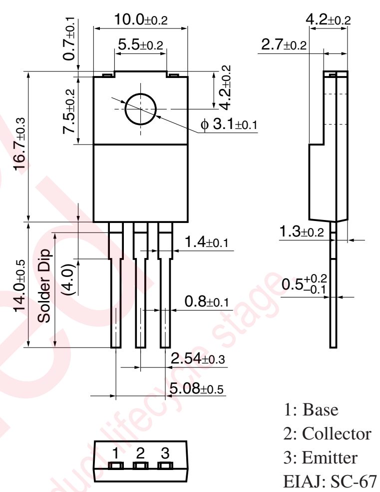
2SD1773

Silicon NPN triple diffusion planar type darlington

For midium speed switching
Complementary to 2SB1193



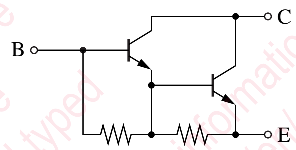
■ Features

- 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 $T_C = 25°C$

Parameter		Symbol	Rating	Unit
Collector-base voltage (Emitter open)		V_{CBO}	120	V
Collector-emitter voltage (Base open)		V_{CEO}	120	V
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		P_C	50	W
	$T_a = 25°C$		2.0	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

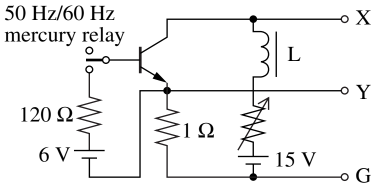
Internal Connection



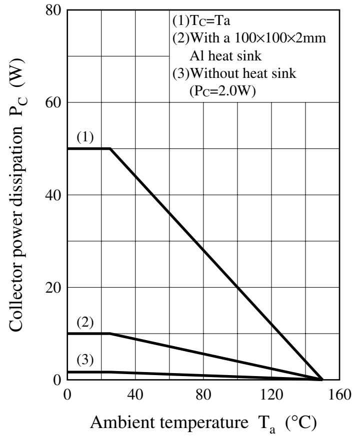
■ Electrical Characteristics $T_C = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter sustaining voltage *	$V_{CEO(SUS)}$	$I_C = 2$ A, $R_{BE} = \infty$, L = 10 mH	120			V
Emitter-base voltage (Collector open)	V_{EBO}	$I_E = 50$ mA, $I_C = 0$	7			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 120$ V, $I_E = 0$			100	µA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = 100$ V, $R_{BE} = \infty$			10	µA
Forward current transfer ratio	h_{FE}	$V_{CE} = 3$ V, $I_C = 4$ A	1 000		20 000	—
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C = 4$ A, $I_B = 8$ mA			1.5	V
	$V_{CE(sat)2}$	$I_C = 8$ A, $I_B = 80$ mA			3.0	
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C = 4$ A, $I_B = 8$ mA			2.0	V
	$V_{BE(sat)2}$	$I_C = 8$ A, $I_B = 80$ mA			3.5	
Transition frequency	f_T	$V_{CE} = 10$ V, $I_C = 1$ A, f = 1 MHz		20		MHz
Turn-on time	t_{on}	$I_C = 4$ A, $I_{B1} = 8$ mA, $I_{B2} = -8$ mA,		0.7		µs
Storage time	t_{stg}	$V_{CC} = 50$ V		6.0		µs
Fall time	t_f			2.0		µs

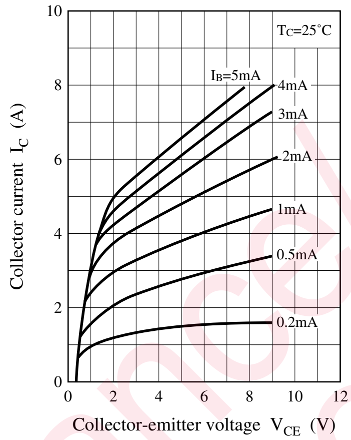
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. ∗: $V_{CEO(SUS)}$ Test circuit



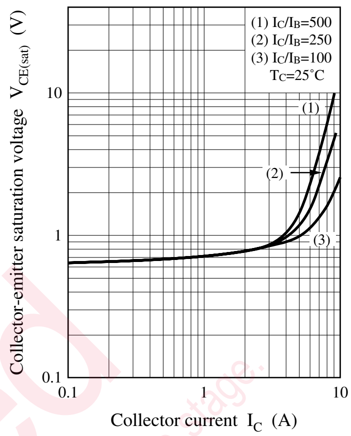
P_C — T_a



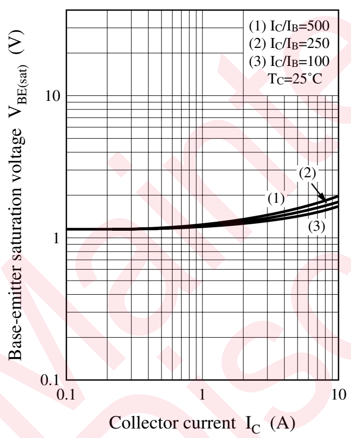
I_C — V_{CE}



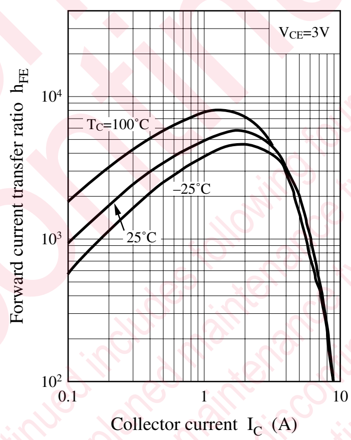
$V_{CE(sat)}$ — I_C



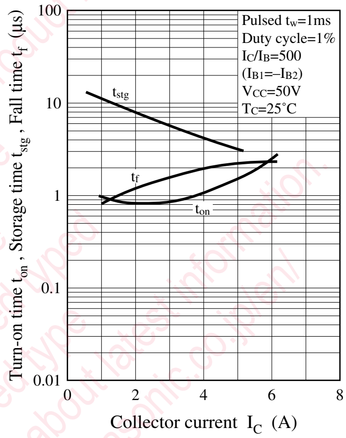
$V_{BE(sat)}$ — I_C



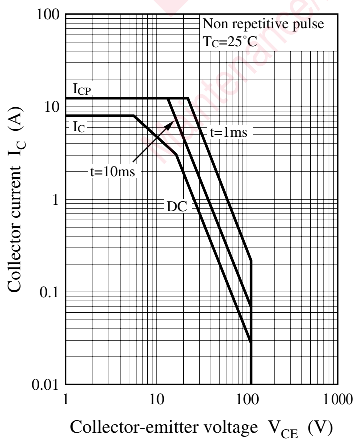
h_{FE} — I_C



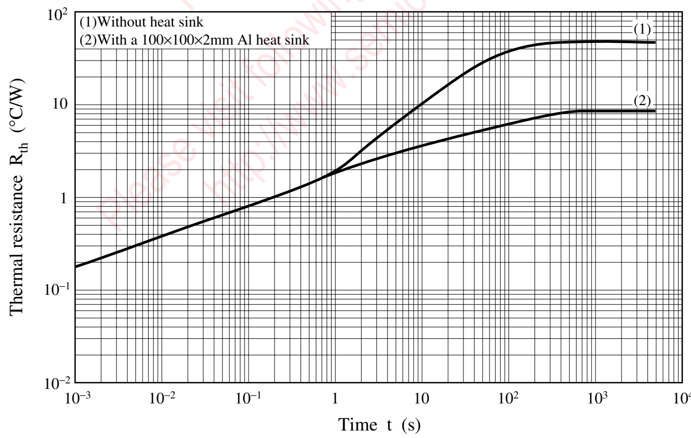
t_{on}, t_{stg}, t_f — I_C



Safe operation area



R_{th} — t



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