

# XP4683

NPN epitaxial planer transistor (Tr1)  
 PNP epitaxial planer transistor (Tr2)

For high-frequency amplification (Tr1)  
 For general amplification (Tr2)

■ Features

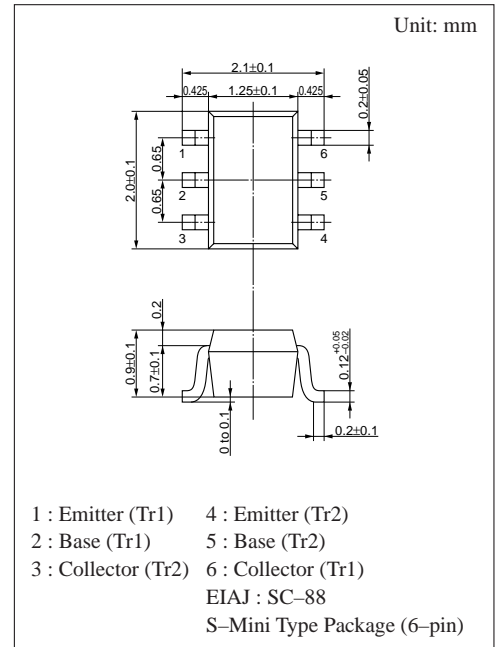
- Two elements incorporated into one package.
- Reduction of the mounting area and assembly cost by one half.

■ Basic Part Number of Element

- 2SC2404+2SB709A

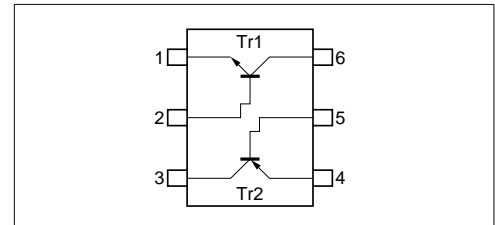
■ Absolute Maximum Ratings (Ta=25°C)

	Parameter	Symbol	Ratings	Unit
Tr1	Collector to base voltage	$V_{CBO}$	30	V
	Collector to emitter voltage	$V_{CEO}$	20	V
	Emitter to base voltage	$V_{EBO}$	3	V
	Collector current	$I_C$	15	mA
Tr2	Collector to base voltage	$V_{CBO}$	-60	V
	Collector to emitter voltage	$V_{CEO}$	-50	V
	Emitter to base voltage	$V_{EBO}$	-7	V
	Collector current	$I_C$	-100	mA
	Peak collector current	$I_{CP}$	-200	mA
Overall	Total power dissipation	$P_T$	150	mW
	Junction temperature	$T_j$	150	°C
	Storage temperature	$T_{stg}$	-55 to +150	°C



Marking Symbol: ER

Internal Connection



■ Electrical Characteristics (Ta=25°C)

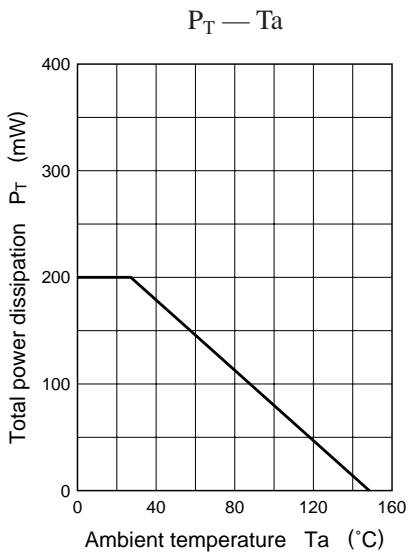
● Tr1

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	$V_{CBO}$	$I_C = 10\mu A, I_E = 0$	30			V
Emitter to base voltage	$V_{EBO}$	$I_E = 10\mu A, I_C = 0$	3			V
Forward current transfer ratio	$h_{FE}$	$V_{CE} = 6V, I_C = -1mA$	40		260	
Base to emitter voltage	$V_{BE}$	$V_{CB} = 6V, I_E = -1mA$		720		mV
Common emitter reverse transfer capacitance	$C_{re}$	$V_{CB} = 6V, I_E = -1mA, f = 10.7MHz$		0.8	1	pF
Transition frequency	$f_T$	$V_{CB} = 6V, I_E = -1mA, f = 200MHz$	450	650		MHz
Noise figure	NF	$V_{CB} = 6V, I_E = -1mA, f = 100MHz$		3.3		dB
Power gain	PG	$V_{CB} = 6V, I_E = -1mA, f = 100MHz$		24		dB

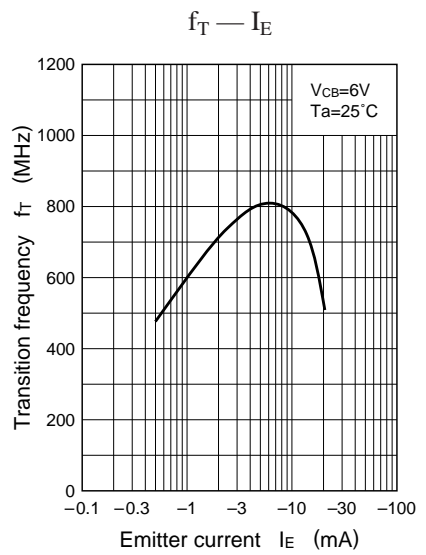
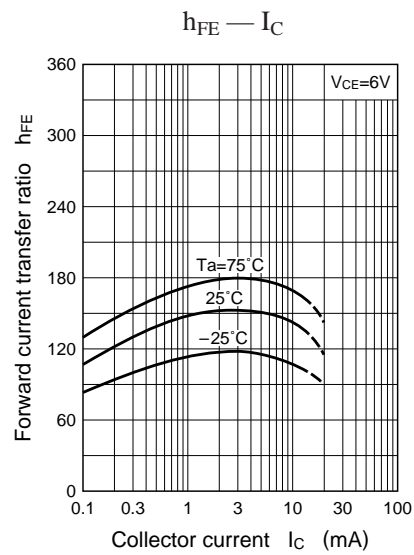
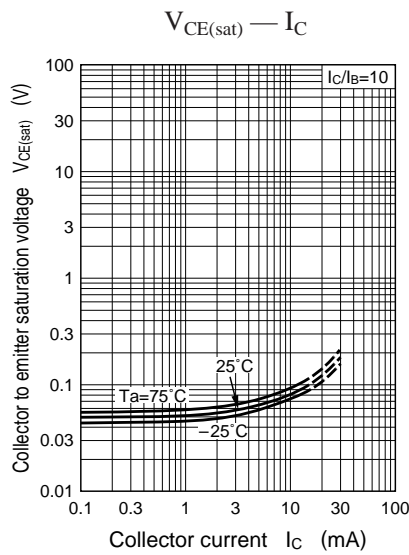
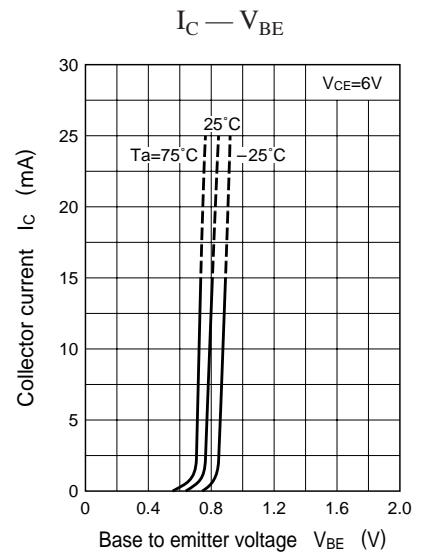
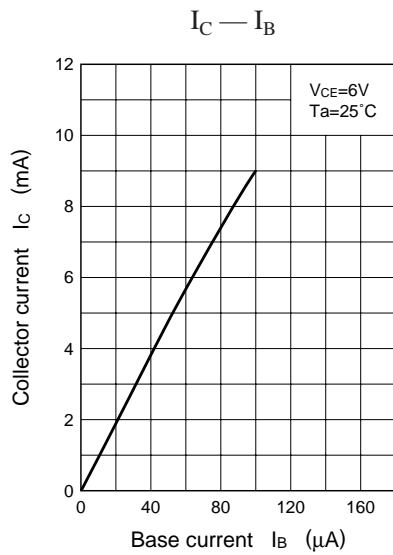
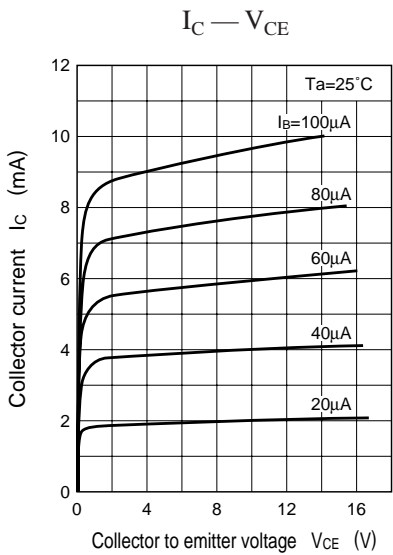
● Tr2

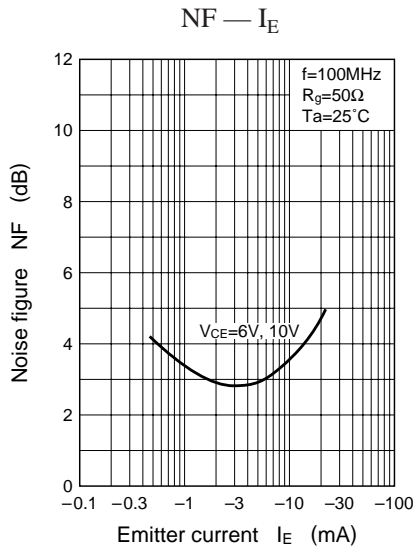
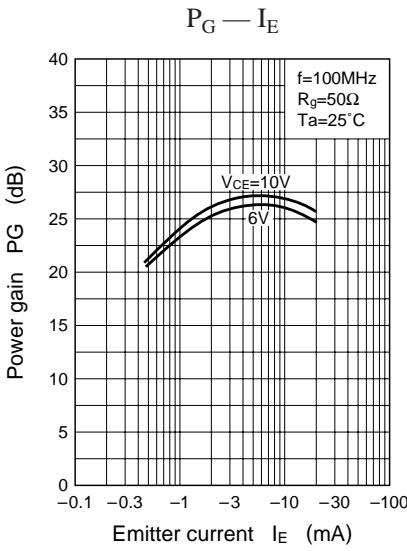
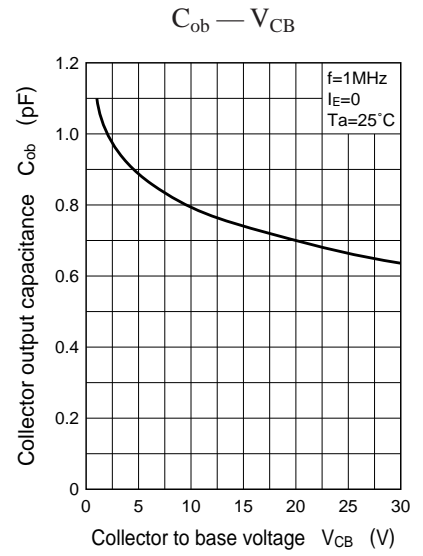
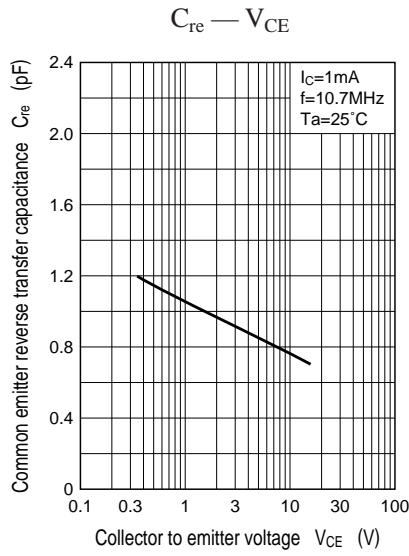
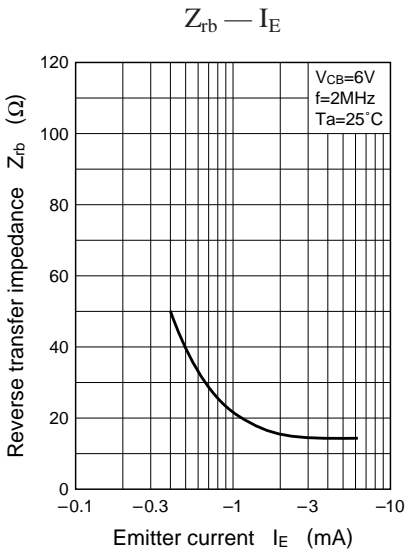
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	$V_{CBO}$	$I_C = -10\mu A, I_E = 0$	-60			V
Collector to emitter voltage	$V_{CEO}$	$I_C = -2mA, I_B = 0$	-50			V
Emitter to base voltage	$V_{EBO}$	$I_E = -10\mu A, I_C = 0$	-7			V
Collector cutoff current	$I_{CBO}$	$V_{CB} = -20V, I_E = 0$			-0.1	$\mu A$
	$I_{CEO}$	$V_{CE} = -10V, I_B = 0$			-100	$\mu A$
Forward current transfer ratio	$h_{FE}$	$V_{CE} = -10V, I_C = -2mA$	160		460	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = -100mA, I_B = -10mA$		-0.3	-0.5	V
Transition frequency	$f_T$	$V_{CB} = -10V, I_E = 1mA, f = 200MHz$		80		MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10V, I_E = 0, f = 1MHz$		2.7		pF

Common characteristics chart

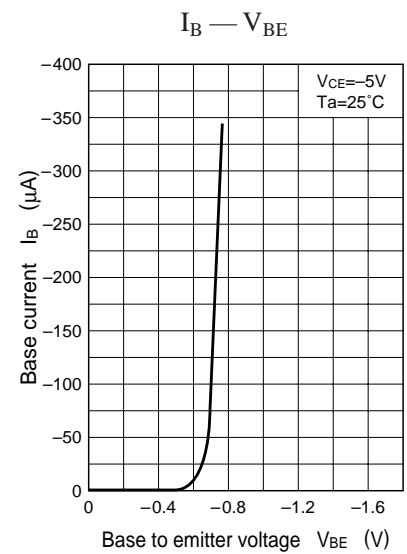
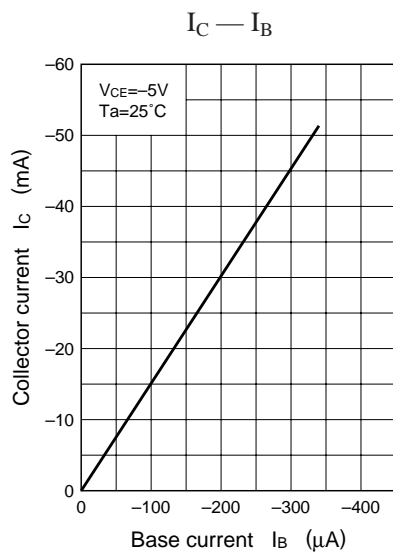
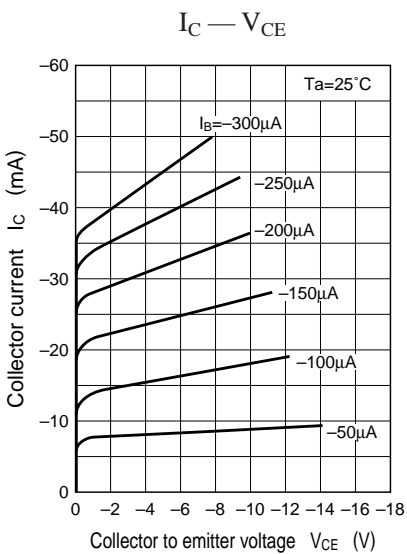


Characteristics charts of Tr1

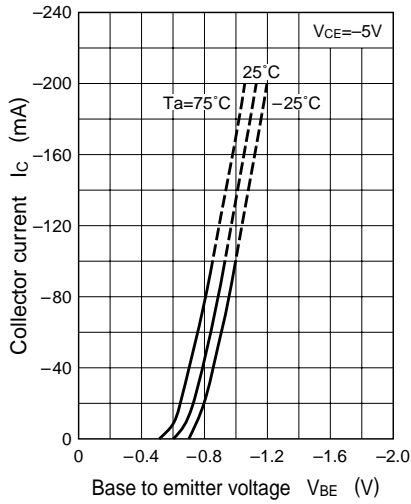




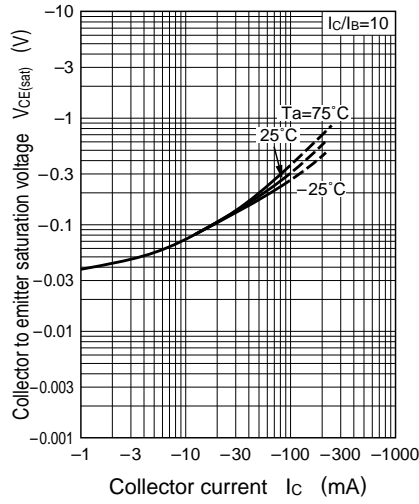
Characteristics charts of Tr2



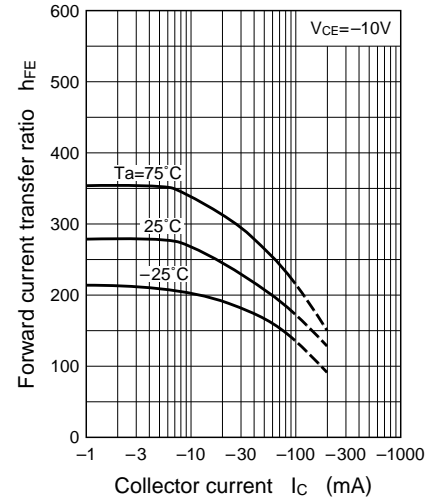
$I_C - V_{BE}$



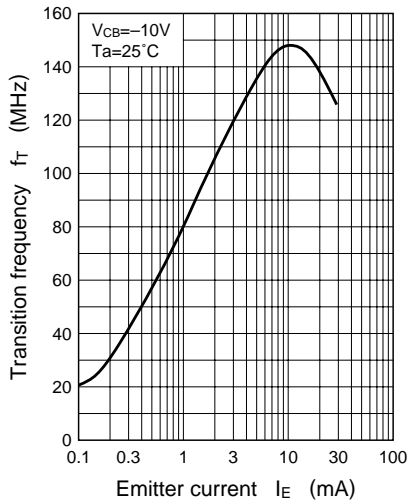
$V_{CE(sat)} - I_C$



$h_{FE} - I_C$



$f_T - I_E$



$C_{ob} - V_{CB}$

