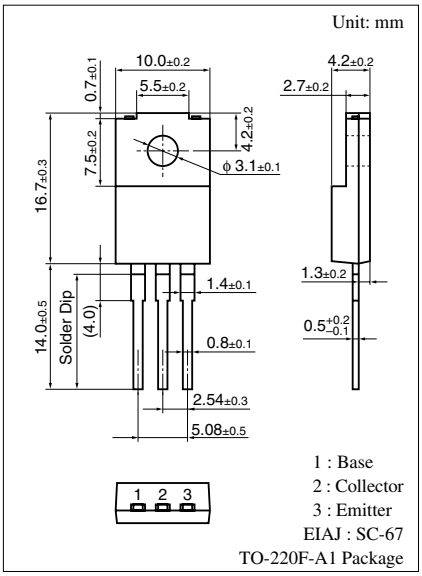
2SB0948, 2SB0948A (2SB948, 2SB948A)

Silicon PNP epitaxial planar type

For low-voltage switching
Complementary to 2SD1445 and 2SD1445A



■ Features

- Low collector to 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 to base voltage	2SB0948	V_{CBO}	−40	V
	2SB0948A		−50	
Collector to emitter voltage	2SB0948	V_{CEO}	−20	V
	2SB0948A		−40	
Emitter to base voltage		V_{EBO}	−5	V
Peak collector current		I_{CP}	−20	A
Collector current		I_C	−10	A
Collector power dissipation	$T_C = 25°C$	P_C	40	W
	$T_a = 25°C$		2	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

■ Electrical Characteristics $T_C = 25°C$

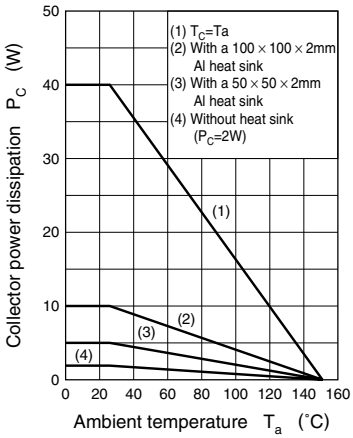
Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector cutoff current		I_{CBO}	$V_{CB} = -40$ V, $I_E = 0$			−50	μA
Emitter cutoff current		I_{EBO}	$V_{EB} = -5$ V, $I_C = 0$			−50	μA
Collector to emitter voltage	2SB0948	V_{CEO}	$I_C = -10$ mA, $I_B = 0$	−20			V
	2SB0948A			−40			
Forward current transfer 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	
Collector to emitter saturation voltage		$V_{CE(sat)}$	$I_C = -10$ A, $I_B = -0.33$ A			−0.6	V
Base to emitter saturation voltage		$V_{BE(sat)}$	$I_C = -10$ A, $I_B = -0.33$ A			−1.5	V
Transition frequency		f_T	$V_{CE} = -10$ V, $I_C = -0.5$ A, f = 10 MHz		100		MHz
Collector output capacitance		C_{ob}	$V_{CB} = -10$ V, $I_E = 0$, f = 1 MHz		400		pF
Turn-on time		t_{on}	$I_C = -3$ A, $I_{B1} = -0.1$ A, $I_{B2} = 0.1$ A		0.1		μs
Storage time		t_{stg}			0.5		μs
Fall time		t_f			0.1		μs

Note) *: Rank classification

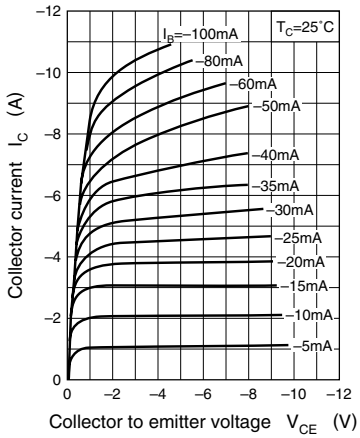
Rank	Q	P
h_{FE2}	90 to 180	130 to 260

Note.) The Part numbers in the Parenthesis show conventional part number.

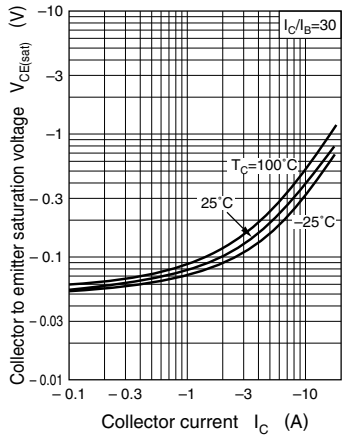
P_C — T_a



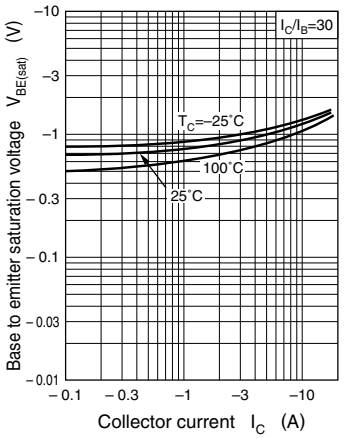
I_C — V_{CE}



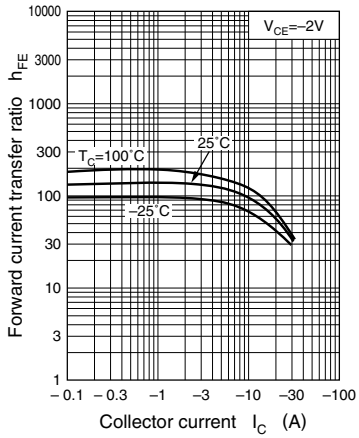
$V_{CE(sat)}$ — I_C



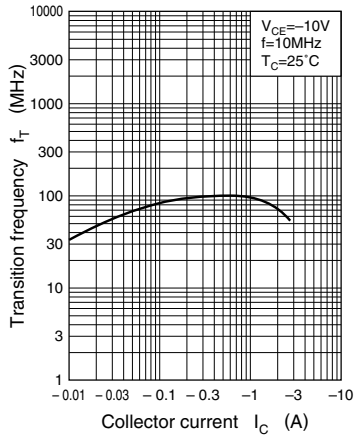
$V_{BE(sat)}$ — I_C



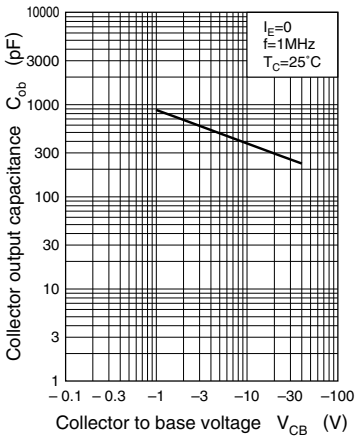
h_{FE} — I_C



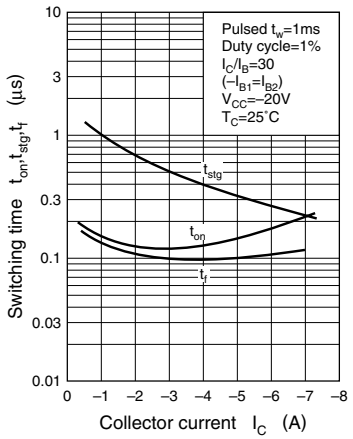
f_T — I_C



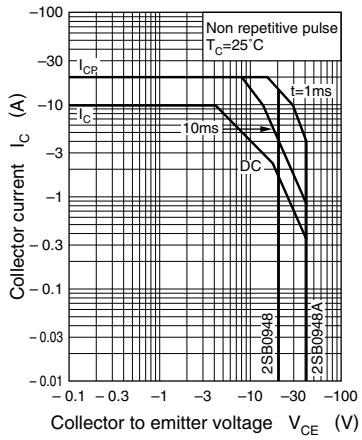
C_{ob} — V_{CB}



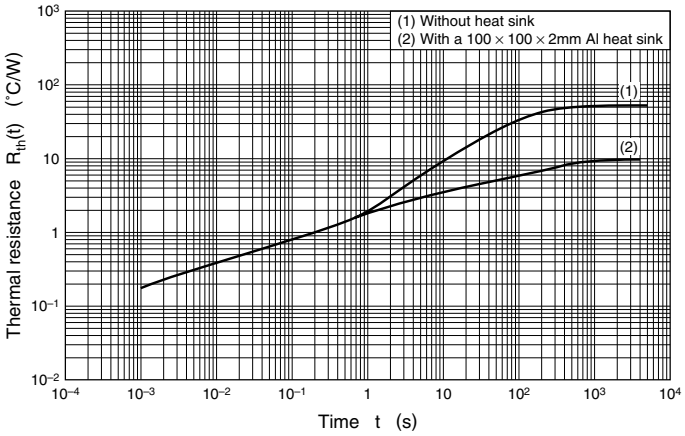
t_{on}, t_{stg}, t_f — I_C



Area of safe operation (ASO)



$R_{th(t)}$ — t


(1) Without heat sink
(2) With a 100 × 100 × 2mm Al heat sink
(1)
(2)
Thermal resistance $R_{th}(t)$ (°C/W)
10^3
10^2
10
1
10^{-1}
10^{-2}
10^{-4}
10^{-3}
10^{-2}
10^{-1}
1
10
10^2
10^3
10^4
Time t (s)

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