

# 2SD1277, 2SD1277A

## Silicon NPN triple diffusion planar type darlington

For midium speed power switching

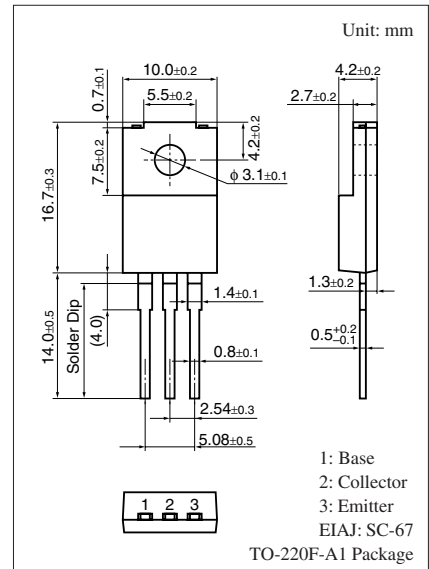
Complementary to 2SB0951, 2SB0951A

### ■ Features

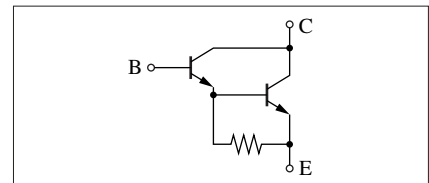
- High forward current transfer ratio  $h_{FE}$
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw

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

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	$T_C = 25^\circ\text{C}$	$P_C$	45	W
			2.0	
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	



### Internal Connection



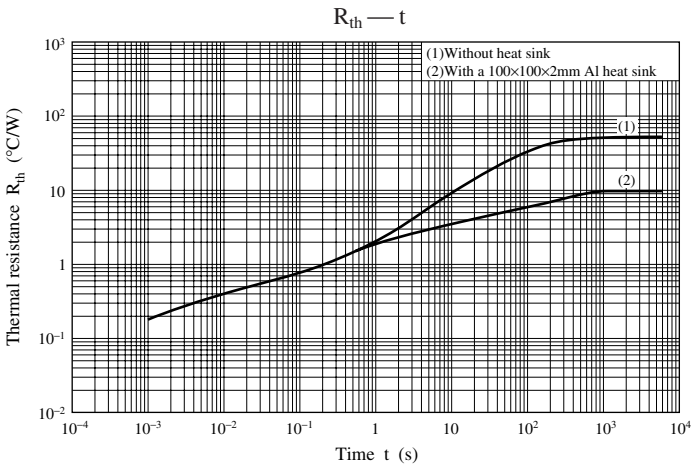
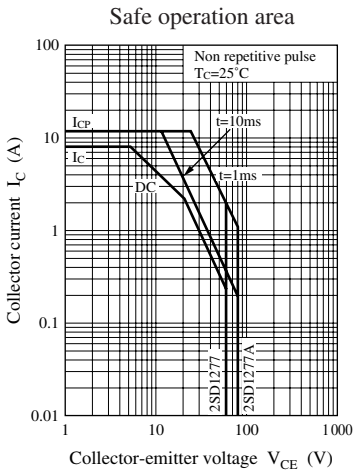
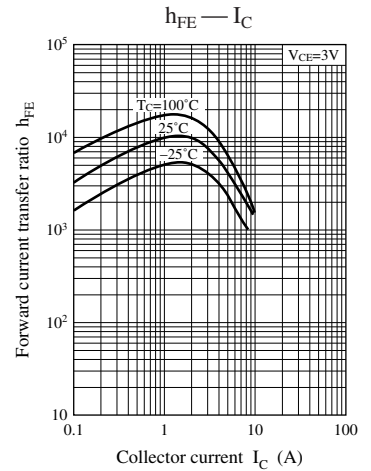
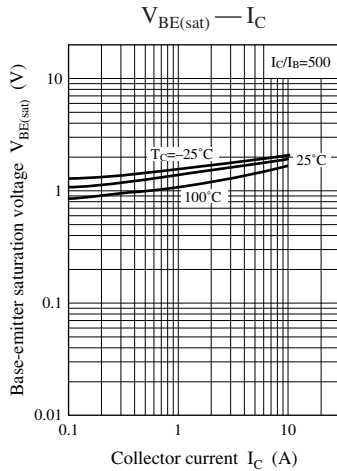
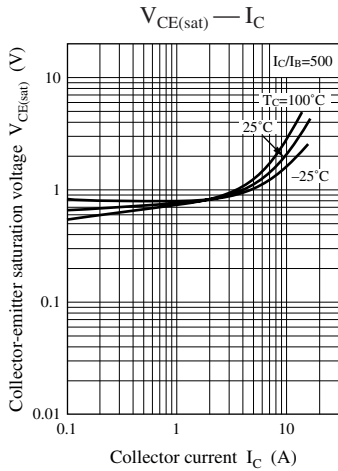
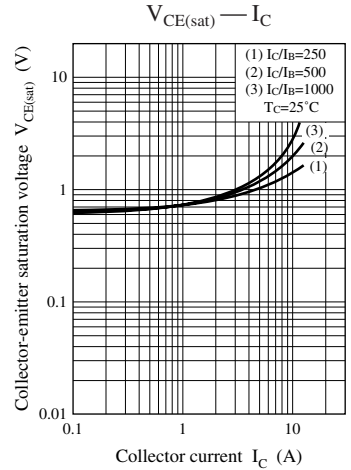
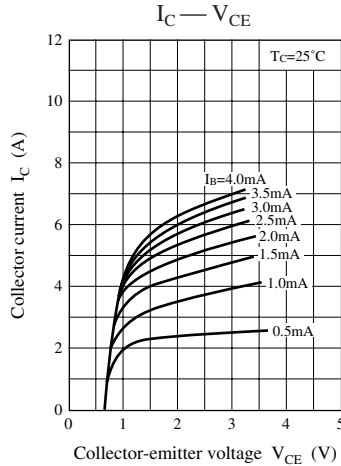
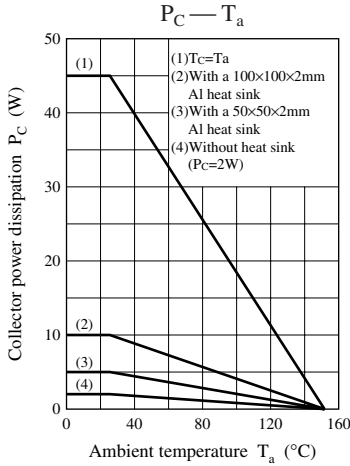
### ■ Electrical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	2SD1277	$I_C = 30\text{ mA}, I_B = 0$	60			V
	2SD1277A		80			
Collector-base cutoff current (Emitter open)	2SD1277	$V_{CB} = 60\text{ V}, I_E = 0$ $V_{CB} = 80\text{ V}, I_E = 0$			100	$\mu\text{A}$
	2SD1277A				100	
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 7\text{ V}, I_C = 0$			2	mA
Forward current transfer ratio	$h_{FE1}^*$	$V_{CE} = 3\text{ V}, I_C = 4\text{ A}$	1000		10000	—
	$h_{FE2}$	$V_{CE} = 3\text{ V}, I_C = 8\text{ A}$	500			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 4\text{ A}, I_B = 8\text{ mA}$			1.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 4\text{ A}, I_B = 8\text{ mA}$			2.0	V
Transition frequency	$f_T$	$V_{CE} = 10\text{ V}, I_C = 0.5\text{ A}, f = 1\text{ MHz}$		20		MHz
Turn-on time	$t_{on}$	$V_{CC} = 50\text{ V}$ $I_C = 2\text{ A}, I_{B1} = 8\text{ mA}, I_{B2} = -8\text{ mA}$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$			4.0		$\mu\text{s}$
Fall time	$t_f$			1.0		$\mu\text{s}$

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. \*: Rank classification

Rank	R	Q	P
$h_{FE1}$	1000 to 2500	2000 to 5000	4000 to 10000



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