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# 2SB648, 2SB648A

Silicon PNP Epitaxial

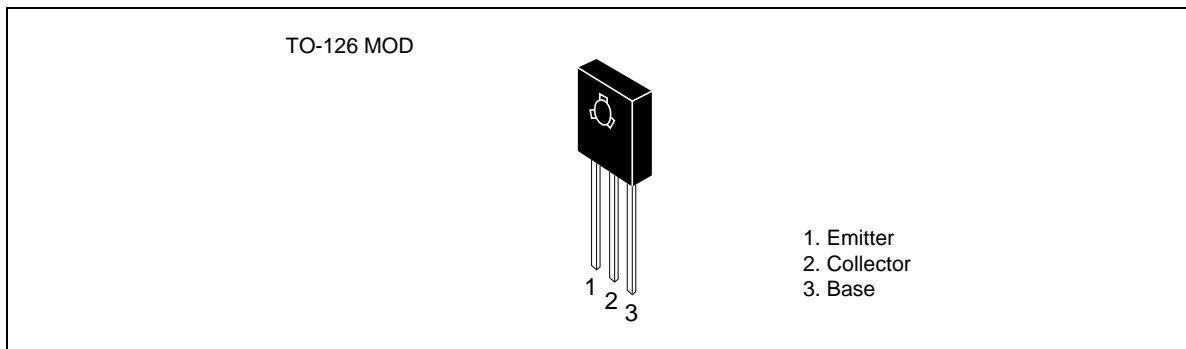
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### Application

Low frequency high voltage amplifier complementary pair with 2SD668/A

### Outline



### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings		Unit
		2SB648	2SB648A	
Collector to base voltage	$V_{CBO}$	-180	-180	V
Collector to emitter voltage	$V_{CEO}$	-120	-160	V
Emitter to base voltage	$V_{EBO}$	-5	-5	V
Collector current	$I_C$	-50	-50	mA
Collector peak current	$I_{C(peak)}$	-100	-100	mA
Collector power dissipation	$P_C$	1	1	W
Junction temperature	$T_J$	150	150	°C
Storage temperature	$T_{stg}$	-55 to +150	-55 to +150	°C

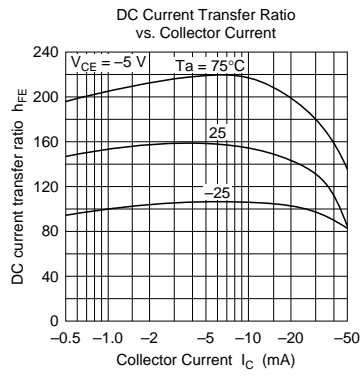
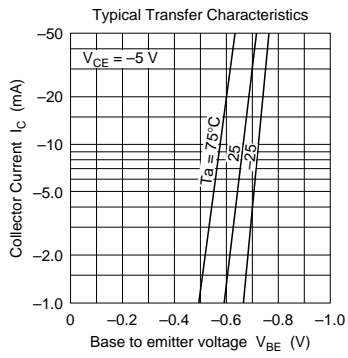
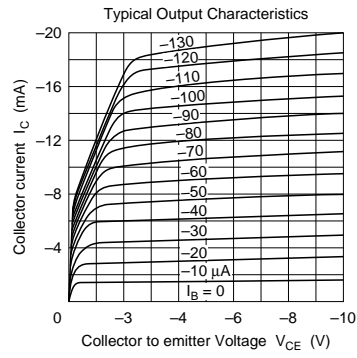
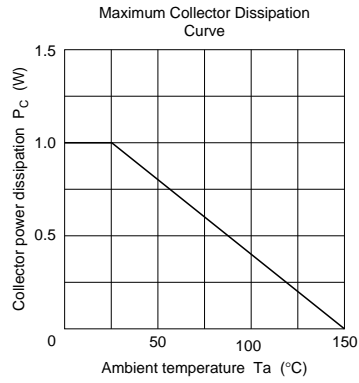
## 2SB648, 2SB648A

### Electrical Characteristics (Ta = 25°C)

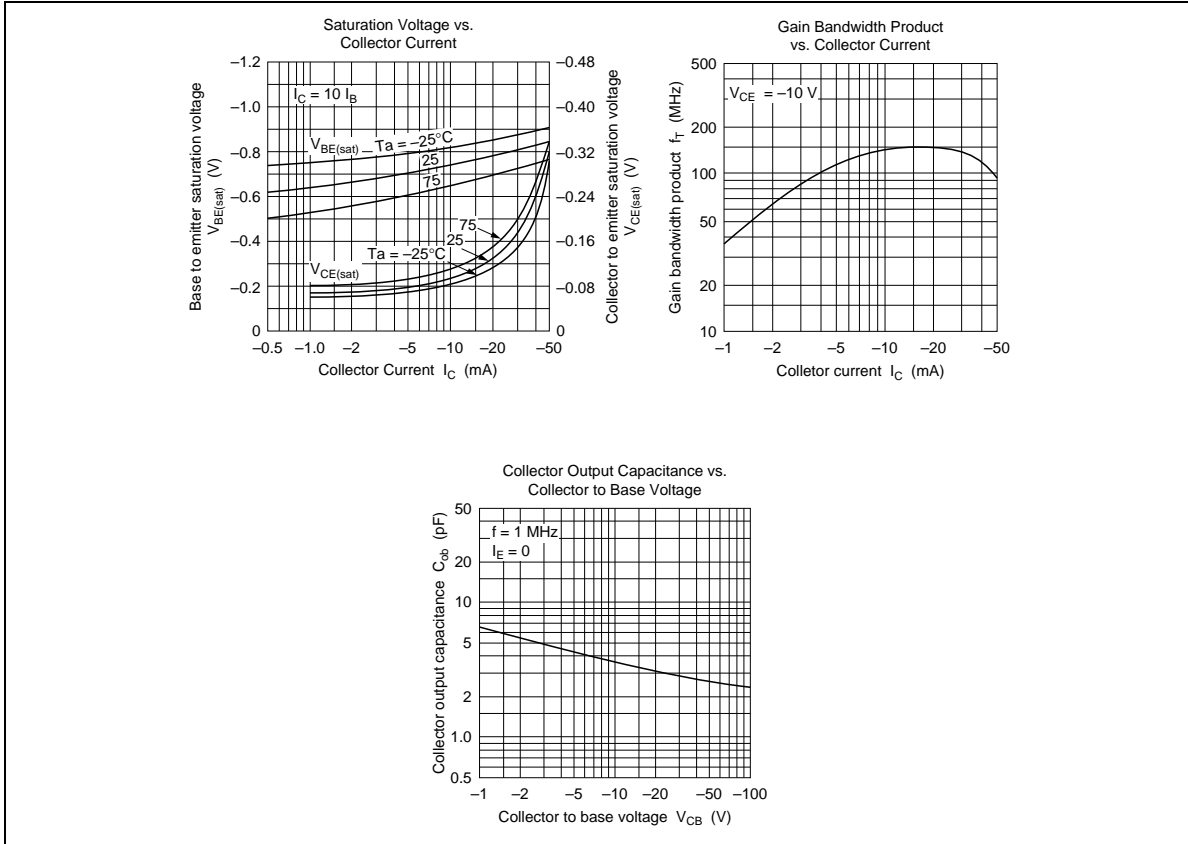
Item	Symbol	2SB648			2SB648A			Unit	Test conditions
		Min	Typ	Max	Min	Typ	Max		
Collector to base breakdown voltage	$V_{(BR)CBO}$	-180	—	—	-180	—	—	V	$I_C = -10 \mu A, I_E = 0$
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	-120	—	—	-160	—	—	V	$I_C = -1 \text{ mA}, R_{BE} = \infty$
Emitter to base breakdown voltage	$V_{(BR)EBO}$	-5	—	—	-5	—	—	V	$I_E = -10 \mu A, I_C = 0$
Collector cutoff current	$I_{CBO}$	—	—	-10	—	—	-10	$\mu A$	$V_{CB} = -160 \text{ V}, I_E = 0$
DC current transfer ratio	$h_{FE1}^{*1}$	60	—	320	60	—	200		$V_{CE} = -5 \text{ V}, I_C = -10 \text{ mA}$
	$h_{FE2}$	30	—	—	30	—	—		$V_{CE} = -5 \text{ V}, I_C = -1 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	—	-2	—	—	-2	V	$I_C = -30 \text{ mA}, I_B = -3 \text{ mA}$
Base to emitter voltage	$V_{BE}$	—	—	-1.5	—	—	-1.5	V	$V_{CE} = -5 \text{ V}, I_C = -10 \text{ mA}$
Gain bandwidth product	$f_T$	—	140	—	—	140	—	MHz	$V_{CE} = -10 \text{ V}, I_C = -10 \text{ mA}$
Collector output capacitance	Cob	—	4.5	—	—	4.5	—	pF	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$

Note: 1. The 2SB648 and 2SB648A are grouped by  $h_{FE1}$  as follows.

	B	C	D
2SB648	60 to 120	100 to 200	160 to 320
2SB648A	60 to 120	100 to 200	—



# 2SB648, 2SB648A



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## 2SB648, 2SB648A

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