

2SB1418, 2SB1418A

Silicon PNP epitaxial planar type Darlington

For power amplification

Complementary to 2SD2138 and 2SD2138A

Features

- High forward current transfer ratio h_{FE}
- High-speed switching
- Allowing automatic insertion with radial taping

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

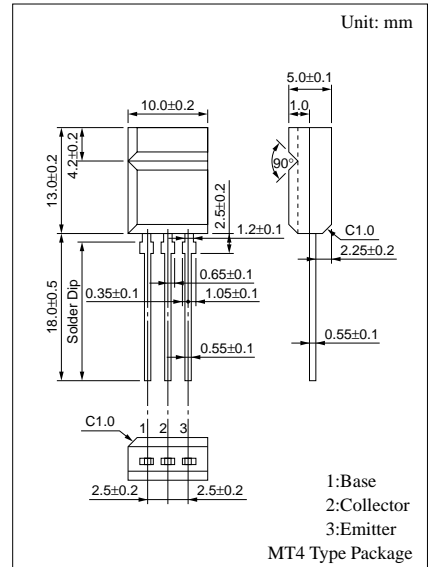
Parameter	Symbol	Rated	Unit
Collector to base voltage	V_{CBO}	-60	V
2SB1418A		-80	
Collector to emitter voltage	V_{CEO}	-60	V
2SB1418A		-80	
Emitter to base voltage	V_{EBO}	-5	V
Peak collector current	I_{CP}	-4	A
Collector current	I_C	-2	A
Collector power dissipation	P_C	15	W
$T_C=25^\circ\text{C}$		2.0	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

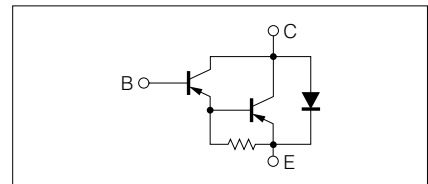
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = -60\text{V}, I_B = 0$			-100	μA
2SB1418A		$V_{CB} = -80\text{V}, I_B = 0$			-100	
Collector cutoff current	I_{CEO}	$V_{CE} = -30\text{V}, I_B = 0$			-100	μA
2SB1418A		$V_{CE} = -40\text{V}, I_B = 0$			-100	
Emitter cutoff current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$			-100	μA
Collector to emitter voltage	V_{CEO}	$I_C = -30\text{mA}, I_B = 0$	-60			V
2SB1418A			-80			
Forward current transfer ratio	h_{FE1}	$V_{CE} = -4\text{V}, I_C = -1\text{A}$	1000			
	h_{FE2}^*	$V_{CE} = -4\text{V}, I_C = -2\text{A}$	2000		10000	
Base to emitter voltage	V_{BE}	$V_{CE} = -4\text{V}, I_C = -2\text{A}$			-2.8	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -2\text{A}, I_B = -8\text{mA}$			-2.5	V
Transition frequency	f_T	$V_{CE} = -10\text{V}, I_C = -0.5\text{A}, f = 1\text{MHz}$		20		MHz
Turn-on time	t_{on}	$I_C = -2\text{A}, I_{B1} = -8\text{mA}, I_{B2} = 8\text{mA}$		0.2		μs
Turn-off time	t_{off}	$V_{CC} = -50\text{V}$		2		μs

* h_{FE2} Rank classification

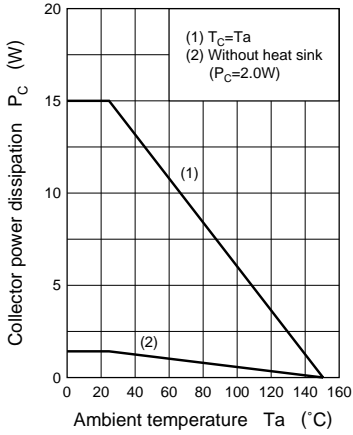
Rank	Q	P
h_{FE2}	2000 to 5000	4000 to 10000



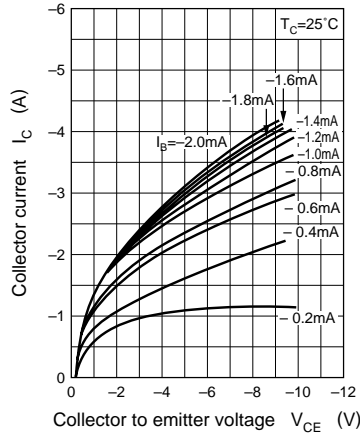
Internal Connection



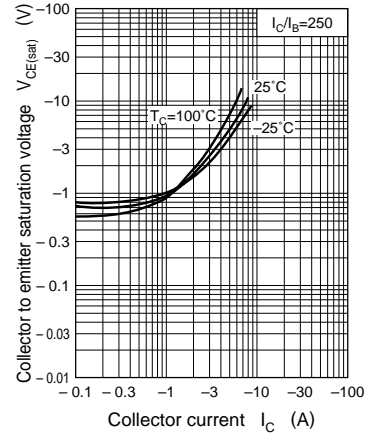
$P_C - T_a$



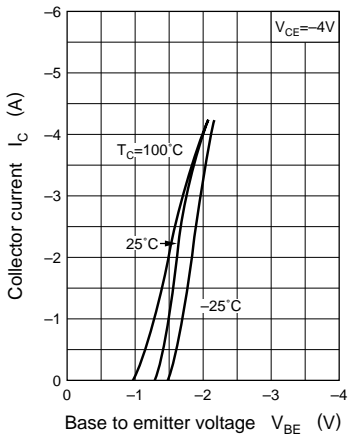
$I_C - V_{CE}$



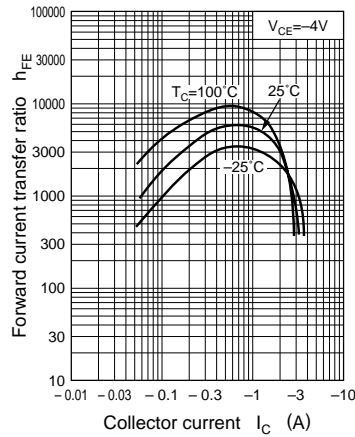
$V_{CE(sat)} - I_C$



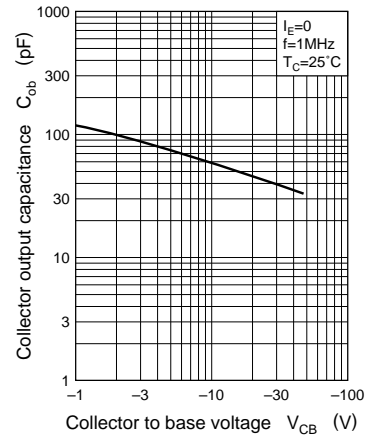
$I_C - V_{BE}$



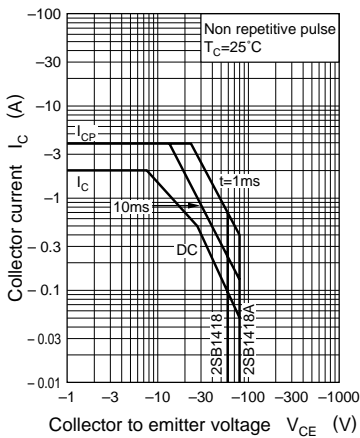
$h_{FE} - I_C$



$C_{ob} - V_{CB}$



Area of safe operation (ASO)



$R_{th(t)} - t$

