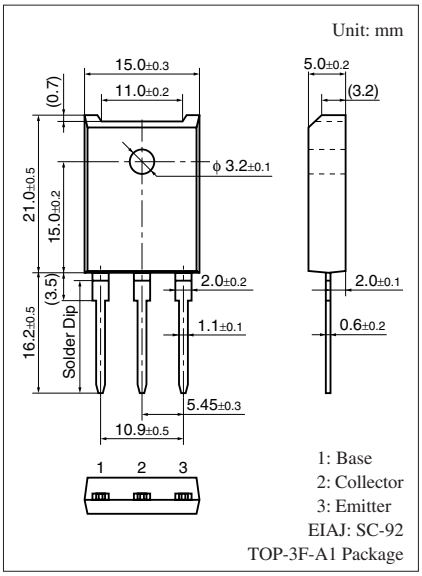
2SB1156

Silicon PNP epitaxial planar type

For power switching

Complementary to 2SD1707



■ 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	−20	A
Peak collector current	I_{CP}	−30	A
Collector power dissipation	P_C	100	W
$T_a = 25°C$		3	
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	60		260	
	h_{FE3}	$V_{CE} = -2$ V, $I_C = -10$ A	30			
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C = -8$ A, $I_B = -0.4$ A			−0.5	V
	$V_{CE(sat)2}$	$I_C = -20$ A, $I_B = -2$ A			−1.5	
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C = -8$ A, $I_B = -0.4$ A			−1.5	V
	$V_{BE(sat)2}$	$I_C = -20$ A, $I_B = -2$ A			−2.5	
Transition frequency	f_T	$V_{CE} = -10$ V, $I_C = -0.5$ A, f = 10 MHz		30		MHz
Turn-on time	t_{on}	$I_C = -8$ A, $I_{B1} = -0.8$ A, $I_{B2} = 0.8$ A		0.5		μs
Storage time	t_{stg}	$V_{CC} = -50$ V		1.0		μs
Fall time	t_f			0.2		μs

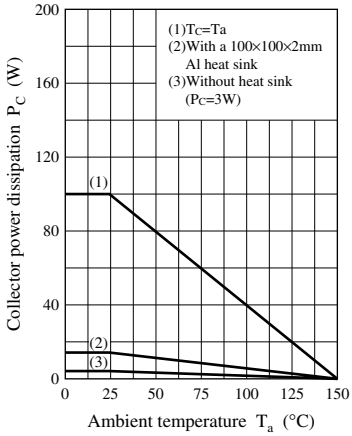
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

2. *: Rank classification

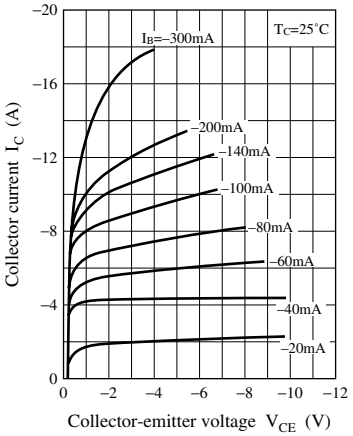
Rank	R	Q	P
h_{FE2}	60 to 120	90 to 180	130 to 260

Ordering can be made by the common rank (PQ rank h_{FE2} = 60 to 240) in the rank classification.

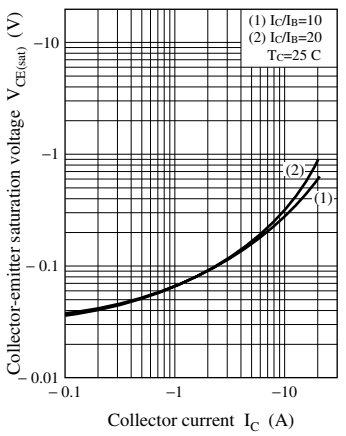
P_C — T_a



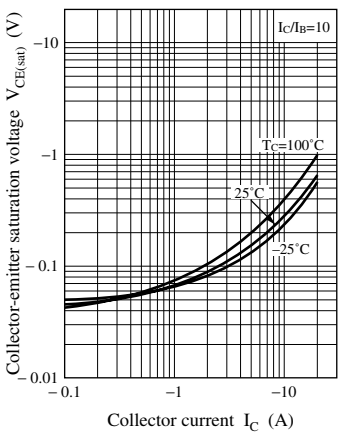
I_C — V_{CE}



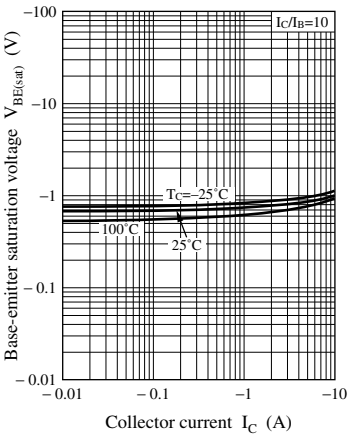
$V_{CE(sat)}$ — I_C



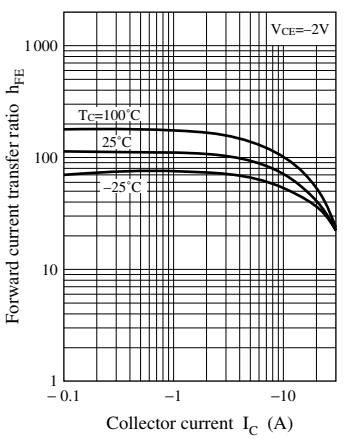
$V_{CE(sat)}$ — I_C



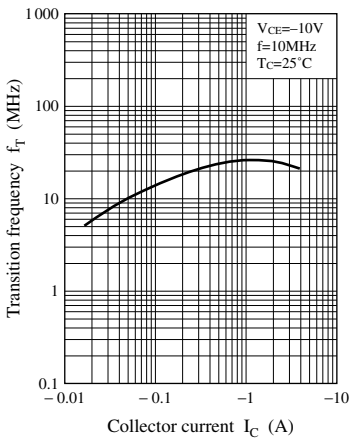
$V_{BE(sat)}$ — I_C



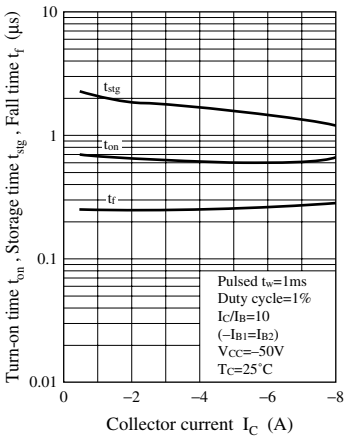
h_{FE} — I_C



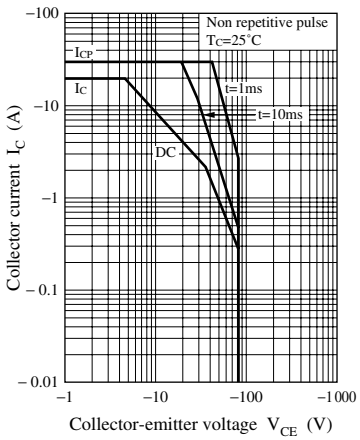
f_T — I_C

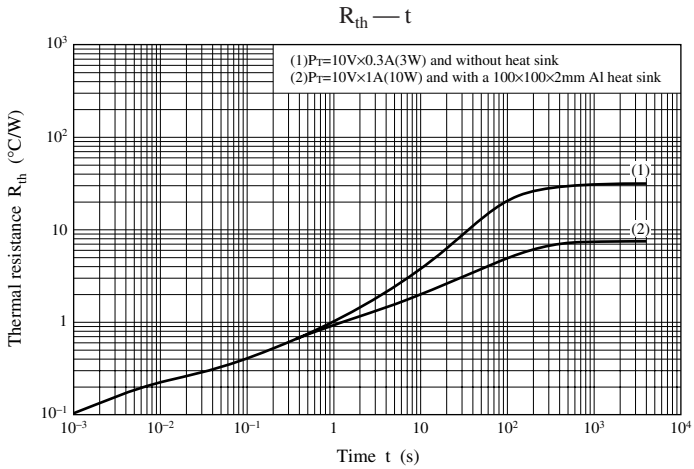


t_{on} , t_{stg} , t_f — I_C



Safe operation area




R_{th} — t
(1)PT=10V×0.3A(3W) and without heat sink
(2)PT=10V×1A(10W) and with a 100×100×2mm Al heat sink
Thermal resistance R_{th} (°C/W)
10^3
10^2
10
1
10^{-1}
(1)
(2)
10^{-3}
10^{-2}
10^{-1}
1
10
10^2
10^3
10^4
Time t (s)

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