

# 2SC5840

## Silicon NPN epitaxial planar type

Power supply for Audio & Visual equipments

such as TVs and VCRs

Industrial equipments such as DC-DC converters

### ■ Features

- High-speed switching ( $t_{stg}$ : storage time/ $t_f$ : fall time is short)
- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Superior forward current transfer ratio  $h_{FE}$  linearity
- TO-220D built-in: Excellent package with withstand voltage 5 kV guaranteed

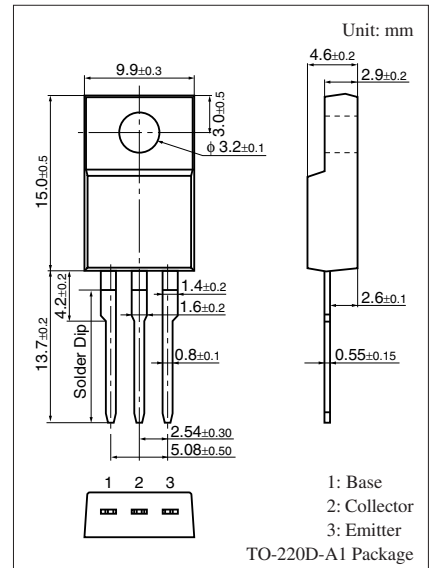
### ■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit	
Collector-base voltage (Emitter open)	$V_{CBO}$	80	V	
Collector-emitter voltage (Base open)	$V_{CEO}$	80	V	
Emitter-base voltage (Collector open)	$V_{EBO}$	5	V	
Collector current	$I_C$	3	A	
Peak collector current	$I_{CP}$	5	A	
Collector power dissipation	$T_C = 25^\circ\text{C}$	$P_C$	15	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 $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

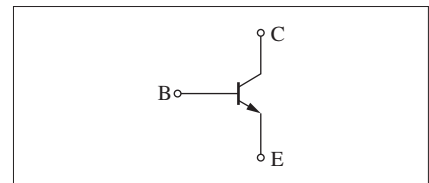
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 10\text{ mA}, I_B = 0$	80			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 80\text{ V}, I_E = 0$			100	$\mu\text{A}$
Collector-emitter cutoff current (Base open)	$I_{CEO}$	$V_{CE} = 80\text{ V}, I_B = 0$			100	$\mu\text{A}$
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = 4\text{ V}, I_C = 0.2\text{ A}$	50			—
	$h_{FE2}$	$V_{CE} = 4\text{ V}, I_C = 1\text{ A}$	80	280		
	$h_{FE3}$	$V_{CE} = 4\text{ V}, I_C = 3\text{ A}$	20			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 3\text{ A}, I_B = 0.375\text{ A}$			0.7	V
Transition frequency	$f_T$	$V_{CE} = 10\text{ V}, I_C = 0.1\text{ A}, f = 10\text{ MHz}$		100		MHz
Turn-on time	$t_{on}$	$I_C = 1\text{ A}$ , Resistance loaded		0.2		$\mu\text{s}$
Storage time	$t_{stg}$	$I_{B1} = 0.1\text{ A}, I_{B2} = -0.1\text{ A}$		0.9		$\mu\text{s}$
Fall time	$t_f$	$V_{CC} = 50\text{ V}$		0.15		$\mu\text{s}$

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

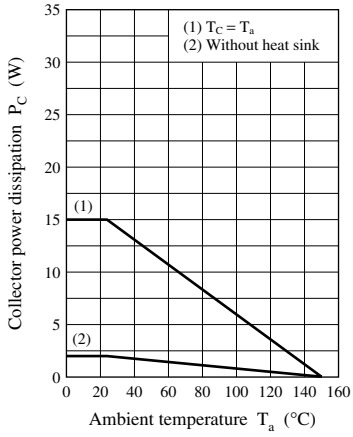


Marking Symbol: C5840

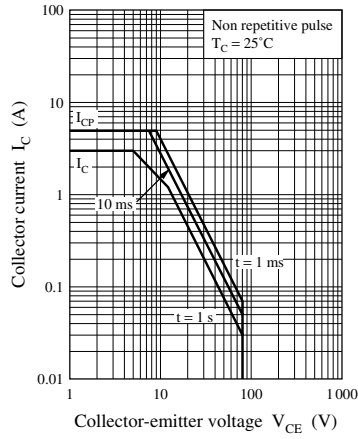
Internal Connection



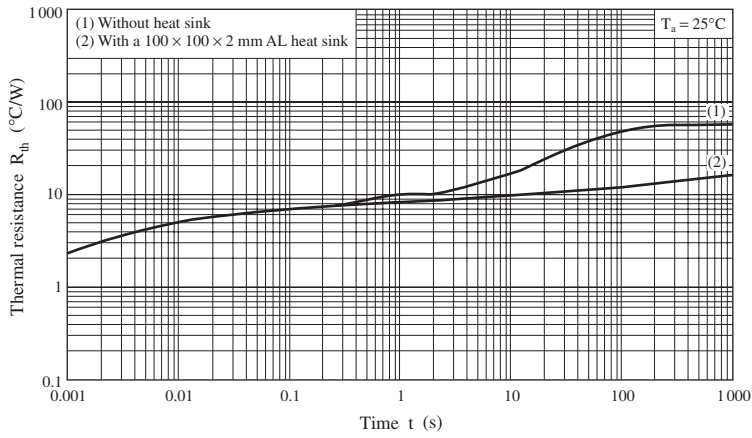
$P_C - T_a$



Safe operation area



$R_{th} - t$



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