

# 2SD1645

## Silicon NPN Epitaxial Planar Darlington Type

### AF Amplifier

#### ■ Features

- 60V Zener diode between built-in C and B, C and E
- Very small fluctuations in breakdown voltage
- Darlington connection
- High DC current gain ( $h_{FE}$ )

#### ■ Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ )

Item	Symbol	Value	Unit
Collector-base voltage	$V_{CB0}$	$60 \pm 10$	V
Collector-emitter voltage	$V_{CEO}$	$60 \pm 10$	V
Emitter-base voltage	$V_{EBO}$	5	V
Peak collector current	$I_{CP}$	1.5	A
Collector current	$I_C$	1.0	A
Collector power dissipation	$P_C$	1.2	W
		5.0*	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	$-55 \sim +150$	$^\circ\text{C}$

\*with a  $100 \times 100 \times 2$  Al heat sink at  $T_a=25^\circ\text{C}$

#### ■ Electrical Characteristics ( $T_c=25^\circ\text{C}$ )

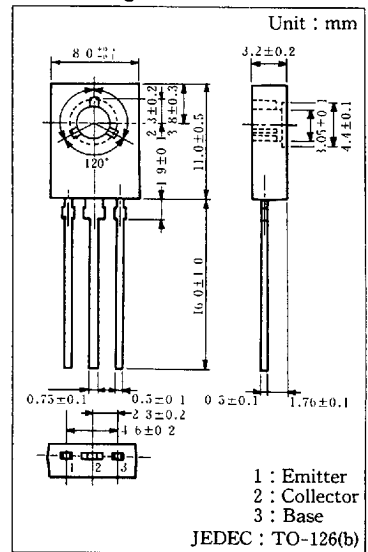
Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	$I_{CB0}$	$V_{CB}=25\text{ V}, I_E=0$			1	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB}=4\text{ V}, I_C=0$			1	$\mu\text{A}$
Collector-base voltage	$V_{CB0}$	$I_C=100\ \mu\text{A}, I_E=0$	50		70	V
Collector-emitter voltage	$V_{CEO}$	$I_C=1\text{ mA}, I_B=0$	50		70	V
Emitter-base voltage	$V_{EBO}$	$I_E=100\ \mu\text{A}, I_C=0$	5			V
DC current gain	$h_{FE}^{*1}$	$V_{CE}=10\text{ V}, I_C=1.0\text{ A}^{*2}$	4000		40000	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1.0\text{ A}, I_B=1.0\text{ mA}^{*2}$			1.8	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=1.0\text{ A}, I_B=1.0\text{ mA}^{*2}$			2.2	V
Transition frequency	$f_T$	$V_{CB}=10\text{ V}, I_E=-50\text{ mA}, f=200\text{ MHz}$		150		MHz

\*2 Pulse measurement

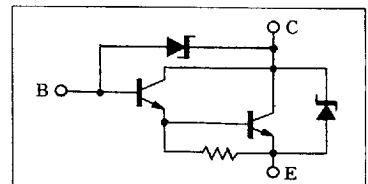
#### \*1 $h_{FE1}$ Classifications

Class	Q	R	S
$h_{FE}$	4000~10000	8000~20000	16000~40000

#### ■ Package Dimensions



#### ■ Inner Circuit



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Panasonic

