# 2SD1275, 2SD1275A

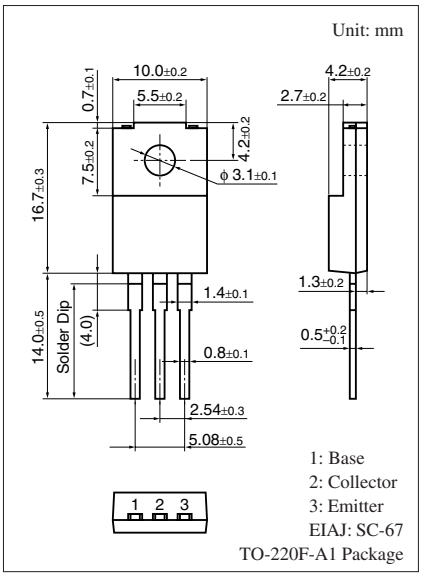
## Silicon NPN triple diffusion planar type darlington

For power amplification

Complementary to 2SB0949 and 2SB0949A

### ■ Features

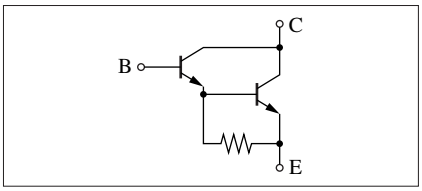
- High forward current transfer ratio $h_{FE}$
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw




### ■ Absolute Maximum Ratings $T_a = 25°C$

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Collector-base voltage (Emitter open) | 2SD1275 | $V_{CBO}$ | 60 | V |
| | 2SD1275A | | 80 | |
| Collector-emitter voltage (Base open) | 2SD1275 | $V_{CEO}$ | 60 | V |
| | 2SD1275A | | 80 | |
| Emitter-base voltage (Collector open) | | $V_{EBO}$ | 5 | V |
| Collector current | | $I_C$ | 2 | A |
| Peak collector current | | $I_{CP}$ | 4 | A |
| Collector power dissipation | $T_C = 25°C$ | $P_C$ | 35 | W |
| | | | 2.0 | |
| Junction temperature | | $T_j$ | 150 | °C |
| Storage temperature | | $T_{stg}$ | −55 to +150 | °C |

Internal Connection




### ■ Electrical Characteristics $T_a = 25°C \pm 3°C$

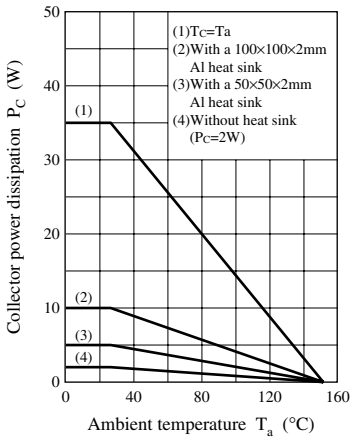
| Parameter | | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Collector-emitter voltage (Base open) | 2SD1275 | $V_{CEO}$ | $I_C$ = 30 mA, $I_B$ = 0 | 60 | | | V |
| | 2SD1275A | | | 80 | | | |
| Base-emitter voltage | | $V_{BE}$ | $V_{CE}$ = 4 V, $I_C$ = 2 A | | | 2.8 | V |
| Collector-base cutoff current (Emitter open) | 2SD1275 | $I_{CBO}$ | $V_{CB}$ = 60 V, $I_E$ = 0 | | | 1 | mA |
| | 2SD1275A | | $V_{CB}$ = 80 V, $I_E$ = 0 | | | 1 | |
| Collector-emitter cutoff current (Base open) | 2SD1275 | $I_{CEO}$ | $V_{CE}$ = 30 V, $I_B$ = 0 | | | 2 | mA |
| | 2SD1275A | | $V_{CE}$ = 40 V, $I_B$ = 0 | | | 2 | |
| Emitter-base cutoff current (Collector open) | | $I_{EBO}$ | $V_{EB}$ = 5 V, $I_C$ = 0 | | | 2 | mA |
| Forward current transfer ratio | | $h_{FE1}$ | $V_{CE}$ = 4 V, $I_C$ = 1 A | 1000 | | | — |
| | | $h_{FE2}$ * | $V_{CE}$ = 4 V, $I_C$ = 2 A | 1000 | | 10000 | |
| Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_C$ = 2 A, $I_B$ = 8 mA | | | 2.5 | V |
| Transition frequency | | $f_T$ | $V_{CE}$ = 10 V, $I_C$ = 0.5 A, f = 1 MHz | | 20 | | MHz |
| Turn-on time | | $t_{on}$ | $I_C$ = 2 A, $I_{B1}$ = 8 mA, $I_{B2}$ = −8 mA, $V_{CC}$ = 50 V | | 0.5 | | μs |
| Storage time | | $t_{stg}$ | | | 4.0 | | μs |
| Fall time | | $t_f$ | | | 1.0 | | μs |

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

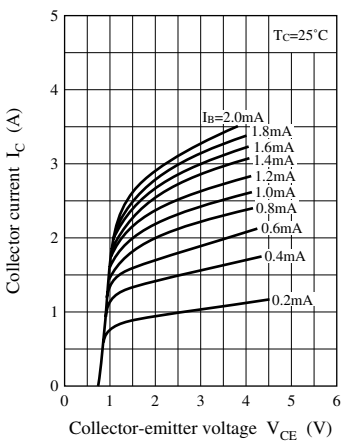
2. *: Rank classification

| Rank | R | Q | P |
|---|---|---|---|
| $h_{FE2}$ | 1000 to 2500 | 2000 to 5000 | 4000 to 10000 |

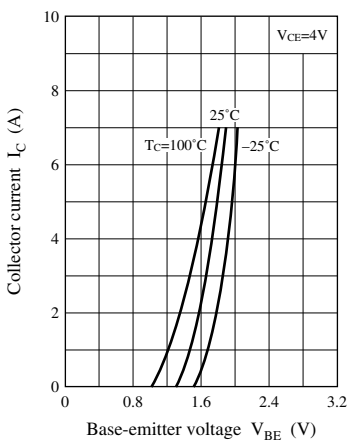
$P_C$ — $T_a$



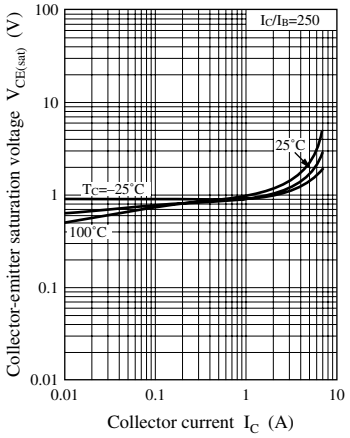

$I_C$ — $V_{CE}$



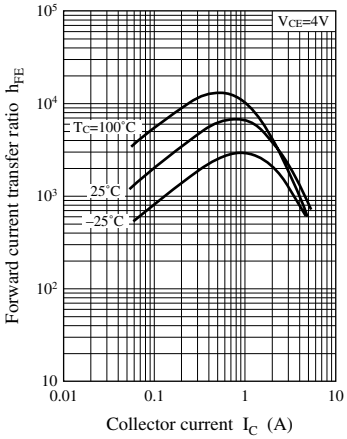

$I_C$ — $V_{BE}$



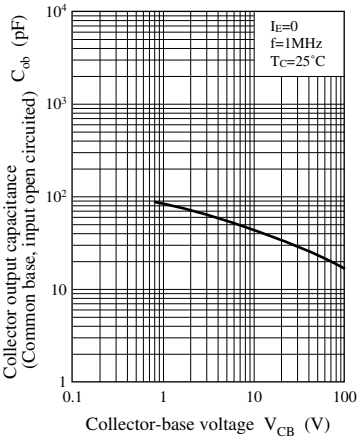

$V_{CE(sat)}$ — $I_C$



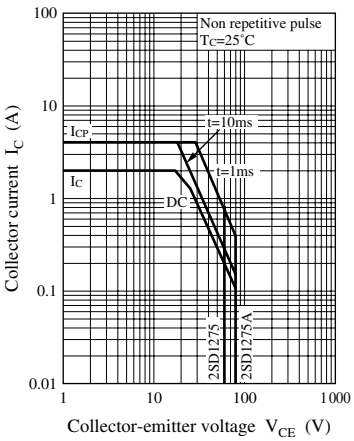

$h_{FE}$ — $I_C$



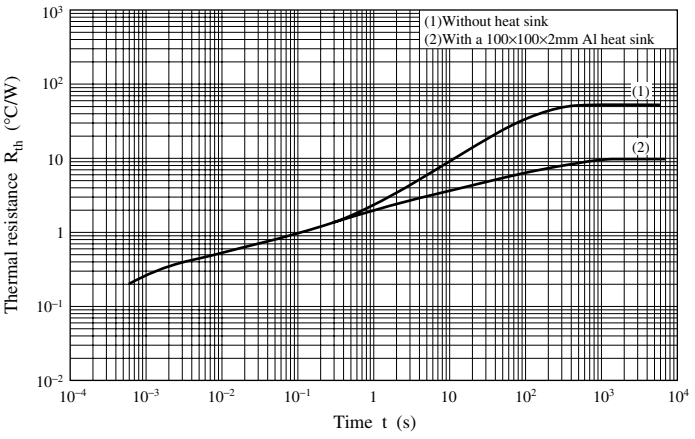

$C_{ob}$ — $V_{CB}$




Safe operation area




$R_{th}$ — t



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