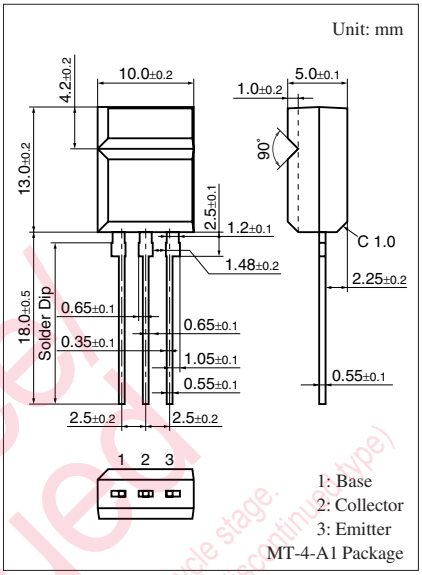
2SB1418, 2SB1418A

Silicon PNP epitaxial planar type darlington

For power amplification
Complementary to 2SD2138 and 2SD2138A

■ Features

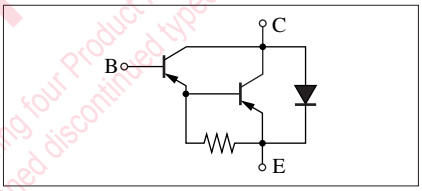
- High forward current transfer ratio h_{FE}
- High-speed switching
- Allowing automatic insertion with radial taping



■ Absolute Maximum Ratings $T_C = 25°C$

Parameter		Symbol	Rating	Unit
Collector-base voltage (Emitter open)	2SB1418	V_{CBO}	−60	V
	2SB1418A		−80	
Collector-emitter voltage (Base open)	2SB1418	V_{CEO}	−60	V
	2SB1418A		−80	
Emitter-base voltage (Collector open)		V_{EBO}	−5	V
Collector current		I_C	−2	A
Peak collector current		I_{CP}	−4	A
Collector power dissipation		P_C	15	W
	$T_a = 25°C$		2.0	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55 to +150	°C

Internal Connection



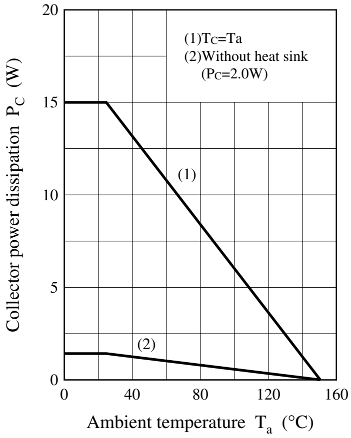
■ Electrical Characteristics $T_C = 25°C \pm 3°C$

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	2SB1418	V_{CEO}	$I_C = -30$ mA, $I_B = 0$	−60			V
	2SB1418A			−80			
Base-emitter voltage		V_{BE}	$V_{CE} = -4$ V, $I_C = -2$ A			−2.8	V
Collector-base cutoff current (Emitter open)	2SB1418	I_{CBO}	$V_{CB} = -60$ V, $I_E = 0$			−100	μA
	2SB1418A		$V_{CB} = -80$ V, $I_E = 0$			−100	
Collector-emitter cutoff current (Base open)	2SB1418	I_{CEO}	$V_{CE} = -30$ V, $I_B = 0$			−100	μA
	2SB1418A		$V_{CE} = -40$ V, $I_B = 0$			−100	
Emitter-base cutoff current (Collector open)		I_{EBO}	$V_{EB} = -5$ V, $I_C = 0$			−100	μA
Forward current transfer ratio		h_{FE1}	$V_{CE} = -4$ V, $I_C = -1$ A	1 000			—
		h_{FE2} *	$V_{CE} = -4$ V, $I_C = -2$ A	1 000		10 000	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -2$ A, $I_B = -8$ mA			−2.5	V
Transition frequency		f_T	$V_{CE} = -10$ V, $I_C = -0.5$ A, f = 1 MHz		20		MHz
Turn-on time		t_{on}	$I_C = -2$ A, $I_{B1} = -8$ mA, $I_{B2} = 8$ mA		0.2		μs
Turn-off time		t_{off}	$V_{CC} = -50$ V		2		μs

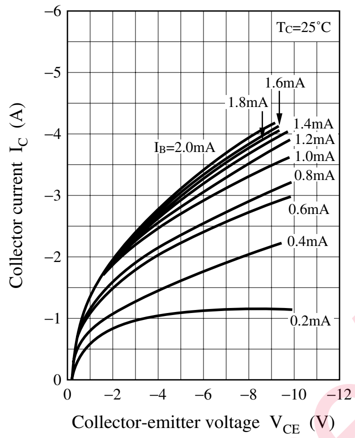
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Rank classification

Rank	R	Q	P
h_{FE2}	1 000 to 2 500	2 000 to 5 000	4 000 to 10 000

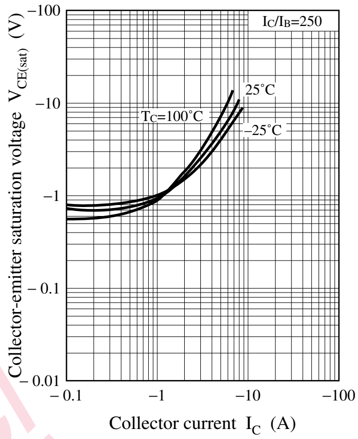
P_C — T_a



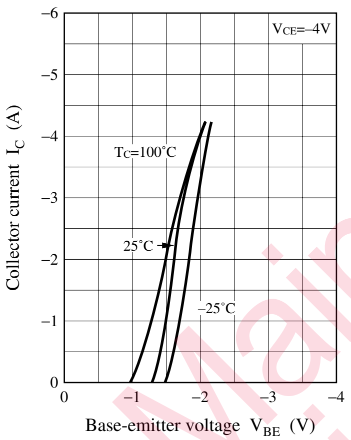
I_C — V_{CE}



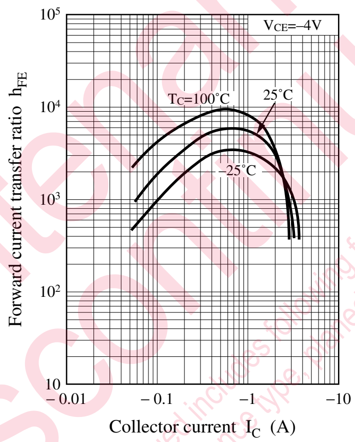
$V_{CE(sat)}$ — I_C



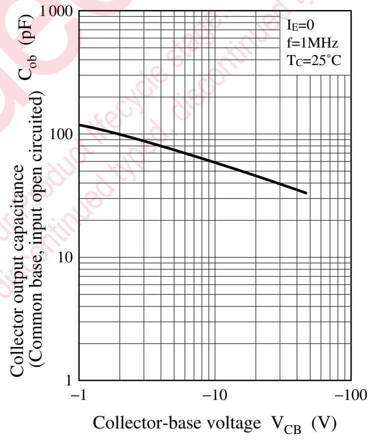
I_C — V_{BE}



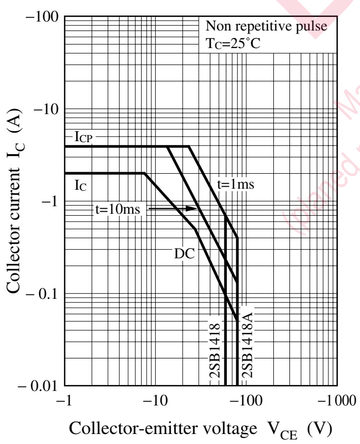
h_{FE} — I_C



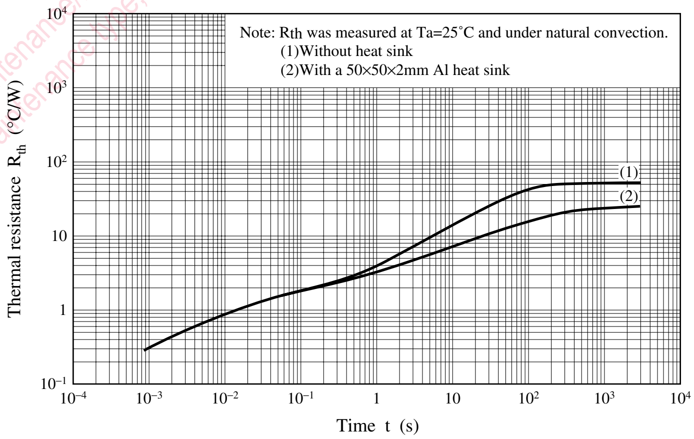
C_{ob} — V_{CB}



Safe operation area



R_{th} — t



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