

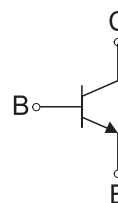


## Features

- High Current
- Complement To BD135/BD137/BD139



TO-126



## Package Marking and Ordering Information

| Product ID         | Pack   | Packing Method | Qty(PCS) |
|--------------------|--------|----------------|----------|
| BD136/BD138 /BD140 | TO-126 | Bulk           | 200      |

## Maximum Ratings (Ta=25°C unless otherwise noted)

| Symbol         | Parameter                                        | Value    | Unit |
|----------------|--------------------------------------------------|----------|------|
| $V_{CBO}$      | Collector-Base Voltage                           | BD136    | V    |
|                |                                                  | BD138    |      |
|                |                                                  | BD140    |      |
| $V_{CEO}$      | Collector-Emitter Voltage                        | BD136    | V    |
|                |                                                  | BD138    |      |
|                |                                                  | BD140    |      |
| $V_{EBO}$      | Emitter-Base Voltage                             | -6       | V    |
| $I_C$          | Collector Current -Continuous                    | -1.5     | A    |
| $P_C$          | Collector Dissipation                            | 1        | W    |
| $T_J, T_{stg}$ | Operation Junction and Storage Temperature Range | -55~+150 | ℃    |



**Electrical Characteristics(Ta=25°C unless otherwise specified)**

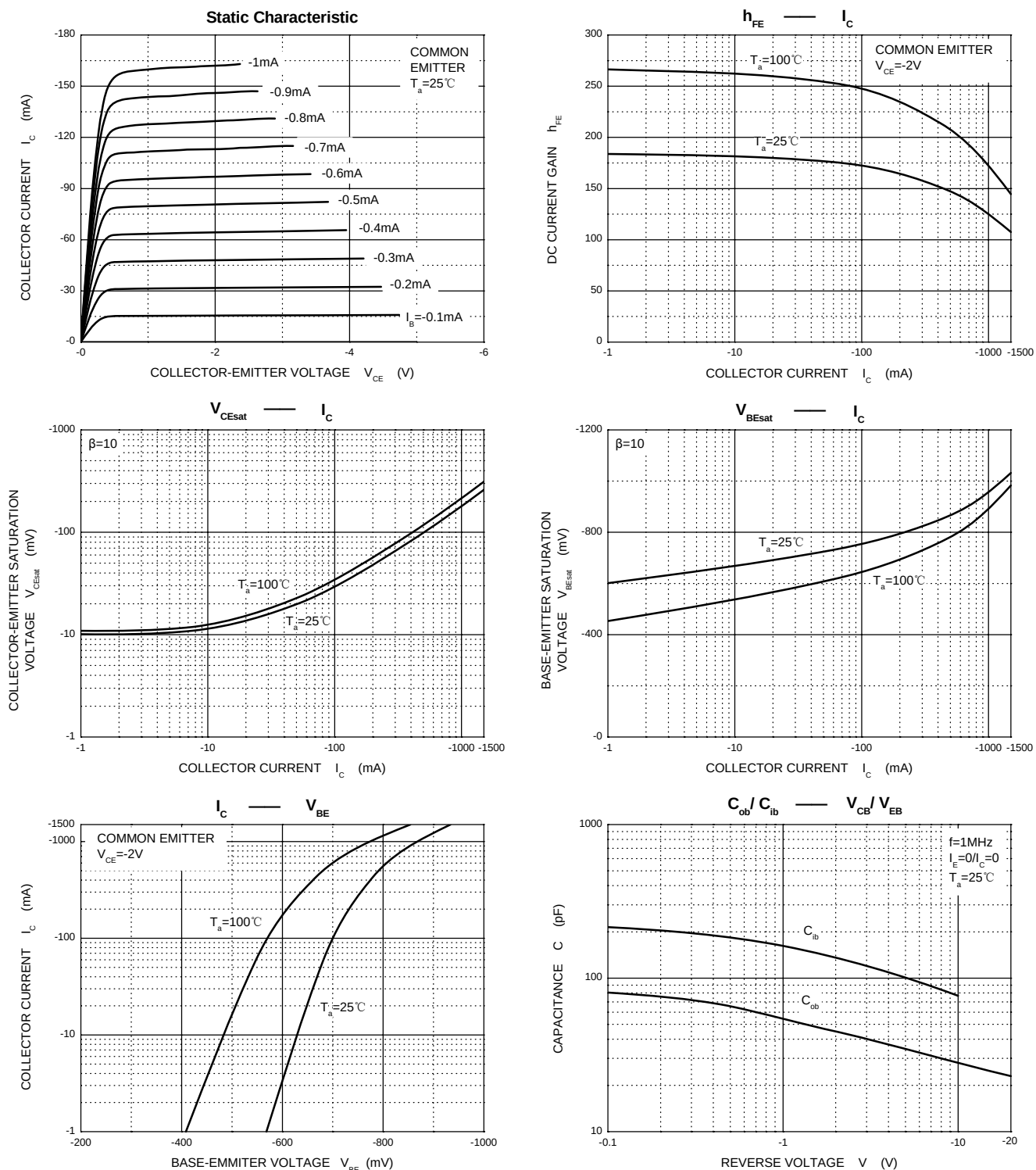
| Parameter                            | symbol        | Test conditions                               | Min               | Max  | Unit    |
|--------------------------------------|---------------|-----------------------------------------------|-------------------|------|---------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=0.1mA, I_E=0$<br>BD136<br>BD138<br>BD140 | -45<br>-60<br>-80 |      | V       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=0.03A, I_B=0$<br>BD136<br>BD138<br>BD140 | -45<br>-60<br>-80 |      | V       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=1mA, I_C=0$                              | -6                |      | V       |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=100V, I_E=0$                          |                   | -0.1 | $\mu A$ |
| Collector cut-off current            | $I_{CEO}$     | $V_{CE}=100V, I_B=0$                          |                   | -0.5 | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=6V, I_C=0$                            |                   | -0.1 | $\mu A$ |
| DC current gain                      | $h_{FE1}$     | $V_{CE}=2V, I_C=0.15A$                        | 40                | 250  |         |
|                                      | $h_{FE2}$     | $V_{CE}=2V, I_C=5mA$                          | 25                |      |         |
|                                      | $h_{FE3}$     | $V_{CE}=2V, I_C=0.5A$                         | 25                |      |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=1.5A, I_B=0.15A$                         |                   | 0.5  | V       |
| Transition frequency                 | $f_T$         | $V_{CE}=10V, I_C=100mA, f=1MHz$               | 50                |      | MHz     |

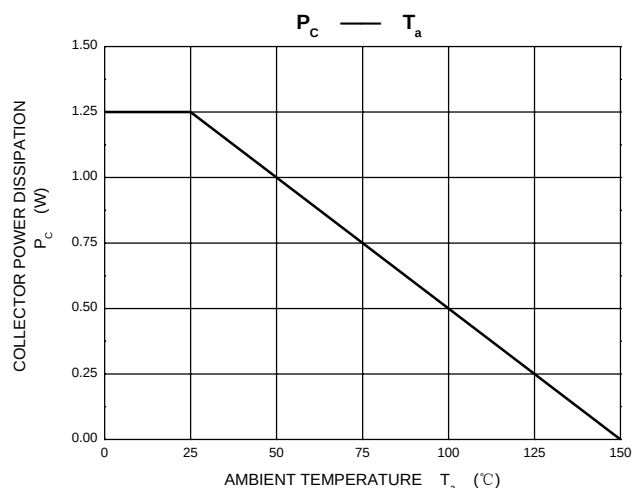
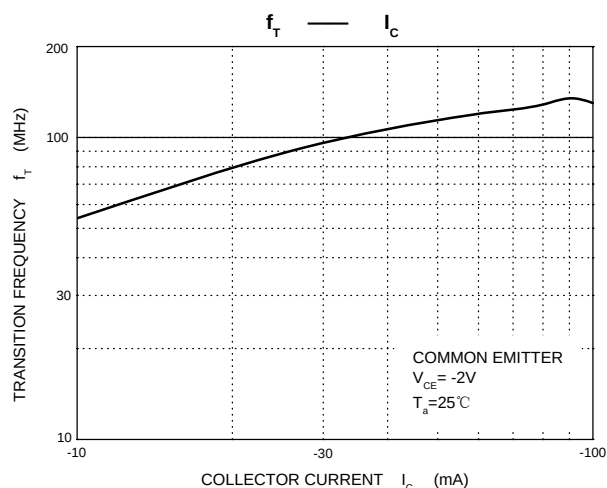
**Classification Of  $h_{FE}$**

| Rank  | BD136/BD138/BD140 | BD136-10/BD138-10<br>/BD140-10 | BD136-16/BD138-16<br>/BD140-16 |
|-------|-------------------|--------------------------------|--------------------------------|
| Range | 40-100            | 63-160                         | 100-250                        |

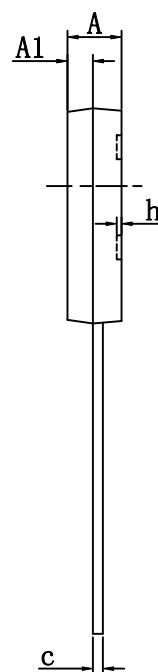
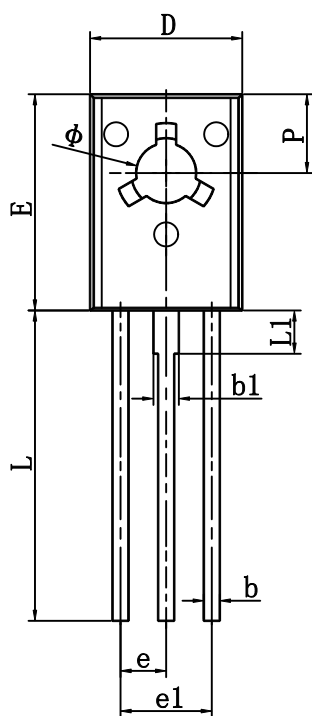


## Typical Characteristics





## TO-18 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min                       | Max    | Min                  | Max   |
| A      | 2.500                     | 2.900  | 0.098                | 0.114 |
| A1     | 1.100                     | 1.500  | 0.043                | 0.059 |
| b      | 0.660                     | 0.860  | 0.026                | 0.034 |
| b1     | 1.170                     | 1.370  | 0.046                | 0.054 |
| c      | 0.450                     | 0.600  | 0.018                | 0.024 |
| D      | 7.400                     | 7.800  | 0.291                | 0.307 |
| E      | 10.600                    | 11.000 | 0.417                | 0.433 |
| e      | 2.290 TYP                 |        | 0.090 TYP            |       |
| e1     | 4.480                     | 4.680  | 0.176                | 0.184 |
| h      | 0.000                     | 0.300  | 0.000                | 0.012 |
| L      | 15.300                    | 15.700 | 0.602                | 0.618 |
| L1     | 2.100                     | 2.300  | 0.083                | 0.091 |
| P      | 3.900                     | 4.100  | 0.154                | 0.161 |
| $\Phi$ | 3.000                     | 3.200  | 0.118                | 0.126 |



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