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FM Radio Tuner with VCO Using the 55GN01CA

Application Note

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Overview

This application note explains about ON Semiconductor's 55GN01CA which is used as a Voltage Controlled Oscillator (VCO) for FM Radio Tuner.

The 55GN01CA is used as a local oscillator in a tuning circuit of Radio and the oscillation frequency can be changed by voltage control of a Varactor diode.

The evaluation board is adjusted to Intermediate Frequency of 10.7MHz.

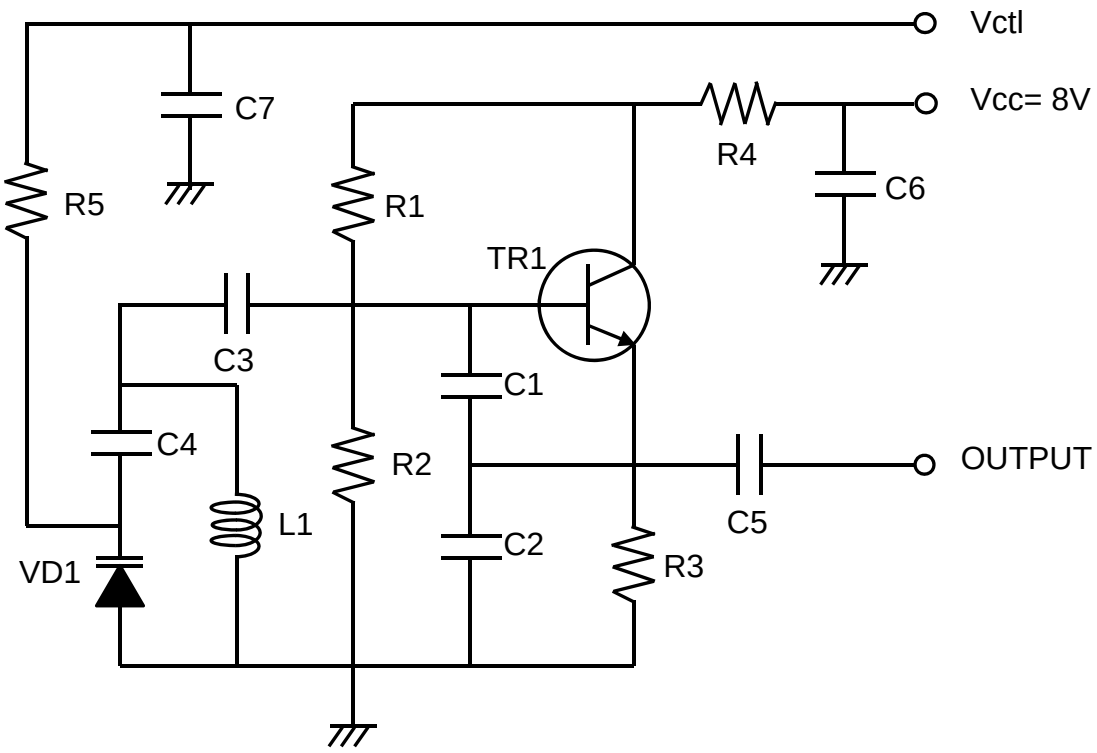
A standard material FR4 is used for the printed circuit board (PCB).

■Summary of Data

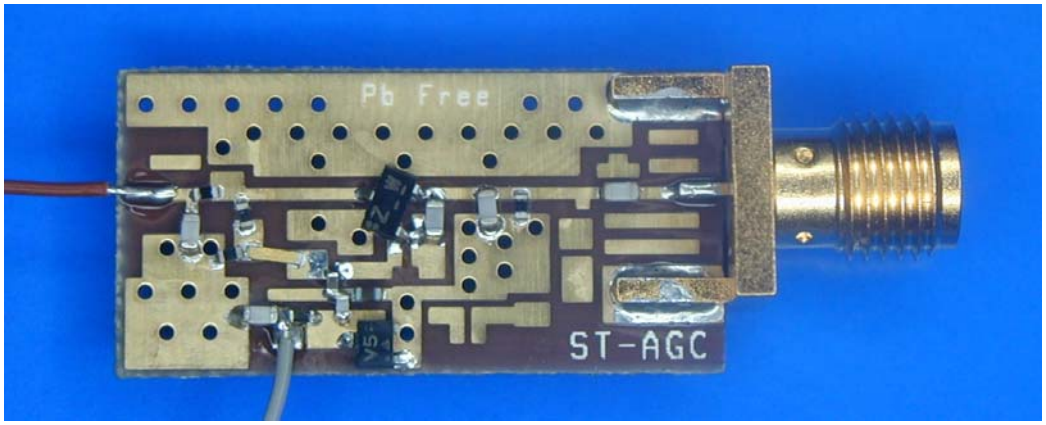
Ta = 25 °C, Vctl = 0 V to 8 V, Zo = 50 Ω

Parameter	Symbol	Condition	Result	Unit
DC Voltage	Vcc		8.0	V
DC Current	Idd		20.5	mA
Oscillating Power	Posc	f = 86.7 MHz	6.07	dBm
		f = 102.7 MHz	6.00	
		f = 118.7 MHz	5.57	

■Circuit Design



■Evaluation Board



■Bill of Materials

Item	Symbol	Value	Manufacture	Size
Bipolar-Tr.	TR1	55GN01CA	ON Semiconductor	SC-59
Varactor Diode	VD1	SVC704	ON Semiconductor	SC-70
Capacitor	C1	68 pF	Murata GRM155	1608
	C2	68 pF	Murata GRM155	1608
	C3	68 pF	Murata GRM155	1005
	C4	1000 pF	Murata GRM155	1005
	C5,C6,C7	2200 pF	Murata GRM155	1608
Resistor	R1	2.2 kΩ	Various	1005
	R2	2.2 kΩ	Various	1005
	R3	100 Ω	Various	1005
	R4	100 Ω	Various	1005
	R5	30 kΩ	Various	1005
Inductor	L1	56 nH	TDK GLQ1005	1005
Material		FR-4		25 x 13 mm

■Measurement Results

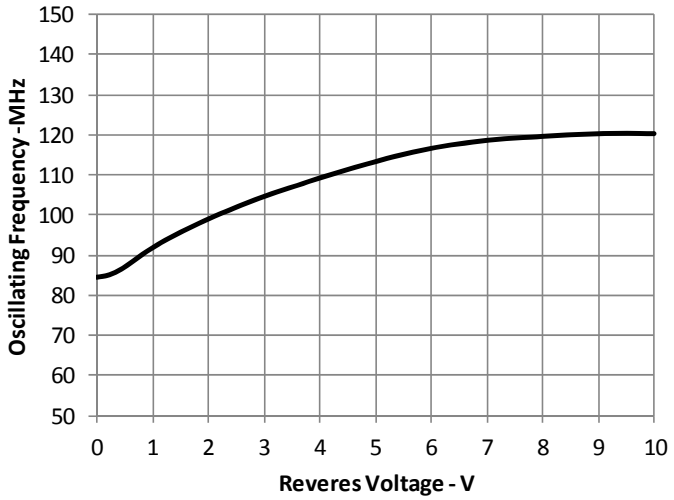


Figure 1 Oscillating Frequency vs. Reveres Voltage

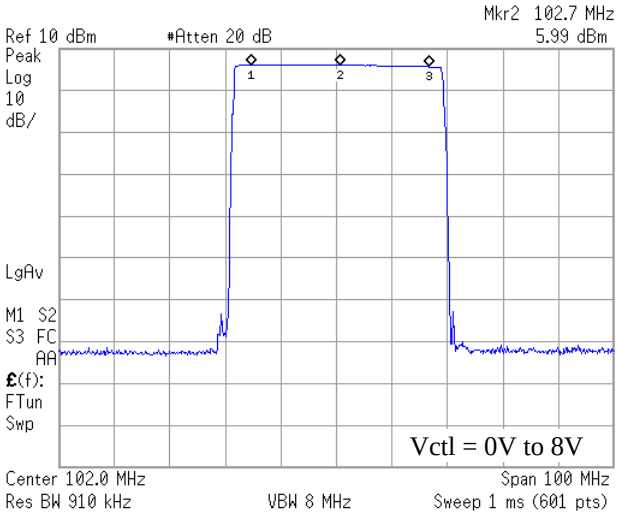


Figure 2 Oscillating Power vs. Frequency