



Description

The YC201 is a high performance GaAs HBT MMIC amplifier with an active bias network. The active bias network provides stable current over temperature and process Beta variations.

Designed to run directly from a 3.4V supply, the YC201 does not require a dropping resistor as compared to typical Darlington amplifiers.

The YC201 product is designed for high linearity 3.4V Gain block applications that require small size and minimal external components. It is internally matched to 50 Ω .

Applications

- ◆ PA Driver Amplifier
- ◆ Cellular, PCS, GSM, UMTS, LTE, 5G
- ◆ Wideband Instrumentation
- ◆ Wireless Data, Satellite Terminals

Features

- ◆ 20-4000MHz
- ◆ OIP3=30.3dBm @900MHz
- ◆ P1dB=15.3dBm @900MHz
- ◆ Gain=20.8dB @900MHz
- ◆ Current Variation/temp=0.048mA/°C
- ◆ Internally matched to 50 Ω
- ◆ SOT-89 Package
- ◆ RoHS Compliant/Lead-free

Electrical Specification

Parameter	Specification			Condition	Units
	Min.	Typ.	Max.		
Gain	19.8	20.8		900MHz	dB
	18.1	19.1		1950MHz	dB
	17.8	18.8		2140MHz	dB
Output P1dB	14.3	15.3		900MHz	dBm
	14.2	15.2		1950MHz	dBm
	14.0	15.0		2140MHz	dBm
Output IP3	28.3	30.3		900MHz	dBm
	24.9	26.9		1950MHz	dBm
	24.6	26.1		2140MHz	dBm
Input Return Loss		-18.0		1950MHz	dB
Output Return Loss		-19.8		1950MHz	dB
Reverse Isolation		-23.2		1950MHz	dB
Noise Figure	2.3	2.7		1950MHz	dB
Device Voltage		3.4			V
Device Current		36			mA
Thermal Resistance		63.1			°C/W

Notes:

1) Test conditions unless otherwise noted : VCC = +3.4 V, Temp. = +25 °C, Zo=50 Ω , OIP3: Pout = +0 dBm/tone, Δf = 1 MHz

Recommended Operating Condition

Parameter	Min	Typ	Max	Units
Device Voltage		3.4		V
Operating Temperature	-40	25	85	°C
Junction Temperature	-		182	°C

Absolute Maximum Ratings

Parameter	Rating	Units
Device Voltage	4.5	V
Supply Current	180	mA
Storage Temperature	-55~+150	°C
RF Input Power	15	dBm

Typical RF Performance

Frequency(MHz)	700	850	1227	1575	1850	Units
S21	21.1	20.9	20.4	19.9	19.3	dB
S11	-16.6	-16.8	-16.5	-16.8	-17.9	dB
S22	-15.7	-16.2	16.3	-17.2	-18.9	dB
Output P1dB	15.5	15.4	15.2	14.5	14.0	dBm
Output IP3	30.5	30.3	28.7	28.6	27.3	dBm
Noise Figure	2.0	2.5	1.9	2.0	2.3	dB

Frequency(MHz)	1960	2140	2350	2600	3500	Units
S21	19.1	18.8	18.4	17.7	16.0	dB
S11	-18.6	-19.5	-20.0	-20.0	-18.9	dB
S22	-20.3	-22.7	-28.4	-33.7	-16.2	dB
Output P1dB	14.1	14.2	13.7	13.2	11.9	dBm
Output IP3	26.9	26.1	25.5	25.0	16.7	dBm
Noise Figure	2.3	2.7	2.3	2.4	2.7	dB

MSL Rating

MSL Rating : Level 3
 Test : 260°C Convection Reflow
 Standard : JEDEC Standard IPC/JEDEC J-STD-020

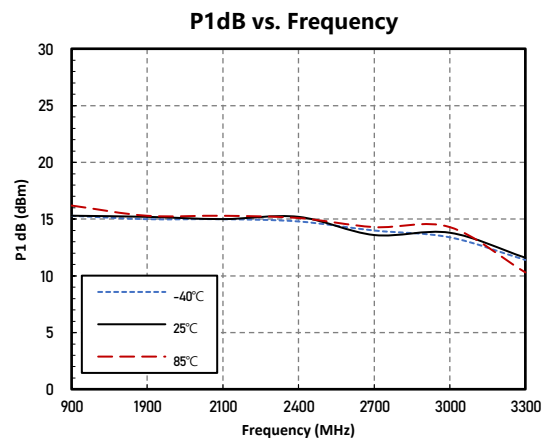
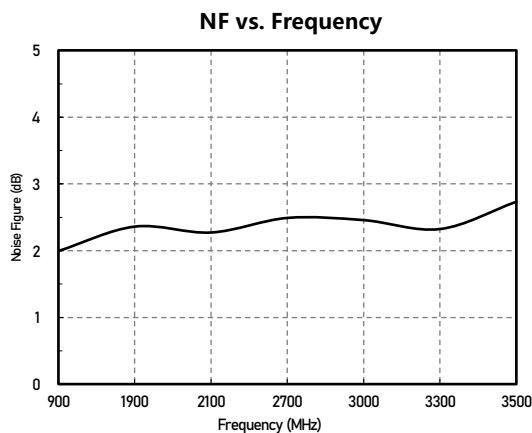
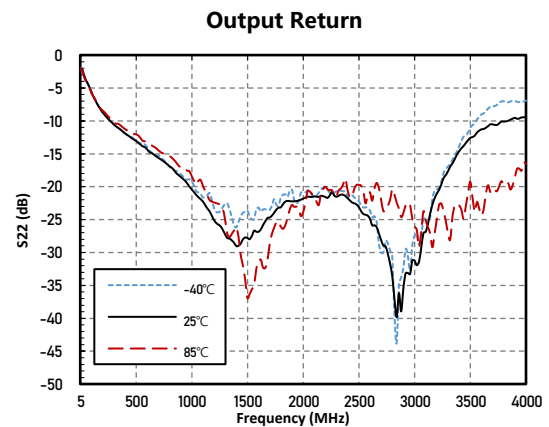
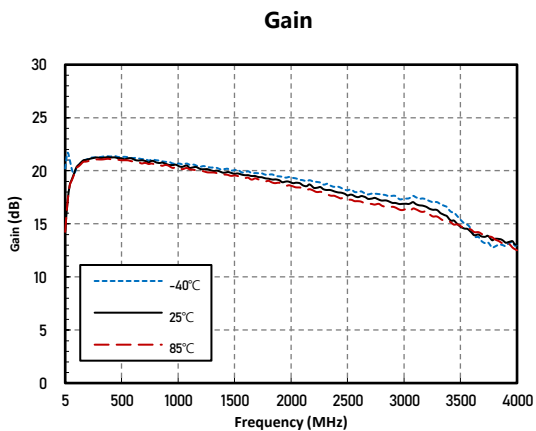
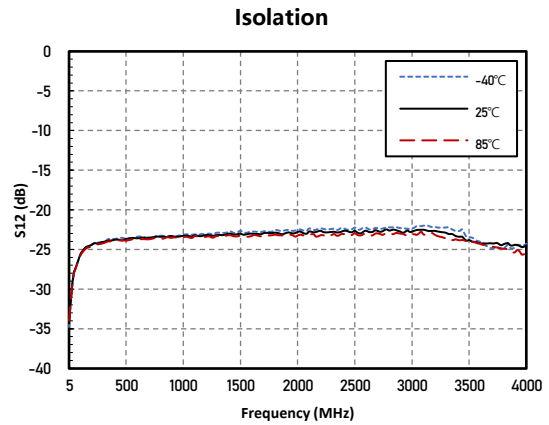
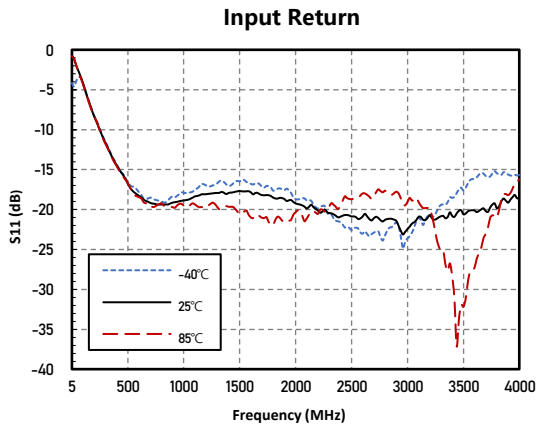
ESD Sensitivity Ratings

ESD Rating : Class 1C
 Test : Human Body Model (HBM)
 Standard : JEDEC Standard JS-001-2012



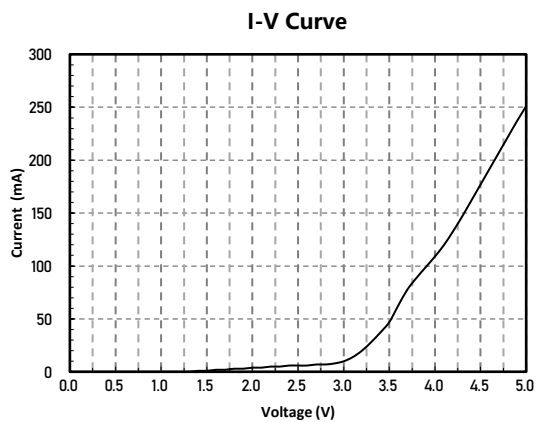
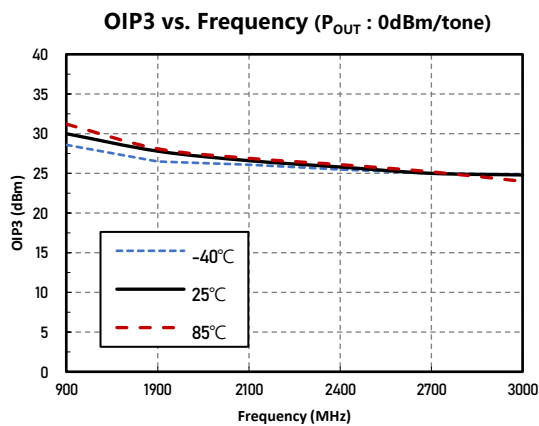
Performance Plots

$V_{CC} = +3.4V$, $I_C = 36mA$, $T = 25^\circ C$, $Z_O = 50\Omega$



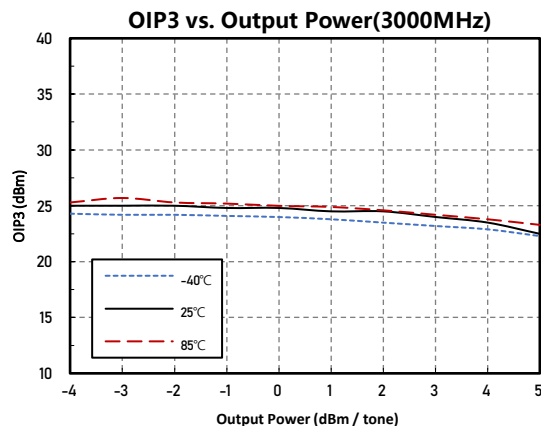
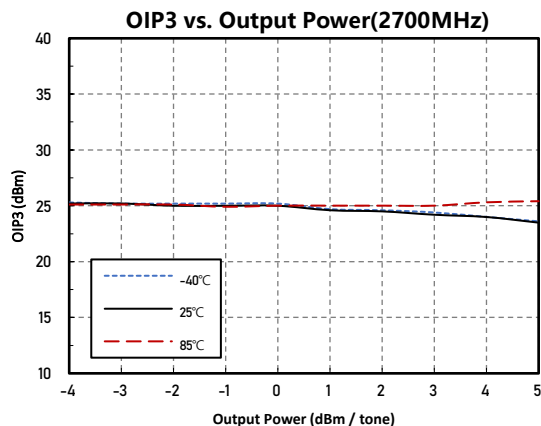
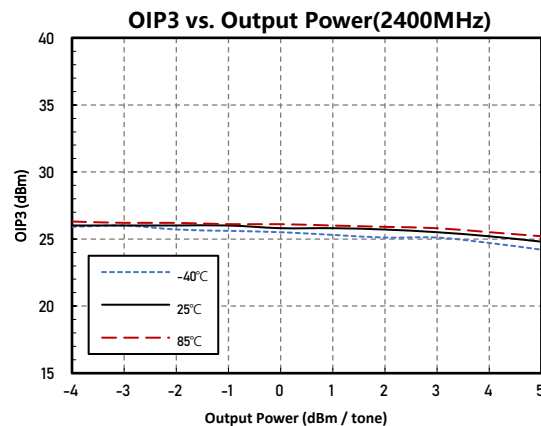
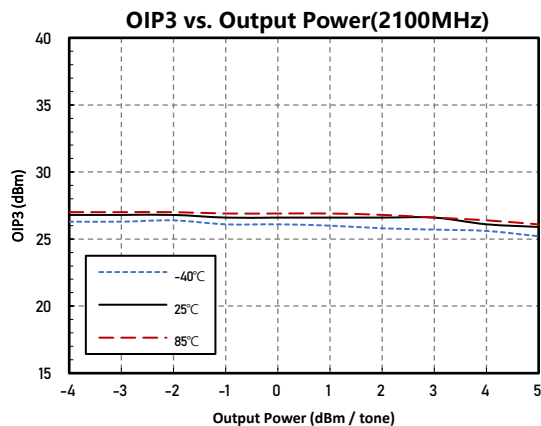
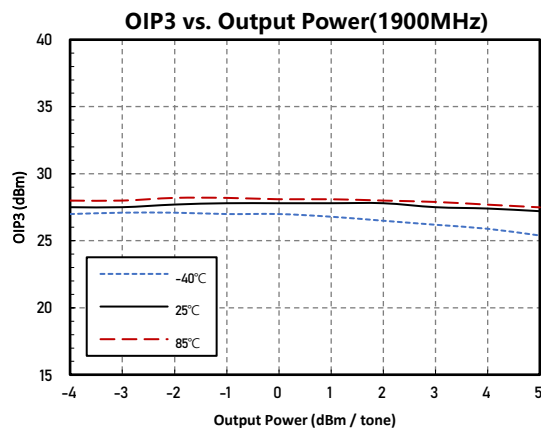
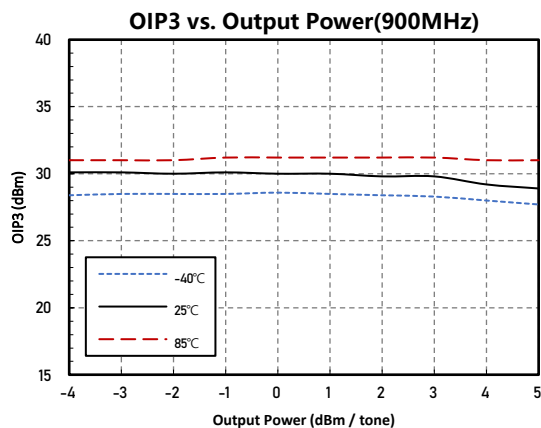
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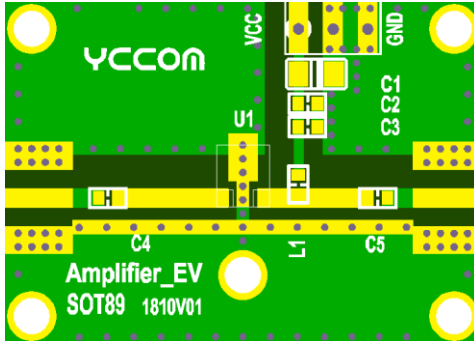


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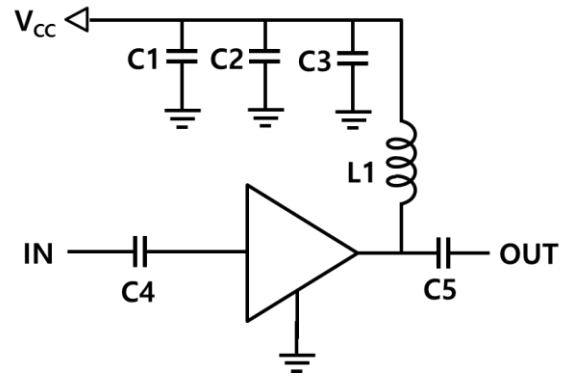


Evaluation Board PCB Information



- ① PCB: FR4
- ② RF width: 1.34 mm
- ③ PCB thick: 0.8 mm

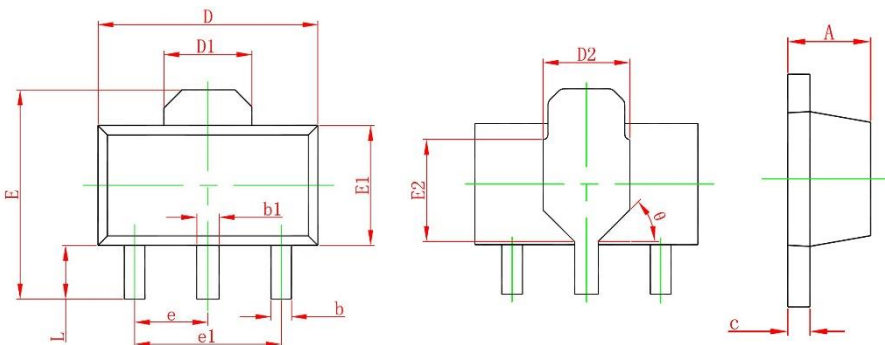
Application Circuit



Suggested Component Values for Key Application Frequencies

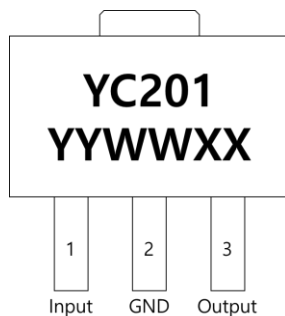
Component	Frequency(MHz)			
	20	500	500~2700	3500
L1	22uH	2.7uH	33nH	8.2nH
C4,C5	2.2uF	100nF	100pF	100pF
C1 / C2 / C3	10uF / 1000pF / 100pF			

Package Outline Drawing



SOT-89		
Symbol	Min	Max
A	1.400	1.600
b	0.320	0.520
b1	0.380	0.580
c	0.350	0.440
D	4.400	4.600
D1	1.550 REF.	
D2	1.750 REF.	
E	3.940	4.250
E1	2.300	2.600
E2	1.900 REF.	
e	1.500 TYP.	
e1	3.000 TYP.	
L	0.900	1.200
θ	45°	
All Dimensions in mm		

Package Marking



P/N : YC201
 YY : Year
 WW : Week
 XX : Wafer No.

PCB Land Pattern

