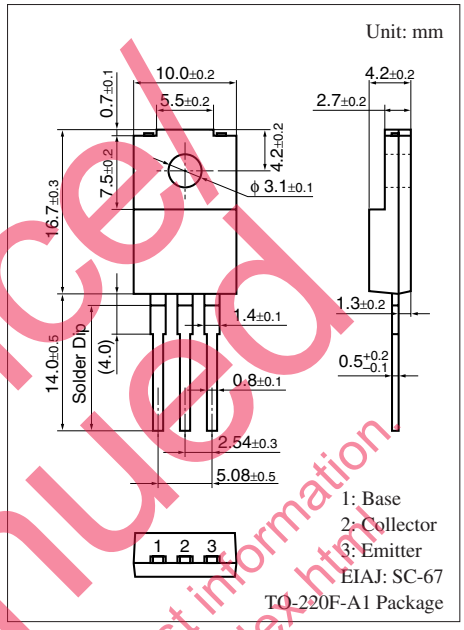
2SD1539A

Silicon NPN epitaxial planar type

For low-voltage switching
Complementary to 2SB1071A



■ Features

- Low collector-emitter saturation voltage $V_{CE(sat)}$
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw

■ Absolute Maximum Ratings $T_C = 25°C$

Parameter		Symbol	Rating	Unit
Collector-base voltage (Emitter open)		V_{CBO}	50	V
Collector-emitter voltage (Base open)		V_{CEO}	40	V
Emitter-base voltage (Collector open)		V_{EBO}	5	V
Collector current		I_C	4	A
Peak collector current		I_{CP}	8	A
Collector power dissipation		P_C	25	W
	$T_a = 25°C$		2.0	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

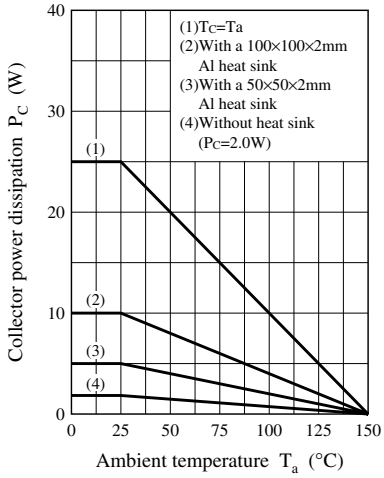
■ Electrical Characteristics $T_C = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	I_C = 10 mA, I_B = 0	40			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 50 V, I_E = 0			50	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 5 V, I_C = 0			50	μA
Forward current transfer ratio	h_{FE1}	V_{CE} = 2 V, I_C = 0.1 A	45			—
	h_{FE2}*	V_{CE} = 2 V, I_C = 1 A	60		260	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 2 A, I_B = 0.1 A			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 2 A, I_B = 0.1 A			1.5	V
Transition frequency	f_T	V_{CE} = 5 V, I_C = 0.5 A, f = 10 MHz		120		MHz
Turn-on time	t_{on}	I_C = 2 A, I_{B1} = 0.2 A, I_{B2} = − 0.2 A		0.2		μs
Storage time	t_{stg}	V_{CC} = 20 V		0.5		μs
Fall time	t_f			0.1		μs

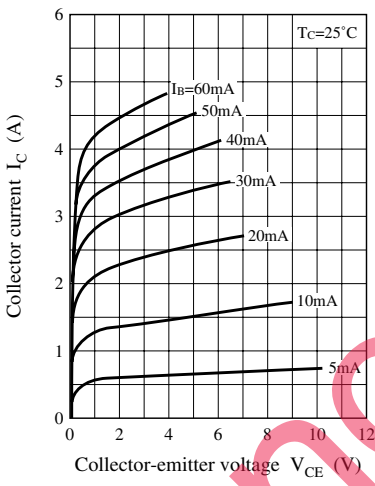
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Rank classification

Rank	R	Q	P
h_{FE2}	60 to 120	90 to 180	130 to 260

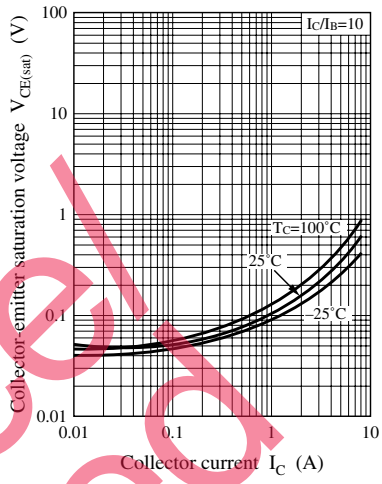
P_C — T_a



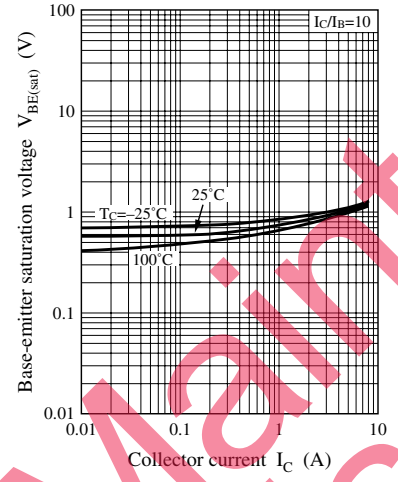
I_C — V_{CE}



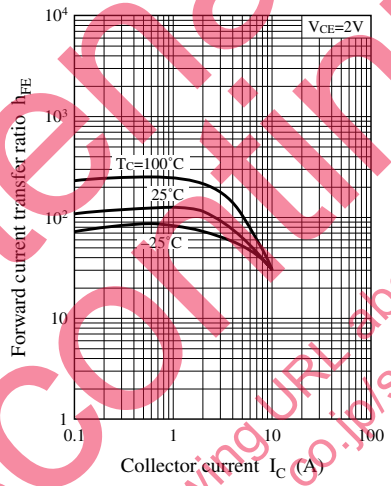
$V_{CE(sat)}$ — I_C



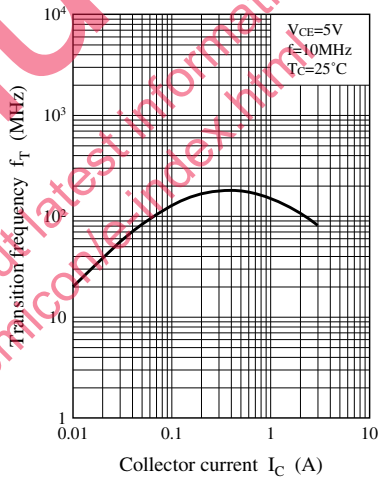
$V_{BE(sat)}$ — I_C



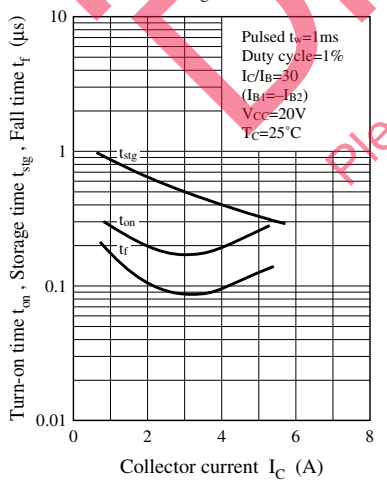
h_{FE} — I_C



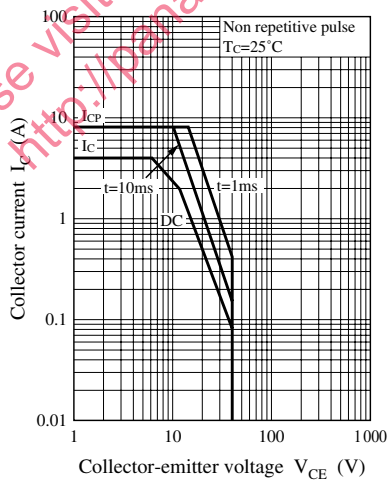
f_T — I_C

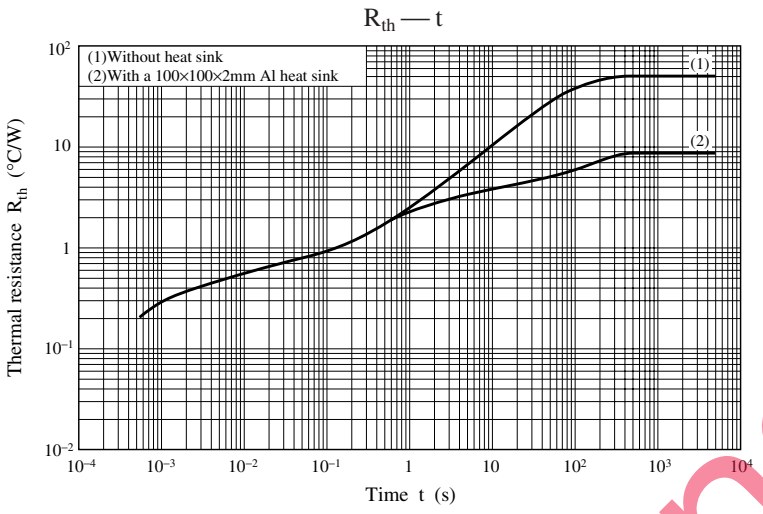


t_{on}, t_{stg}, t_f — I_C



Safe operation area





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