

# 2SD1457, 2SD1457A

Silicon NPN triple diffusion planar type Darlington

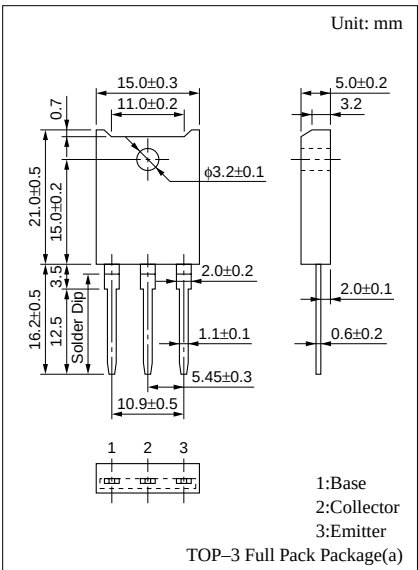
For power amplification

## Features

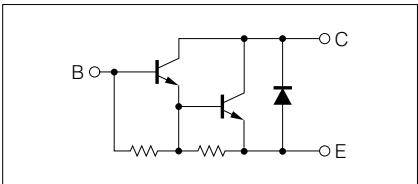
- High forward current transfer ratio  $h_{FE}$
- High collector to base voltage  $V_{CBO}$
- Full-pack package which can be installed to the heat sink with one screw

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

| Parameter                    | Symbol    | Ratings     | Unit        |
|------------------------------|-----------|-------------|-------------|
| Collector to base voltage    | $V_{CBO}$ | 200         | V           |
| Collector to emitter voltage | $V_{CEO}$ | 150         | V           |
|                              |           | 200         | V           |
| Emitter to base voltage      | $V_{EBO}$ | 5           | V           |
| Peak collector current       | $I_{CP}$  | 10          | A           |
| Collector current            | $I_C$     | 6           | A           |
| Collector power dissipation  | $P_C$     | 60          | W           |
|                              |           | 3           | W           |
| Junction temperature         | $T_j$     | 150         | $^{\circ}C$ |
| Storage temperature          | $T_{stg}$ | -55 to +150 | $^{\circ}C$ |



## Internal Connection



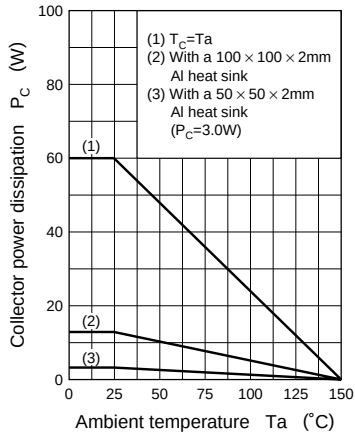
## Electrical Characteristics ( $T_C=25^{\circ}C$ )

| Parameter                               | Symbol         | Conditions                           | min | typ | max   | Unit    |
|-----------------------------------------|----------------|--------------------------------------|-----|-----|-------|---------|
| Collector cutoff current                | $I_{CBO}$      | $V_{CB} = 200V, I_E = 0$             |     |     | 100   | $\mu A$ |
| Collector to emitter voltage            | $V_{CEO(sus)}$ | $I_C = 2A, L = 10mH$                 | 150 |     |       | V       |
| Emitter to base voltage                 | $V_{EBO}$      | $I_E = 0.1A, I_C = 0$                | 5   |     |       | V       |
| Forward current transfer ratio          | $h_{FE}^*$     | $V_{CE} = 2V, I_C = 2A$              | 700 |     | 10000 |         |
| Collector to emitter saturation voltage | $V_{CE(sat)}$  | $I_C = 3A, I_B = 0.06A$              |     |     | 1.5   | V       |
| Base to emitter saturation voltage      | $V_{BE(sat)}$  | $I_C = 3A, I_B = 0.06A$              |     |     | 2.5   | V       |
| Transition frequency                    | $f_T$          | $V_{CE} = 10V, I_C = 0.5A, f = 1MHz$ |     | 15  |       | MHz     |

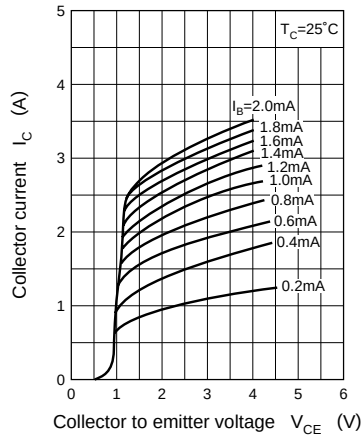
\* $h_{FE}$  Rank classification

| Rank     | Q           | P            | O             |
|----------|-------------|--------------|---------------|
| $h_{FE}$ | 700 to 2500 | 2000 to 5000 | 4000 to 10000 |

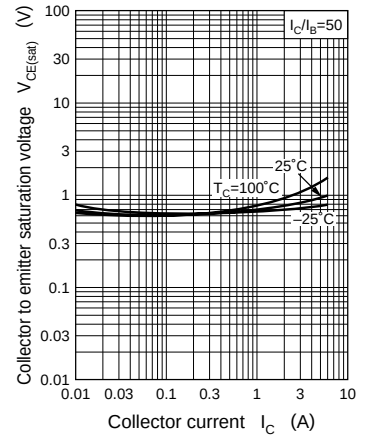
$P_C - T_a$



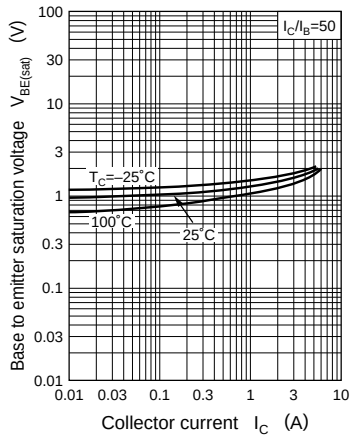
$I_C - V_{CE}$



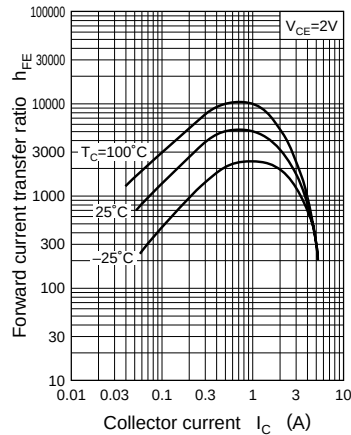
$V_{CE(sat)} - I_C$



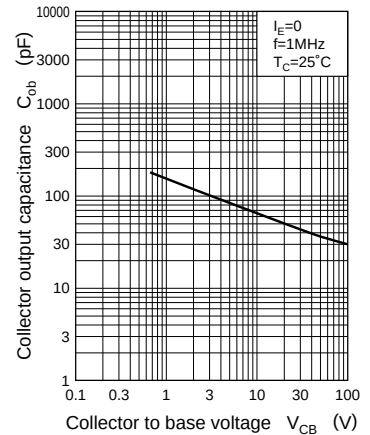
$V_{BE(sat)} - I_C$



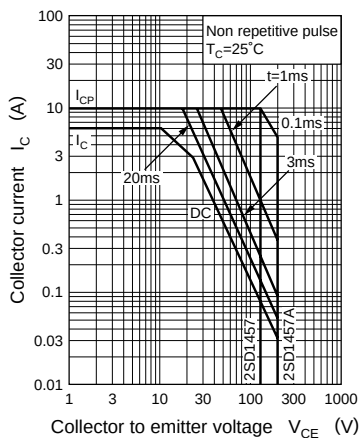
$h_{FE} - I_C$



$C_{ob} - V_{CB}$



Area of safe operation (ASO)



$R_{th(t)} - t$

