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# 2SC3127, 2SC3128, 2SC3510

Silicon NPN Epitaxial

# HITACHI

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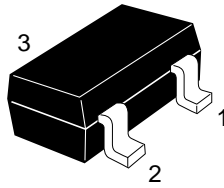
## Application

UHF/VHF wide band amplifier

## Outline

MPAK

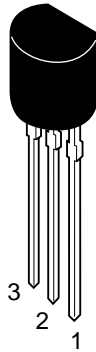
2SC3127



- 1. Emitter
- 2. Base
- 3. Collector

TO-92 (2)

2SC3128, 2SC3510



1. Base
2. Emitter
3. Collector

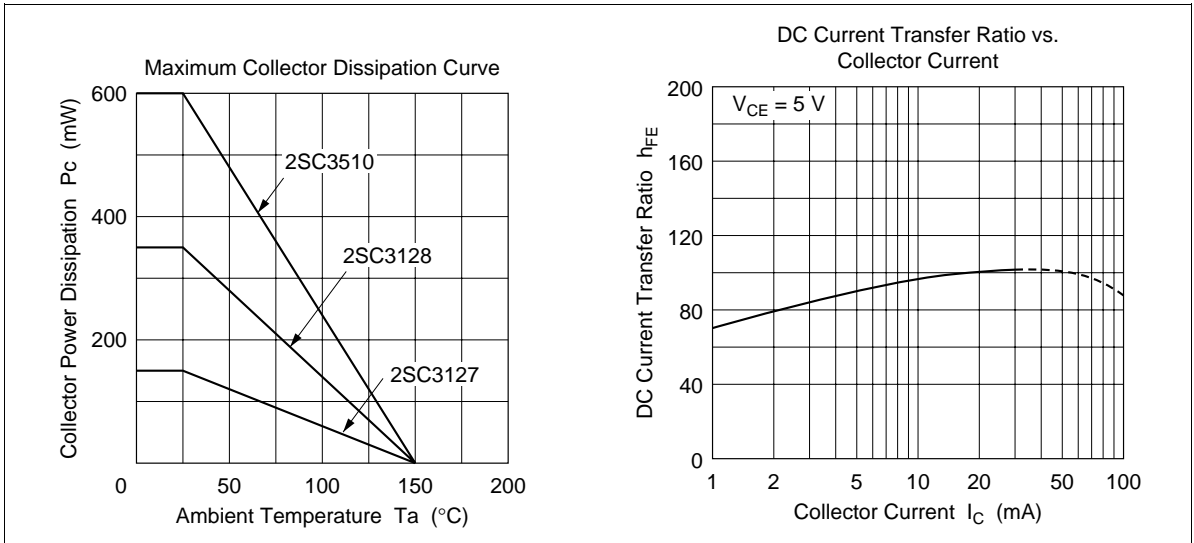
**Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

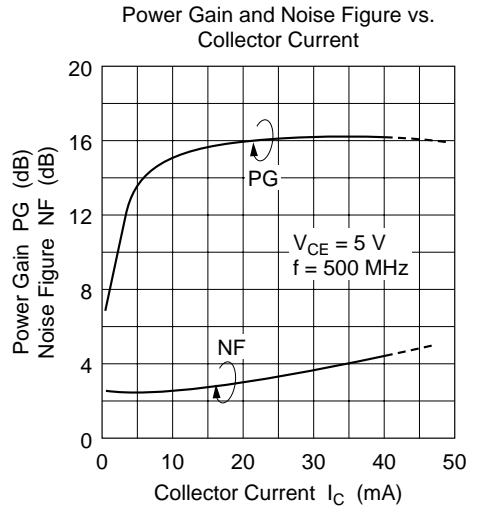
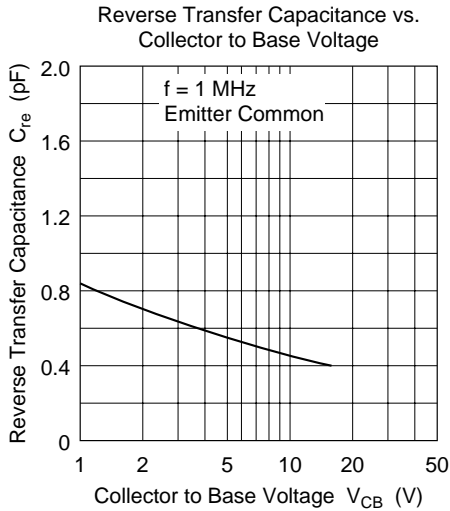
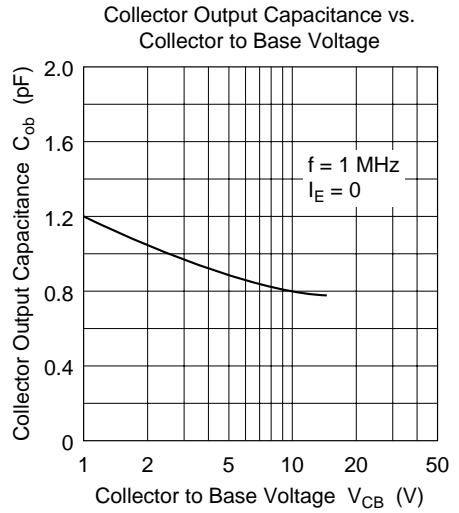
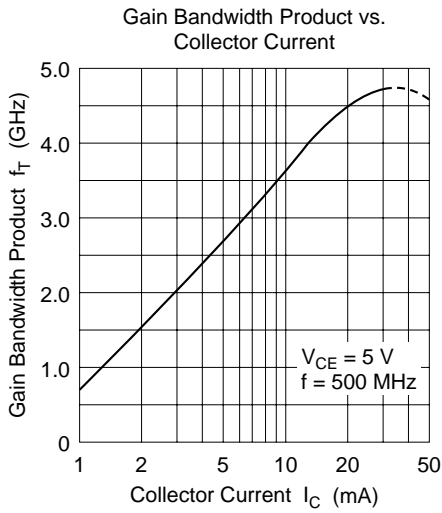
Item	Symbol	2SC3127* <sup>1</sup>	2SC3128	2SC3510	Unit
Collector to base voltage	$V_{\text{CBO}}$	20	20	20	V
Collector to emitter voltage	$V_{\text{CEO}}$	12	12	12	V
Emitter to base voltage	$V_{\text{EBO}}$	3	3	3	V
Collector current	$I_{\text{C}}$	50	50	50	mA
Collector power dissipation	$P_{\text{C}}$	150	350	600	mW
Junction temperature	$T_{\text{j}}$	150	150	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	-55 to +150	-55 to +150	$^\circ\text{C}$

Note: 1. Marking for 2SC3127 is "ID-".

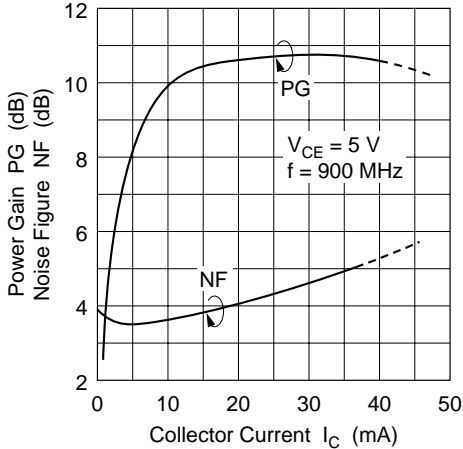
Electrical Characteristics (Ta = 25°C)

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

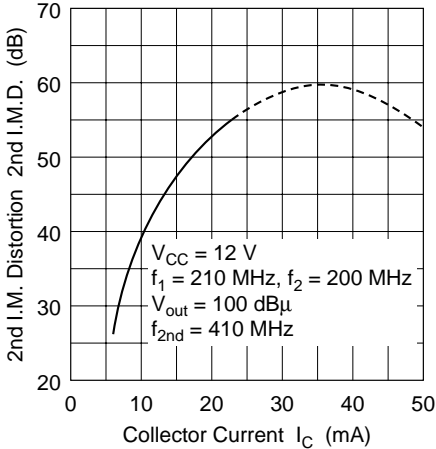




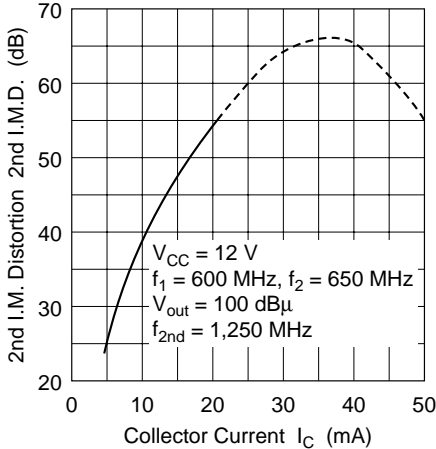
Power Gain and Noise Figure vs. Collector Current



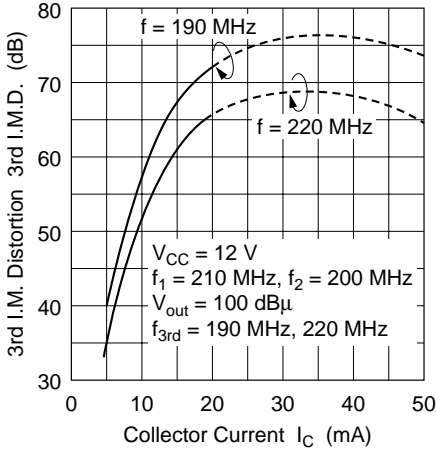
2nd I.M. Distortion vs. Collector Current

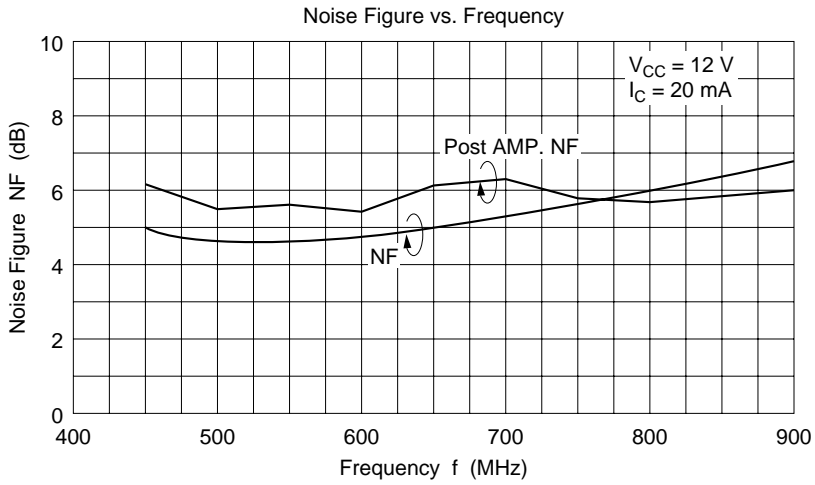
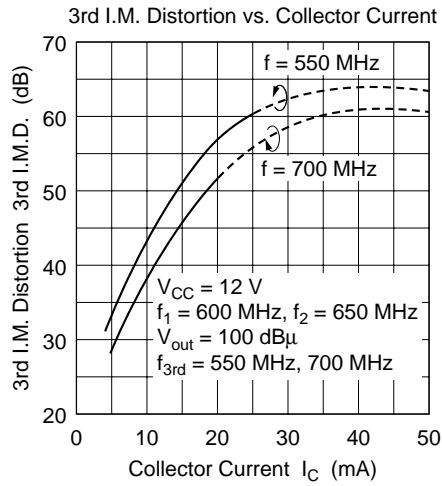


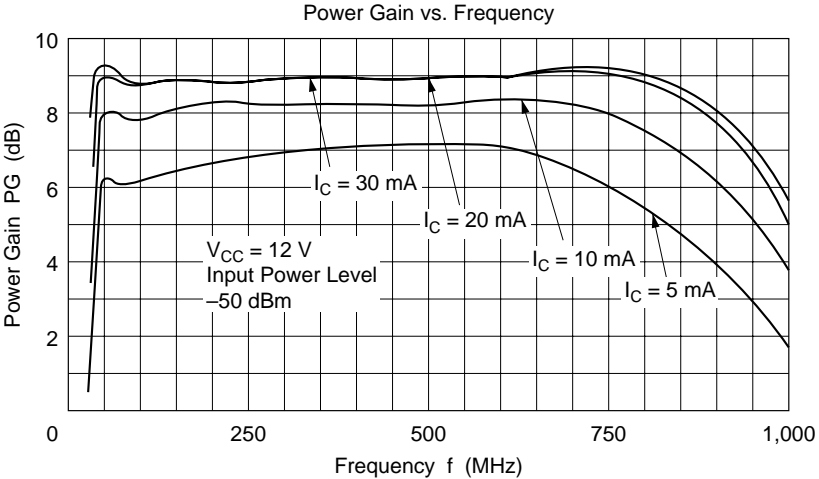
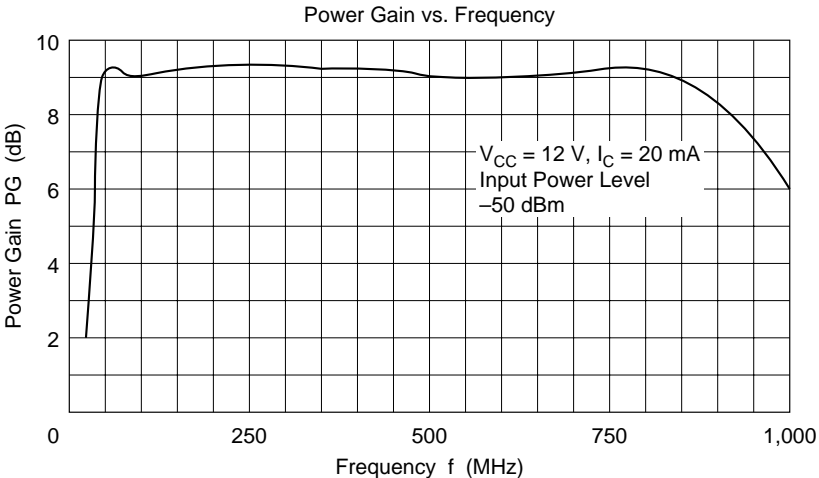
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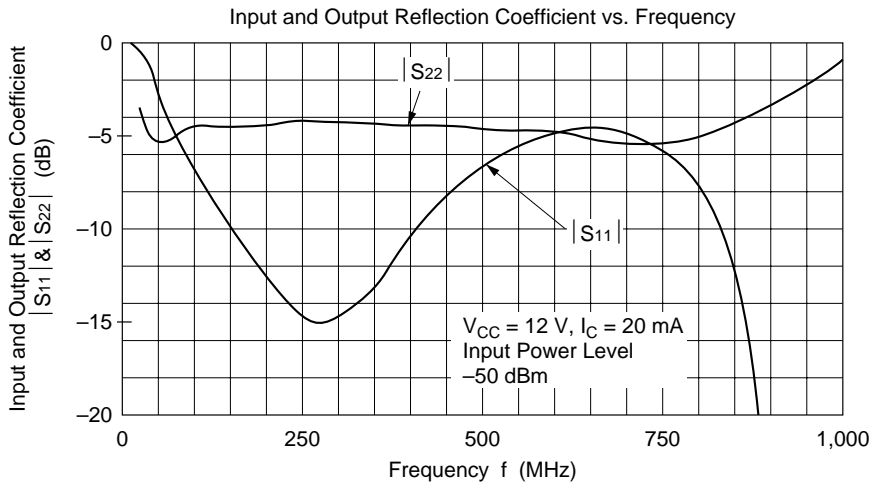


3rd I.M. Distortion vs. Collector Current

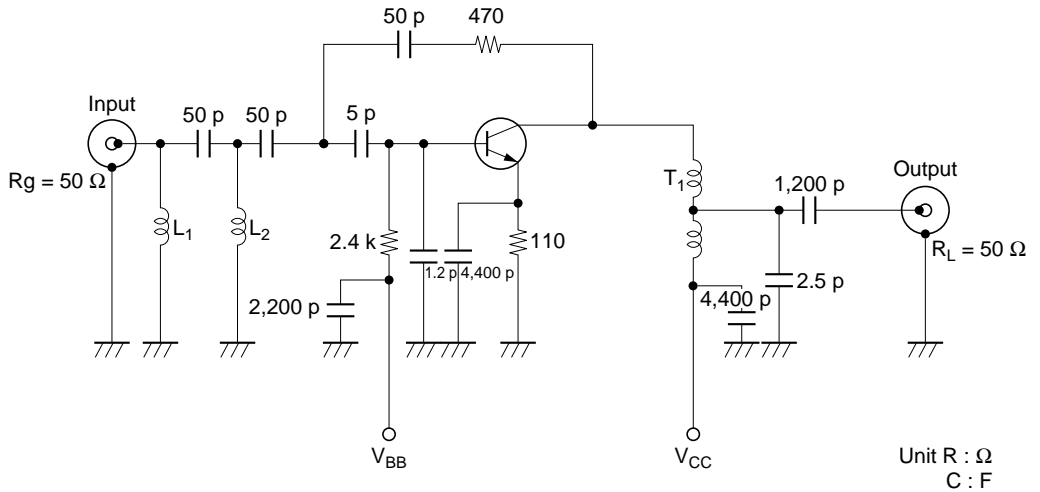








Vhf to Uhf Wide Band Amp. Circuit



Parts Specification

$L_1$  : Inside dia  $\phi 3.0$  mm,  $\phi 0.4$  mm Polyurethane Coated Copper wire 12 Turns.

$L_2$  : Inside dia  $\phi 3.5$  mm,  $\phi 0.5$  mm Polyurethane Coated Copper wire 9 Turns.

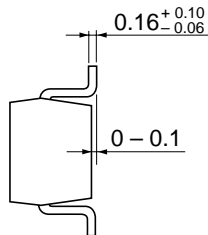
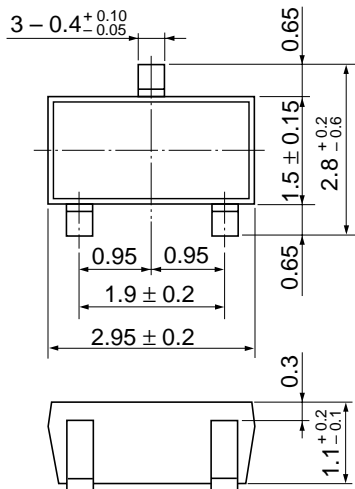
$T_1$  : Balance wind used Ferrite Core

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

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

Ratio Input to Output is 2 : 1





Hitachi Code	MPAK
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.011 g

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