

2SD2052

Silicon NPN triple diffusion planar type

For high power amplification

Complementary to 2SB1361

Features

- Satisfactory forward current transfer ratio h_{FE} vs. collector current I_C characteristics
- Wide area of safe operation (ASO)
- High transition frequency f_T
- Optimum for the output stage of a HiFi audio amplifier
- Full-pack package which can be installed to the heat sink with one screw

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$)

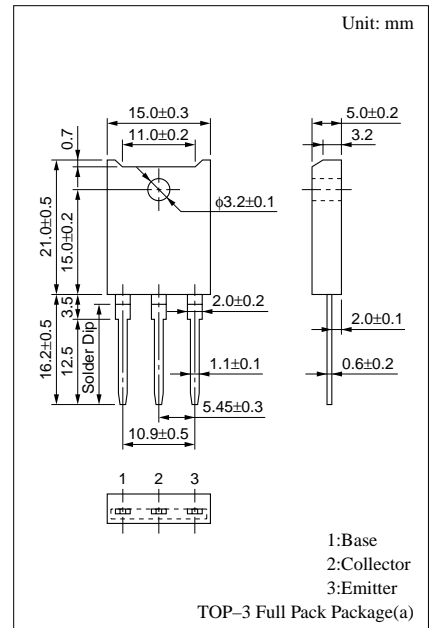
Parameter	Symbol	Rated	Unit
Collector to base voltage	V_{CBO}	150	V
Collector to emitter voltage	V_{CEO}	150	V
Emitter to base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	15	A
Collector current	I_C	9	A
Collector power dissipation	P_C	$T_C=25^\circ\text{C}$	100
		$T_a=25^\circ\text{C}$	3
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +155	$^\circ\text{C}$

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

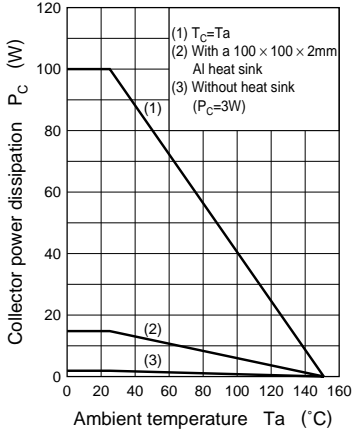
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 150\text{V}, I_E = 0$			50	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 3\text{V}, I_C = 0$			50	μA
Forward current transfer ratio	h_{FE1}	$V_{CE} = 5\text{V}, I_C = 20\text{mA}$	20			
	h_{FE2}^*	$V_{CE} = 5\text{V}, I_C = 1\text{A}$	60		200	
	h_{FE3}	$V_{CE} = 5\text{V}, I_C = 7\text{A}$	20			
Base to emitter voltage	V_{BE}	$V_{CE} = 5\text{V}, I_C = 7\text{A}$			1.8	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 7\text{A}, I_B = 0.7\text{A}$			2.0	V
Transition frequency	f_T	$V_{CE} = 5\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$		20		MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$		150		pF

* h_{FE2} Rank classification

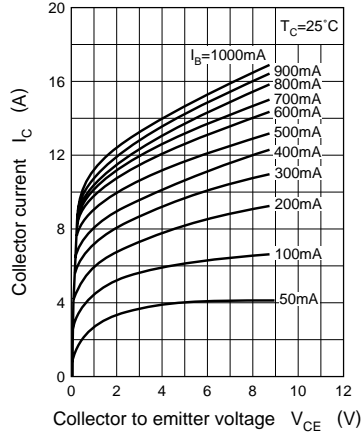
Rank	Q	S	P
h_{FE2}	60 to 120	80 to 160	100 to 200



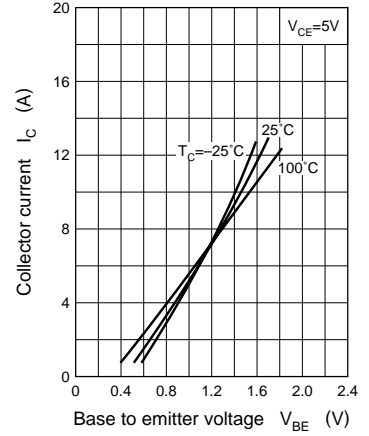
$P_C - T_a$



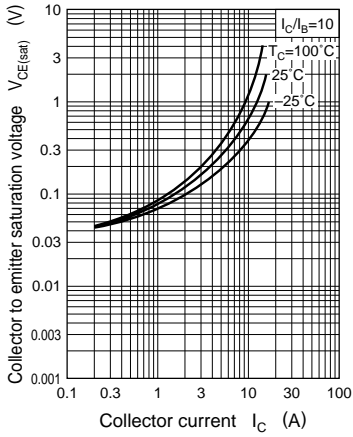
$I_C - V_{CE}$



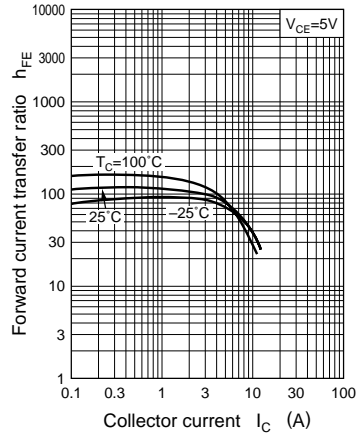
$I_C - V_{BE}$



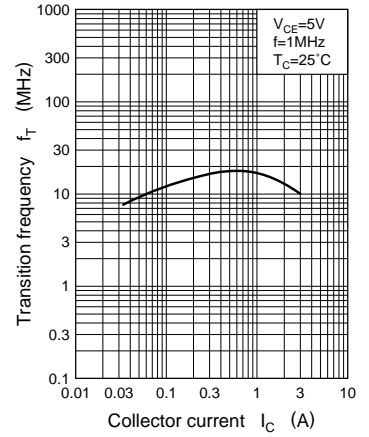
$V_{CE(sat)} - I_C$



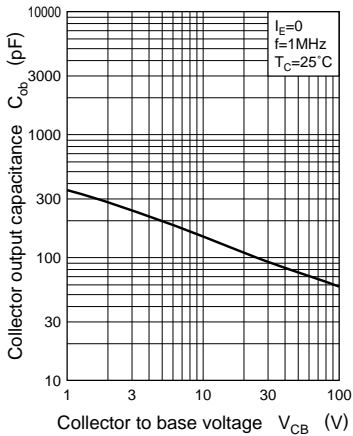
$h_{FE} - I_C$



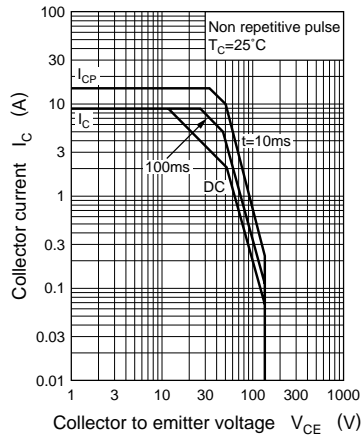
$f_T - I_C$



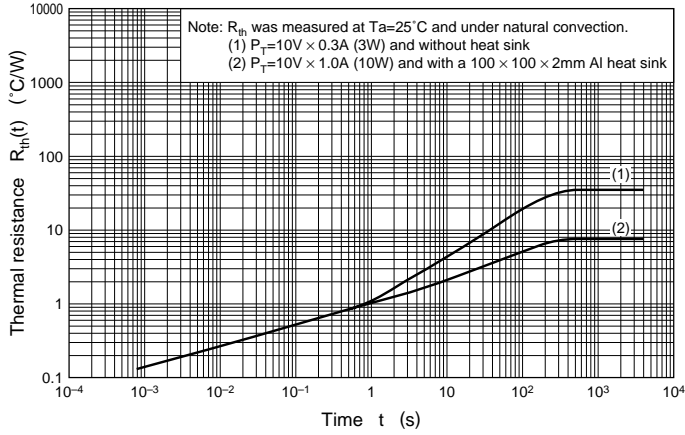
$C_{ob} - V_{CB}$



Area of safe operation (ASO)



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



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