

2SB1531

Silicon PNP epitaxial planar type Darlington

For power amplification

Complementary to 2SD2340

Features

- Optimum for 40W 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 ($T_C=25^\circ C$)

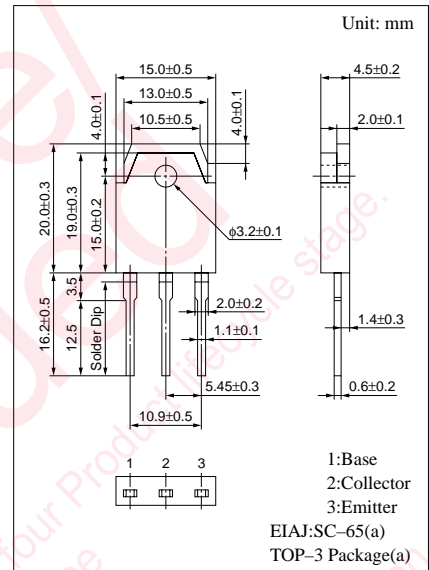
Parameter	Symbol	Rated	Unit
Collector to base voltage	V_{CBO}	-130	V
Collector to emitter voltage	V_{CEO}	-110	V
Emitter to base voltage	V_{EBO}	-5	V
Peak collector current	I_{CP}	-10	A
Collector current	I_C	-6	A
Collector power dissipation	P_C	50	W
$T_C=25^\circ C$		2.5	
Junction temperature	T_J	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

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

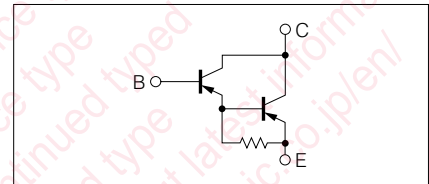
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = -130V, I_E = 0$			-100	μA
	I_{CEO}	$V_{CE} = -110V, I_B = 0$			-100	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = -5V, I_C = 0$			-100	μA
Collector to emitter voltage	V_{CEO}	$I_C = -30mA, I_B = 0$	-110			V
Forward current transfer ratio	h_{FE1}	$V_{CE} = -5V, I_C = -1A$	2000			
	h_{FE2}^*	$V_{CE} = -5V, I_C = -5A$	5000		30000	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -5A, I_B = -5mA$			-2.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = -5A, I_B = -5mA$			-3.0	V
Transition frequency	f_T	$V_{CE} = -10V, I_C = -0.5A, f = 1MHz$		20		MHz
Turn-on time	t_{on}	$I_C = -5A, I_{B1} = -5mA, I_{B2} = 5mA, V_{CC} = -50V$		0.9		μs
Storage time	t_{stg}			2.5		μs
Fall time	t_f			1.7		μs

* h_{FE2} Rank classification

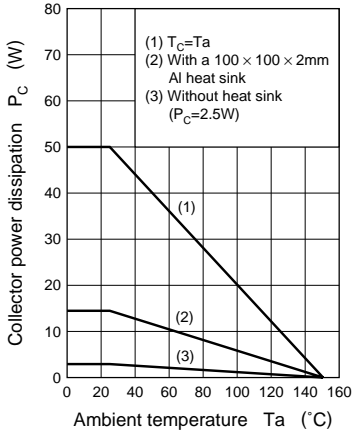
Rank	Q	S	P
h_{FE2}	5000 to 15000	7000 to 21000	8000 to 30000



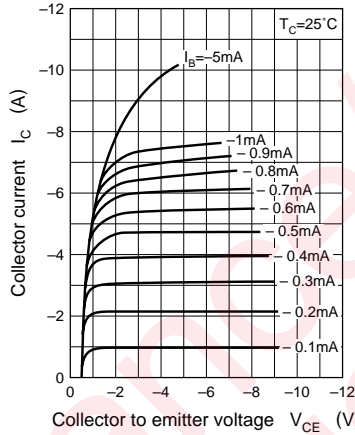
Internal Connection



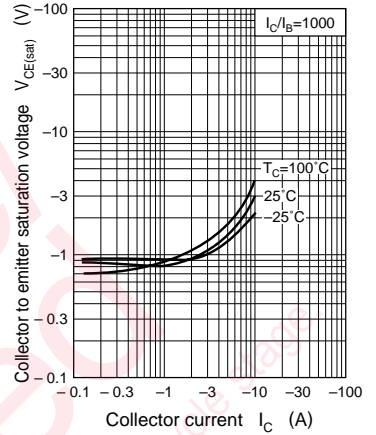
$P_C - T_a$



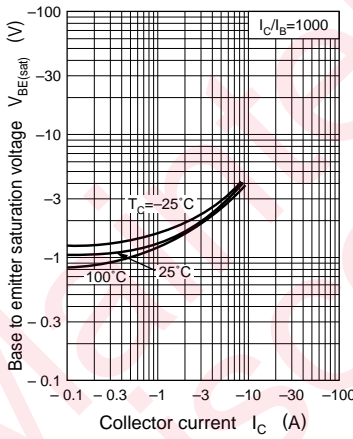
$I_C - V_{CE}$



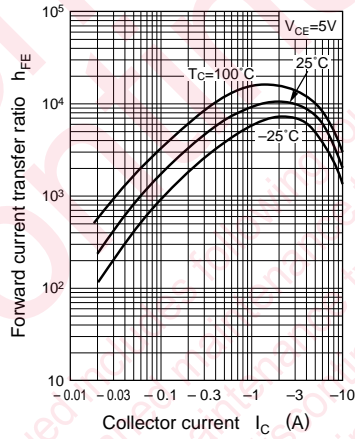
$V_{CE(sat)} - I_C$



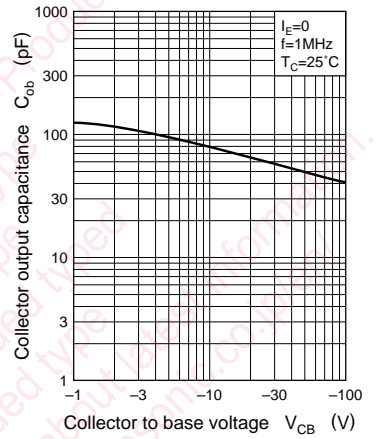
$V_{BE(sat)} - I_C$



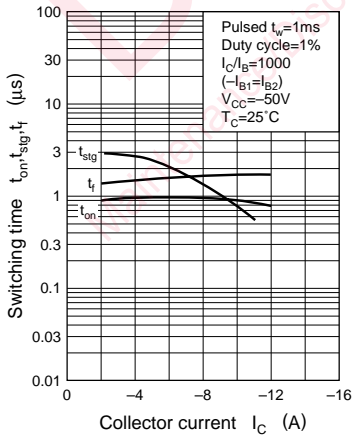
$h_{FE} - I_C$



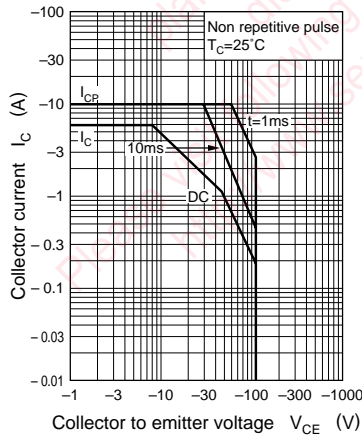
$C_{ob} - V_{CB}$



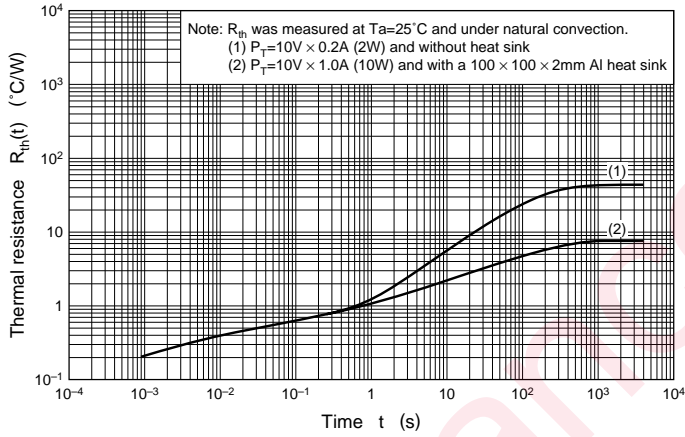
$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)



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



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 Discontinued
 planned maintenance type
 maintenance type
 planned discontinued type
 discontinued type
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