

# 2SD1773

## Silicon NPN triple diffusion planar type Darlington

For medium speed switching

Complementary to 2SB1193

### Features

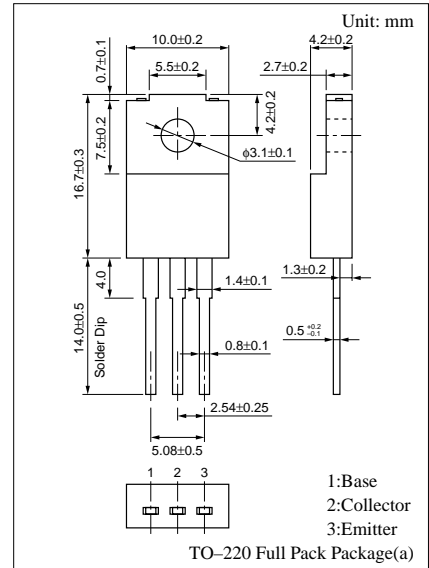
- High forward current transfer ratio  $h_{FE}$
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw

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

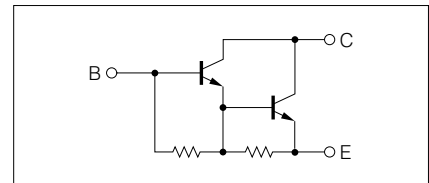
Parameter	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	120	V
Collector to emitter voltage	$V_{CEO}$	120	V
Emitter to base voltage	$V_{EBO}$	7	V
Peak collector current	$I_{CP}$	12	A
Collector current	$I_C$	8	A
Collector power dissipation	$P_C$	$T_C=25^\circ\text{C}$ 50	W
		$T_a=25^\circ\text{C}$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

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

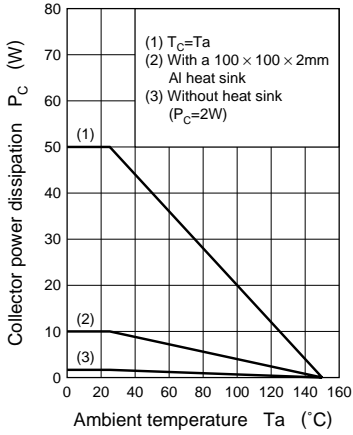
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 120\text{V}, I_E = 0$			100	$\mu\text{A}$
	$I_{CEO}$	$V_{CE} = 100\text{V}, I_B = 0$			10	$\mu\text{A}$
Collector to base voltage	$V_{CEO(sus)}$	$I_C = 2\text{A}, L = 10\text{mH}$	120			V
Emitter to base voltage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



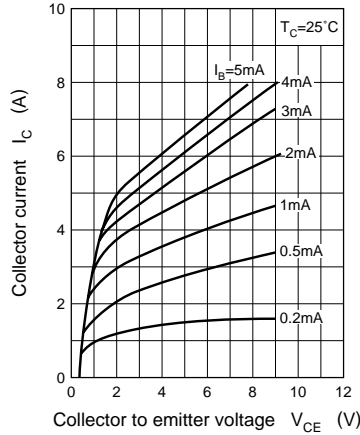
### Internal Connection



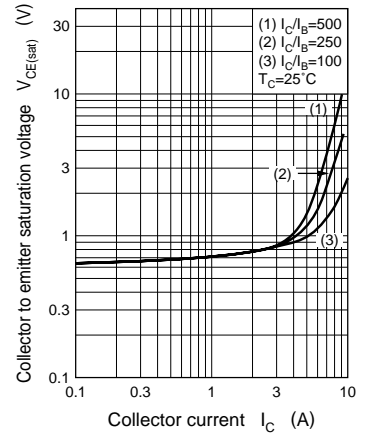
$P_C - T_a$



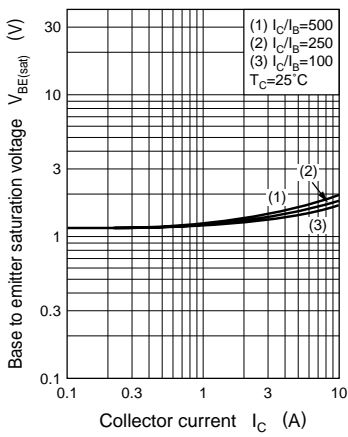
$I_C - V_{CE}$



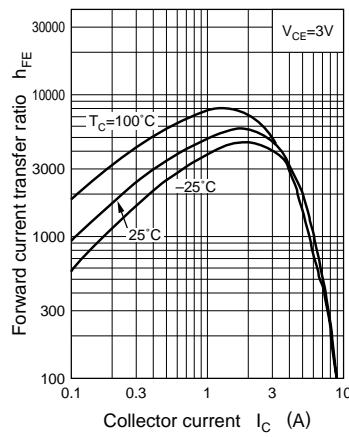
$V_{CE(sat)} - I_C$



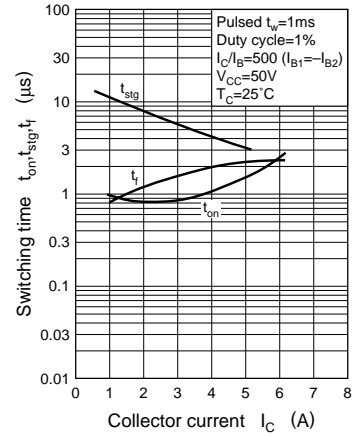
$V_{BE(sat)} - I_C$



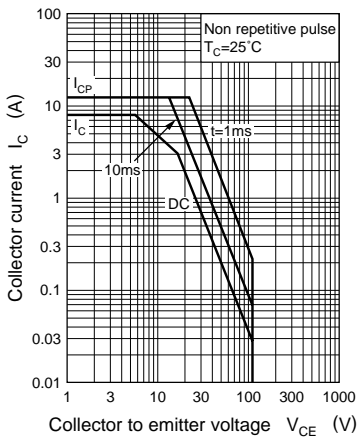
$h_{FE} - I_C$



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



Area of safe operation (ASO)



$R_{th(t)} - t$

