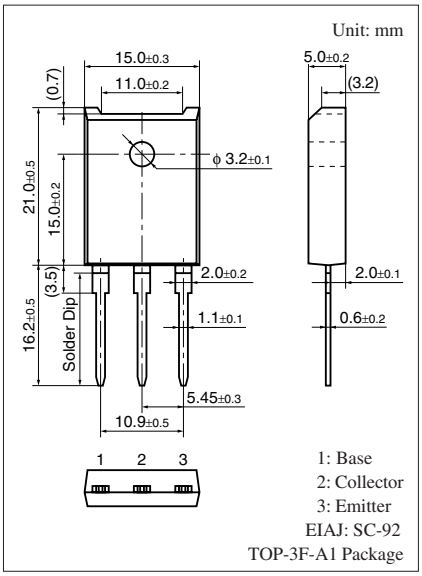
2SC3974

Silicon NPN triple diffusion planar type

For high breakdown voltage high-speed switching



■ Features

- High-speed switching
- High collector-base voltage (Emitter open) V_{CBO}
- Wide safe operation area
- Satisfactory linearity of forward current transfer ratio h_{FE}
- Full-pack package which can be installed to the heat sink with one screw

■ Absolute Maximum Ratings $T_C = 25°C$

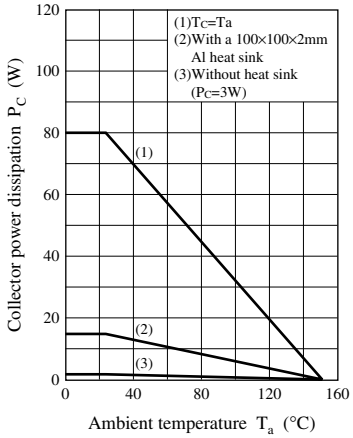
Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	800	V
Collector-emitter voltage (E-B short)	V_{CES}	800	V
Collector-emitter voltage (Base open)	V_{CEO}	500	V
Emitter-base voltage (Collector open)	V_{EBO}	8	V
Base current	I_B	4	A
Collector current	I_C	7	A
Peak collector current	I_{CP}	15	A
Collector power dissipation	P_C	80	W
$T_a = 25°C$		3.0	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

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

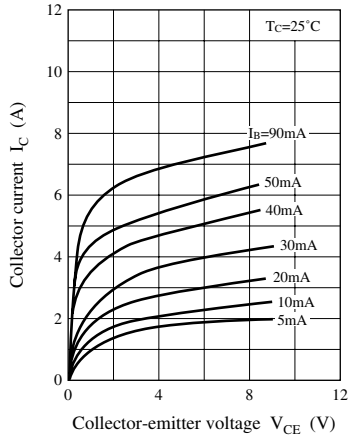
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	I_C = 10 mA, I_B = 0	500			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 800 V, I_E = 0			100	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 5 V, I_C = 0			100	μA
Forward current transfer ratio	h_{FE1}	V_{CE} = 5 V, I_C = 0.1 A	15			—
	h_{FE2}	V_{CE} = 5 V, I_C = 4 A	8			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 4 A, I_B = 0.8 A			1.0	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 4 A, I_B = 0.8 A			1.5	V
Transition frequency	f_T	V_{CE} = 10 V, I_C = 0.5 A, f = 1 MHz		20		MHz
Turn-on time	t_{on}	I_C = 4 A			1.0	μs
Storage time	t_{stg}	I_{B1} = 0.8 A, I_{B2} = –1.6 A			3.0	μs
Fall time	t_f	V_{CC} = 200 V			0.3	μs

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

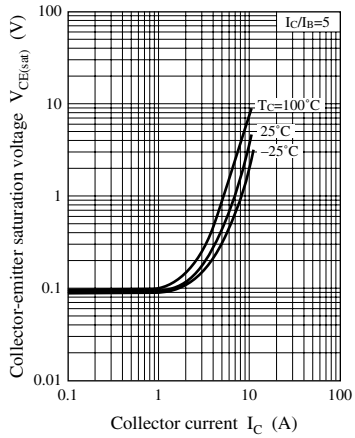
P_C — T_a



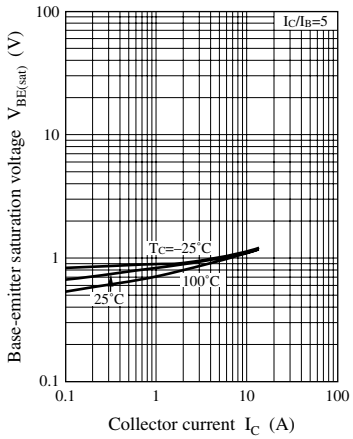
I_C — V_{CE}



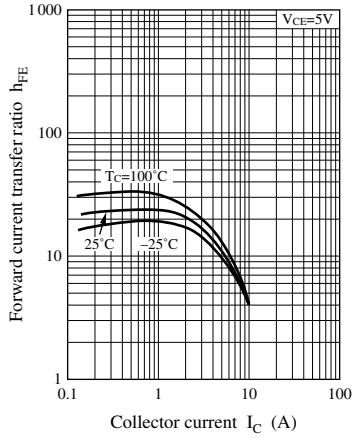
$V_{CE(sat)}$ — I_C



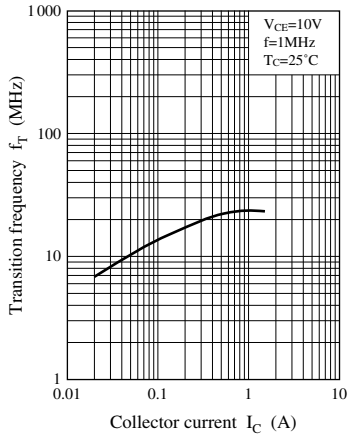
$V_{BE(sat)}$ — I_C



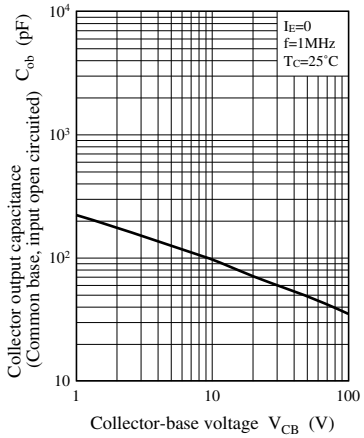
h_{FE} — I_C



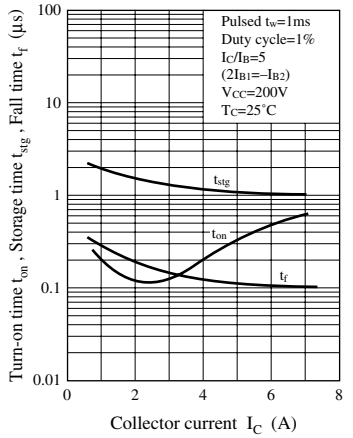
f_T — I_C



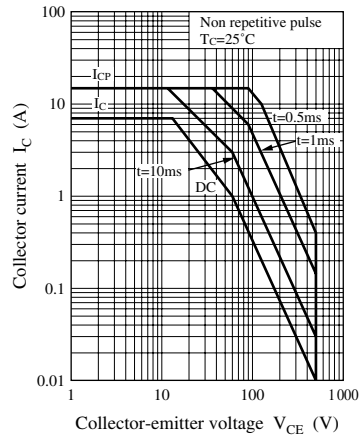
C_{ob} — V_{CB}



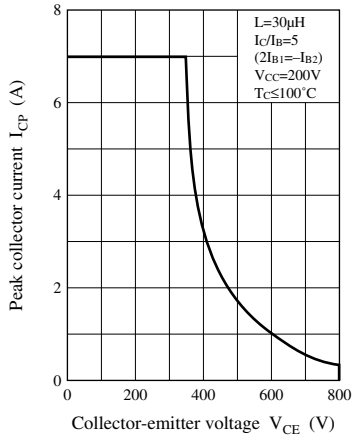
t_{on} , t_{stg} , t_f — I_C



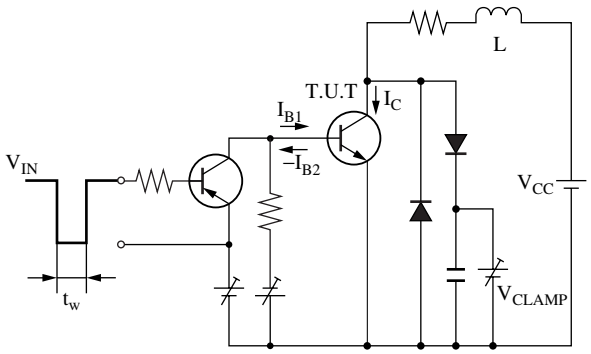
Safe operation area



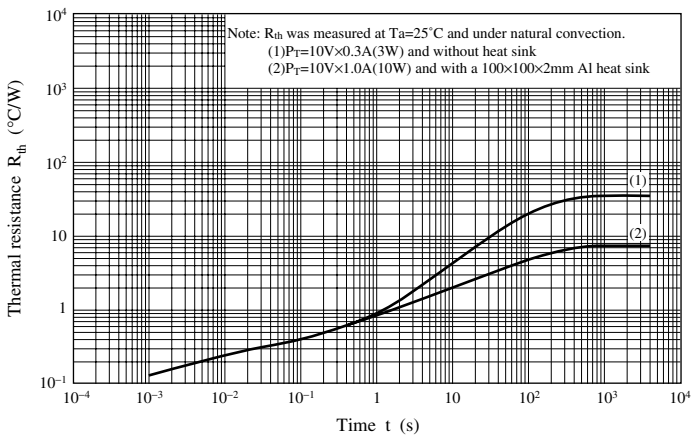
Safe operation area (Reverse bias)



Safe operation area (Reverse bias) measuring circuit



R_{th} — t



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