

2SB1502

Silicon PNP epitaxial planar type Darlington

For power amplification

Complementary to 2SD2275

Features

- Optimum for 55W 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 ($T_C=25^\circ\text{C}$)

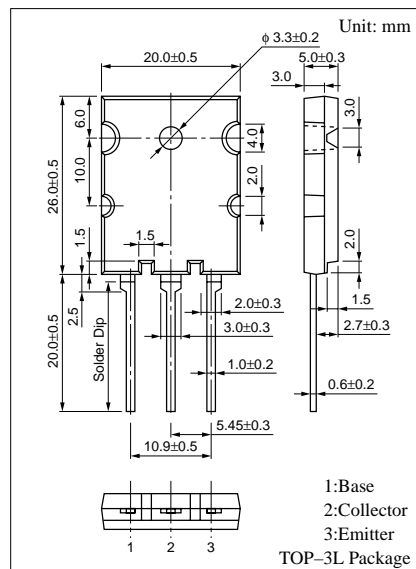
Parameter	Symbol	Rated	Unit
Collector to base voltage	V_{CBO}	-120	V
Collector to emitter voltage	V_{CEO}	-100	V
Emitter to base voltage	V_{EBO}	-5	V
Peak collector current	I_{CP}	-8	A
Collector current	I_C	-5	A
Collector power dissipation	P_C	$T_C=25^\circ\text{C}$	60
		$T_a=25^\circ\text{C}$	3.5
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

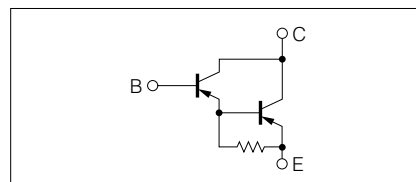
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = -120\text{V}, I_E = 0$			-100	μA
	I_{CEO}	$V_{CE} = -100\text{V}, I_B = 0$			-100	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$			-100	μA
Collector to emitter voltage	V_{CEO}	$I_C = -30\text{mA}, I_B = 0$	-100			V
Forward current transfer ratio	h_{FE1}	$V_{CE} = -5\text{V}, I_C = -1\text{A}$	2000			
	h_{FE2}^*	$V_{CE} = -5\text{V}, I_C = -4\text{A}$	5000		30000	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -4\text{A}, I_B = -4\text{mA}$			-2.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = -4\text{A}, I_B = -4\text{mA}$			-3.0	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}	$I_C = -4\text{A}, I_{B1} = -4\text{mA}, I_{B2} = 4\text{mA}, V_{CC} = -50\text{V}$		1.0		μs
Storage time	t_{stg}			0.8		μs
Fall time	t_f			1.0		μs

* h_{FE2} Rank classification

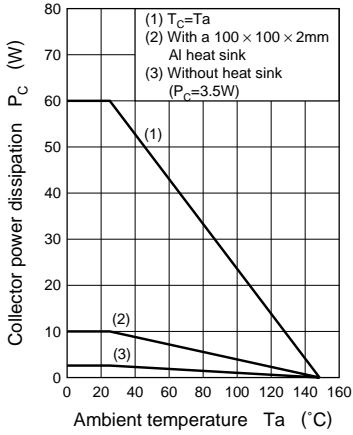
Rank	Q	S	P
h_{FE2}	5000 to 15000	7000 to 21000	8000 to 30000



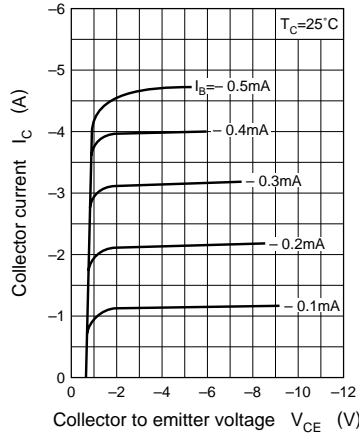
Internal Connection



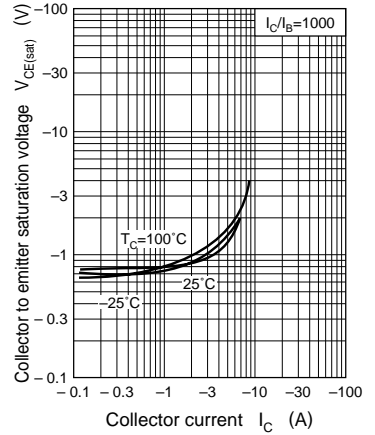
$P_C - T_a$



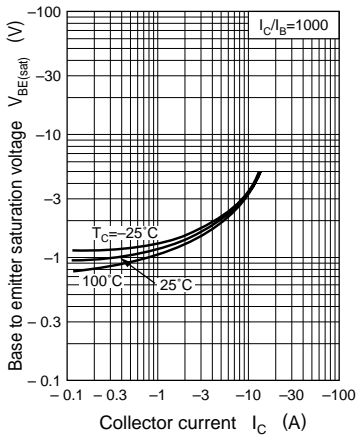
$I_C - V_{CE}$



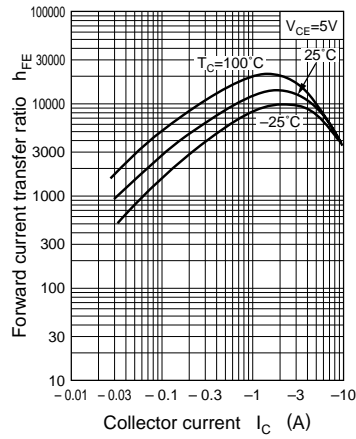
$V_{CE(sat)} - I_C$



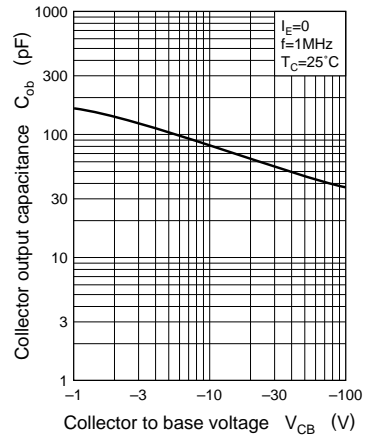
$V_{BE(sat)} - I_C$



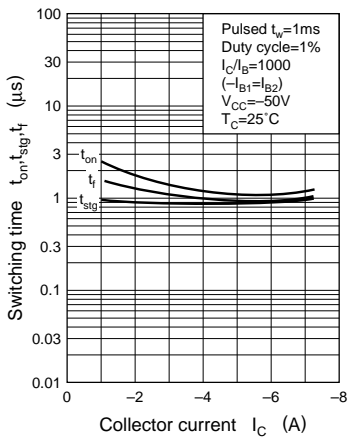
$h_{FE} - I_C$



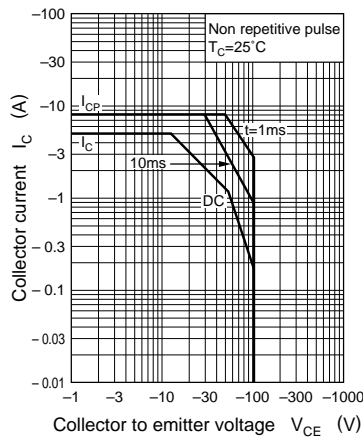
$C_{ob} - V_{CB}$



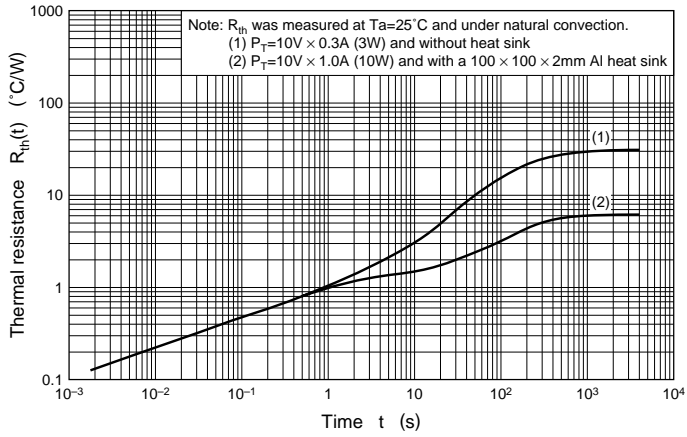
$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)



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



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