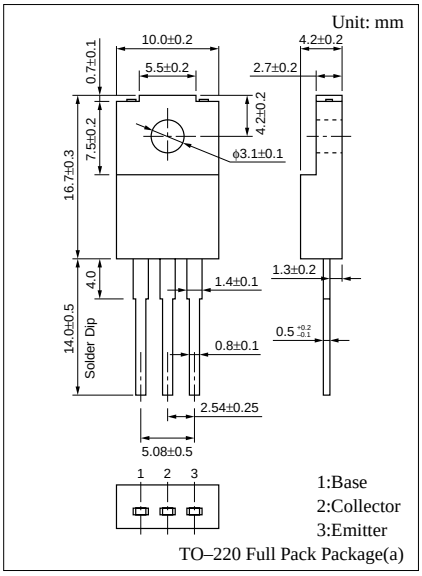
2SD1277, 2SD1277A

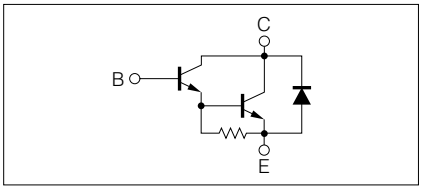
Silicon NPN triple diffusion planar type Darlington

For midium speed power switching

Complementary to 2SB951 and 2SB951A



Internal Connection



Features

- High foward 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_C=25˚C)

Parameter		Symbol	Ratings	Unit
Collector to base voltage	2SD1277	V_{CBO}	60	V
	2SD1277A		80	
Collector to emitter voltage	2SD1277	V_{CEO}	60	V
	2SD1277A		80	
Emitter to base voltage		V_{EBO}	7	V
Peak collector current		I_{CP}	12	A
Collector current		I_C	8	A
Collector power dissipation	T_C=25°C	P_C	45	W
	Ta=25°C		2	
Junction temperature		T_j	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

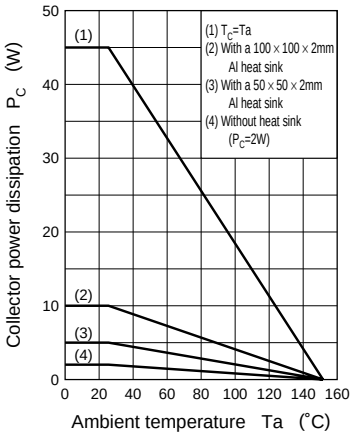
Electrical Characteristics (T_C=25˚C)

Parameter		Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	2SD1277	I_{CBO}	V_{CB} = 60V, I_E = 0			100	μA
	2SD1277A		V_{CB} = 80V, I_E = 0			100	
Emitter cutoff current		I_{EBO}	V_{EB} = 7V, I_C = 0			2	mA
Collector to emitter voltage	2SD1277	V_{CEO}	I_C = 30mA, I_B = 0	60			V
	2SD1277A			80			
Forward current transfer ratio		h_{FE1}*	V_{CE} = 3V, I_C = 4A	2000		10000	
		h_{FE2}	V_{CE} = 3V, I_C = 8A	500			
Collector to emitter saturation voltage		$V_{CE(sat)}$	I_C = 4A, I_B = 8mA			1.5	V
Base to emitter saturation voltage		$V_{BE(sat)}$	I_C = 4A, I_B = 8mA			2	V
Transition frequency		f_T	V_{CE} = 10V, I_C = 0.5A, f = 1MHz	20			MHz
Turn-on time		t_{on}	I_C = 4A, I_{B1} = 8mA, I_{B2} = –8mA, V_{CC} = 50V		0.5		μs
Storage time		t_{stg}			4		μs
Fall time		t_f			1		μs

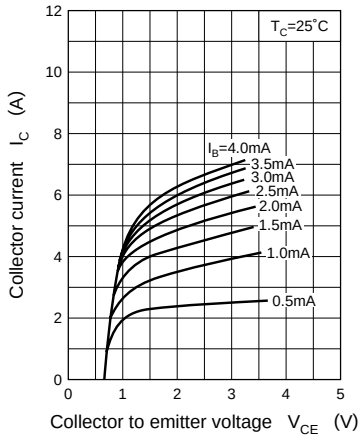
*h_{FE1} Rank classification

Rank	Q	P
h_{FE1}	2000 to 5000	4000 to 10000

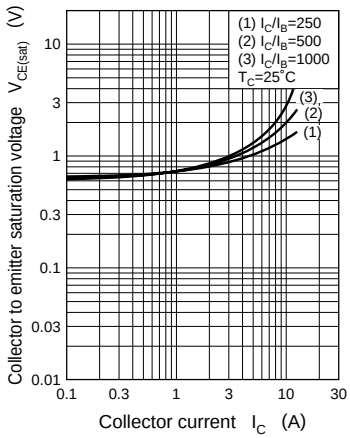
P_C — Ta



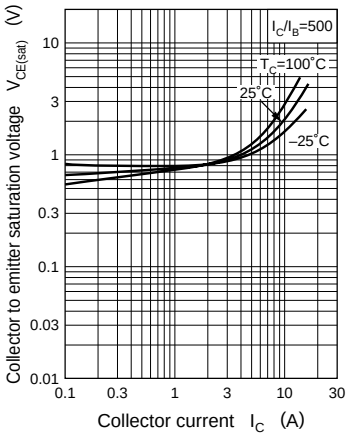
I_C — V_{CE}



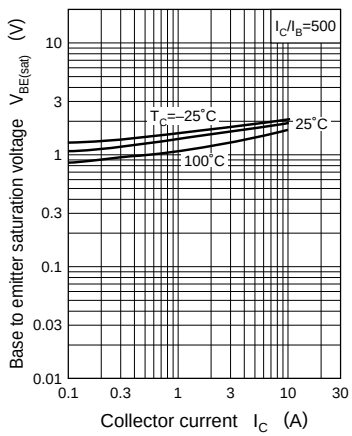
$V_{CE(sat)}$ — I_C



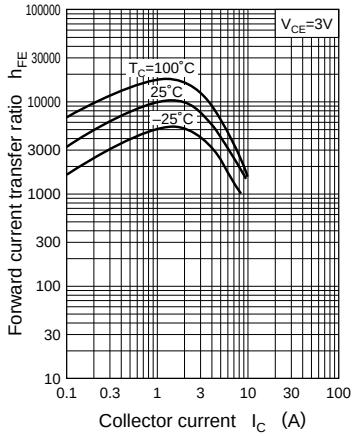
$V_{CE(sat)}$ — I_C



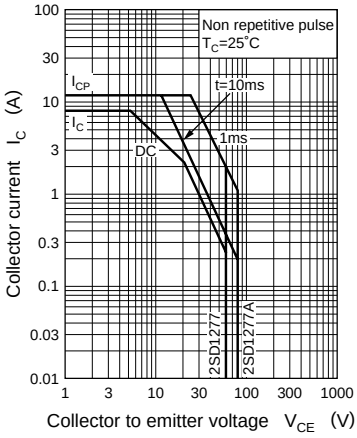
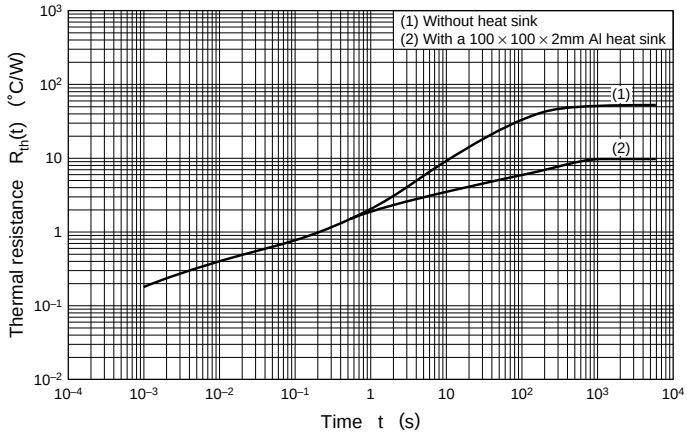
$V_{CB(sat)}$ — I_C



h_{FE} — I_C



Area of safe operation (ASO)



$R_{th(t)}$ — t