | I_{CEO} | $V_{CE} = 140\text{V}, I_B = 0$ | | | 100 | μA |
| Emitter cutoff current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | | | 100 | μA |
| Collector to emitter voltage | V_{CEO} | $I_C = 30\text{mA}, I_B = 0$ | 140 | | | V |
| Forward current transfer ratio | h_{FE1} | $V_{CE} = 5\text{V}, I_C = 1\text{A}$ | 2000 | | | |
| | h_{FE2}^* | $V_{CE} = 5\text{V}, I_C = 7\text{A}$ | 5000 | | 30000 | |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 7\text{A}, I_B = 7\text{mA}$ | | | 2.5 | V |
| Base to emitter saturation voltage | $V_{BE(sat)}$ | $I_C = 7\text{A}, I_B = 7\text{mA}$ | | | 3.0 | 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} | $I_C = 7\text{A}, I_{B1} = 7\text{mA}, I_{B2} = -7\text{mA}, V_{CC} = 50\text{V}$ | | 2.0 | | μs |
| Storage time | t_{stg} | | | 6.0 | | μs |
| Fall time | t_f | | | 1.2 | | μs |

* h_{FE2} Rank classification

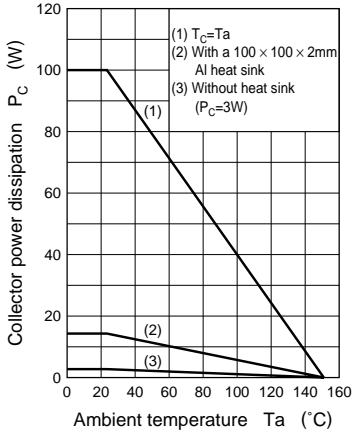
| Rank | Q | P |
|-----------|---------------|---------------|
| h_{FE2} | 5000 to 15000 | 8000 to 30000 |



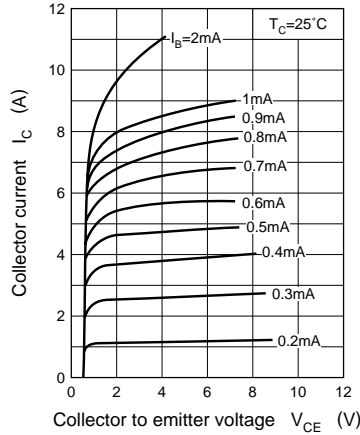
Internal Connection



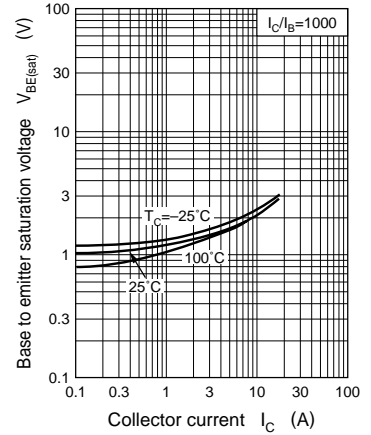
$P_C - T_a$



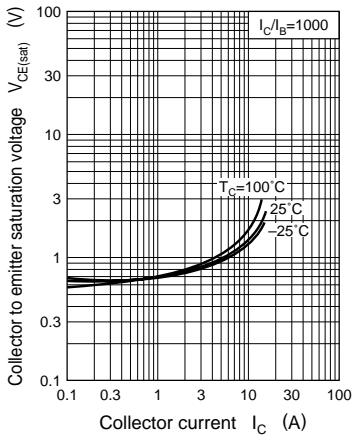
$I_C - V_{CE}$



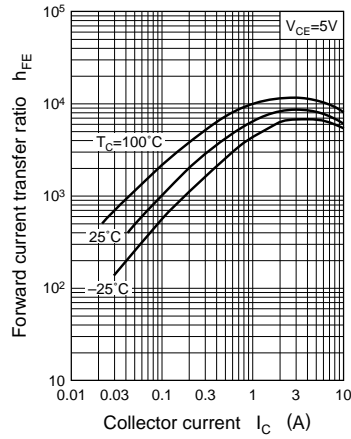
$V_{BE(sat)} - I_C$



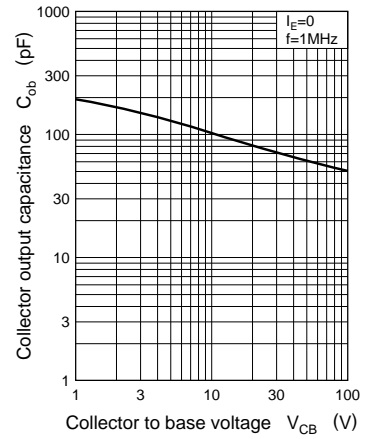
$V_{CE(sat)} - I_C$



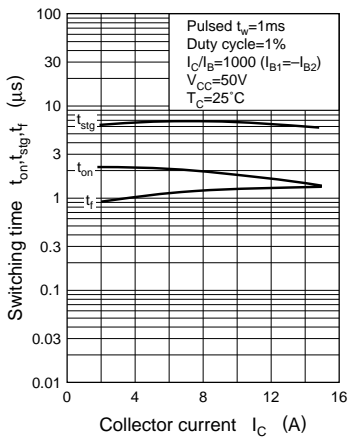
$h_{FE} - I_C$



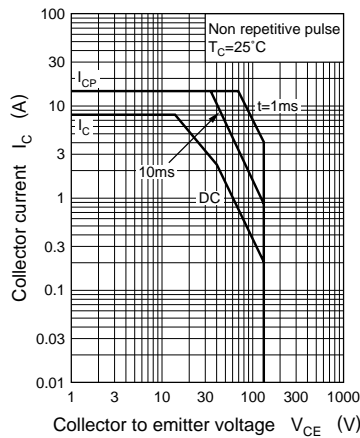
$C_{ob} - V_{CB}$



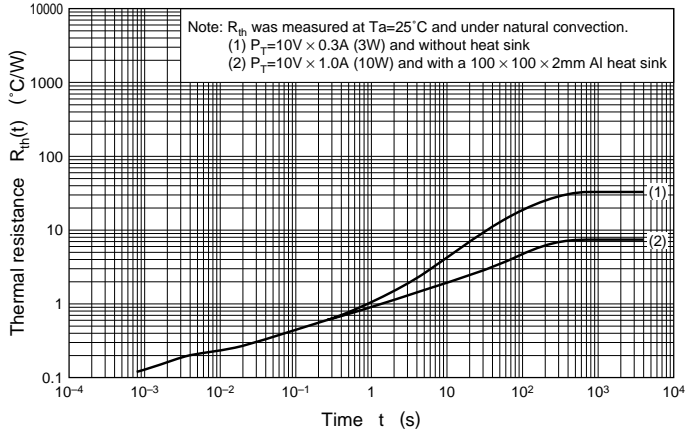
$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)



$$R_{th(t)} - t$$



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