

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 $T_C = 25^\circ\text{C}$

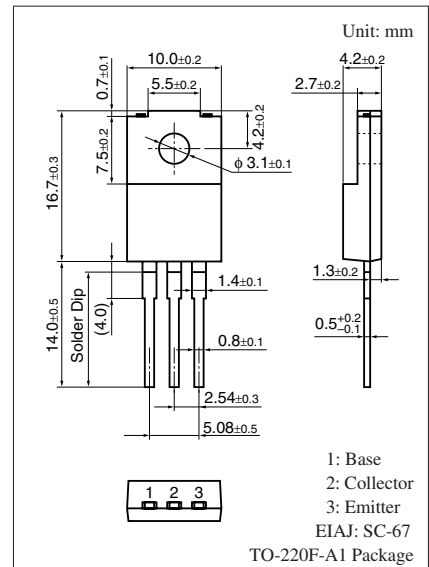
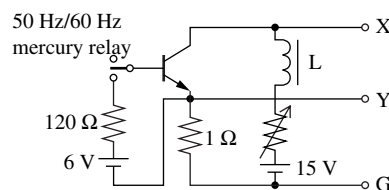
Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	800	V
Collector-emitter voltage (E-B short)	V_{CES}	800	V
Collector-emitter voltage (Base open)	V_{CEO}	500	V
Emitter-base voltage (Collector open)	V_{EBO}	8	V
Base current	I_B	3	A
Collector current	I_C	5	A
Peak collector current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

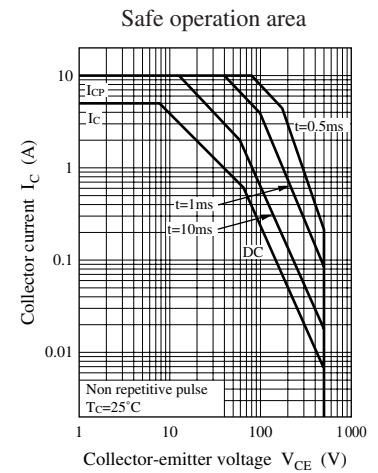
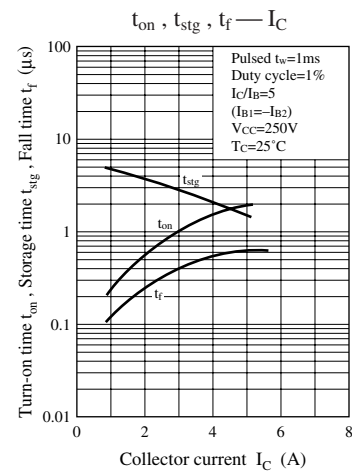
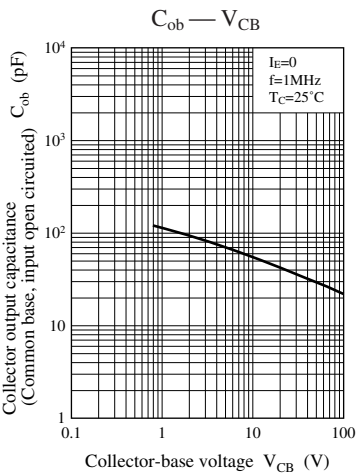
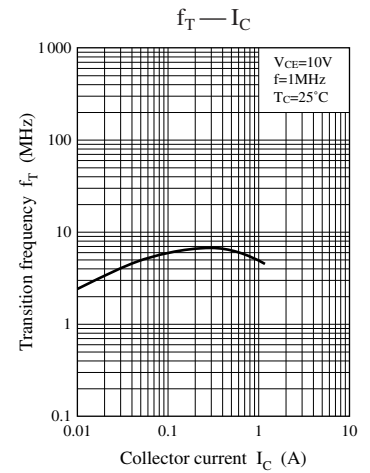
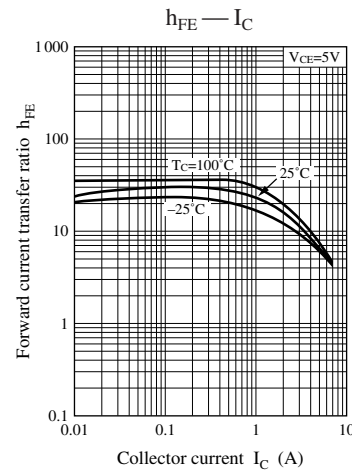
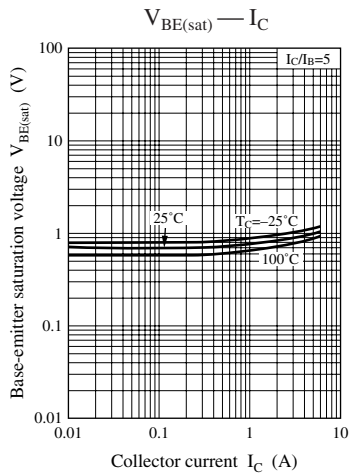
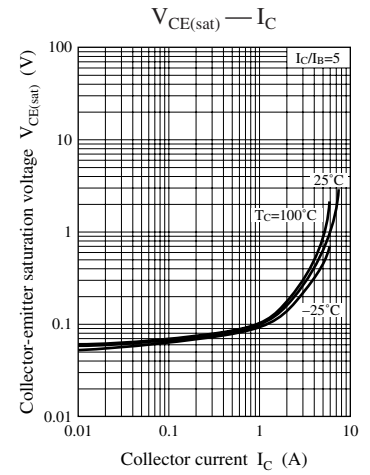
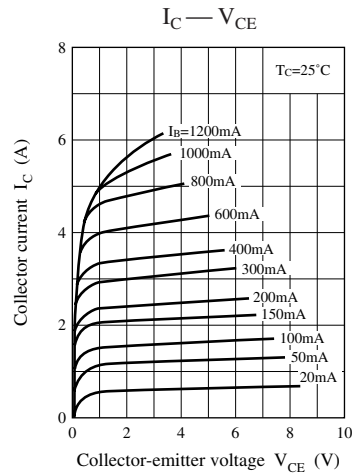
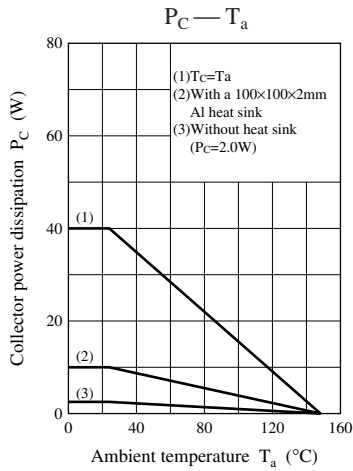
■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

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

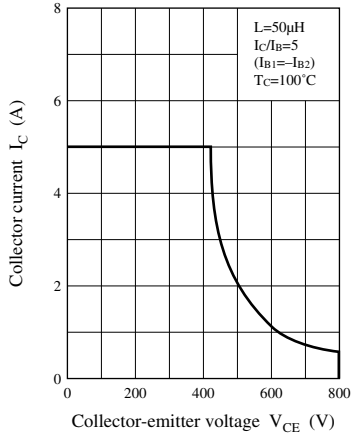
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

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

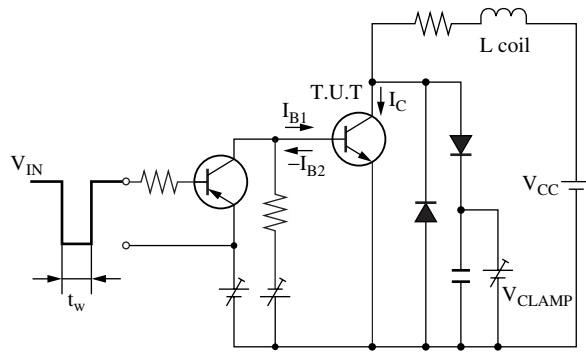




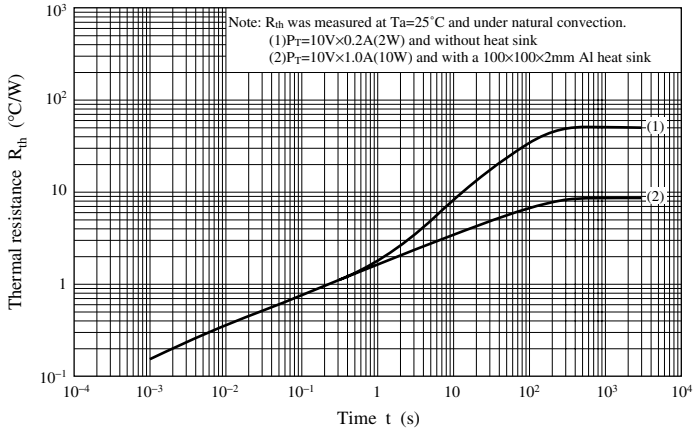
Safe operation area (Reverse bias)



Safe operation area (Reverse bias) measurement circuit



$R_{th} - t$



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