

# 2SD1640

## Silicon NPN epitaxial planar type darlington

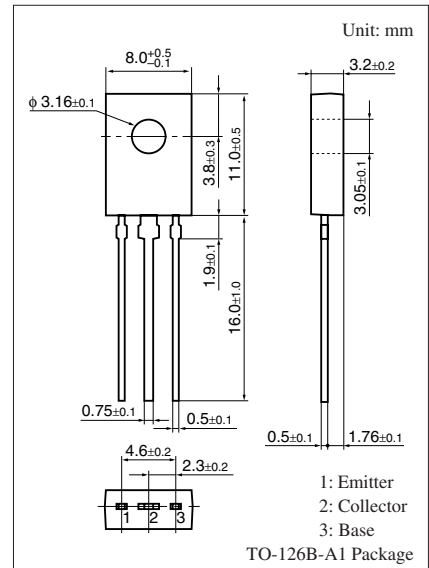
For low-frequency output amplification

### ■ Features

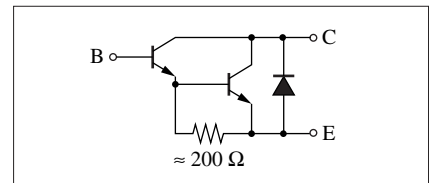
- High forward current transfer ratio  $h_{FE}$
- Large peak collector current  $I_{CP}$
- High collector-emitter voltage (Base open)  $V_{CEO}$

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

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	120	V
Collector-emitter voltage (Base open)	$V_{CEO}$	100	V
Emitter-base voltage (Collector open)	$V_{EBO}$	5	V
Collector current	$I_C$	2	A
Peak collector current	$I_{CP}$	3	A
Collector power dissipation	$P_C$	1.2	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$



### Internal Connection



### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

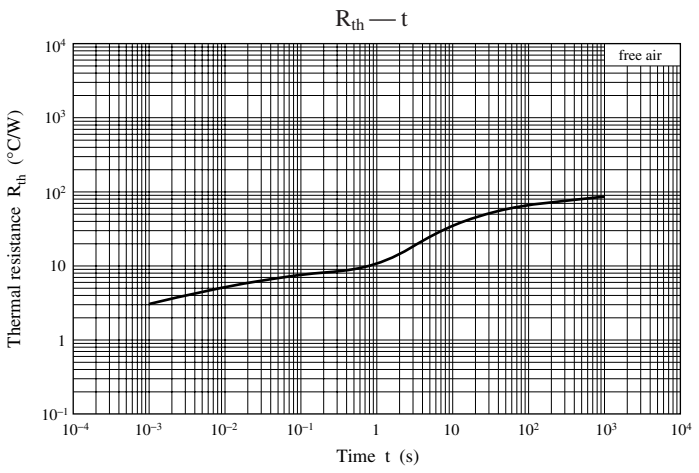
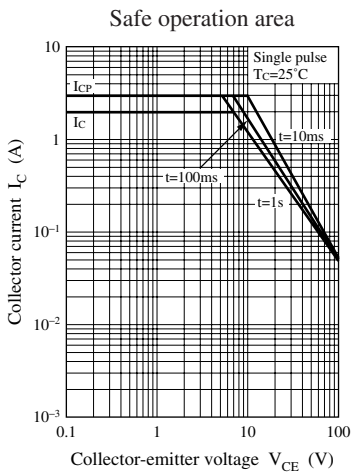
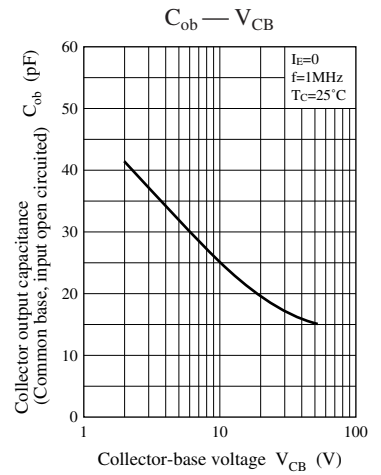
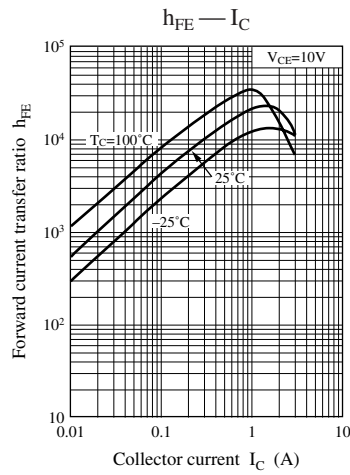
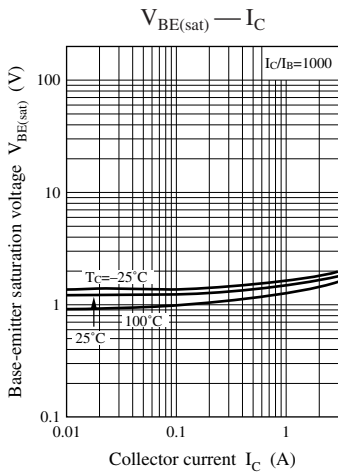
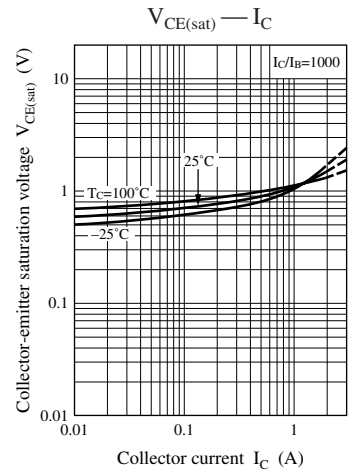
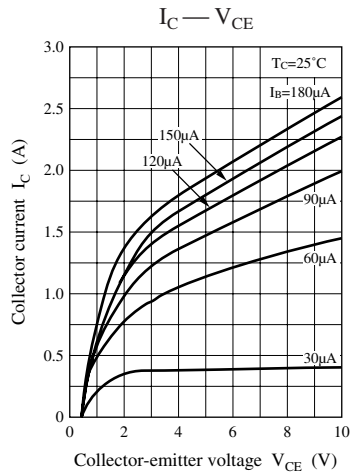
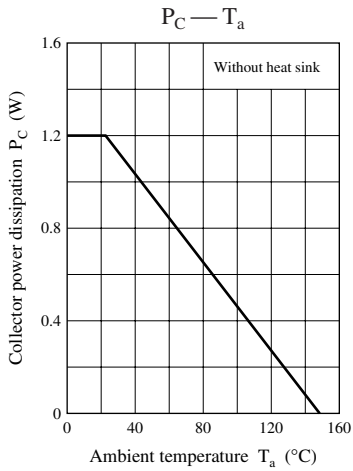
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	$V_{CBO}$	$I_C = 100 \mu\text{A}$ , $I_E = 0$	120			V
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 1 \text{ mA}$ , $I_B = 0$	100			V
Emitter-base voltage (Collector open)	$V_{EBO}$	$I_E = 100 \mu\text{A}$ , $I_C = 0$	5			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 25 \text{ V}$ , $I_E = 0$			0.1	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 4 \text{ V}$ , $I_C = 0$			1	$\mu\text{A}$
Forward current transfer ratio <sup>*1, 2</sup>	$h_{FE}$	$V_{CE} = 10 \text{ V}$ , $I_C = 1 \text{ A}$	4000		40000	—
Collector-emitter saturation voltage <sup>*1</sup>	$V_{CE(sat)}$	$I_C = 1.0 \text{ A}$ , $I_B = 1.0 \text{ mA}$			1.5	V
Base-emitter saturation voltage <sup>*1</sup>	$V_{BE(sat)}$	$I_C = 1.0 \text{ A}$ , $I_B = 1.0 \text{ mA}$			2.0	V

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 20000	16000 to 40000



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