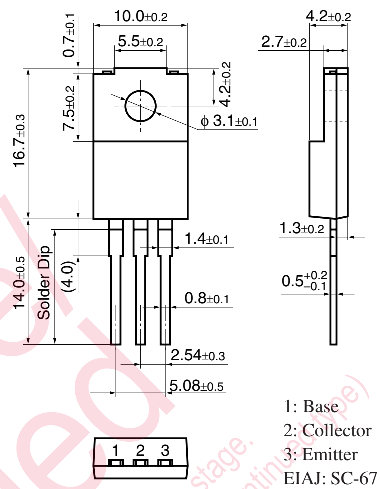
2SD1964

Silicon NPN epitaxial planar type

For power switching



■ 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 $T_C = 25°C$

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	15	A
Peak collector current		I_{CP}	25	A
Collector power dissipation		P_C	50	W
	$T_a = 25°C$		2.0	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

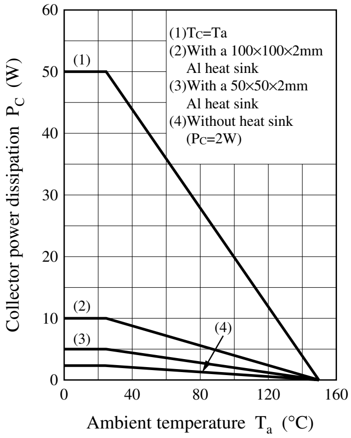
■ Electrical Characteristics $T_C = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 10$ mA, $I_B = 0$	80			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 100$ V, $I_E = 0$			10	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, $I_C = 3$ A	90		260	
	h_{FE3}	$V_{CE} = 2$ V, $I_C = 8$ A	30			
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C = 7$ A, $I_B = 0.35$ A			0.5	V
	$V_{CE(sat)2}$	$I_C = 15$ A, $I_B = 1.5$ A			1.5	
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C = 7$ A, $I_B = 0.35$ A			1.5	V
	$V_{BE(sat)2}$	$I_C = 15$ A, $I_B = 1.5$ A			2.5	
Transition frequency	f_T	$V_{CE} = 10$ V, $I_C = 0.5$ A, f = 1 MHz		20		MHz
Turn-on time	t_{on}	$I_C = 7$ A, $I_{B1} = 0.7$ A, $I_{B2} = -0.7$ A,		0.5		μs
Storage time	t_{stg}	$V_{CC} = 50$ V		2.0		μs
Fall time	t_f			0.2		μs

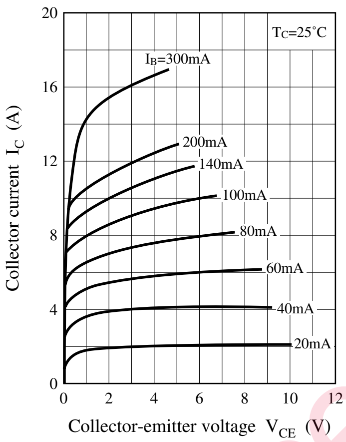
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. ∗: Rank classification

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

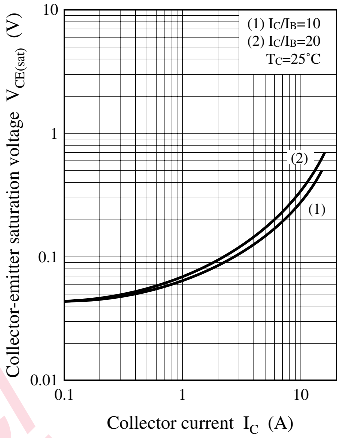
P_C — T_a



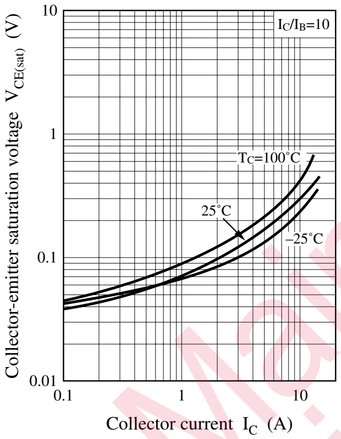
I_C — V_{CE}



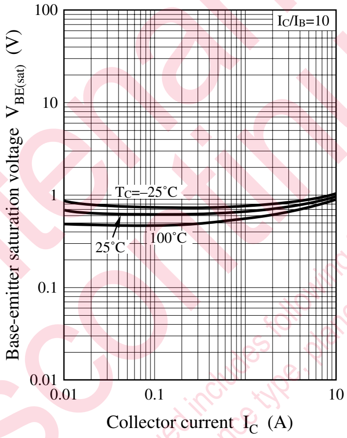
$V_{CE(sat)}$ — I_C



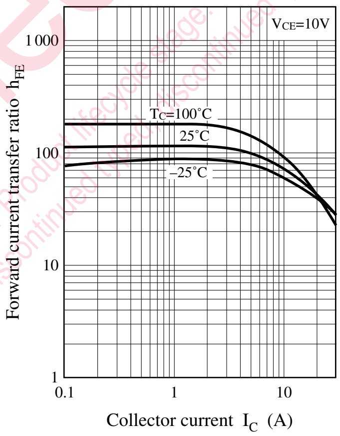
$V_{CE(sat)}$ — I_C



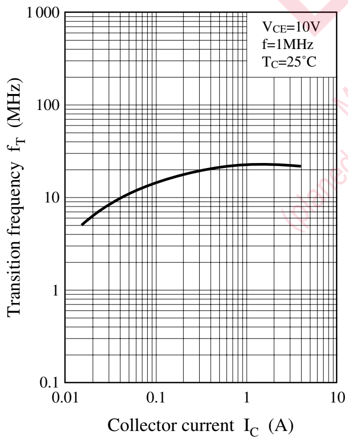
$V_{BE(sat)}$ — I_C



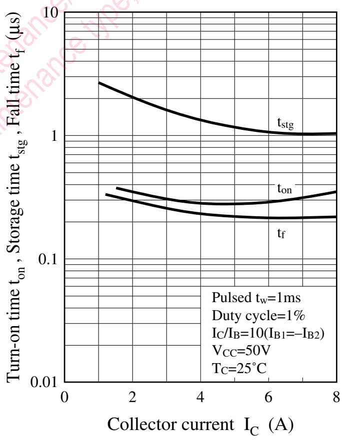
h_{FE} — I_C



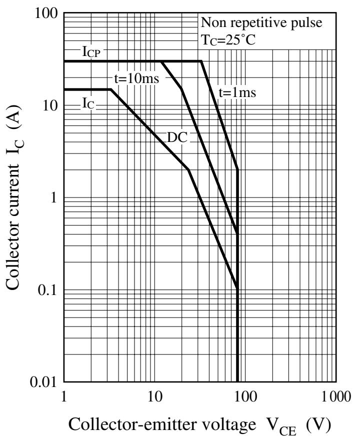
f_T — I_C



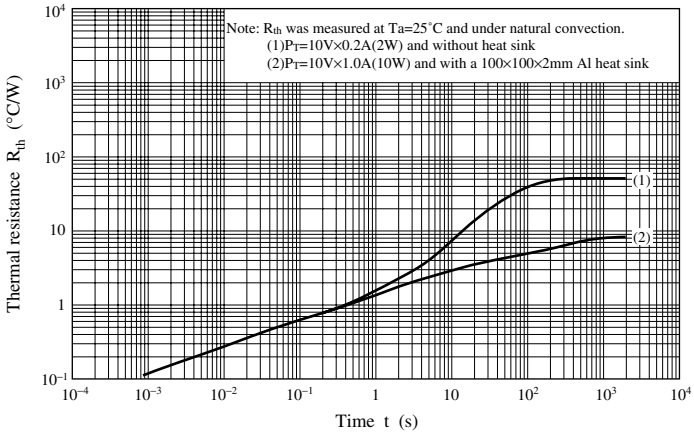
t_{on}, t_{stg}, t_f — I_C



Safe operation area



R_{th} — t



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