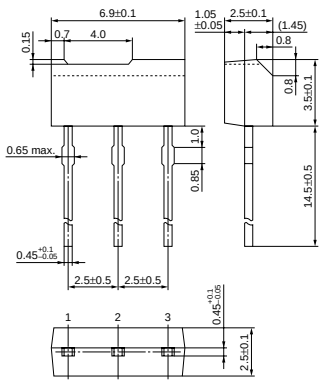
2SD1993

Silicon NPN epitaxial planer type

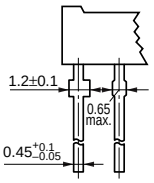
For low-frequency and low-noise amplification

Unit: mm



Note: In addition to the lead type shown in the upper figure, the type as shown in the lower figure is also available.

1:Emitter
2:Collector
3:Base
MT1 Type Package



(HW type)

Features

- Low noise voltage NV.
- High foward current transfer ratio h_{FE}.
- Allowing supply with the radial taping.

Absolute Maximum Ratings (Ta=25˚C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	55	V
Collector to emitter voltage	V_{CEO}	55	V
Emitter to base voltage	V_{EBO}	7	V
Peak collector current	I_{CP}	200	mA
Collector current	I_C	100	mA
Collector power dissipation	P_C	400	mW
Junction temperature	T_j	150	˚C
Storage temperature	T_{stg}	–55 ~ +150	˚C

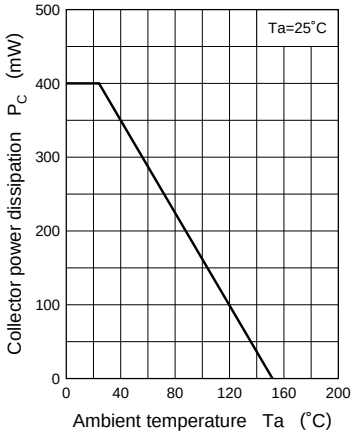
Electrical Characteristics (Ta=25˚C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	V_{CB} = 20V, I_E = 0			100	nA
	I_{CEO}	V_{CE} = 20V, I_B = 0			1	µA
Collector to base voltage	V_{CBO}	I_C = 10µA, I_E = 0	55			V
Collector to emitter voltage	V_{CEO}	I_C = 2mA, I_B = 0	55			V
Emitter to base voltage	V_{EBO}	I_E = 10µA, I_C = 0	7			V
Forward current transfer ratio	h_{FE}*	V_{CE} = 10V, I_C = 2mA	210		650	
Collector to emitter saturation voltage	$V_{CE(sat)}$	I_C = 100mA, I_B = 10mA			1.0	V
Transition frequency	f_T	V_{CB} = 10V, I_E = –2mA, f = 200MHz		200		MHz
Noise voltage	NV	V_{CE} = 10V, I_C = 1mA, G_V = 80dB R_g = 100kΩ, Function = FLAT			150	mV

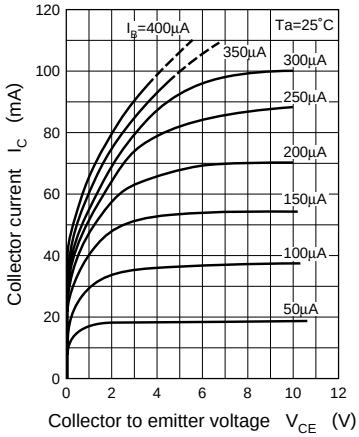
*h_{FE} Rank classification

Rank	R	S	T
h_{FE}	210 ~ 340	290 ~ 460	360 ~ 650

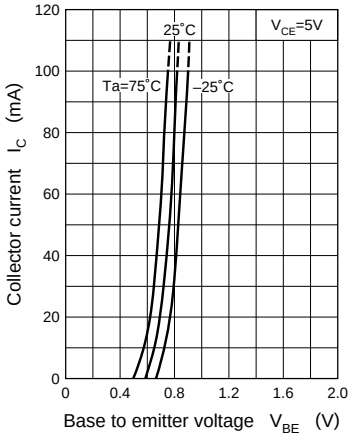
P_C — Ta



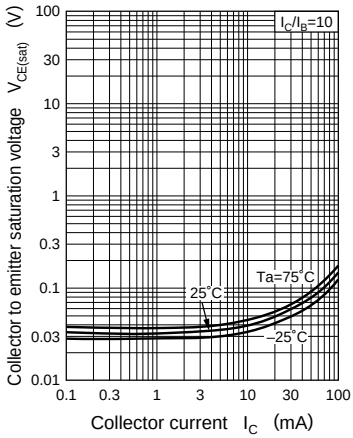
I_C — V_{CE}



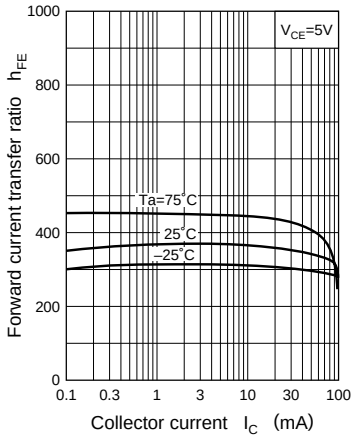
I_C — V_{BE}



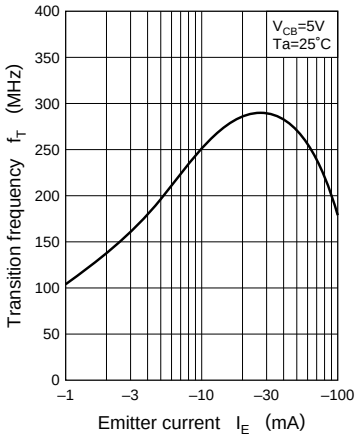
$V_{CE(sat)}$ — I_C



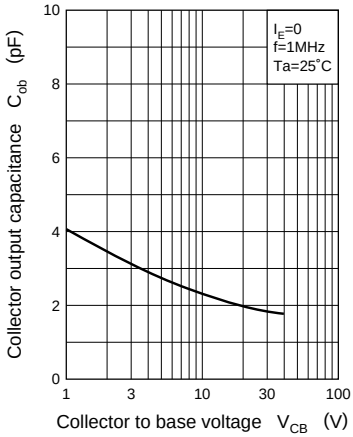
h_{FE} — I_C



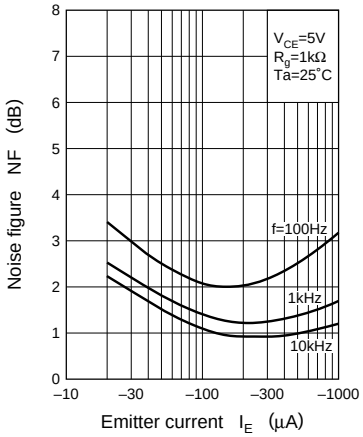
f_T — I_E



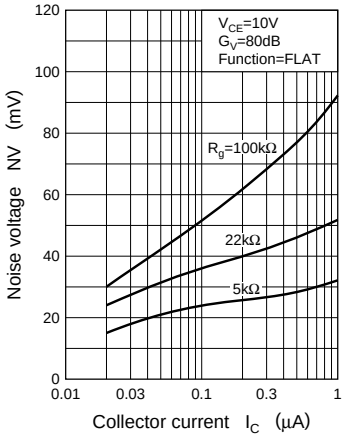
C_{ob} — V_{CB}



NF — I_E



NV — I_C



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