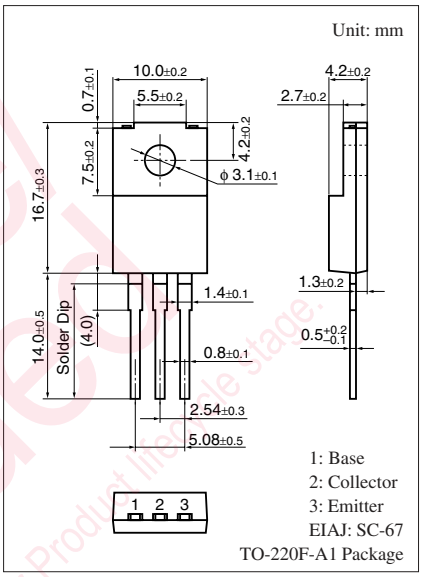
2SD1277, 2SD1277A

Silicon NPN triple diffusion planar type darlington

For midium speed power switching
Complementary to 2SB0951, 2SB0951A



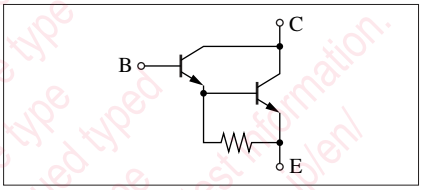
■ Features

- High forward current transfer ratio h_{FE}
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw

■ Absolute Maximum Ratings $T_a = 25°C$

Parameter		Symbol	Rating	Unit
Collector-base voltage (Emitter open)	2SD1277	V_{CBO}	60	V
	2SD1277A		80	
Collector-emitter voltage (Base open)	2SD1277	V_{CEO}	60	V
	2SD1277A		80	
Emitter-base voltage (Collector open)		V_{EBO}	7	V
Collector current		I_C	8	A
Peak collector current		I_{CP}	12	A
Collector power dissipation	$T_C = 25°C$	P_C	45	W
			2.0	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

Internal Connection



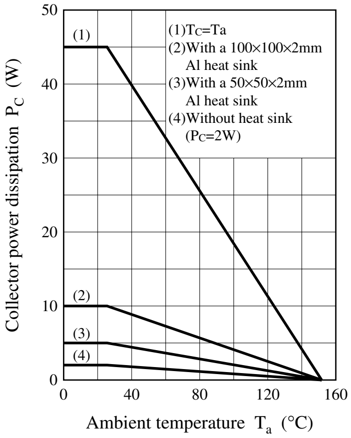
■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	2SD1277	V_{CEO}	I_C = 30 mA, I_B = 0	60			V
	2SD1277A			80			
Collector-base cutoff current (Emitter open)	2SD1277	I_{CBO}	V_{CB} = 60 V, I_E = 0			100	µA
	2SD1277A		V_{CB} = 80 V, I_E = 0			100	
Emitter-base cutoff current (Collector open)		I_{EBO}	V_{EB} = 7 V, I_C = 0			2	mA
Forward current transfer ratio		h_{FE1} *	V_{CE} = 3 V, I_C = 4 A	1 000		10 000	—
		h_{FE2}	V_{CE} = 3 V, I_C = 8 A	500			
Collector-emitter saturation voltage		$V_{CE(sat)}$	I_C = 4 A, I_B = 8 mA			1.5	V
Base-emitter saturation voltage		$V_{BE(sat)}$	I_C = 4 A, I_B = 8 mA			2.0	V
Transition frequency		f_T	V_{CE} = 10 V, I_C = 0.5 A, f = 1 MHz		20		MHz
Turn-on time		t_{on}	I_C = 2 A, I_{B1} = 8 mA, I_{B2} = −8 mA,		0.5		µs
Storage time		t_{stg}	V_{CC} = 50 V		4.0		µs
Fall time		t_f			1.0		µs

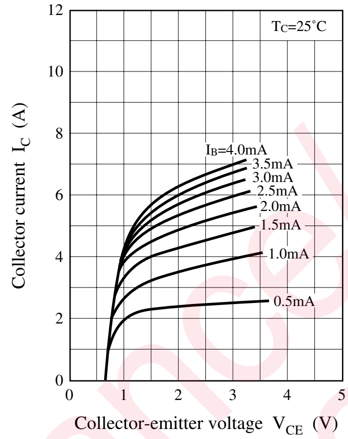
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Rank classification

Rank	R	Q	P
h_{FE1}	1 000 to 2 500	2 000 to 5 000	4 000 to 10 000

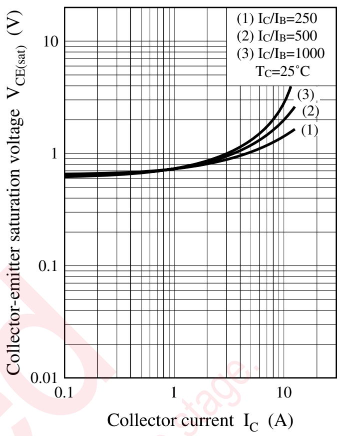
P_C — T_a



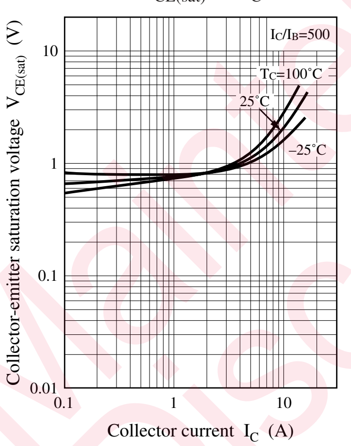
I_C — V_{CE}



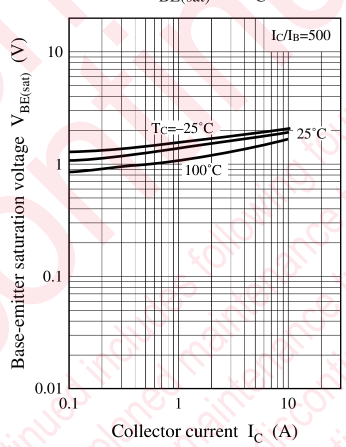
$V_{CE(sat)}$ — I_C



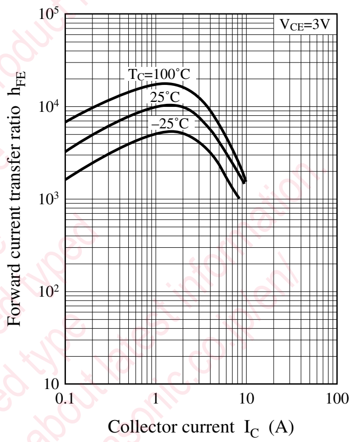
$V_{CE(sat)}$ — I_C



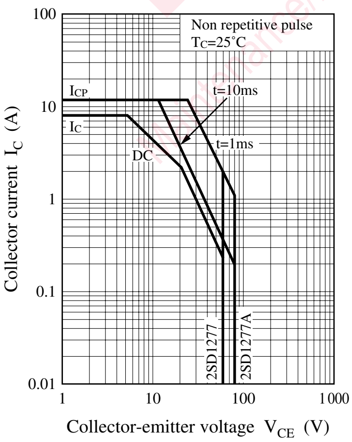
$V_{BE(sat)}$ — I_C



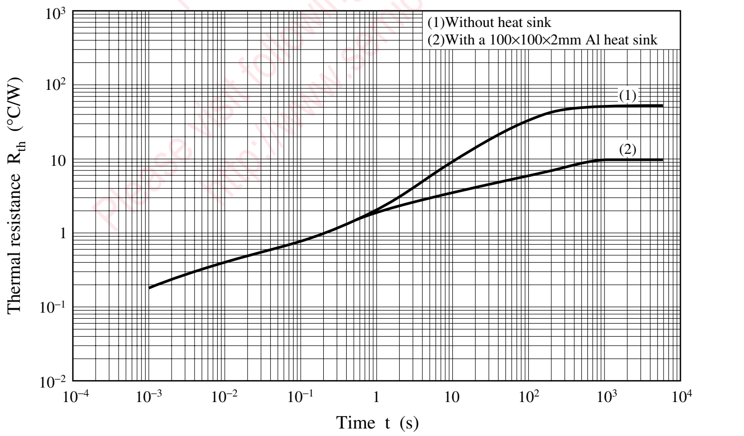
h_{FE} — I_C



Safe operation area



R_{th} — t



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