

2SD1773

Silicon NPN triple diffusion planar type Darlington

For medium speed switching

Complementary to 2SB1193

Features

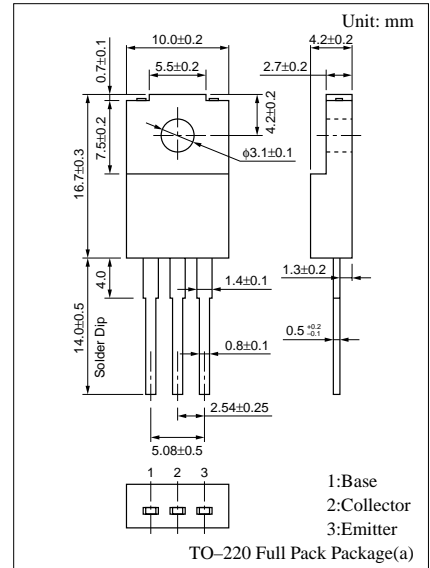
- High forward current transfer ratio h_{FE}
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw

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

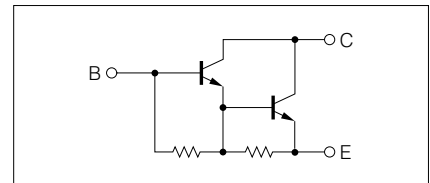
Parameter	Symbol	Rated	Unit
Collector to base voltage	V_{CBO}	120	V
Collector to emitter voltage	V_{CEO}	120	V
Emitter to base voltage	V_{EBO}	7	V
Peak collector current	I_{CP}	12	A
Collector current	I_C	8	A
Collector power dissipation	P_C	50 2	W
		$T_C=25^\circ\text{C}$	
		$T_a=25^\circ\text{C}$	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

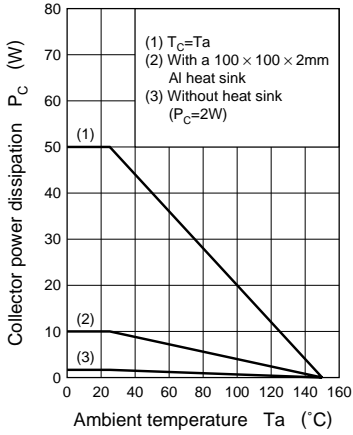
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 120\text{V}, I_E = 0$			100	μA
	I_{CEO}	$V_{CE} = 100\text{V}, I_B = 0$			10	μA
Collector to base voltage	$V_{CEO(sus)}$	$I_C = 2\text{A}, L = 10\text{mH}$	120			V
Emitter to base voltage	V_{EBO}	$I_E = 50\text{mA}, I_C = 0$	7			V
Forward current transfer ratio	h_{FE}	$V_{CE} = 3\text{V}, I_C = 4\text{A}$	1000		20000	
	$V_{CE(sat)1}$	$I_C = 4\text{A}, I_B = 8\text{mA}$			1.5	V
Collector to emitter saturation voltage	$V_{CE(sat)2}$	$I_C = 8\text{A}, I_B = 80\text{mA}$			3	V
	$V_{BE(sat)1}$	$I_C = 4\text{A}, I_B = 8\text{mA}$			2	V
Base to emitter saturation voltage	$V_{BE(sat)2}$	$I_C = 8\text{A}, I_B = 80\text{mA}$			3.5	V
	Transition frequency	f_T	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$		20	
Turn-on time	t_{on}	$I_C = 4\text{A}, I_{B1} = 8\text{mA}, I_{B2} = -8\text{mA}, V_{CC} = 50\text{V}$		0.7		μs
Storage time	t_{stg}			6		μs
Fall time	t_f			2		μs



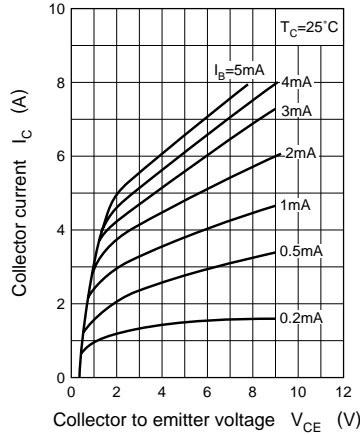
Internal Connection



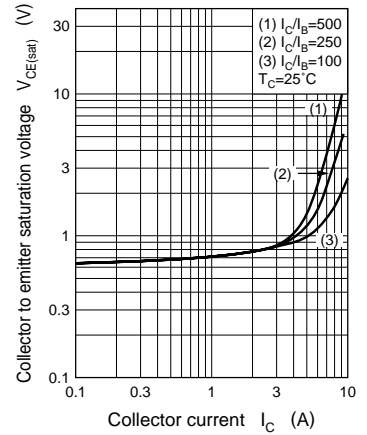
$P_C - T_a$



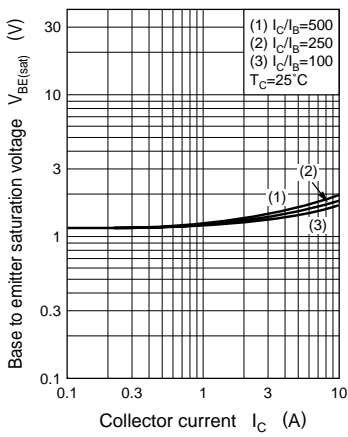
$I_C - V_{CE}$



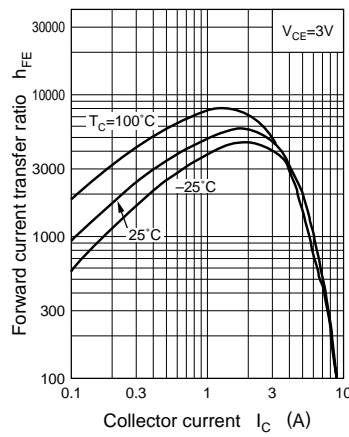
$V_{CE(sat)} - I_C$



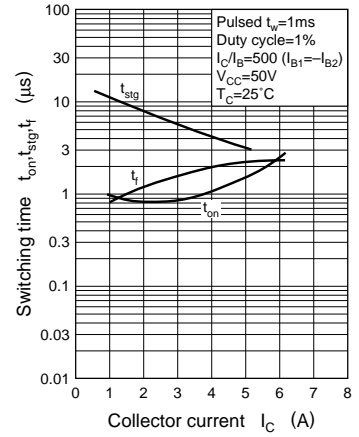
$V_{BE(sat)} - I_C$



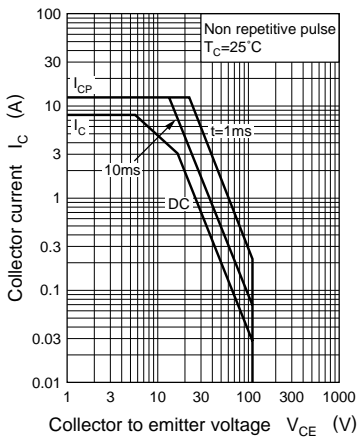
$h_{FE} - I_C$



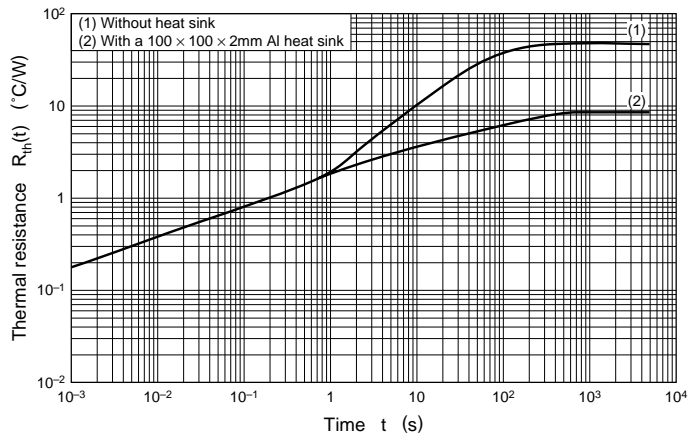
$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)



$R_{th(t)} - t$



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