

2SD1640

Silicon NPN epitaxial planar type darlington

For low-frequency output amplification

■ Features

- Darlington connection
- High forward current transfer ratio h_{FE}
- Large peak collector current I_{CP}
- High collector to emitter voltage V_{CEO}

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

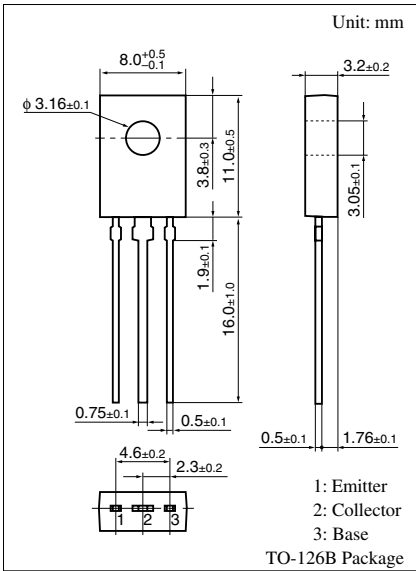
Parameter	Symbol	Rating	Unit
Collector to base voltage	V_{CBO}	120	V
Collector to emitter voltage	V_{CEO}	100	V
Emitter to base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	3	A
Collector current	I_C	2	A
Collector power dissipation	P_C	1.2	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature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

■ Electrical Characteristics $T_C = 25^\circ\text{C}$

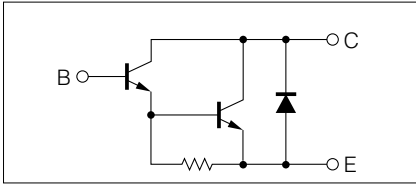
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 25\text{ V}, I_E = 0$			0.1	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 4\text{ V}, I_C = 0$			1	μA
Collector to base voltage	V_{CBO}	$I_C = 100\text{ }\mu\text{A}, I_E = 0$	120			V
Collector to emitter voltage	V_{CEO}	$I_C = 1\text{ mA}, I_B = 0$	100			V
Emitter to base voltage	V_{EBO}	$I_E = 100\text{ }\mu\text{A}, I_C = 0$	5			V
Forward current transfer ratio *	h_{FE}	$V_{CE} = 10\text{ V}, I_C = 1\text{ A}$	4 000		40 000	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1\text{ A}, I_B = 1\text{ mA}$			1.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1\text{ A}, I_B = 1\text{ mA}$			2	
Transition frequency	f_T	$V_{CE} = 10\text{ V}, I_E = -50\text{ mA}, f = 200\text{ MHz}$		150		MHz

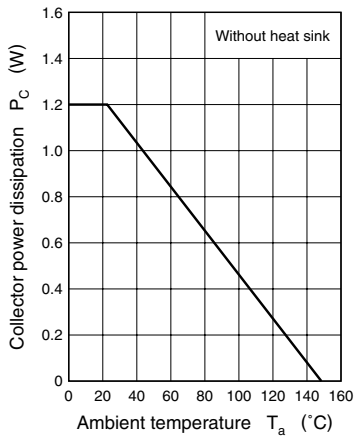
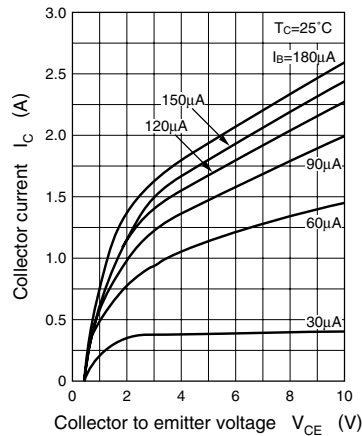
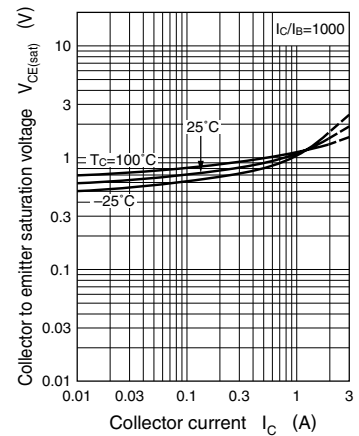
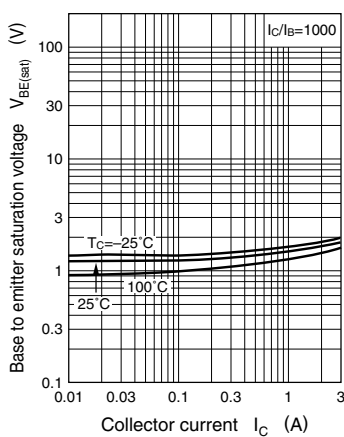
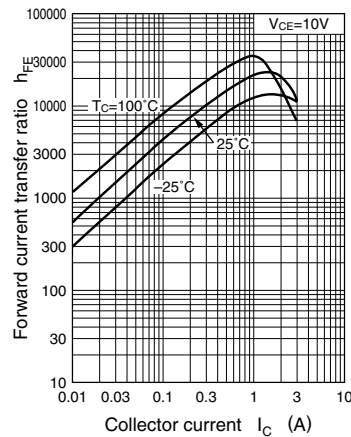
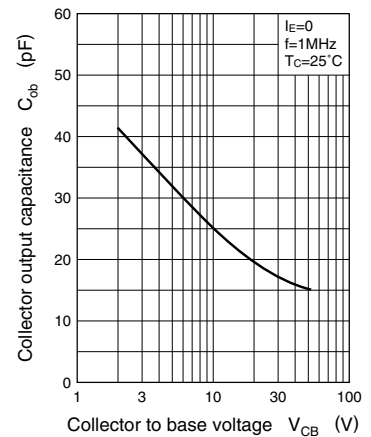
Note) *: Rank classification

Rank	Q	R	S
h_{FE}	4 000 to 10 000	8 000 to 20 000	16 000 to 40 000

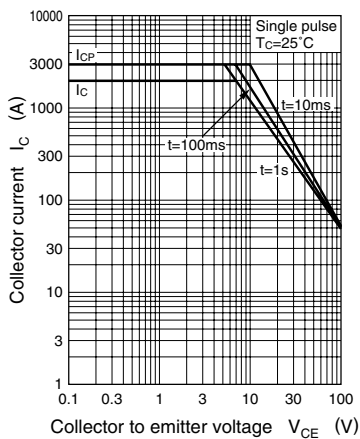
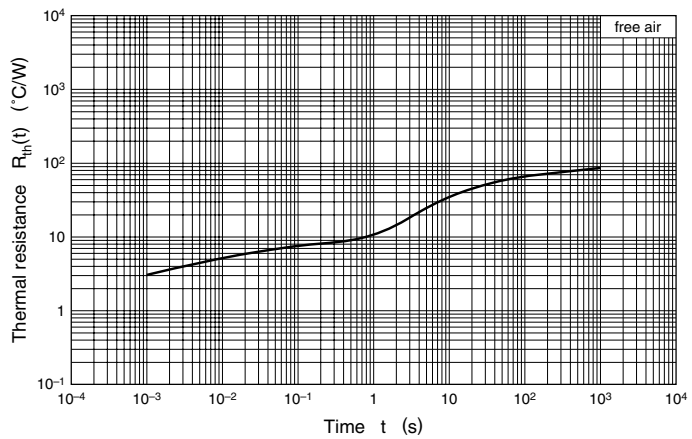


Internal Connection



$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $C_{ob} - V_{CB}$ 

Area of safe operation (ASO)

 $R_{th(t)} - t$ 

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