

# 2SB1503

## Silicon PNP epitaxial planar type Darlington

For power amplification

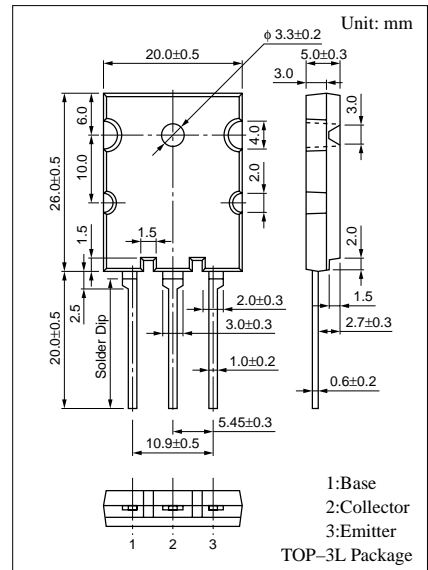
Complementary to 2SD2276

### Features

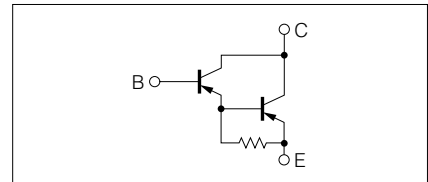
- Optimum for 110W HiFi output
- High forward current transfer ratio  $h_{FE}$ : 5000 to 30000
- Low collector to emitter saturation voltage  $V_{CE(sat)}$ :  $< -2.5V$

### Absolute Maximum Ratings ( $T_C=25^\circ C$ )

Parameter	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	-160	V
Collector to emitter voltage	$V_{CEO}$	-140	V
Emitter to base voltage	$V_{EBO}$	-5	V
Peak collector current	$I_{CP}$	-12	A
Collector current	$I_C$	-7	A
Collector power dissipation	$P_C$	$T_C=25^\circ C$	120
		$T_a=25^\circ C$	3.5
Junction temperature	$T_j$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$



### Internal Connection



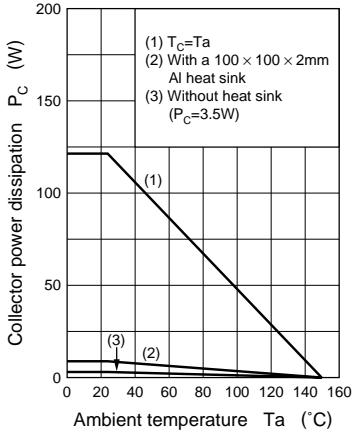
### Electrical Characteristics ( $T_C=25^\circ C$ )

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

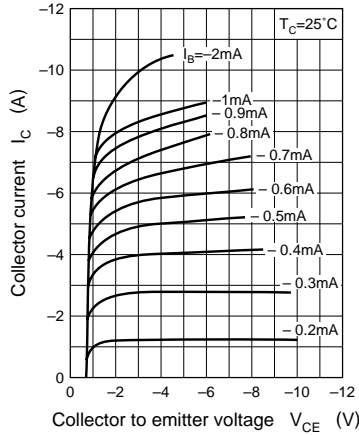
\* $h_{FE2}$  Rank classification

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

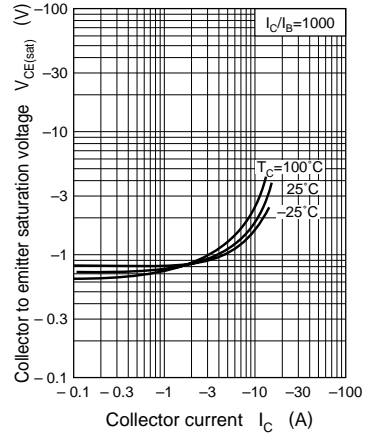
$P_C - T_a$



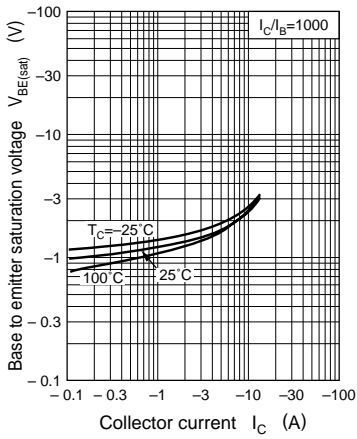
$I_C - V_{CE}$



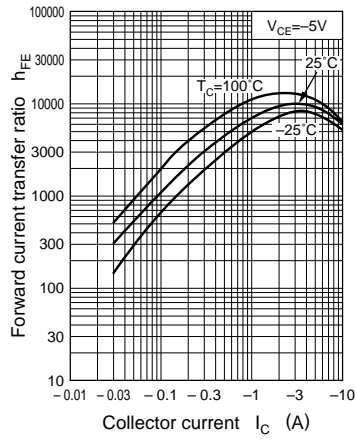
$V_{CE(sat)} - I_C$



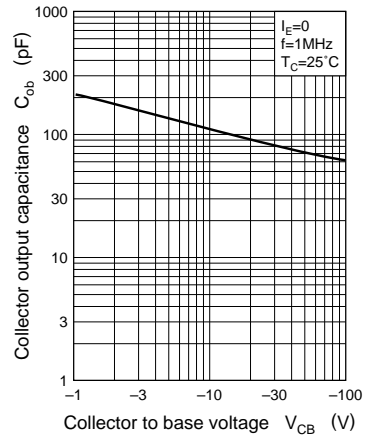
$V_{BE(sat)} - I_C$



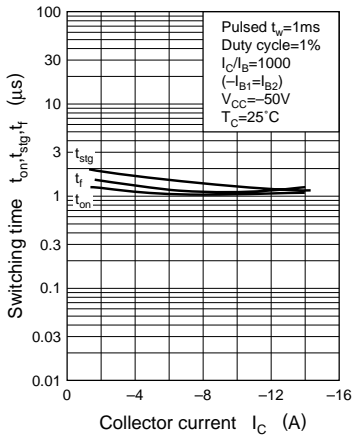
$h_{FE} - I_C$



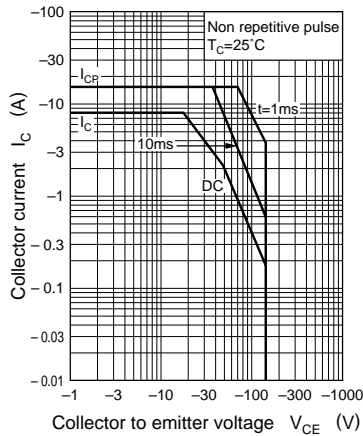
$C_{ob} - V_{CB}$



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



Area of safe operation (ASO)



$$R_{th(t)} \text{ --- } t$$

