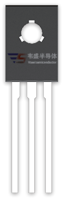
# 2SD2136 TRANSISTOR (NPN)

## FEATURES

- High Forward Current Transfer Ratio $h_{FE}$ Which has
- LowSatisfactoryCollector-Emitter Saturation Voltage $V_{CE(sat)}$
- Allowing Supply with the Radial Taping



TO-126

1.EMITTER
2.COLLECTOR
3.BASE

## ORDERING INFORMATION

| Part Number | Package | Packing Method | Pack Quantity |
|---|---|---|---|
| 2SD2136 | TO-126 | Bulk | 200pcs/Bag |
| 2SD2136-TU | TO-126 | Tube | 60pcs/Tube |

## MAXIMUM RATINGS ($T_a$=25℃ unless otherwise noted)

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 60 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 60 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 6 | V |
| $I_C$ | Collector Current | 3 | A |
| $P_C$ | Collector Power Dissipation | 1.25 | W |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient | 100 | ℃/W |
| $T_J$,$T_{stg}$ | Operation Junction and Storage Temperature Range | -55~+150 | ℃ |

## $T_a$=25℃ unless otherwise specified

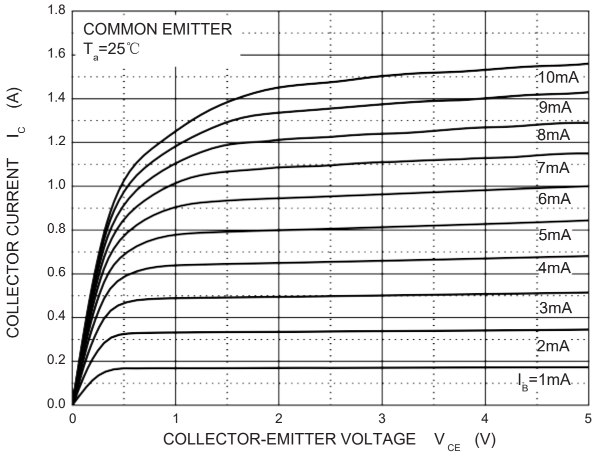
| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Collector-base breakdown voltage** | $V_{(BR)CBO}$ | $I_C$=100μA,$I_E$=0 | 60 | | | V |
| **Collector-emitter breakdown voltage** | $V_{(BR)CEO}$* | $I_C$=30mA,$I_B$=0 | 60 | | | V |
| **Emitter-base breakdown voltage** | $V_{(BR)EBO}$ | $I_E$= 100μA,$I_C$=0 | 6 | | | V |
| **Collector cut-off current** | $I_{CBO}$ | $V_{CB}$=60V,$I_E$=0 | | | 200 | μA |
| **Collector cut-off current** | $I_{CEO}$ | $V_{CE}$=60V,$I_B$=0 | | | 300 | μA |
| **Emitter cut-off current** | $I_{EBO}$ | $V_{EB}$=6V,$I_C$=0 | | | 1 | mA |
| **DC current gain** | $h_{FE(1)}$* | $V_{CE}$=4V, $I_C$=1A | 40 | | 250 | |
| | $h_{FE(2)}$* | $V_{CE}$=4V, $I_C$=3A | 10 | | | |
| **Collector-emitter saturation voltage** | $V_{CE(sat)}$* | $I_C$=3A,$I_B$=0.375A | | | 1.2 | V |
| **Base-emitter voltage** | $V_{BE}$* | $V_{CE}$=4V, $I_C$=3A | | | 1.8 | V |
| **Transition frequency** | $f_T$ | $V_{CE}$=5V,$I_C$=0.1A, f=10MHz | | 30 | | MHz |

*Pulse test: pulse width ≤300μs, duty cycle≤ 2.0%.

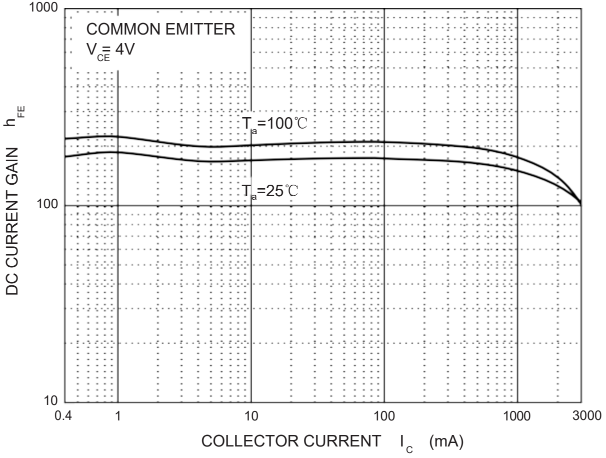
## CLASSIFICATION OF $h_{FE(1)}$

| RANK | P | Q | R |
|---|---|---|---|
| **RANGE** | 40-90 | 70-150 | 120-250 |

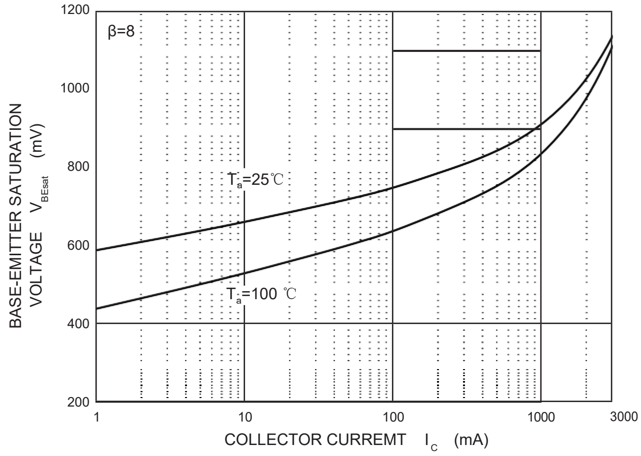
### Static Characteristic



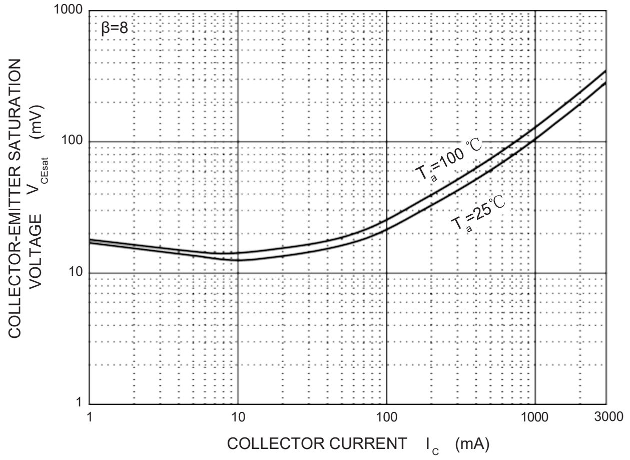
### $h_{FE}$ — $I_C$



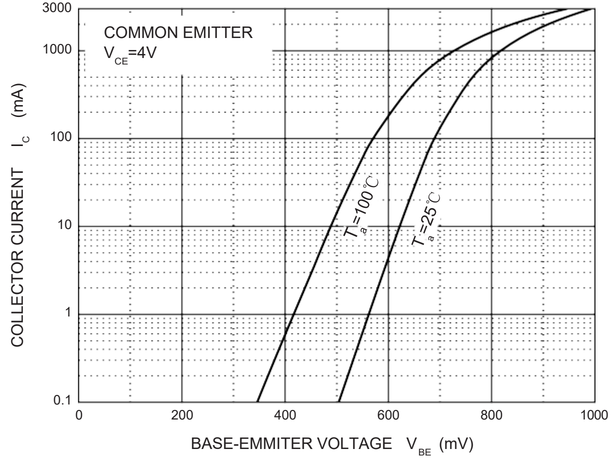
### $V_{BEsat}$ — $I_C$



### $V_{CEsat}$ — $I_C$



### $I_C$ — $V_{BE}$



### $P_C$ — $T_a$