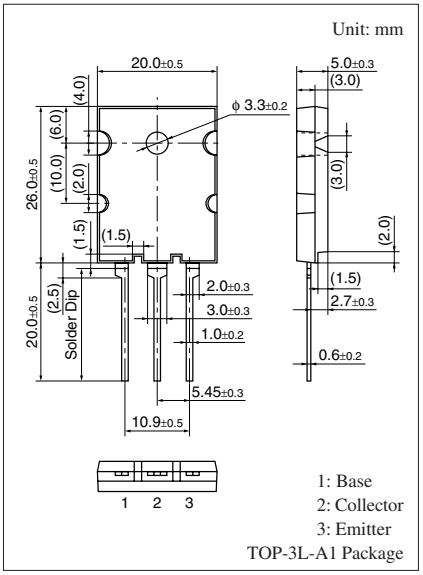
2SB1503

Silicon PNP epitaxial planar type darlington

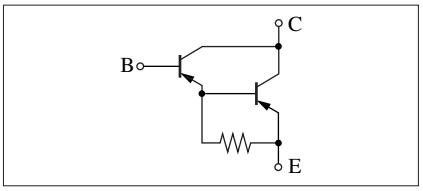
For power amplification
Complementary to 2SD2276



■ Features

- Optimum for 110 W HiFi output
- High forward current transfer ratio h_{FE}
- Low collector-emitter saturation voltage $V_{CE(sat)}$

Internal Connection



■ Absolute Maximum Ratings $T_C = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	−160	V
Collector-emitter voltage (Base open)	V_{CEO}	−140	V
Emitter-base voltage (Collector open)	V_{EBO}	−5	V
Collector current	I_C	−8	A
Peak collector current	I_{CP}	−15	A
Collector power dissipation	P_C	120	W
$T_a = 25°C$		3.5	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

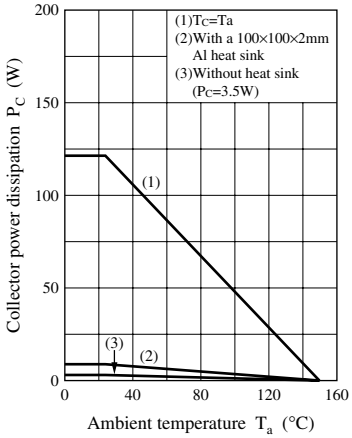
■ Electrical Characteristics $T_C = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = -30$ mA, $I_B = 0$	−140			V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = -160$ V, $I_E = 0$			−100	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	$V_{CE} = -140$ V, $I_B = 0$			−100	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = -5$ V, $I_C = 0$			−100	μA
Forward current transfer ratio	h_{FE1}	$V_{CE} = -5$ V, $I_C = -1$ A	2000			—
	h_{FE2} *	$V_{CE} = -5$ V, $I_C = -7$ A	5000		30000	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -7$ A, $I_B = -7$ mA			−2.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -7$ A, $I_B = -7$ mA			−3.0	V
Transition frequency	f_T	$V_{CE} = -10$ V, $I_C = -0.5$ A, f = 1 MHz		20		MHz
Turn-on time	t_{on}	$I_C = -7$ A, $I_{B1} = -7$ mA, $I_{B2} = 7$ mA		1.0		μs
Storage time	t_{stg}	$V_{CC} = -50$ V		1.5		μs
Fall time	t_f			1.2		μs

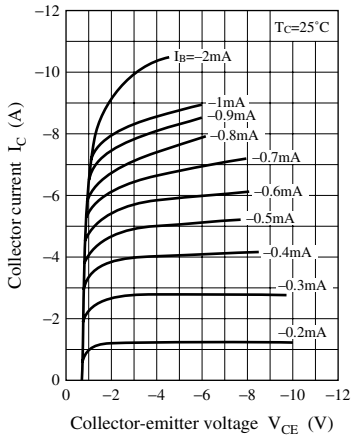
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Rank classification

Rank	Q	S	P
h_{FE2}	5000 to 15000	7000 to 21000	8000 to 30000

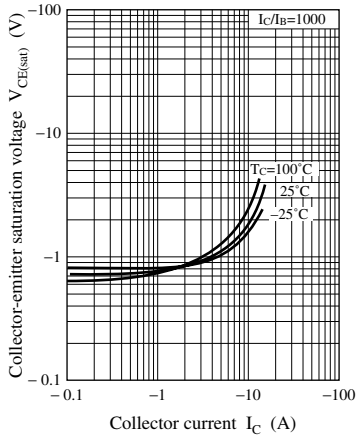
P_C — T_a



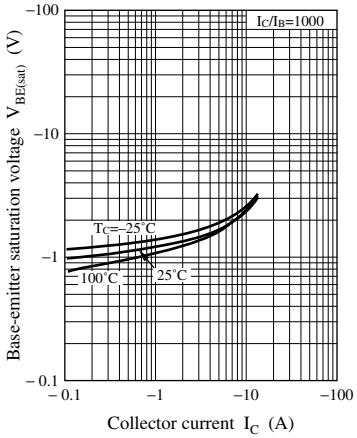
I_C — V_{CE}



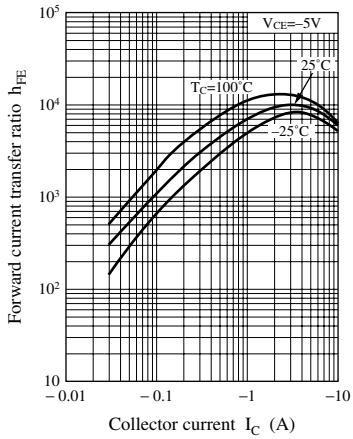
$V_{CE(sat)}$ — I_C



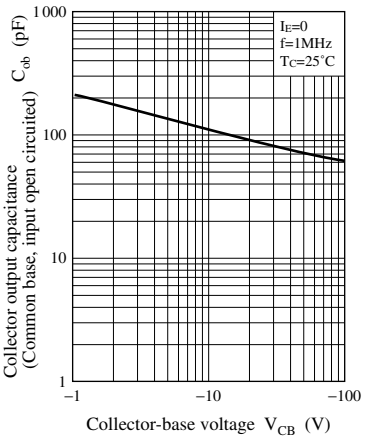
$V_{BE(sat)}$ — I_C



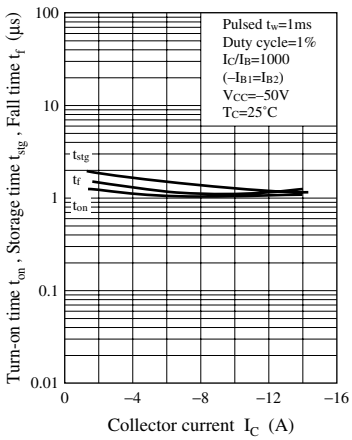
h_{FE} — I_C



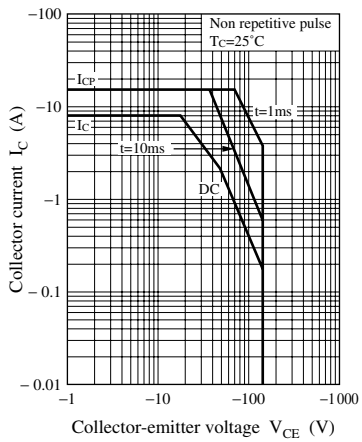
C_{ob} — V_{CB}



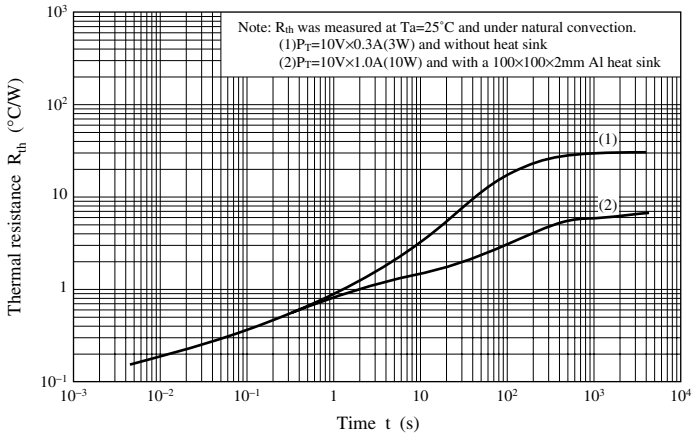
t_{on} , t_{stg} , t_f — I_C



Safe operation area



R_{th} — t


Note: Rth was measured at Ta=25°C and under natural convection.
(1)PT=10V×0.3A(3W) and without heat sink
(2)PT=10V×1.0A(10W) and with a 100×100×2mm Al heat sink
(1)
(2)
Thermal resistance Rth (°C/W)
Time t (s)
10³
10²
10
1
10⁻¹
10⁻³
10⁻²
10⁻¹
1
10
10²
10³
10⁴

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