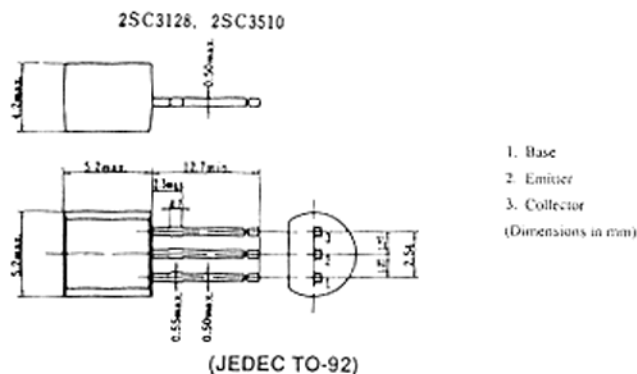
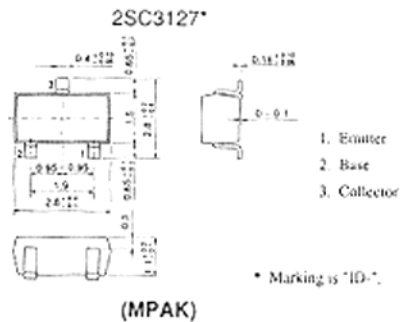


# 2SC3127

## 2SC3128, 2SC3510

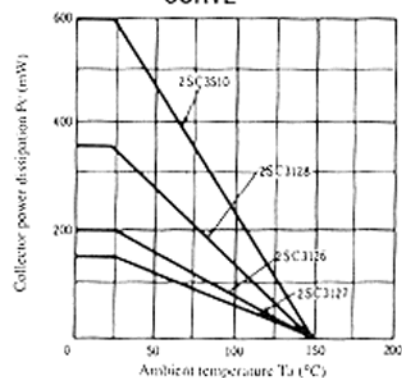
SILICON NPN EPITAXIAL  
UHF/VHF WIDE BAND AMPLIFIER



### ■ ABSOLUTE MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ )

Item	Symbol	2SC3127*	2SC3128	2SC3510	Unit
Collector to base voltage	$V_{CB0}$	20	20	20	V
Collector to emitter voltage	$V_{CE0}$	12	12	12	V
Emitter to base voltage	$V_{EB0}$	3	3	3	V
Collector current	$I_c$	50	50	50	mA
Collector power dissipation	$P_c$	150	350	600	mW
Junction temperature	$T_j$	150	150	150	$^{\circ}\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	-55 to +150	-55 to +150	$^{\circ}\text{C}$

### MAXIMUM COLLECTOR DISSIPATION CURVE

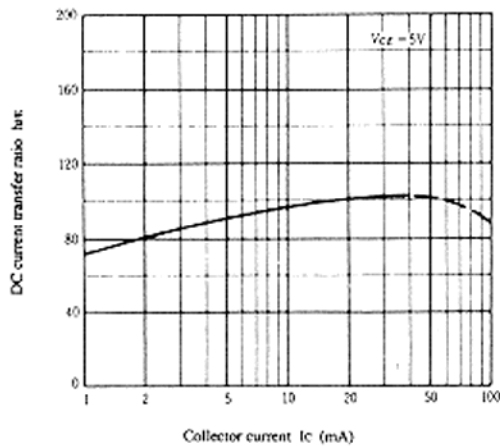


## 2SC3127, 2SC3128, 2SC3510

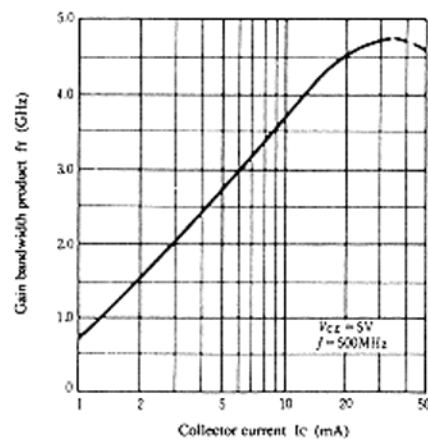
### ■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Collector to base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10\mu A, I_E = 0$	20	—	—	V
Collector to emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1mA, R_{BE} = \infty$	12	—	—	V
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 3V, I_C = 0$	—	—	10	$\mu A$
Collector cutoff current	$I_{CBO}$	$V_{CB} = 12V, I_E = 0$	—	—	0.5	$\mu A$
DC current transfer ratio	$h_{FE}$	$V_{CE} = 5V, I_C = 20mA$	30	90	200	
Collector output capacitance	$C_{ob}$	$V_{CB} = 5V, I_E = 0, f = 1MHz$	—	0.9	1.5	pF
Gain bandwidth product	$f_T$	$V_{CE} = 5V, I_C = 20mA$	3.5	4.5	—	GHz
Power gain	PG	$V_{CE} = 5V, I_C = 20mA, f = 900MHz$	—	10.5	—	dB
Noise figure	NF	$V_{CE} = 5V, I_C = 5mA, f = 900MHz$	—	2.2	—	dB

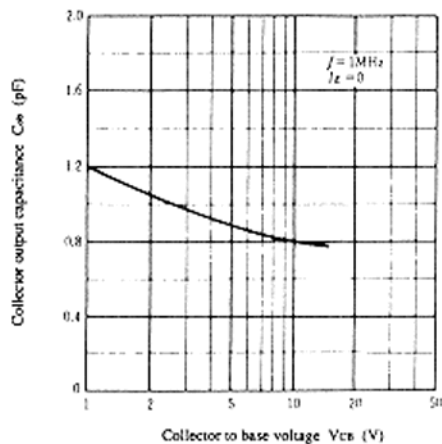
**DC CURRENT TRANSFER RATIO  
VS. COLLECTOR CURRENT**



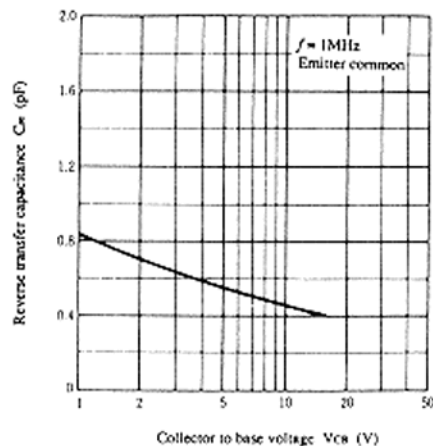
**GAIN BANDWIDTH PRODUCT  
VS. COLLECTOR CURRENT**



**COLLECTOR OUTPUT CAPACITANCE  
VS. COLLECTOR TO BASE VOLTAGE**

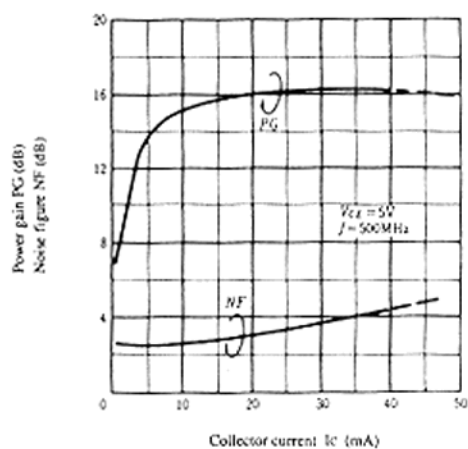


**REVERSE TRANSFER CAPACITANCE  
VS. COLLECTOR TO BASE VOLTAGE**

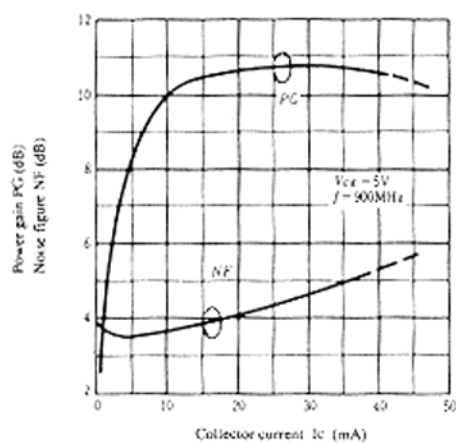


# 2SC3127, 2SC3128, 2SC3510

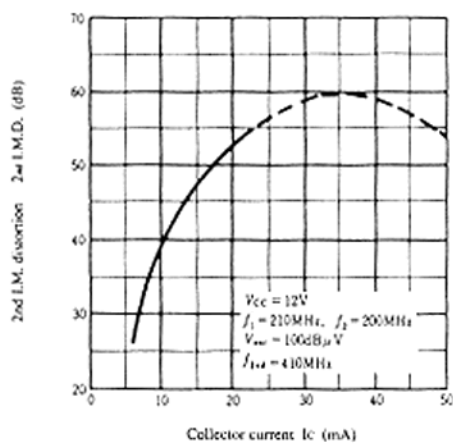
**POWER GAIN AND NOISE FIGURE VS. COLLECTOR CURRENT**



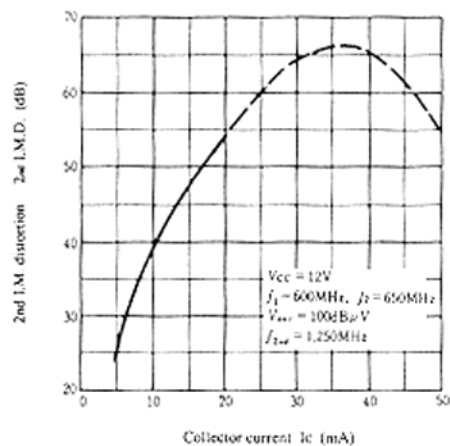
**POWER GAIN AND NOISE FIGURE VS. COLLECTOR CURRENT**



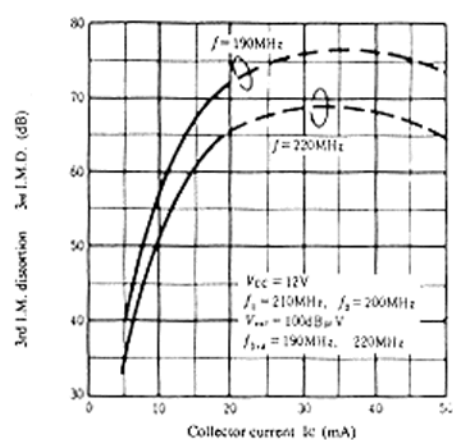
**2ND I.M. DISTORTION VS. COLLECTOR CURRENT**



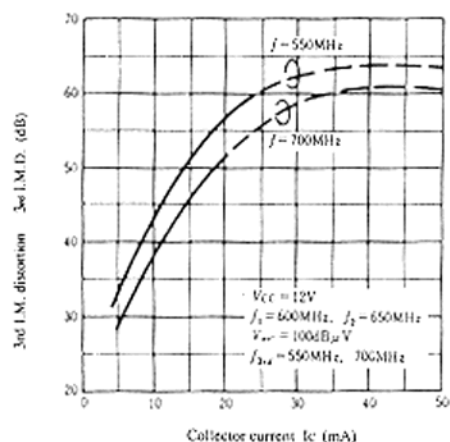
**2ND I.M. DISTORTION VS. COLLECTOR CURRENT**



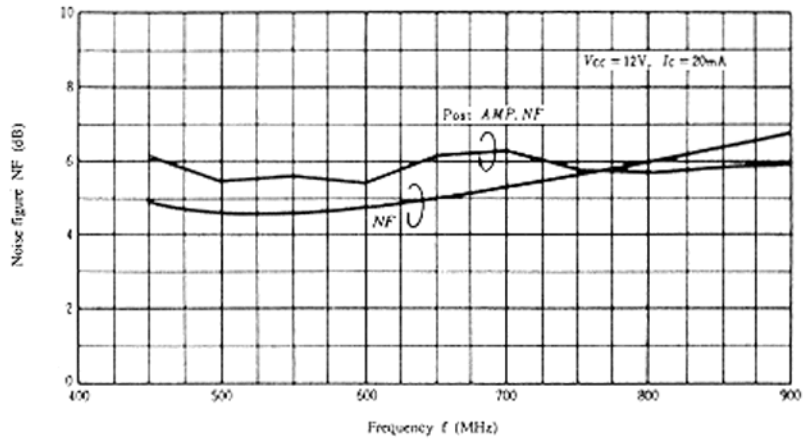
**3RD I.M. DISTORTION VS. COLLECTOR CURRENT**



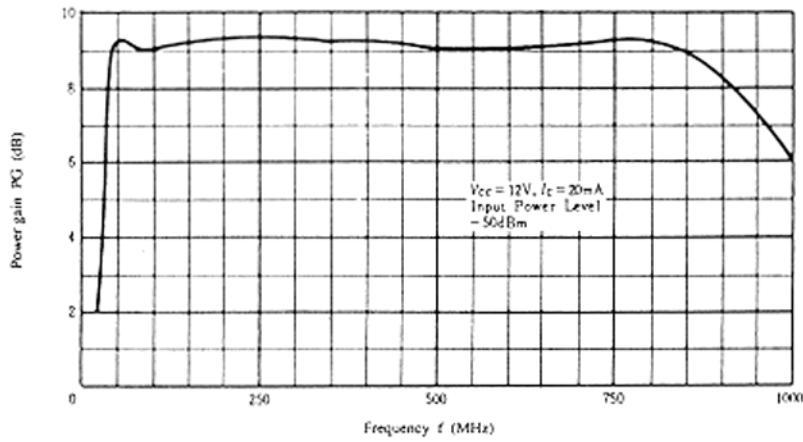
**3RD I.M. DISTORTION VS. COLLECTOR CURRENT**



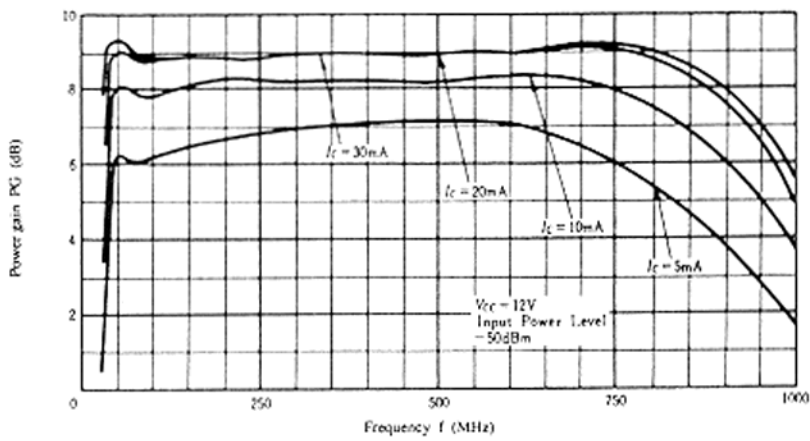
NOISE FIGURE VS. FREQUENCY



POWER GAIN VS. FREQUENCY

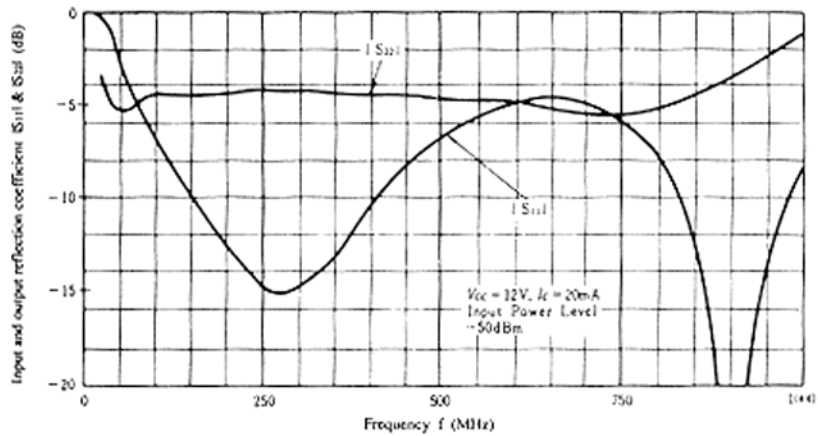


POWER GAIN VS. FREQUENCY

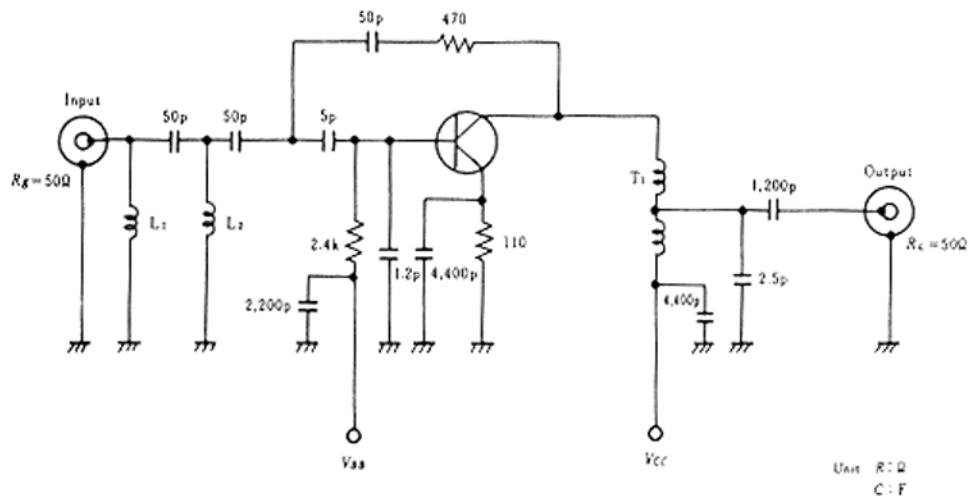


## 2SC3127, 2SC3128, 2SC3510

### INPUT AND OUTPUT REFLECTION COEFFICIENT VS. FREQUENCY



### VHF to UHF WIDE BAND AMP. CIRCUIT



#### Parts Specification

L<sub>1</sub> : Inside dia  $\phi 3.0mm$ ,  $\phi 0.4m$  Polyurethane Coated Copper wire 12 Turns.

L<sub>2</sub> : Inside dia  $\phi 3.5mm$ ,  $\phi 0.5m$  Polyurethane Coated Copper wire 9 Turns.

T<sub>1</sub> : Balance wind used Ferrite Core

Outside dia  $\phi 4.0mm$ , Inside dia  $\phi 2.0mm$

$\phi 0.1mm$  Polyurethane Coated Copper wire 3 Turns.

Ratio Input to Output is 2 : 1