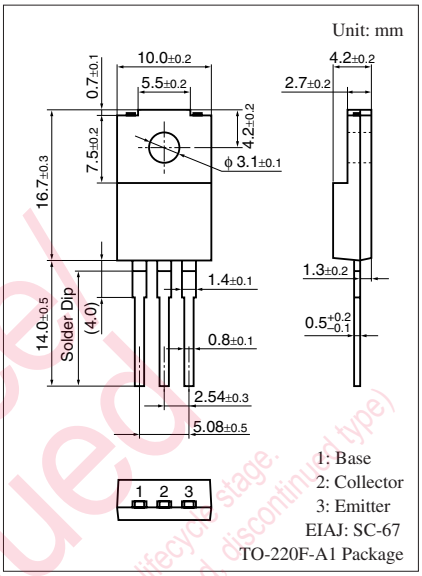
2SC4638

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}
- Low collector-emitter saturation voltage $V_{CE(sat)}$
- Full-pack package which can be installed to the heat sink with one screw

■ Absolute Maximum Ratings $T_C = 25°C$

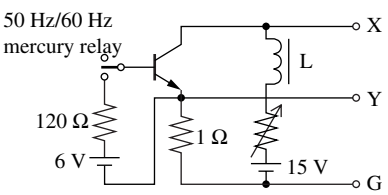
Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	800	V
Collector-emitter voltage (E-B short)	V_{CES}	800	V
Collector-emitter voltage (Base open)	V_{CEO}	500	V
Emitter-base voltage (Collector open)	V_{EBO}	8	V
Base current	I_B	3	A
Collector current	I_C	5	A
Peak collector current	I_{CP}	10	A
Collector power dissipation	P_C	40	W
$T_a = 25°C$		2.0	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

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

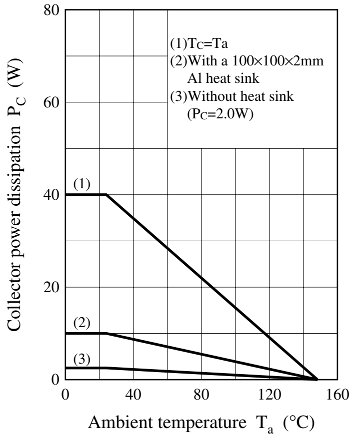
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter sustaining voltage *	$V_{CEO(SUS)}$	I_C = 0.2 A, L = 25 mH	500			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 800 V, I_E = 0			100	µA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 5 V, I_C = 0			100	µA
Forward current transfer ratio	h_{FE1}	V_{CE} = 5 V, I_C = 0.1 A	15			—
	h_{FE2}	V_{CE} = 5 V, I_C = 3 A	8			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 3 A, I_B = 0.6 A			1.0	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 3 A, I_B = 0.6 A			1.5	V
Transition frequency	f_T	V_{CE} = 10 V, I_C = 0.5 A, f = 1 MHz		8		MHz
Turn-on time	t_{on}	I_C = 3 A			1.5	µs
Storage time	t_{stg}	I_{B1} = 0.6 A, I_{B2} = − 0.6 A			3.0	µs
Fall time	t_f	V_{CC} = 250 V			1.0	µs

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

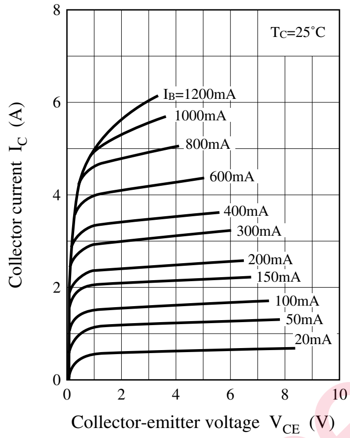
2. *: $V_{CEO(SUS)}$ test circuit



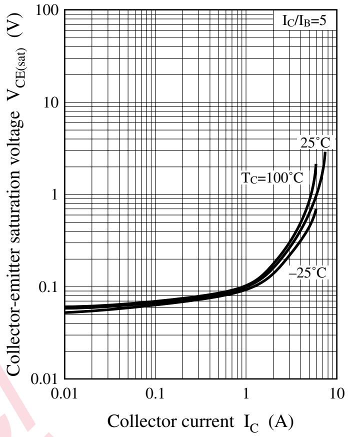
P_C — T_a



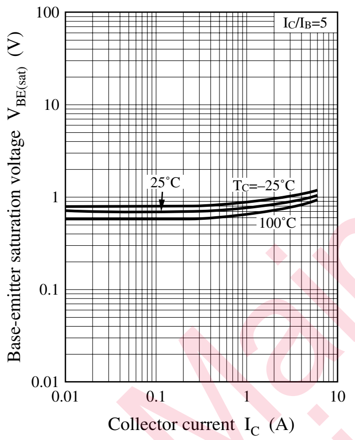
I_C — V_{CE}



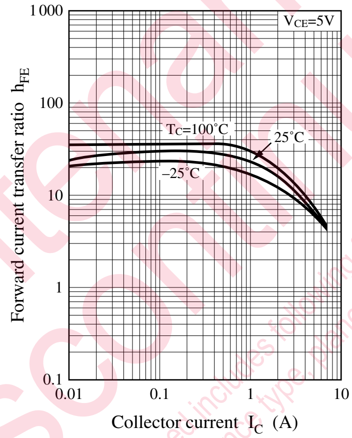
$V_{CE(sat)}$ — I_C



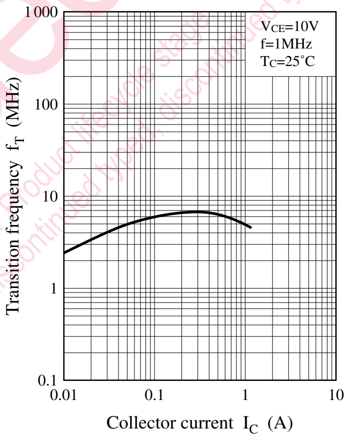
$V_{BE(sat)}$ — I_C



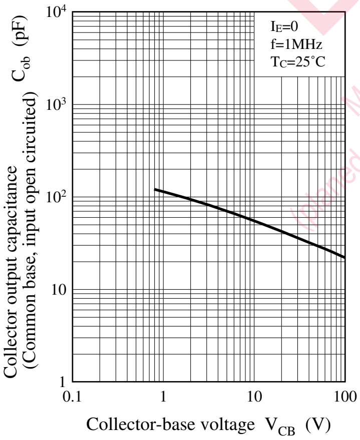
h_{FE} — I_C



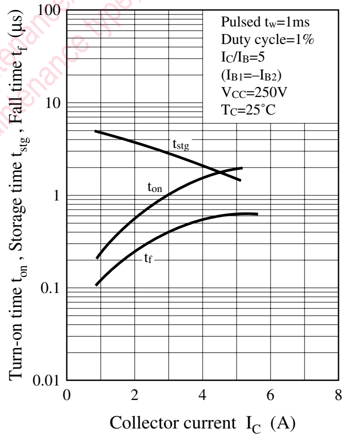
f_T — I_C



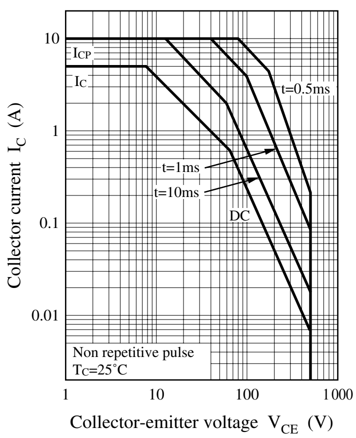
C_{ob} — V_{CB}



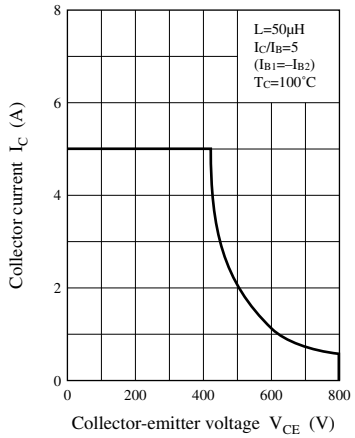
t_{on} , t_{stg} , t_f — I_C



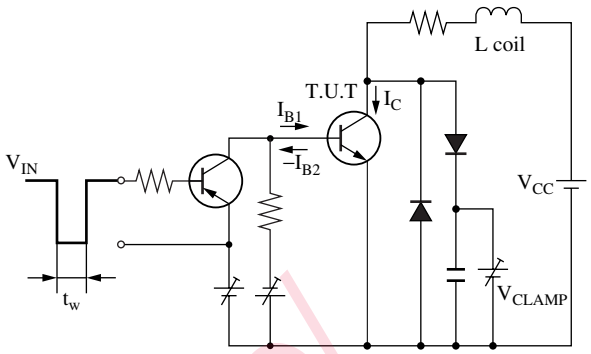
Safe operation area



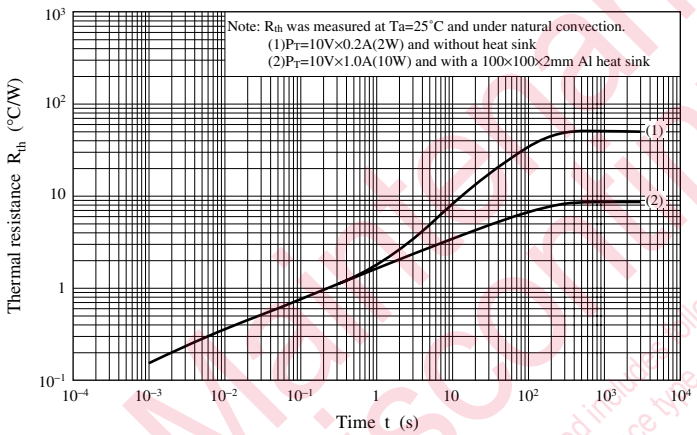
Safe operation area (Reverse bias)



Safe operation area (Reverse bias) measurement circuit



R_{th} — t



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