

# 2SC4559

## Silicon NPN triple diffusion planar type

For high breakdown voltage high-speed switching

### ■ Features

- High-speed switching
- High collector-emitter voltage (Base open)  $V_{CEO}$
- Full-pack package which can be installed to the heat sink with one screw

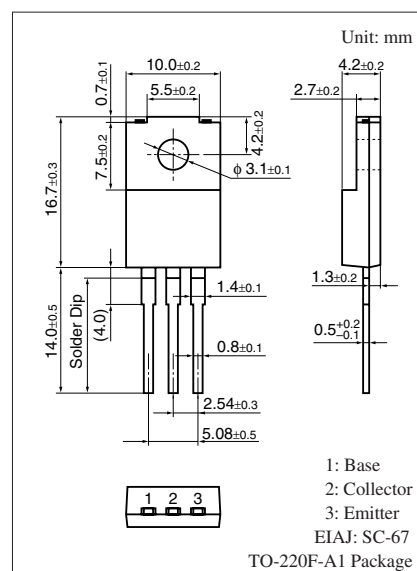
### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

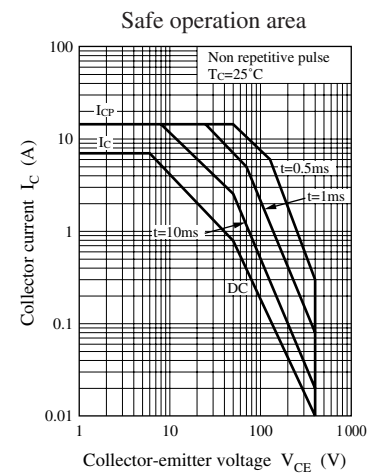
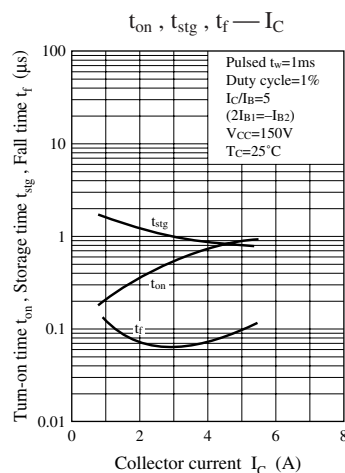
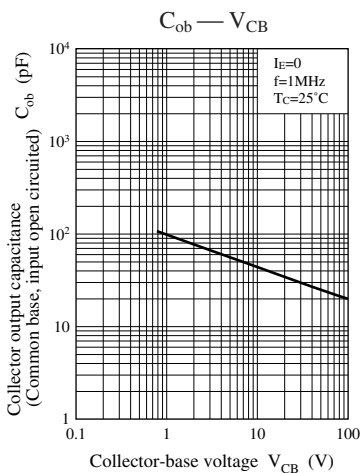
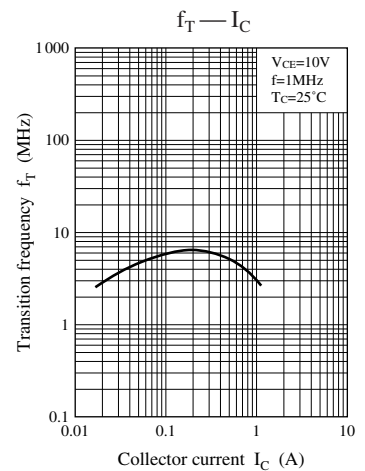
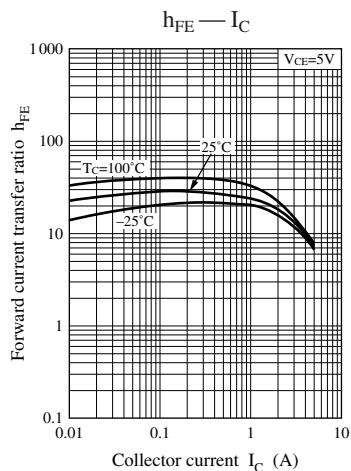
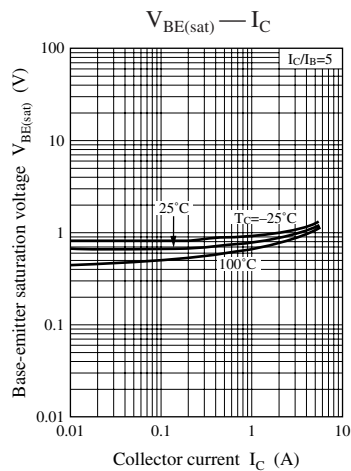
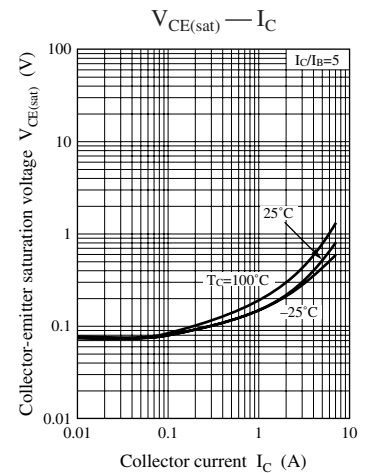
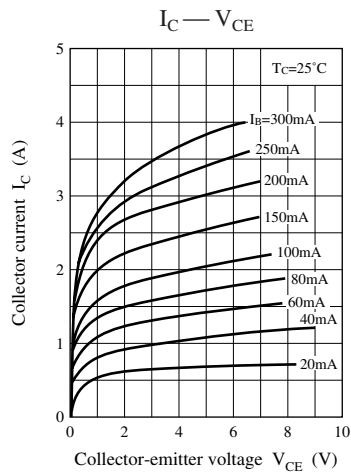
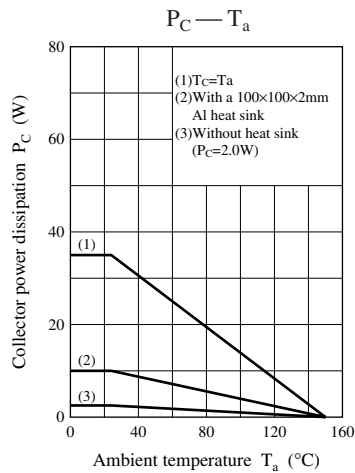
Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V <sub>CBO</sub>	500	V
Collector-emitter voltage (E-B short)	V <sub>CES</sub>	500	V
Collector-emitter voltage (Base open)	V <sub>CEO</sub>	400	V
Emitter-base voltage (Collector open)	V <sub>EBO</sub>	7	V
Base current	I <sub>B</sub>	3	A
Collector current	I <sub>C</sub>	7	A
Peak collector current	I <sub>CP</sub>	15	A
Collector power dissipation	P <sub>C</sub>	35	W
		2.0	
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	−55 to +150	°C

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

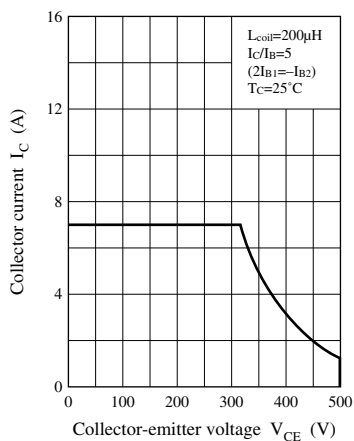
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 10\text{ mA}$ , $I_B = 0$	400			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 500\text{ V}$ , $I_E = 0$			100	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 5\text{ V}$ , $I_C = 0$			100	$\mu\text{A}$
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = 5\text{ V}$ , $I_C = 0.1\text{ A}$	10			—
	$h_{FE2}$	$V_{CE} = 5\text{ V}$ , $I_C = 3\text{ A}$	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	$f_T$	$V_{CE} = 10\text{ V}$ , $I_C = 0.5\text{ A}$ , $f = 1\text{ MHz}$		10		MHz
Turn-on time	$t_{on}$	$I_C = 3\text{ A}$			1.0	$\mu\text{s}$
Storage time	$t_{stg}$	$I_{B1} = 0.6\text{ A}$ , $I_{B2} = -1.2\text{ A}$			2.0	$\mu\text{s}$
Fall time	$t_f$	$V_{CC} = 150\text{ V}$			0.3	$\mu\text{s}$

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

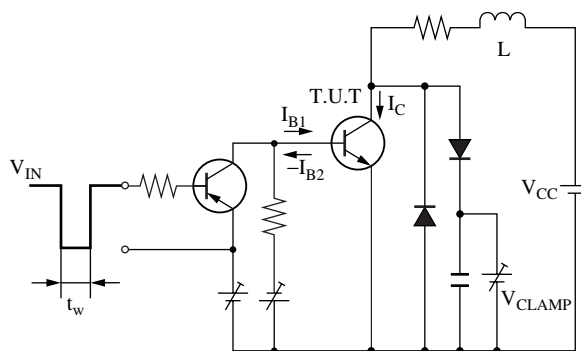




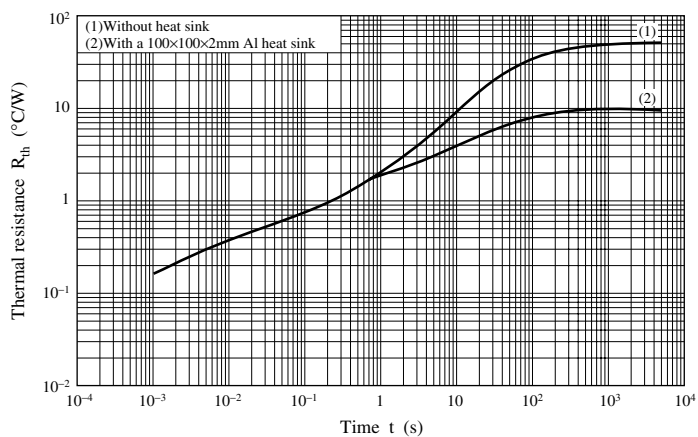
Safe operation area (Reverse bias)



Safe operation area (Reverse bias) measurement circuit



$R_{th} - t$



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