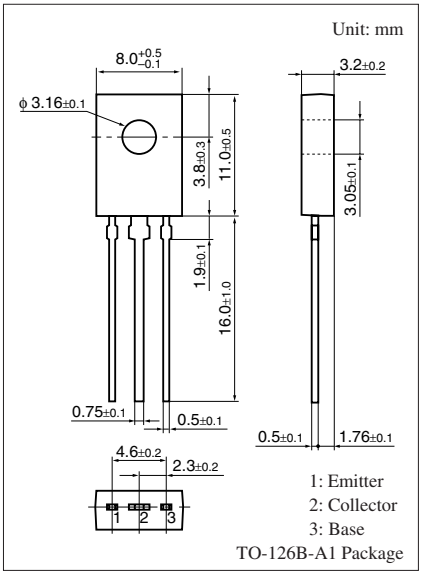
2SD0946 (2SD946), 2SD0946A (2SD946A), 2SD0946B (2SD946B)

Silicon NPN epitaxial planar type darlington

For low-frequency amplification

■ Features

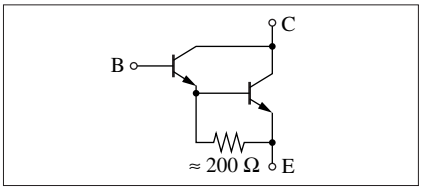
- Forward current transfer ratio h_{FE} is designed high, which is appropriate to the driver circuit of motors and printer hammer.
- A shunt resistor is omitted from the driver.



■ Absolute Maximum Ratings $T_a = 25°C$

Parameter		Symbol	Rating	Unit
Collector-base voltage (Emitter open)	2SD0946	V_{CBO}	30	V
	2SD0946A		60	
	2SD0946B		100	
Collector-emitter voltage (Base open)	2SD0946	V_{CEO}	25	V
	2SD0946A		50	
	2SD0946B		80	
Emitter-base voltage (Collector open)		V_{EBO}	5	V
Collector current		I_C	1	A
Peak collector current		I_{CP}	1.5	A
Collector power dissipation		P_C	1.2	W
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

Internal Connection



■ Electrical Characteristics $T_a = 25°C \pm 3°C$

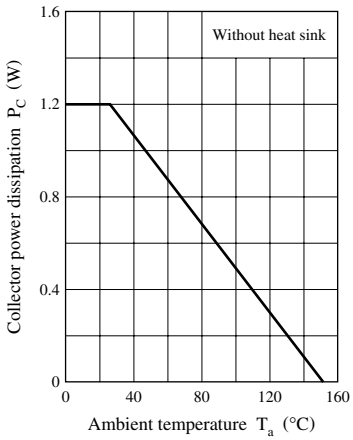
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-base voltage (Emitter open)	2SD0946	V_{CBO}	I_C = 100 µA, I_E = 0	30			V
	2SD0946A			60			
	2SD0946B			100			
Collector-emitter voltage (Base open)	2SD1263	V_{CEO}	I_C = 1 mA, I_B = 0	25			V
	2SD0946A			50			
	2SD0946B			80			
Emitter-base voltage (Collector open)		V_{EBO}	I_E = 100 µA, I_C = 0	5			V
Collector-base cutoff current (Emitter open)		I_{CBO}	V_{CB} = 25 V, I_E = 0			0.1	µA
Emitter-base cutoff current (Collector open)		I_{EBO}	V_{EB} = 4 V, I_C = 0			0.1	µA
Forward current transfer ratio *1, 2		h_{FE}	V_{CE} = 10 V, I_C = 1 A	4000		40000	—
Collector-emitter saturation voltage *1		$V_{CE(sat)}$	I_C = 1 A, I_B = 1 mA			1.8	V
Base-emitter saturation voltage *1		$V_{BE(sat)}$	I_C = 1 A, I_B = 1 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

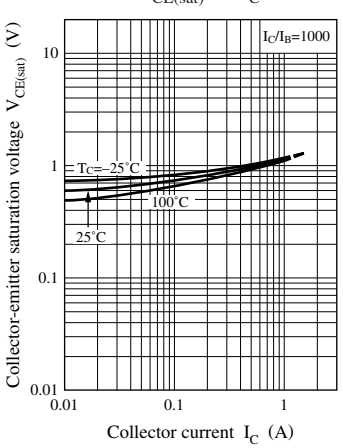
Rank	Q	R	S
h_{FE}	4000 to 10000	8000 to 20000	16000 to 40000

Note) The part numbers in the parenthesis show conventional part number.

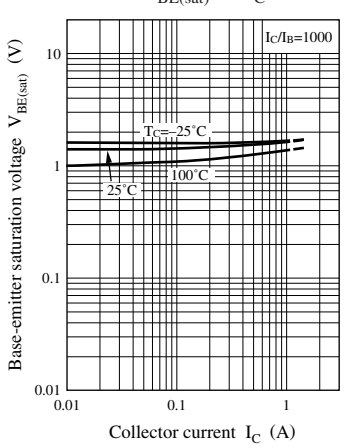
P_C — T_a



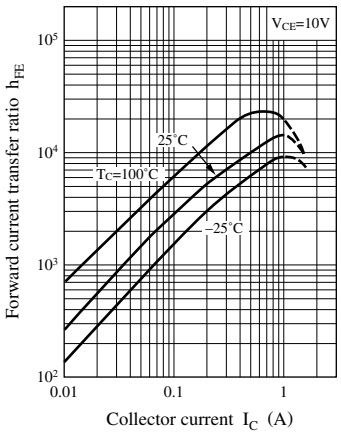
$V_{CE(sat)}$ — I_C



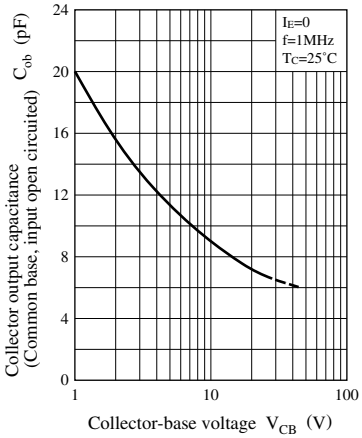
$V_{BE(sat)}$ — I_C



h_{FE} — I_C



C_{ob} — V_{CB}



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