

2SB1638, 2SB1638A

Silicon PNP epitaxial planar type

For low-voltage switching

Features

- Low collector to emitter saturation voltage $V_{CE(sat)}$
- Satisfactory linearity of forward current transfer ratio h_{FE}
- I type package enabling direct soldering of the radiating fin to the printed circuit board, etc. of small electronic equipment.

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$)

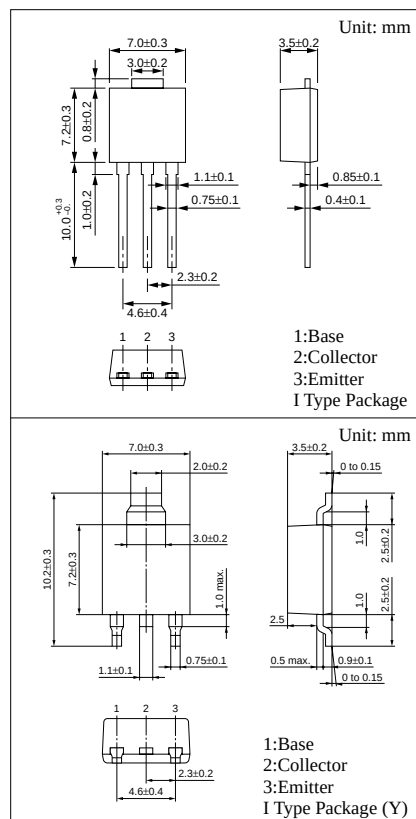
Parameter	Symbol	Ratings	Unit
Collector to base voltage	2SB1638	-40	V
	2SB1638A		
Collector to emitter voltage	2SB1638	-20	V
	2SB1638A		
Emitter to base voltage	V_{EBO}	-5	V
Peak collector current	I_{CP}	-12	A
Collector current	I_C	-7	A
Collector power dissipation	$T_C=25^\circ\text{C}$	15	W
	$T_a=25^\circ\text{C}$		
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics ($T_C=25^\circ\text{C}$)

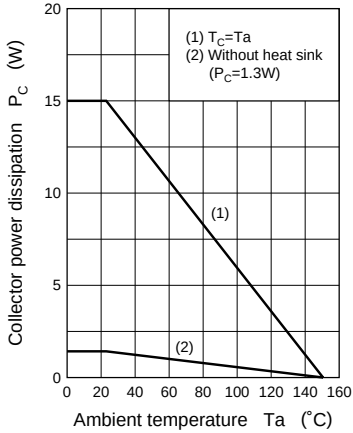
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	2SB1638 2SB1638A	I_{CBO} $V_{CB} = -40\text{V}, I_E = 0$ $V_{CB} = -50\text{V}, I_E = 0$			-50	μA
					-50	
Emitter cutoff current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$			-50	μA
Collector to emitter voltage	2SB1638 2SB1638A	V_{CEO} $I_C = -10\text{mA}, I_B = 0$	-20			V
			-40			
Forward current transfer ratio	h_{FE1} h_{FE2}^*	$V_{CE} = -2\text{V}, I_C = -0.1\text{A}$	45			
		$V_{CE} = -2\text{V}, I_C = -2\text{A}$	90		260	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -5\text{A}, I_B = -0.16\text{A}$			-0.6	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = -5\text{A}, I_B = -0.16\text{A}$			-1.5	V
Transition frequency	f_T	$V_{CE} = -10\text{V}, I_C = -0.5\text{A}, f = 10\text{MHz}$		150		MHz
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$		140		pF
Turn-on time	t_{on}	$I_C = -2\text{A}, I_{B1} = -66\text{mA}, I_{B2} = 66\text{mA}$		0.1		μs
Storage time	t_{stg}			0.5		μs
Fall time	t_f			0.1		μs

* h_{FE2} Rank classification

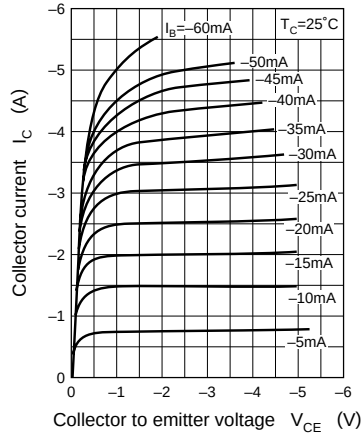
Rank	Q	P
h_{FE2}	90 to 180	130 to 260



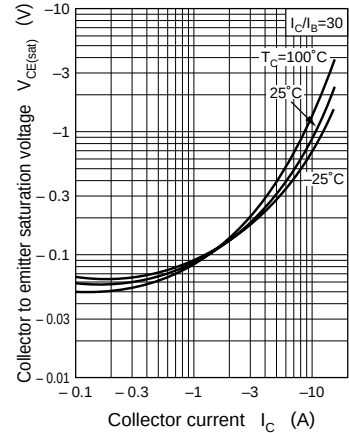
$P_C - T_a$



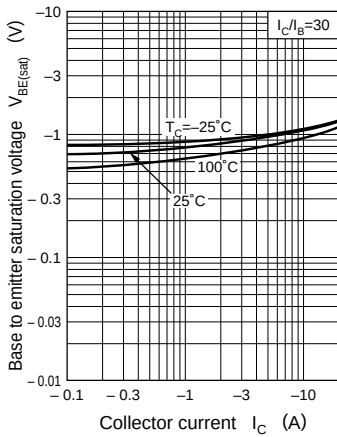
$I_C - V_{CE}$



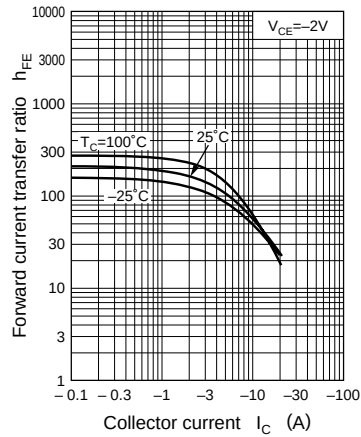
$V_{CE(sat)} - I_C$



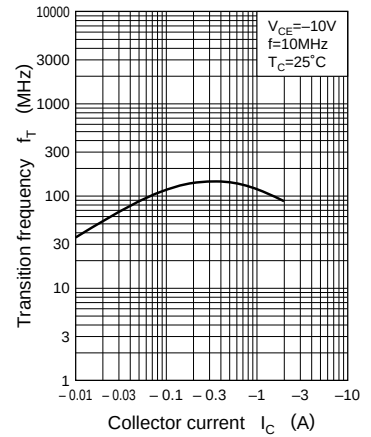
$V_{BE(sat)} - I_C$



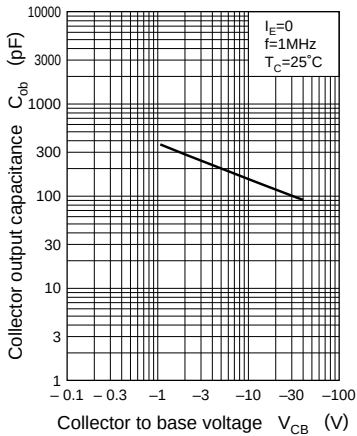
$h_{FE} - I_C$



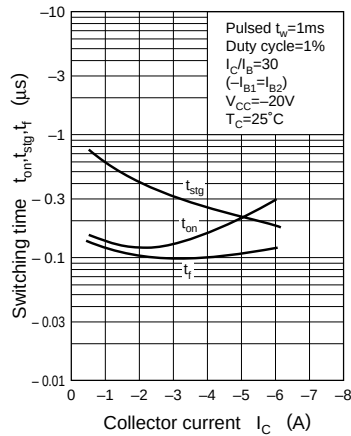
$f_T - I_C$



$C_{ob} - V_{CB}$



$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)

