This product complies with the RoHS Directive (EU 2002/95/EC).

2SD1645

Silicon NPN epitaxial planar type darlington

For low frequency amplification

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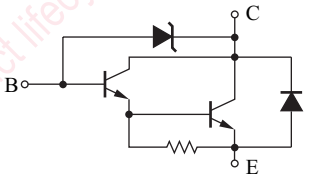
■ Features

- Built-in zener diode (60 V) between collector-base and collector-emitter
- Small variation in withstand pressure
- Darlington connection
- Extremely satisfactory linearity of the forward current transfer ratio h_{FE}

■ Package

- Code
  TO-126B-A1
- Pin Name
  1. Emitter
  2. Collector
  3. Base

■ Internal Connection



■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	60±10	V
Collector-emitter voltage (Base open)	V_{CEO}	60±10	V
Emitter-base voltage (Collector open)	V_{EBO}	5	V
Collector current	I_C	1.0	A
Peak collector current	I_{CP}	1.5	A
Collector power dissipation	P_C	1.2	W
		5.0 *	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

Note) *: With a 100 mm × 100 mm × 2 mm Al heat sink at $T_a = 25°C$

■ Electrical Characteristics $T_a = 25°C±3°C$

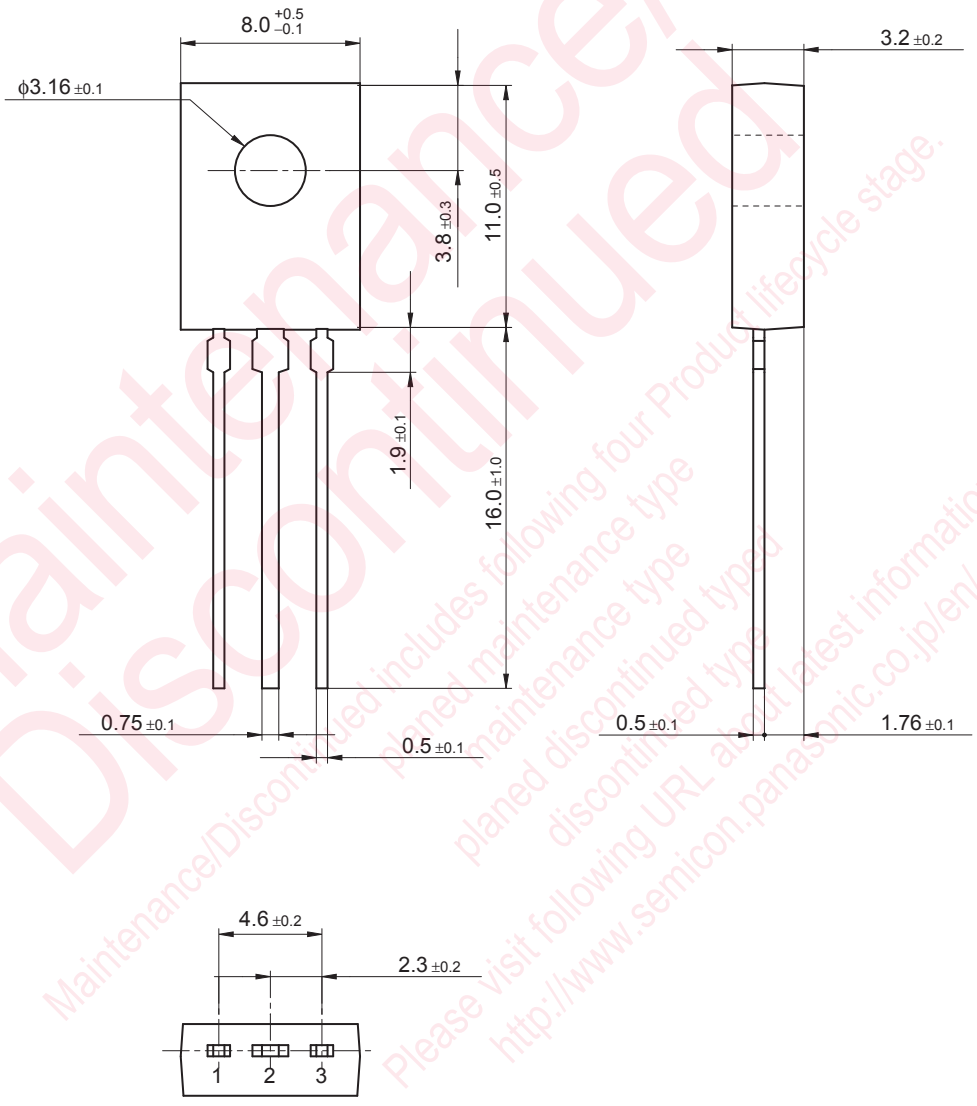
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	V_{CBO}	$I_C = 100\ \mu A$, $I_E = 0$	50		70	V
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 1$ mA, $I_B = 0$	50		70	V
Emitter-base voltage (Collector open)	V_{EBO}	$I_E = 100\ \mu A$, $I_C = 0$	5			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 25$ V, $I_E = 0$			1	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = 4$ V, $I_C = 0$			1	μA
Forward current transfer ratio *1	h_{FE} *2	$V_{CE} = 10$ V, $I_C = 1.0$ A	4000		40000	—
Collector-emitter saturation voltage *1	$V_{CE(sat)}$	$I_C = 1.0$ A, $I_B = 1.0$ mA			1.8	V
Base-emitter saturation voltage *1	$V_{BE(sat)}$	$I_C = 1.0$ A, $I_B = 1.0$ mA			2.2	V
Transition frequency	f_T	$V_{CB} = 10$ V, $I_E = -50$ mA, f = 200 MHz		150		MHz

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *1: Pulse measurement
*2: Rank classification

Rank	Q	R	S
h_{FE}	4000 to 10000	8000 to 12000	16000 to 40000

TO-126B-A1

Unit: mm



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