

# 2SD1705

## Silicon NPN epitaxial planar type

For power switching

Complementary to 2SB1154

### ■ Features

- Low collector-emitter saturation voltage  $V_{CE(sat)}$
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Large collector current  $I_C$
- 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)	$V_{CBO}$	130	V
Collector-emitter voltage (Base open)	$V_{CEO}$	80	V
Emitter-base voltage (Collector open)	$V_{EBO}$	7	V
Collector current	$I_C$	10	A
Peak collector current	$I_{CP}$	20	A
Collector power dissipation	$P_C$	70	W
		$T_a = 25^\circ\text{C}$	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

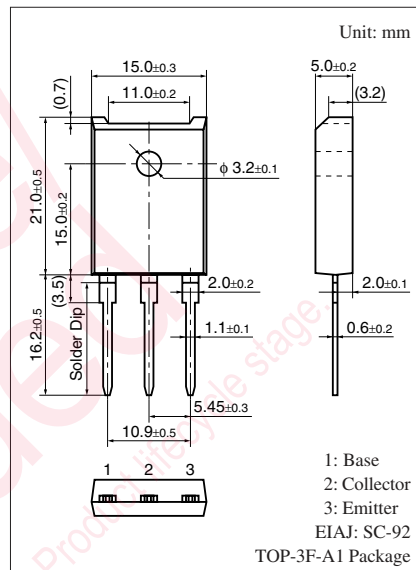
### ■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

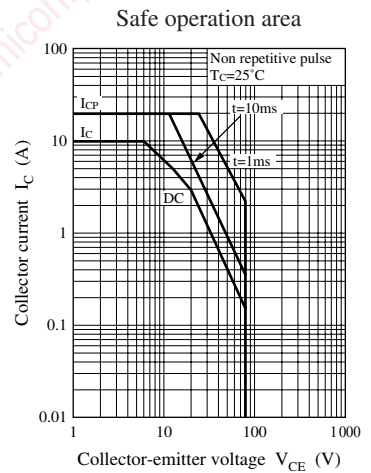
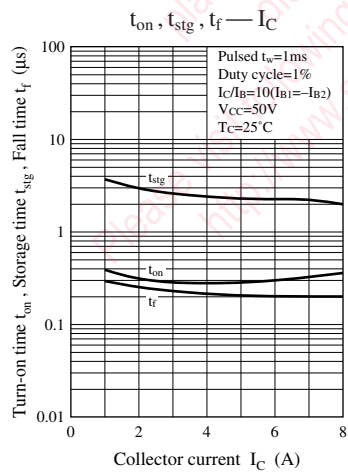
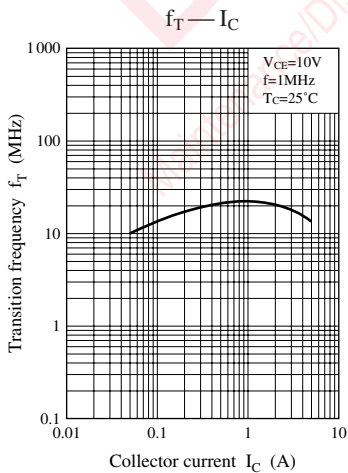
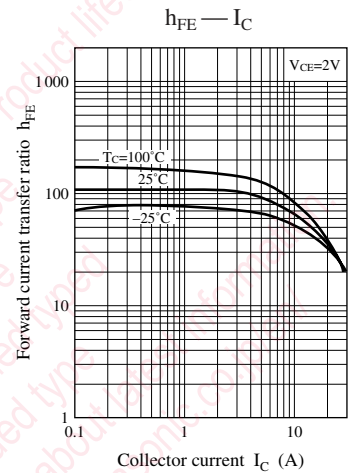
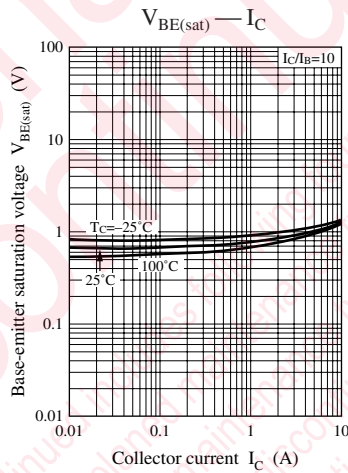
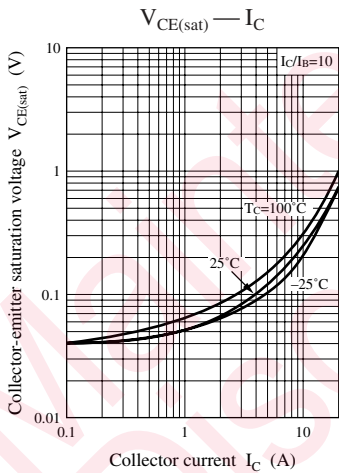
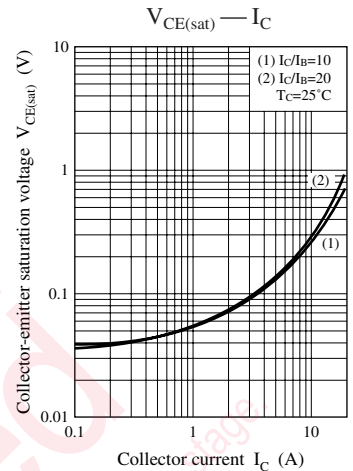
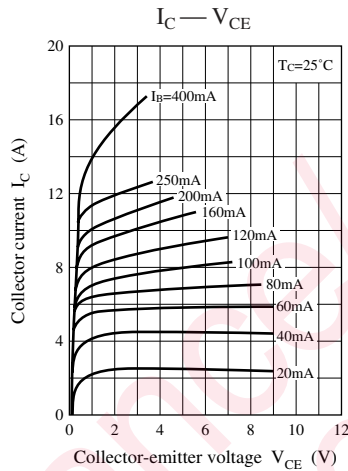
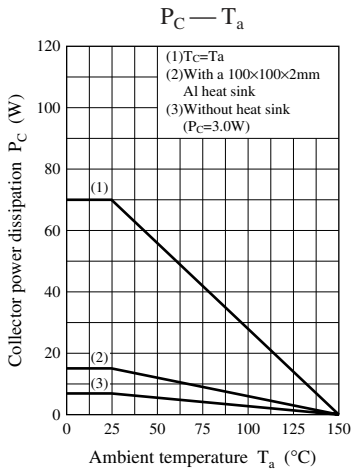
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	$V_{CEO}$	$I_C = 10 \text{ mA}, I_B = 0$	80			V
Collector-base cutoff current (Emitter open)	$I_{CBO}$	$V_{CB} = 100 \text{ V}, I_E = 0$			10	$\mu\text{A}$
Emitter-base cutoff current (Collector open)	$I_{EBO}$	$V_{EB} = 5 \text{ V}, I_C = 0$			50	$\mu\text{A}$
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = 2 \text{ V}, I_C = 0.1 \text{ A}$	45			—
	$h_{FE2}^*$	$V_{CE} = 2 \text{ V}, I_C = 3 \text{ A}$	90	260		
	$h_{FE3}$	$V_{CE} = 2 \text{ V}, I_C = 6 \text{ A}$	30			
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C = 6 \text{ A}, I_B = 0.3 \text{ A}$			0.5	V
	$V_{CE(sat)2}$	$I_C = 10 \text{ A}, I_B = 1 \text{ A}$			1.5	
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C = 6 \text{ A}, I_B = 0.3 \text{ A}$			1.5	V
	$V_{BE(sat)2}$	$I_C = 10 \text{ A}, I_B = 1 \text{ A}$			2.5	
Transition frequency	$f_T$	$V_{CE} = 10 \text{ V}, I_C = 0.5 \text{ A}, f = 1 \text{ MHz}$		20		MHz
Turn-on time	$t_{on}$	$I_C = 6 \text{ A}, I_{B1} = 0.6 \text{ A}, I_{B2} = -0.6 \text{ A}$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$	$V_{CC} = 50 \text{ V}$		2.0		$\mu\text{s}$
Fall time	$t_f$			0.2		$\mu\text{s}$

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

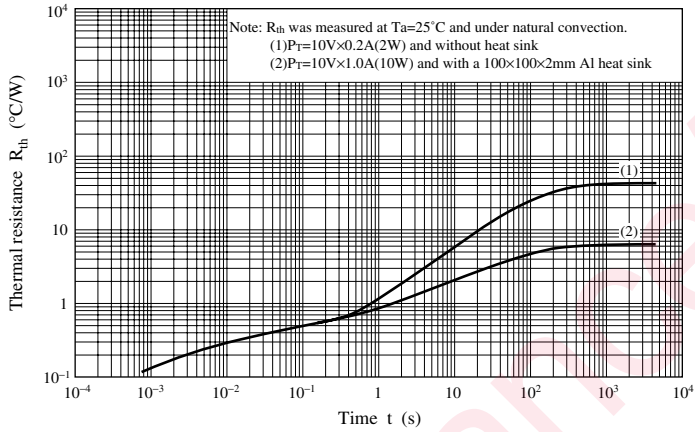
2. \*: Rank classification

Rank	Q	P
$h_{FE2}$	90 to 180	130 to 260





$R_{th} - t$



Maintenance/Discontinued includes following four Product lifecycle stage.  
 planned maintenance type  
 maintenance type  
 planned discontinued type  
 discontinued type  
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