

# 2SC5809

## Silicon NPN triple diffusion planar type

For high breakdown voltage high-speed switching

### ■ Features

- High-speed switching (Fall time  $t_f$  is short)
- High collector-base voltage (Emitter open)  $V_{CBO}$
- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- TO-220D built-in: Excellent package with withstand voltage 5 kV guaranteed

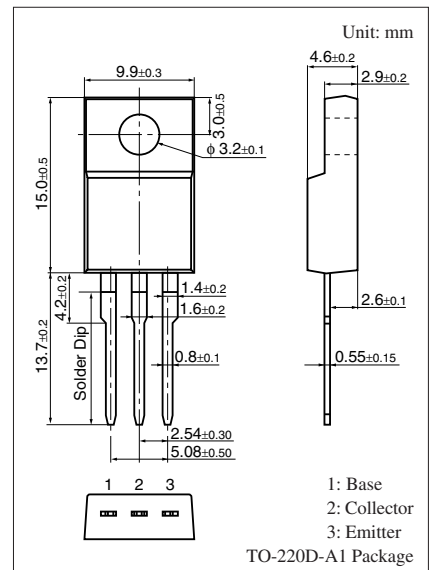
### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit	
Collector-base voltage (Emitter open)	$V_{CBO}$	800	V	
Collector-emitter voltage (Base open)	$V_{CEO}$	500	V	
Emitter-base voltage (Collector open)	$V_{EBO}$	8	V	
Collector current	$I_C$	3	A	
Peak collector current	$I_{CP}$	6	A	
Collector power dissipation	$T_C = 25^\circ\text{C}$	$P_C$	30	W
	$T_a = 25^\circ\text{C}$		2	
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	

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

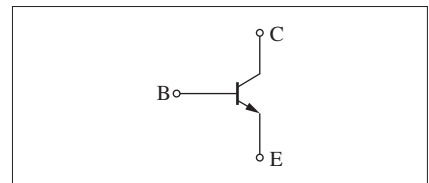
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 10\text{ mA}, I_B = 0$	500			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 800\text{ V}, I_E = 0$			100	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 5\text{ V}, I_C = 0$			100	$\mu\text{A}$
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$	15			—
	$h_{FE2}$	$V_{CE} = 5\text{ V}, I_C = 3\text{ A}$	8			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 3\text{ A}, I_B = 0.6\text{ A}$		0.3	0.6	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	$t_{on}$	$I_C = 3.0\text{ A}$ , Resistance loaded		1.1		$\mu\text{s}$
Storage time	$t_{stg}$	$I_{B1} = 0.6\text{ A}, I_{B2} = -0.6\text{ A}$		2.0		$\mu\text{s}$
Fall time	$t_f$	$V_{CC} = 200\text{ V}$		0.3		$\mu\text{s}$

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

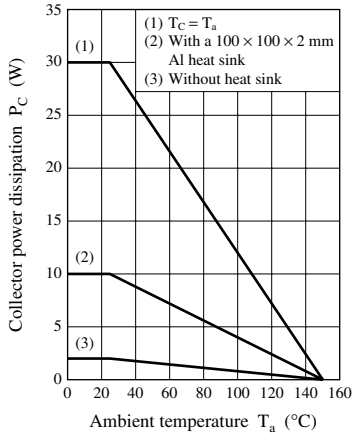


Marking Symbol: C5809

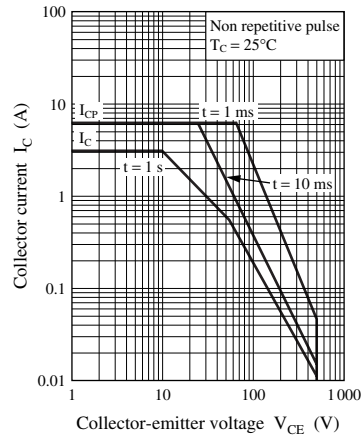
Internal Connection



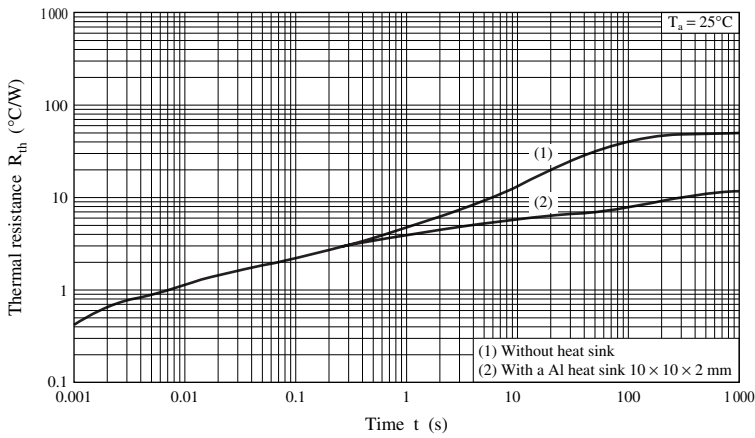
$P_C - T_a$



Safe operation area



$R_{th} - t$



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