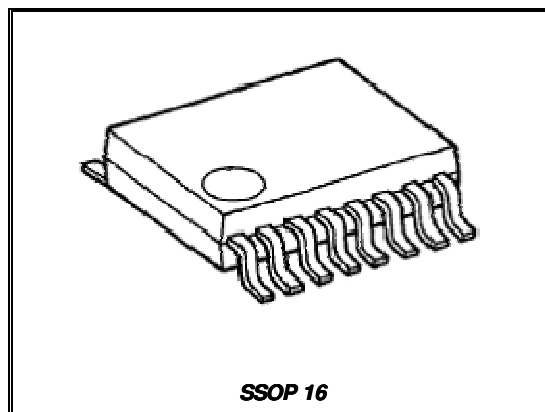


## DESCRIPTION

GT3136 is an FM IF detector IC, which contains Mixer, IF Amplifier, RSSI circuit, Quadrature Detector and Noise Detector.

## FEATURES

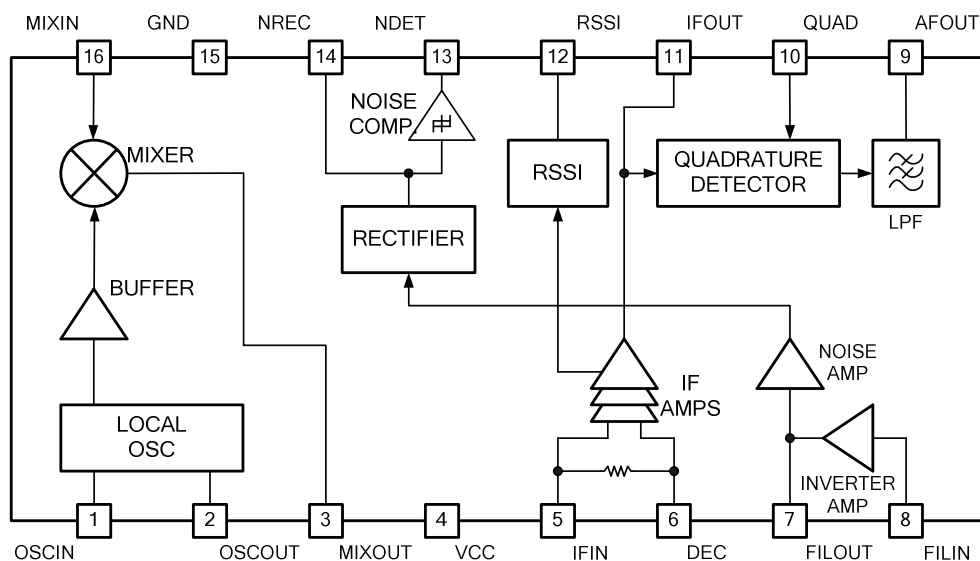
- Low operating voltage :  $V_{cc} = 1.8 \sim 5.5V$
- Operating frequency :  $10 \sim 100MHz$
- Excellent temperature characteristics
- High sensitivity  
12dB sensitivity : 5dBuV (11dBuV EMF)
- Quadrature detector,  
both ceramic and coil discriminators are usable
- High intercept point : 98dBuV
- Noise detection circuit
- RSSI function
- SSOP16 package



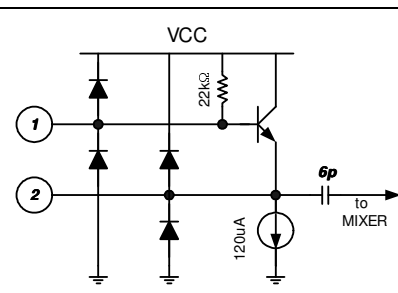
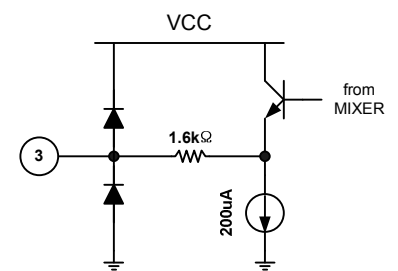
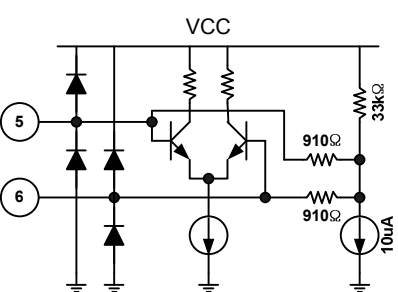
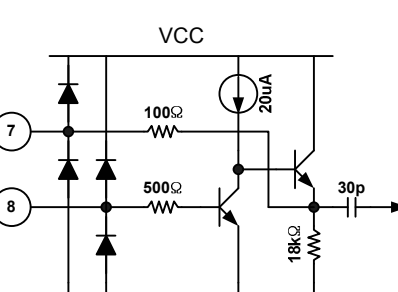
## APPLICATIONS

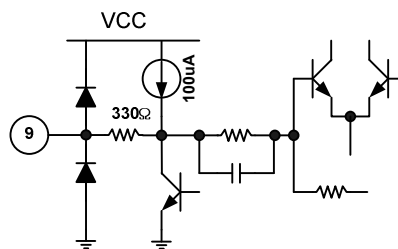
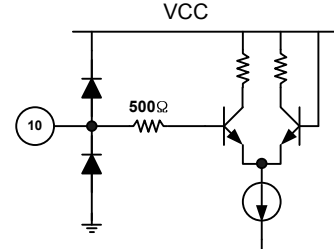
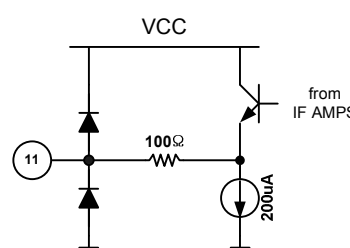
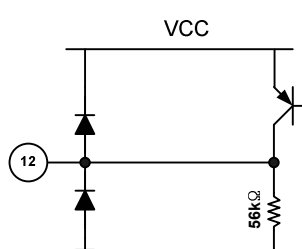
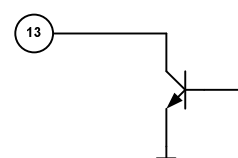
- Cordless phone, walkie-talkie and shortwave radio set
- Other wireless communication systems

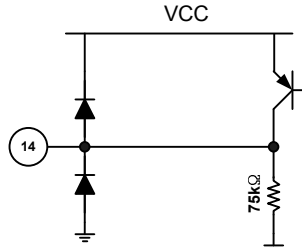
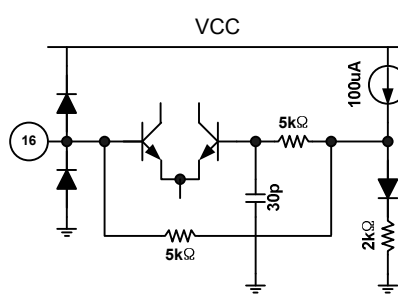
## BLOCK DIAGRAM



**PIN DESCRIPTION**

Pin No.	Symbol	Function Description	Internal Equivalent Circuit
1	OSCIN	Local Oscillator base input	
2	OSCOUT	Local Oscillator emitter input	
3	MIXOUT	Mixer output (Output impedance : 1.8kΩ)	
4	VCC	Power Supply	
5	IFIN	IF Amplifier input (Input impedance : 1.8kΩ)	
6	DEC	Decoupling input for bias.	
7	FILOUT	Inverter Amp. output	
8	FILIN	Inverter Amp. input	

Pin No.	Symbol	Function Description	Internal Equivalent Circuit
9	AFOUT	Demodulated Signal output (Output impedance : 360Ω)	
10	QUAD	Phase shift signal input of Quadrature Detector.	
11	IFOUT	IF Amplifier output.	
12	RSSI	RSSI output	
13	NDET	Noise Comparator output	

Pin No.	Symbol	Function Description	Internal Equivalent Circuit
14	NREC	Rectifier output	
15	GND	Ground	
16	MIXIN	Mixer input	

DC voltage for pins (Typical values for reference)

( $V_{CC}=2V$ )

Pin No.	Pin Name	Voltage	Pin No.	Pin Name	Voltage
1	OSCIN	1.92	9	AFOUT	-
2	OSCOU	1.33	10	QUAD	2.00
3	MIXOUT	0.65	11	IFOUT	1.09
4	VCC	2.00	12	RSSI	-
5	IFIN	1.62	13	NDET	-
6	DEC	1.62	14	NREC	-
7	FILOUT	0.73	15	GND	0.00
8	FILIN	0.68	16	MIX IN	0.96

(UNIT : V)

**ELECTRICAL CHARACTERISTICS**

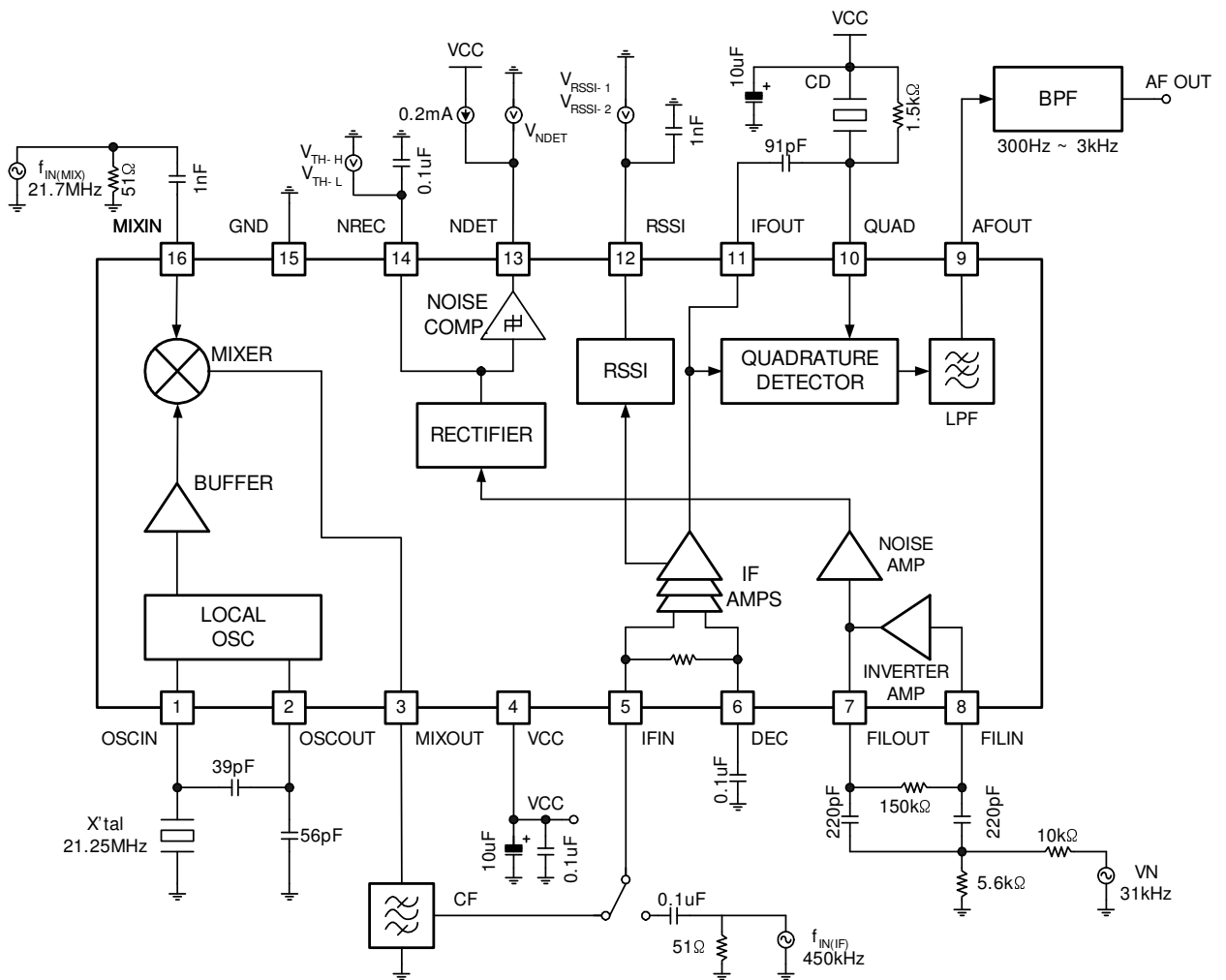
Characteristic	Symbol	Rating	Unit
Supply Voltage	$V_{CC}$	7	V
Power Dissipation	$P_D$	560	mW
Operation Temperature	$T_{opr}$	-30 ~ 85	°C
Storage Temperature	$T_{stg}$	-50 ~ 150	°C

Unless otherwise specified,

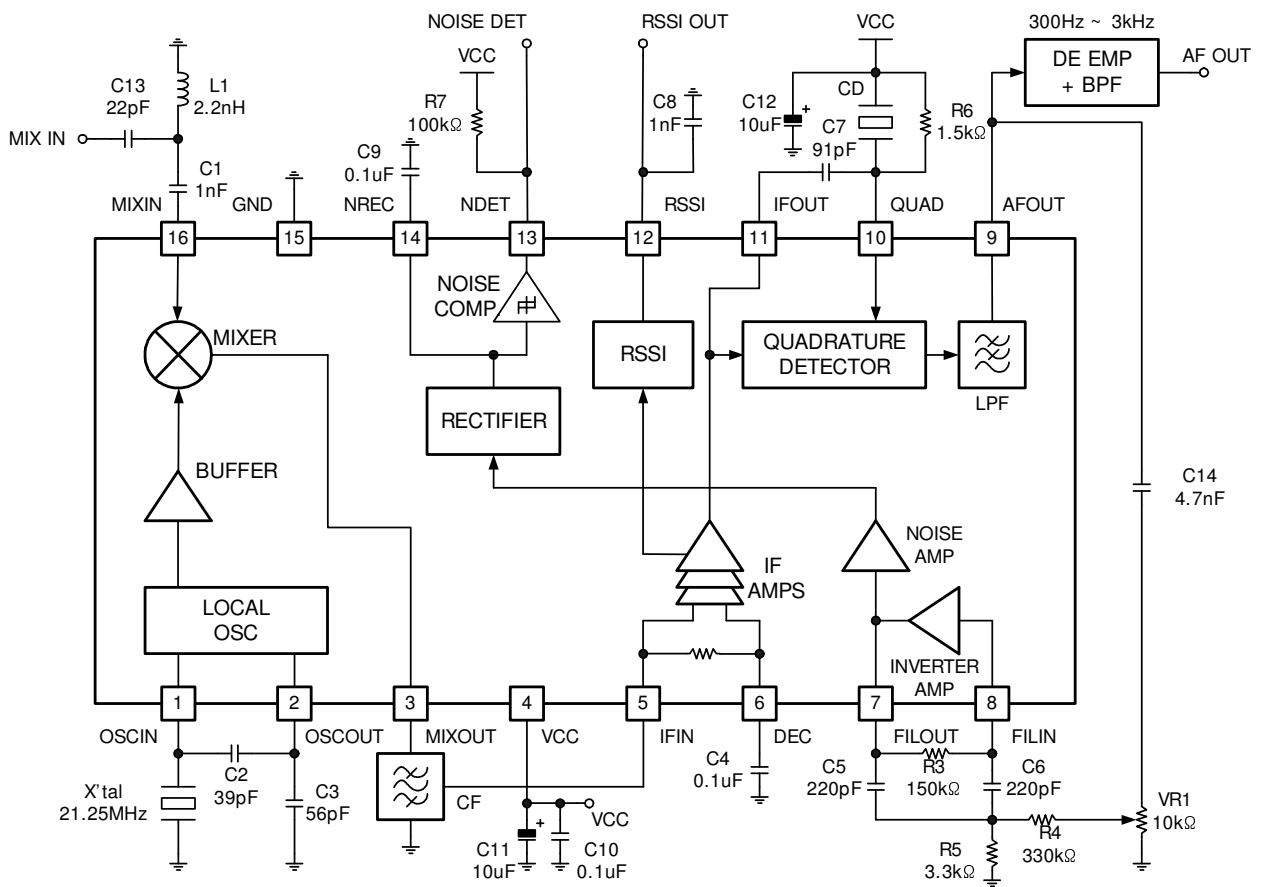
( $V_{CC} = 2.0V$ ,  $F_{IN(MIX)} = 21.7MHz$ ,  $f_{IN(IF)} = 450kHz$ ,  $\Delta f = \pm 1.5kHz$ ,  $f_{MOD} = 1kHz$ ,  $T_a = 25^\circ C$ )

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Power Supply Voltage	$V_{CC}$	-	1.8	2	5.5	V
Current Consumption	$I_{CCQ}$	-	-	2.9	-	mA
Mixer Conversion Gain	$G_{VC}$	Measured through ceramic filter. [ $V_{IN(MIX)} = 46dBuV$ ]	15	18	21	dB
Mixer Intercept Point	$P_{IM}$	Input 50Ω	-	98	-	dBuV
Mixer Input Impedance	$R_{IN(MIX)}$	-	-	4.7	-	kΩ
	$C_{IN(MIX)}$		-	3.1	-	pF
Mixer Output Resistance	$R_{O(MIX)}$	-	1.2	1.8	2.4	kΩ
12dB Sensitivity	12dB SN	-	-	5	-	dBuV
Demodulation Output Level	$V_{OD}$	$V_{IN(IF)} = 80dBuV$	-	110	-	mVrms
SN Ratio	SN	$V_{IN(IF)} = 80dBuV$	43	61	-	dB
AM Rejection Ratio	AMR	$V_{IN(IF)} = 80dBuV$ , AM = 30%	-	40	-	dB
IF AMP. Input Resistance	$R_{IN(IF)}$	-	1.2	1.8	-	kΩ
RSSI Output Voltage	$V_{RSSI-1}$	$V_{CC} = 3V$	$V_{IN(IF)} = 30dBuV$	450	-	mV
	$V_{RSSI-2}$			$V_{IN(IF)} = 100dBuV$	2.1	-
Noise Detection Output Voltage	$V_{NDET}$	I SINK = 0.2mA	-	0.1	0.5	V
Noise Detection Output Leak Current	$I_{LEAK}$	$V_{NREC} = 0.6V$ , $V_{NDET} = 2V$	-	0	5	uA
Noise Detection Level	"H" Level	$V_{TH-H}$	-	0.5	0.7	V
	"L" Level	$V_{TH-L}$		0.3	0.4	

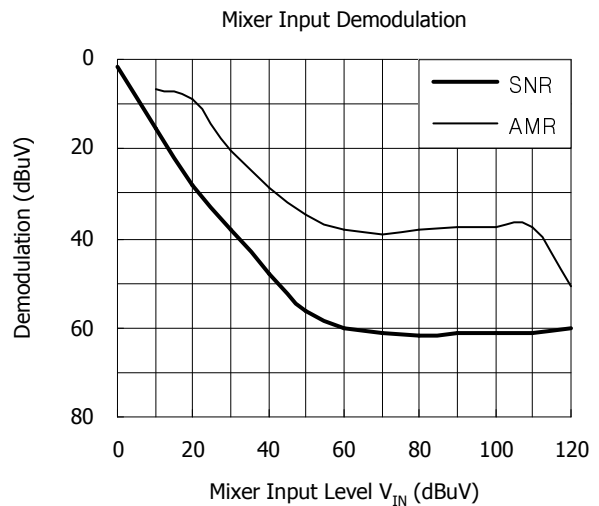
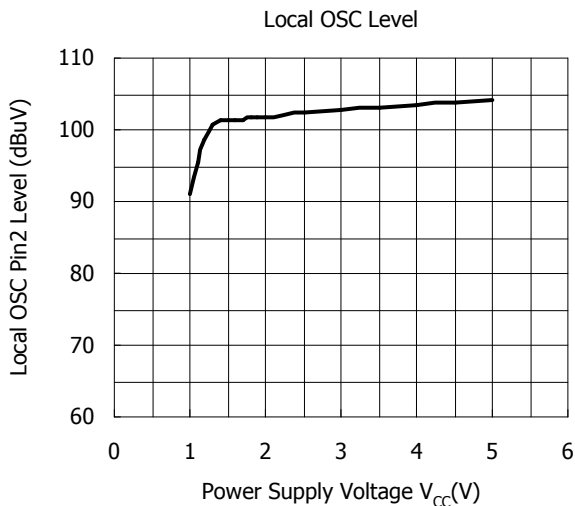
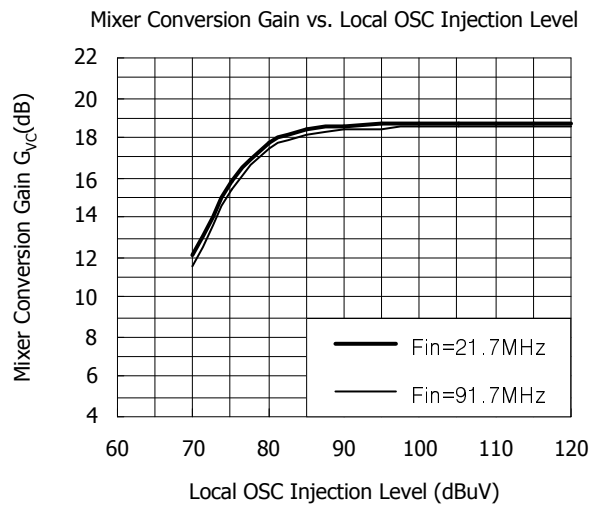
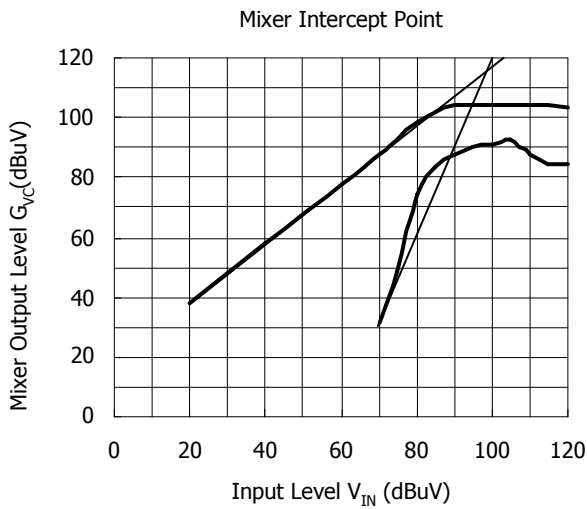
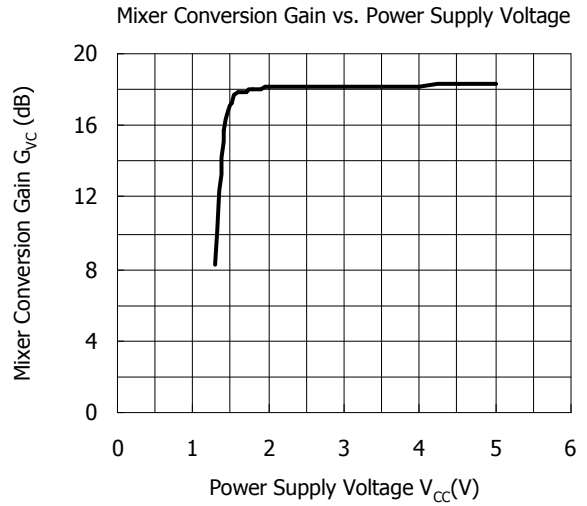
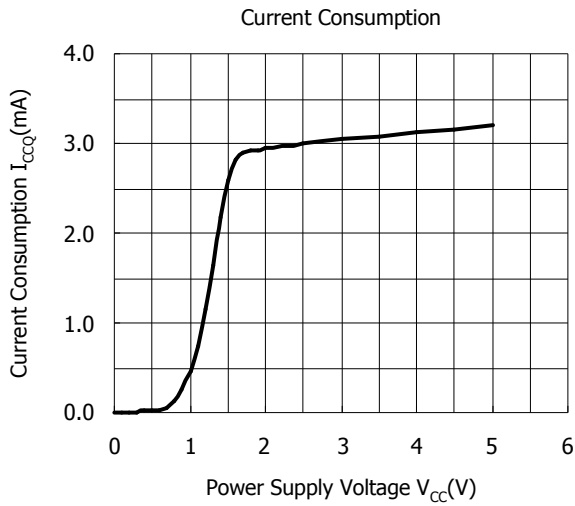
TEST CIRCUIT



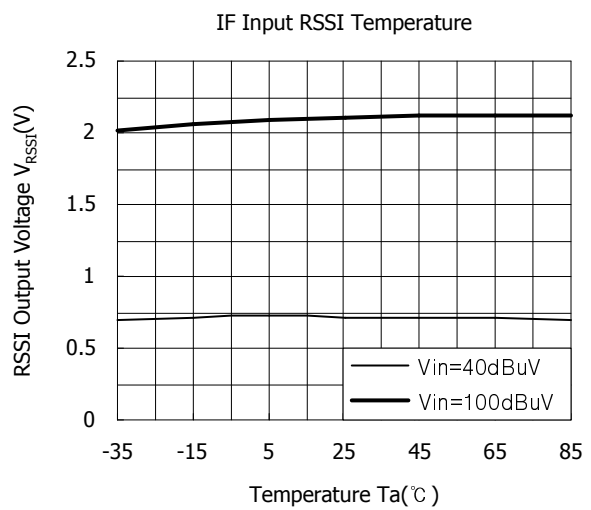
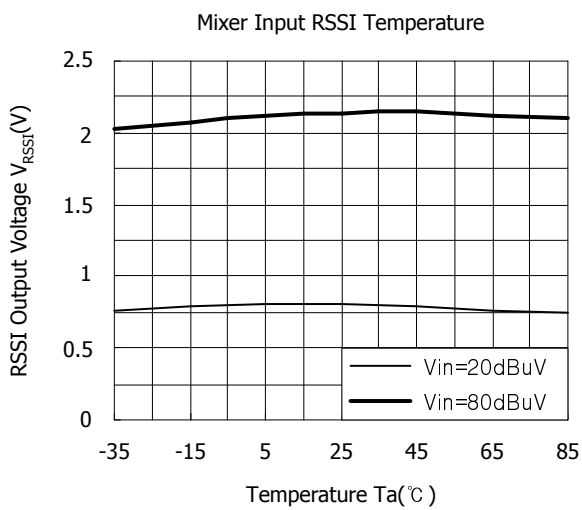
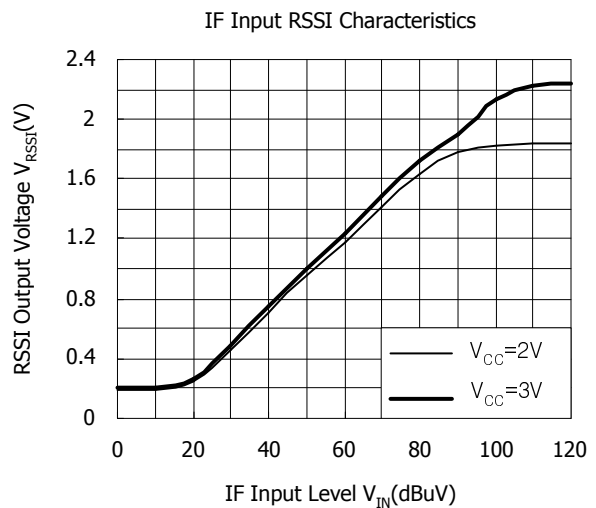
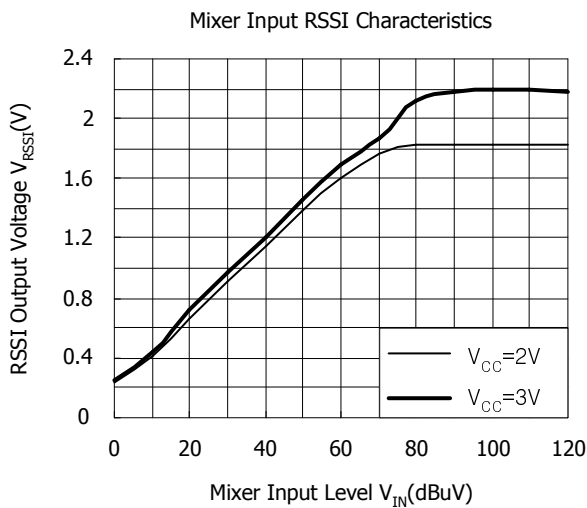
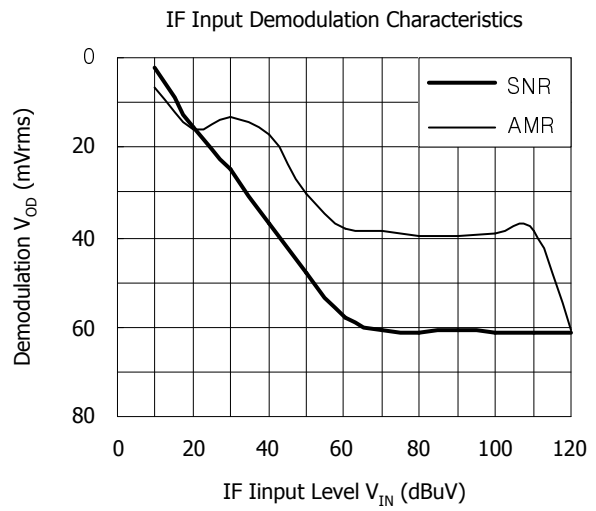
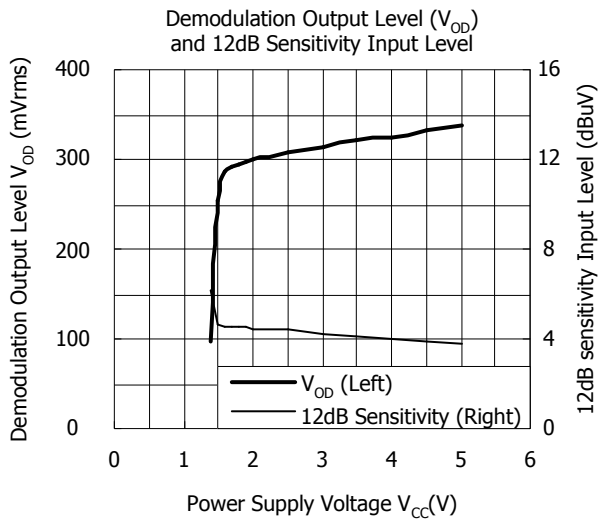
APPLICATION CIRCUIT

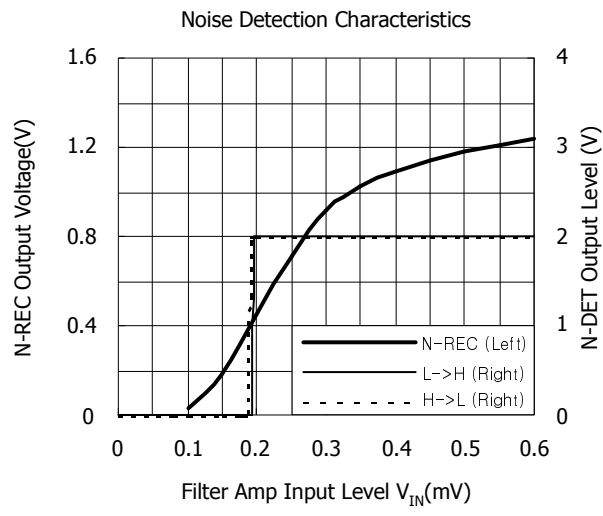


**ELECTRICAL CHARACTERISTIC CURVES**

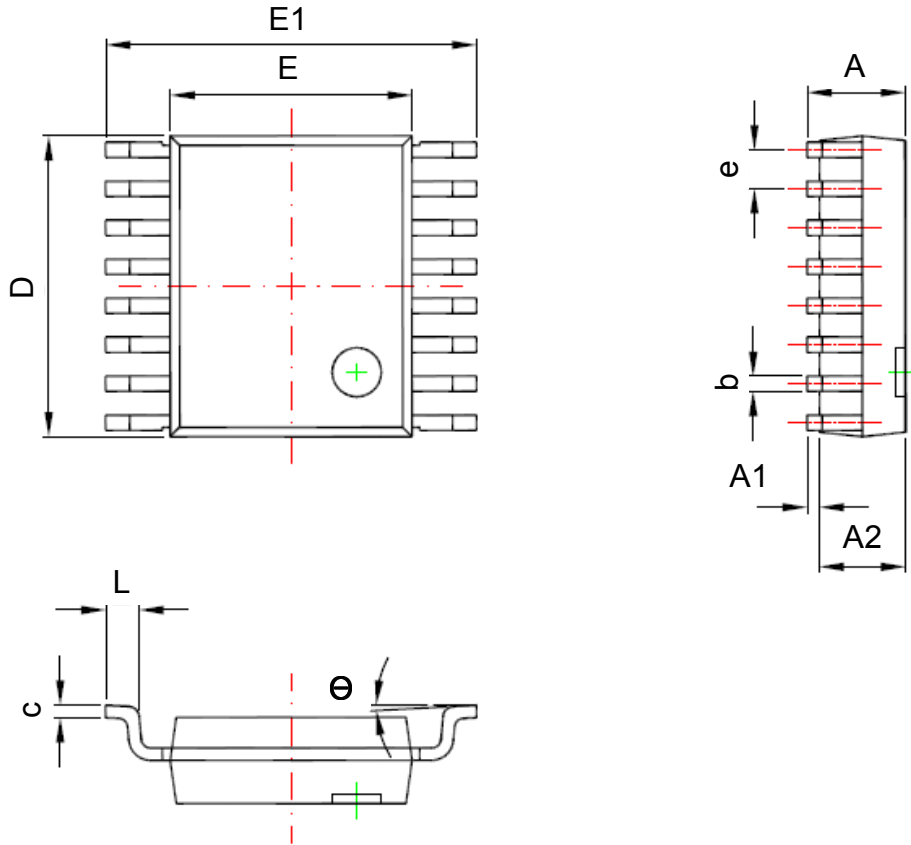








PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions in millimeter		Dimensions in inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.200	0.300	0.008	0.012
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	0.635(BSC)		0.025(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°