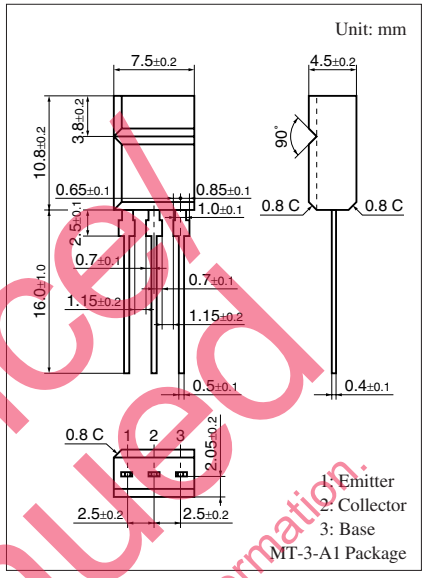
2SB1504

Silicon PNP epitaxial planar type darlington

For power switching

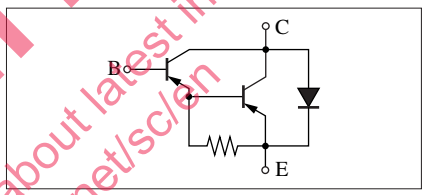
- High forward current transfer ratio h_{FE}
- High-speed switching
- Allowing automatic insertion with radial taping



■ Absolute Maximum Ratings $T_a = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	−50	V
Collector-emitter voltage (Base open)	V_{CEO}	−50	V
Emitter-base voltage (Collector open)	V_{EBO}	−7	V
Collector current	I_C	−8	A
Peak collector current	I_{CP}	−12	A
Collector power dissipation	P_C	1.5	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

Internal Connection



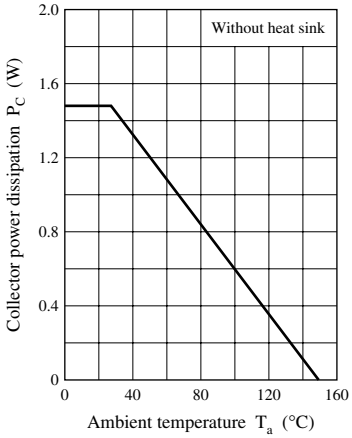
■ Electrical Characteristics $T_a = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	I_C = −30 mA, I_B = 0	−50			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = −50 V, I_E = 0			−100	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = −7 V, I_C = 0			−2	mA
Forward current transfer ratio	h_{FE1} *	V_{CE} = −3 V, I_C = −4 A	1 000		10 000	—
	h_{FE2}	V_{CE} = −3 V, I_C = −8 A	500			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = −4 A, I_B = −8 mA			−1.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = −4 A, I_B = −8 mA			−2.0	V
Transition frequency	f_T	V_{CB} = −10 V, I_E = 0.5 A, f = 200 MHz		20		MHz
Turn-on time	t_{on}	I_C = −4 A, I_{B1} = −8 mA, I_{B2} = 8 mA		0.5		μs
Storage time	t_{stg}	V_{CC} = −50 V		2.0		μs
Fall time	t_f			1.0		μs

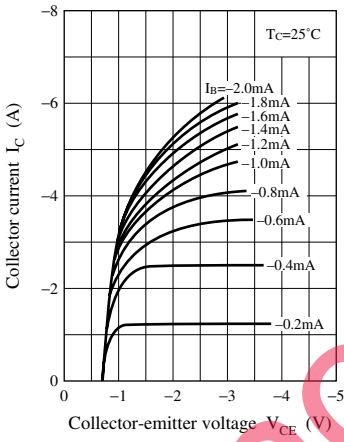
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Rank classification

Rank	P	Q	R
h_{FE1}	1 000 to 2 500	2 000 to 5 000	4 000 to 10 000

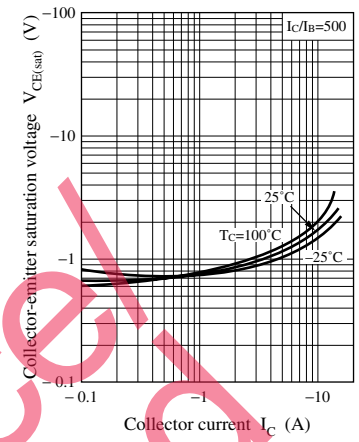
P_C — T_a



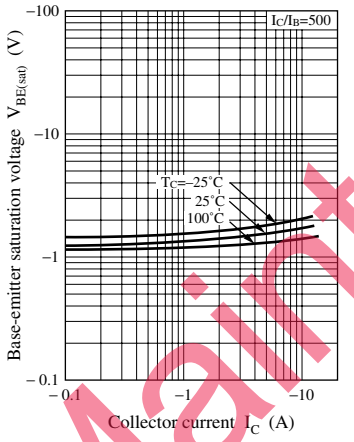
I_C — V_{CE}



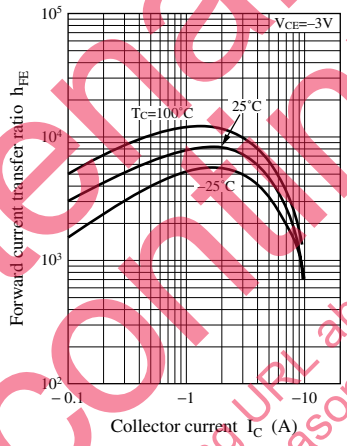
$V_{CE(sat)}$ — I_C



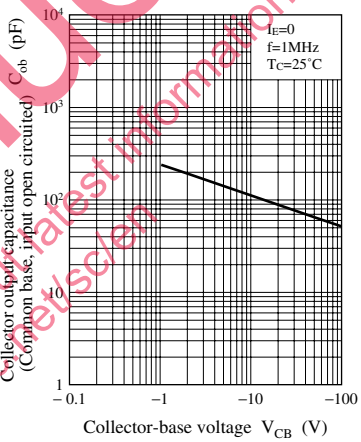
$V_{BE(sat)}$ — I_C



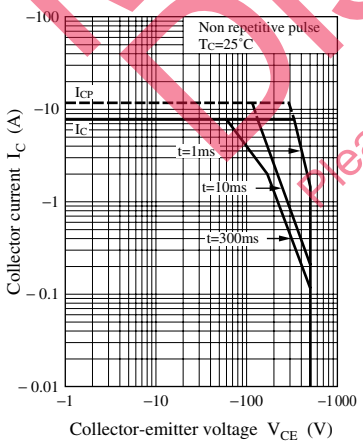
h_{FE} — I_C



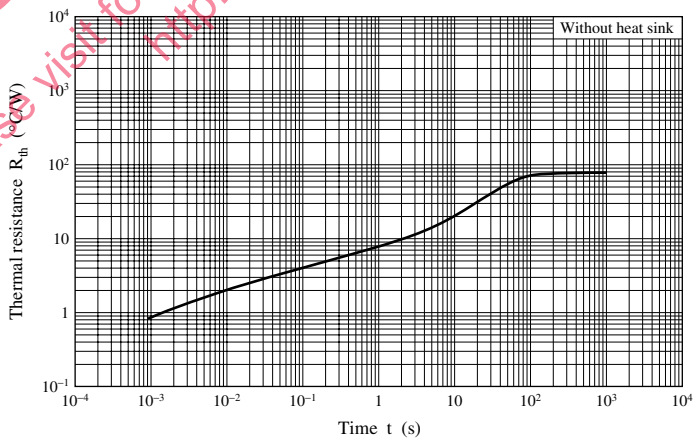
C_{ob} — V_{CB}



Safe operation area



R_{th} — t



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