

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	$^\circ\text{C}$

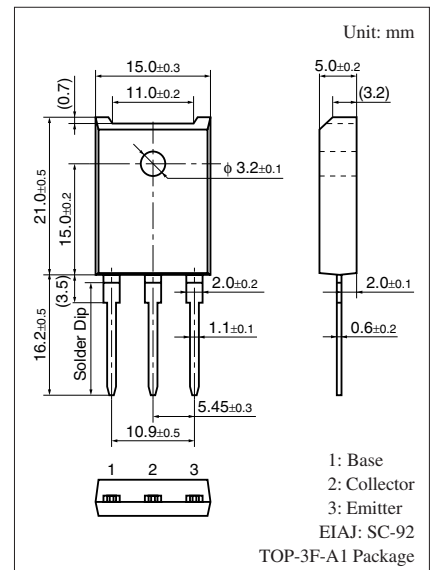
■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

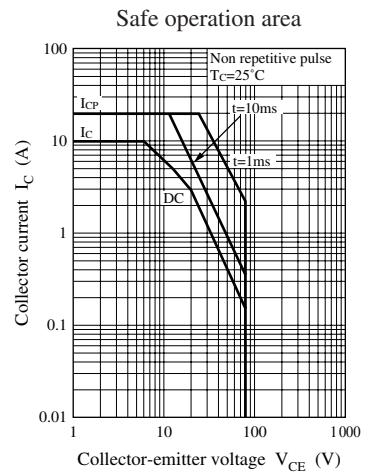
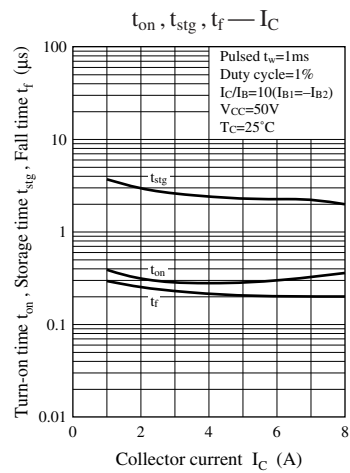
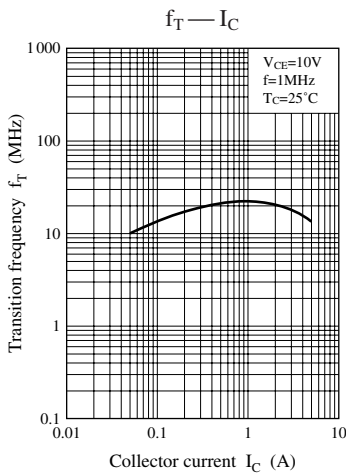
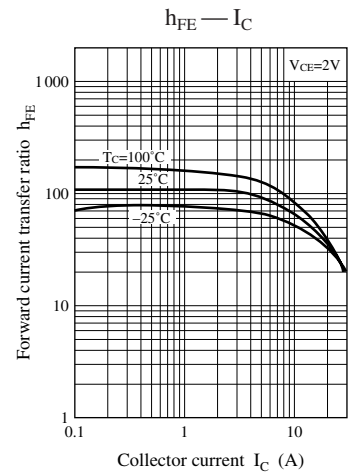
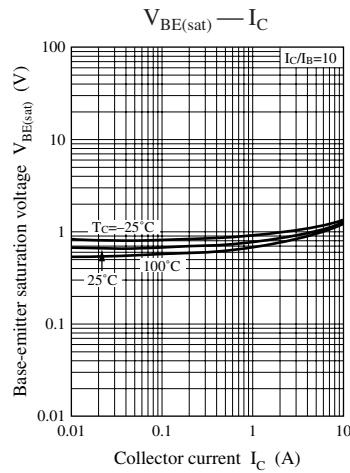
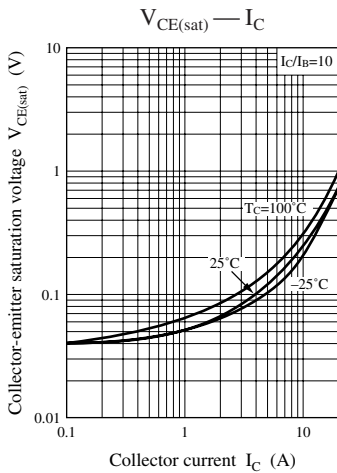
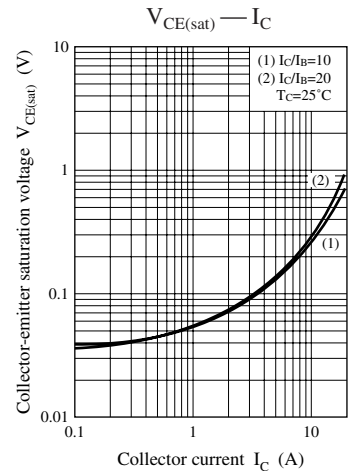
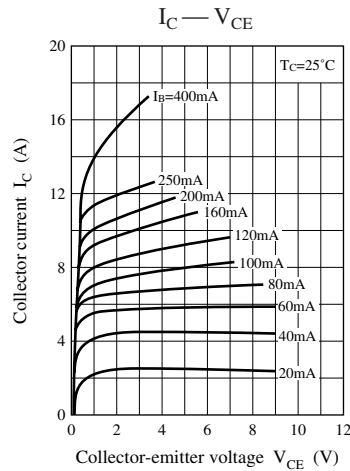
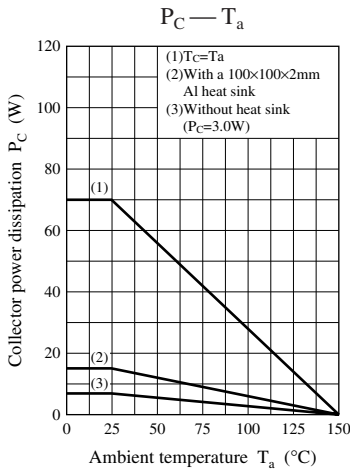
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 10\text{ mA}, I_B = 0$	80			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 100\text{ V}, I_E = 0$			10	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0$			50	μA
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		μs
Storage time	t_{stg}	$V_{CC} = 50\text{ V}$		2.0		μs
Fall time	t_f			0.2		μs

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

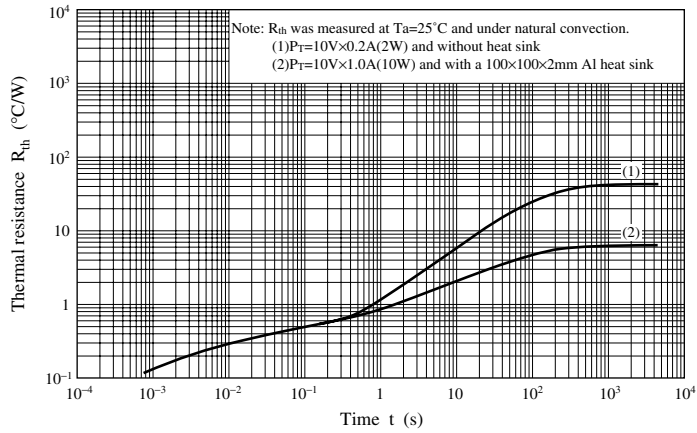
2. *: Rank classification

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





$R_{th} - t$



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