# 2SD601A

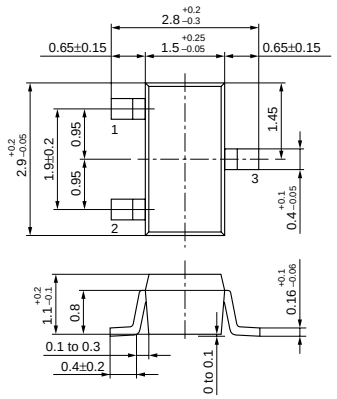
## Silicon NPN epitaxial planer type

For general amplification
Complementary to 2SB709A

### Features

- High foward current transfer ratio $h_{FE}$.
- Low collector to emitter saturation voltage $V_{CE(sat)}$.
- Mini type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

Unit: mm




1:Base
2:Emitter
3:Collector

JEDEC:TO–236
EIAJ:SC–59
Mini Type Package

Marking symbol : Z

### Absolute Maximum Ratings (Ta=25˚C)

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | 60 | V |
| Collector to emitter voltage | $V_{CEO}$ | 50 | V |
| Emitter to base voltage | $V_{EBO}$ | 7 | V |
| Peak collector current | $I_{CP}$ | 200 | mA |
| Collector current | $I_C$ | 100 | mA |
| Collector power dissipation | $P_C$ | 200 | mW |
| Junction temperature | $T_j$ | 150 | ˚C |
| Storage temperature | $T_{stg}$ | –55 ~ +150 | ˚C |

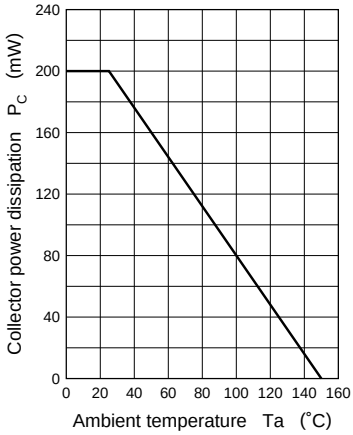
### Electrical Characteristics (Ta=25˚C)

| Parameter | Symbol | Conditions | min | typ | max | Unit |
|---|---|---|---|---|---|---|
| Collector cutoff current | $I_{CBO}$ | $V_{CB}$ = 20V, $I_E$ = 0 | | | 0.1 | µA |
| | $I_{CEO}$ | $V_{CE}$ = 10V, $I_B$ = 0 | | | 100 | µA |
| Collector to base voltage | $V_{CBO}$ | $I_C$ = 10µA, $I_E$ = 0 | 60 | | | V |
| Collector to emitter voltage | $V_{CEO}$ | $I_C$ = 2mA, $I_B$ = 0 | 50 | | | V |
| Emitter to base voltage | $V_{EBO}$ | $I_E$ = 10µA, $I_C$ = 0 | 7 | | | V |
| Forward current transfer ratio | $h_{FE1}$* | $V_{CE}$ = 10V, $I_C$ = 2mA | 160 | | 460 | |
| | $h_{FE2}$ | $V_{CE}$ = 2V, $I_C$ = 100mA | 90 | | | |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C$ = 100mA, $I_B$ = 10mA | | 0.1 | 0.3 | V |
| Transition frequency | $f_T$ | $V_{CB}$ = 10V, $I_E$ = –2mA, f = 200MHz | | 150 | | MHz |
| Noise voltage | NV | $V_{CE}$ = 10V, $I_C$ = 1mA, $G_V$ = 80dB<br>$R_g$ = 100kΩ, Function = FLAT | | 110 | | mV |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$ = 10V, $I_E$ = 0, f = 1MHz | | 3.5 | | pF |

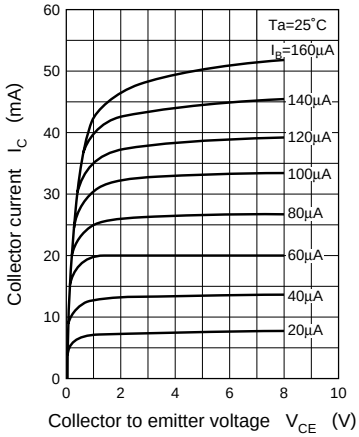
*$h_{FE1}$ Rank classification

| Rank | Q | R | S |
|---|---|---|---|
| $h_{FE1}$ | 160 ~ 260 | 210 ~ 340 | 290 ~ 460 |
| Marking Symbol | ZQ | ZR | ZS |

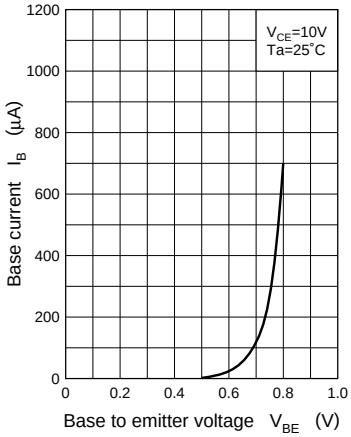
$P_C$ — Ta



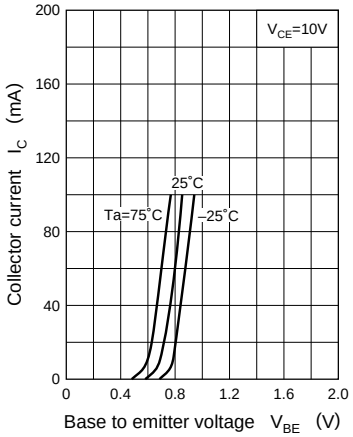

$I_C$ — $V_{CE}$



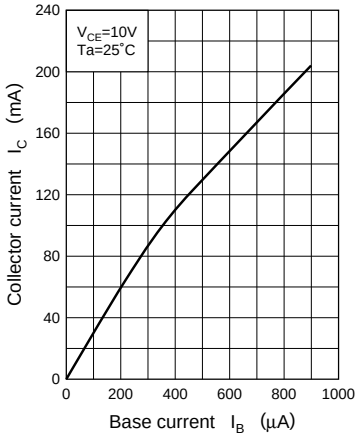

$I_B$ — $V_{BE}$



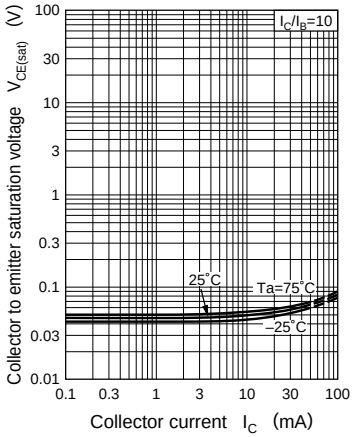

$I_C$ — $V_{BE}$



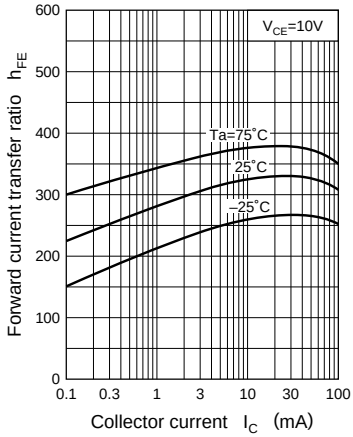

$I_C$ — $I_B$



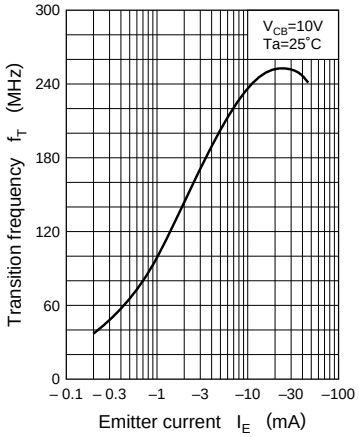

$V_{CE(sat)}$ — $I_C$




$h_{FE}$ — $I_C$




$f_T$ — $I_E$




NV — $I_C$

