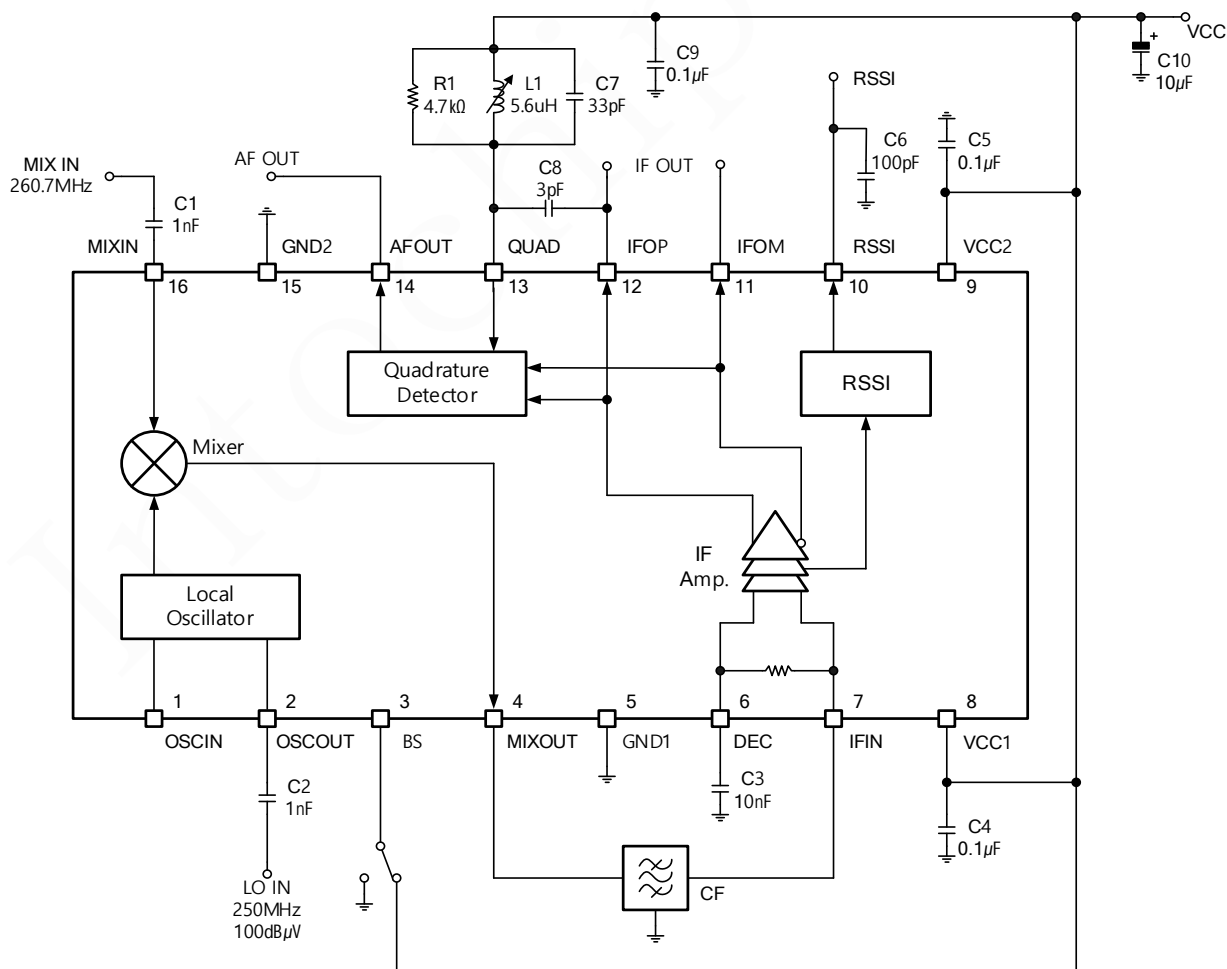


The DHF810 is a wide-band IF detector IC that can be operating at 10.7MHz. It consists of high-speed mixer, IF amplifier, RSSI circuit and quadrature detector. It is available in a 16-pin TSSOP plastic package.

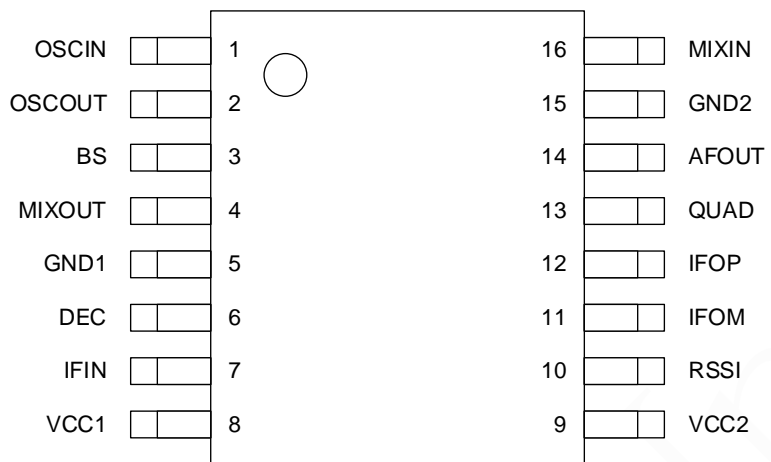
Features

- Low operating voltage (2.3V ~ 5.5V)
- Wide mixer operating frequency (20MHz to 300MHz)
- Excellent temperature characteristics
- High sensitivity
- RSSI function
- Battery save function
- TSSOP16 package (Pb-free and RoHS compliant)

Block Diagram & Application Circuit Example



Pin Description



| Pin No. | Mnemonic | Description | Internal Equivalent Circuit |
|---------|----------|--|-----------------------------|
| 1 | OSCIN | Local oscillator input. | |
| 2 | OSCOUT | Local oscillator output. | |
| 3 | BS | Battery save input. Normal operation state : High Battery save state : Low | |
| 4 | MIXOUT | Mixer output. (Output impedance is around 330Ω) | |
| 5 | GND1 | Ground. | |

| Pin No. | Mnemonic | Description | Internal Equivalent Circuit |
|---------|----------|---|-----------------------------|
| 6 | DEC | Decoupling input for bias | |
| 7 | IFIN | IF amplifier input (Input impedance is around 1.8kΩ) | |
| 8 | VCC1 | Power supply | |
| 9 | VCC2 | Power supply | |
| 10 | RSSI | RSSI output. | |
| 11 | IFOM | IF Amplifier output. IFOP and IFOM are in opposite phases. | |
| 12 | IFOP | | |
| 13 | QUAD | Phase shift signal input of quadrature detector. | |

| Pin No. | Mnemonic | Description | Internal Equivalent Circuit |
|---------|----------|--|-----------------------------|
| 14 | AFOUT | Demodulated signal output (Output impedance is around 360Ω) | |
| 15 | GND2 | Ground. | |
| 16 | MIXIN | Mixer input. | |

Absolute Maximum Ratings

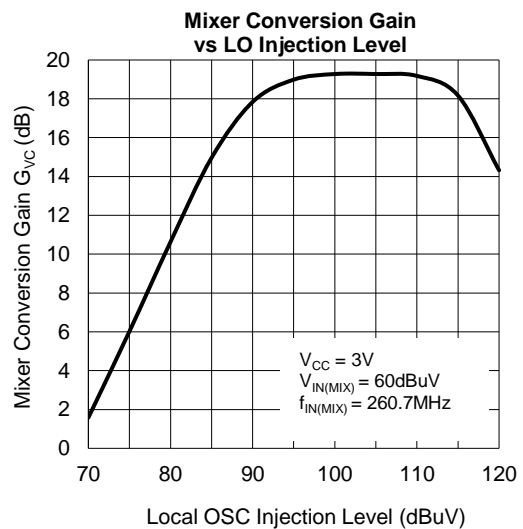
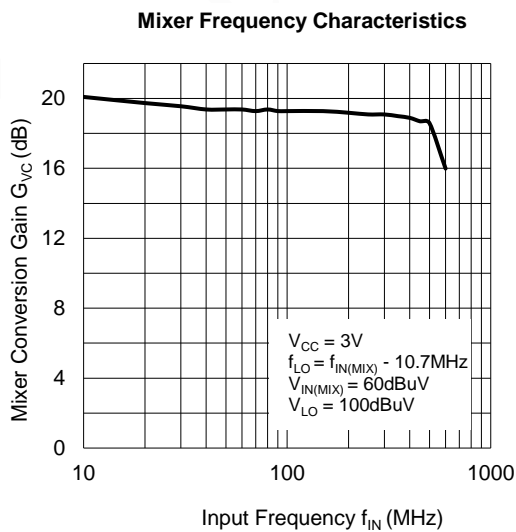
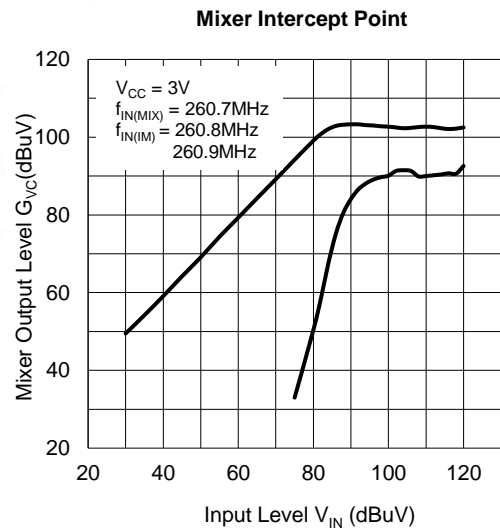
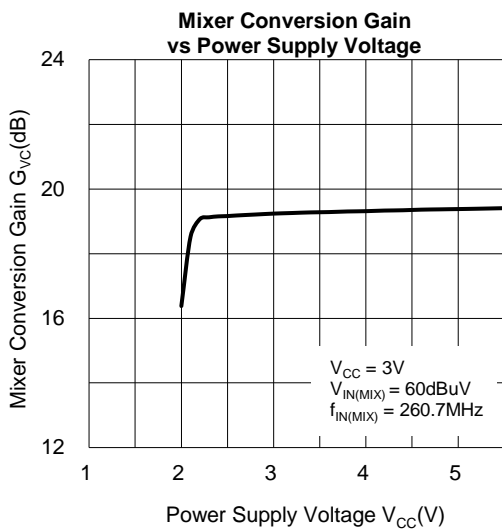
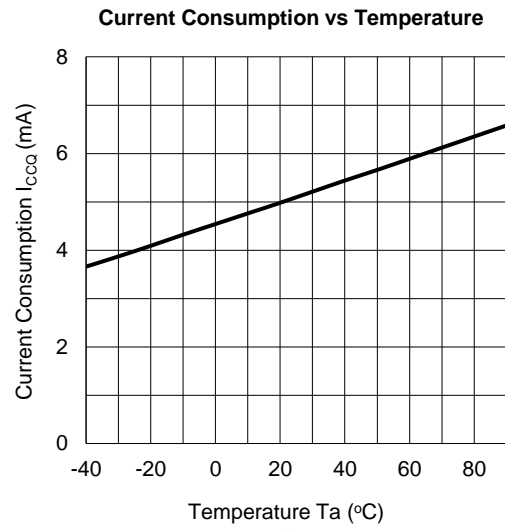
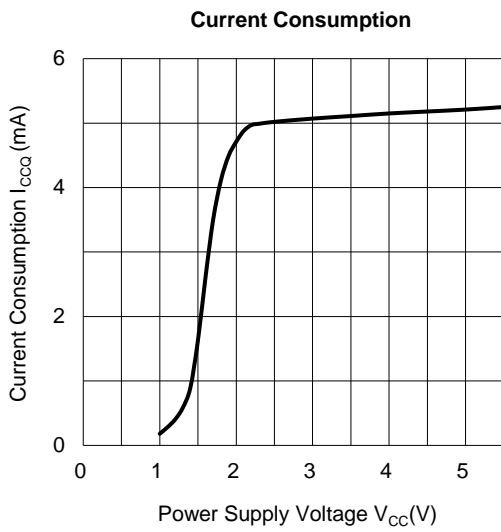
| Parameter | Symbol | Value | Unit |
|-----------------------------|-----------------|-------------|------|
| Power Supply Voltage | V _{CC} | -0.3 to 7.0 | V |
| Operating Temperature Range | T _{OP} | -40 to +85 | °C |
| Storage Temperature Range | T _{ST} | -50 to +150 | °C |

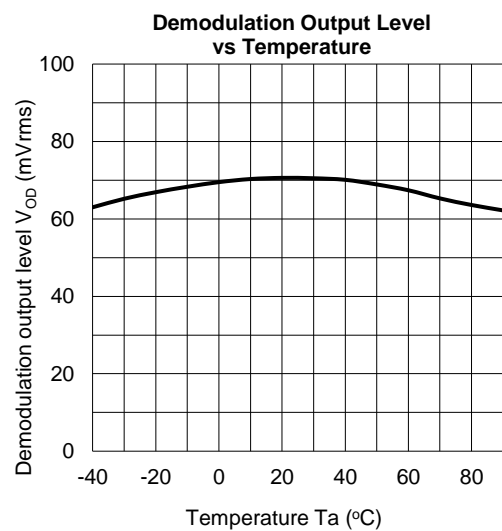
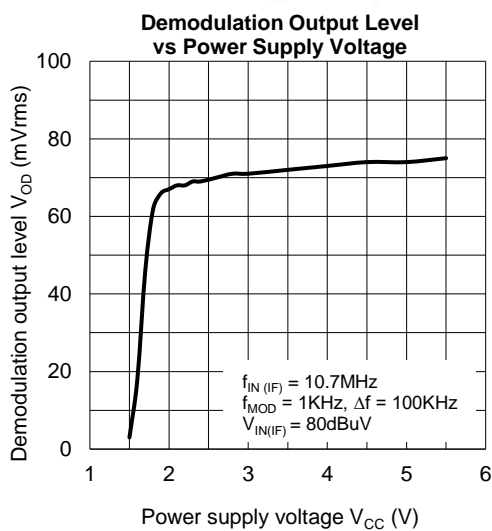
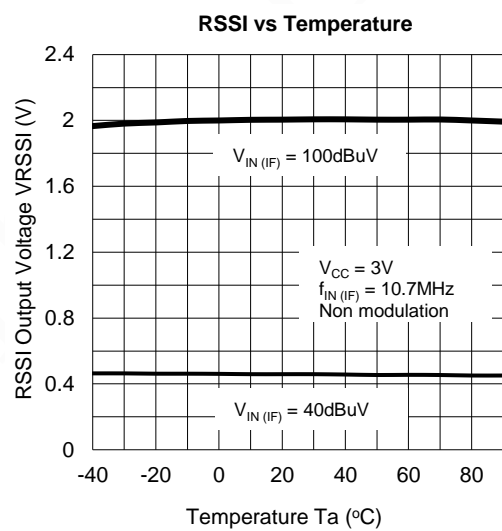
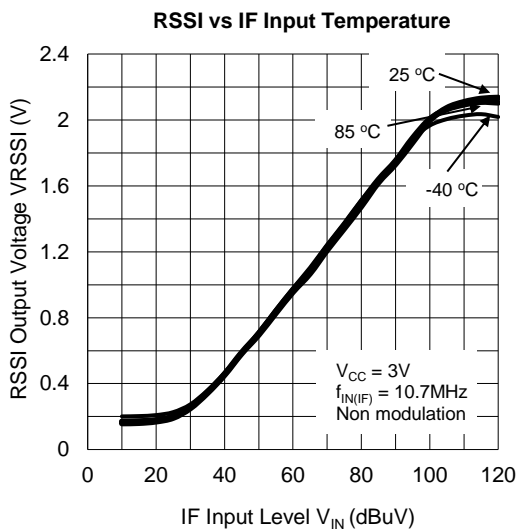
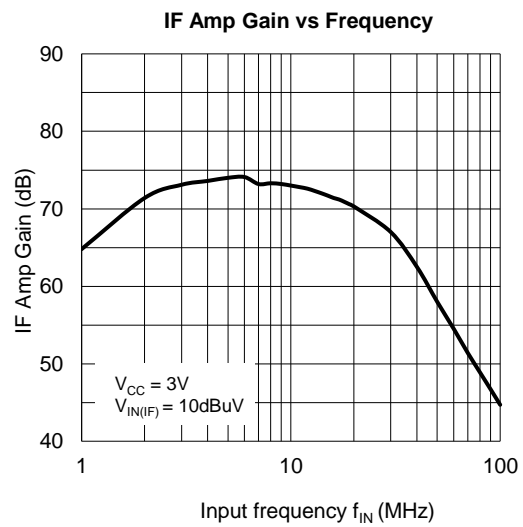
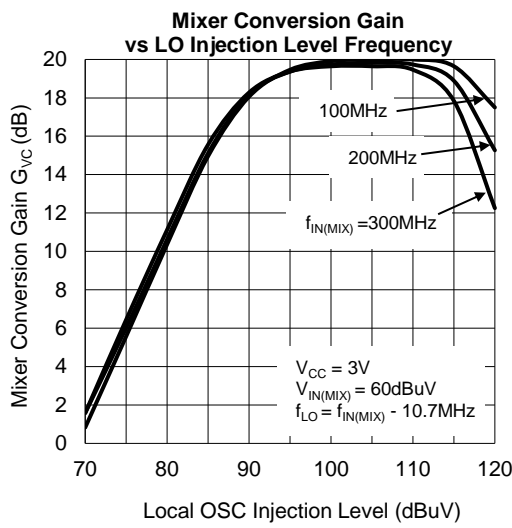
Electrical Characteristics

(V_{CC}=3V, f_{IN(MIX)} = 260.7MHz, f_{IN(LO)} = 250MHz, f_{IN(IF)} = 10.7MHz, Δf = ±100kHz, f_{MOD} = 1kHz, Ta=25°C)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|-----------------------------|-----------------------|---|------|------|------|-------------------|
| Power Supply Voltage | V _{CC} | - | 2.3 | 3 | 5.5 | V |
| Power Supply Current | I _{CCQ} | - | 4.1 | 5.1 | 6.1 | mA |
| Battery Save Current | I _{CCQ (BS)} | BS = 0V | - | - | 10 | uA |
| BS High Level Input Voltage | V _H | Battery Save Input | 2 | - | 5.5 | V |
| BS Low Level Input Voltage | V _L | Battery Save Input | 0 | - | 0.4 | V |
| Mixer Operating Frequency | f _{MIX} | - | 20 | - | 300 | MHz |
| Mixer Conversion Gain | G _{VC} | V _{IN(MIX)} = 60dBuV | 15 | 19 | 23 | dB |
| Mixer Intercept Point | P _{IM} | - | - | 95 | - | dBuV |
| Mixer Output Resistance | R _{O (MIX)} | - | - | 330 | - | Ω |
| Mixer 1dB Compression Level | D _{R (MIX)} | Mixer Input Level at G _{VC} 1dB down | - | 82 | - | dBuV |
| LO Operating Frequency | f _{LO} | - | 20 | - | 120 | MHz |
| LO Input Level | V _{LO} | - | - | 100 | - | dBuV |
| IF AMP. Operating Frequency | f _{IF} | - | 4 | - | 15 | MHz |
| IF AMP. Gain | G _V | - | - | 73 | - | dB |
| IF AMP. Input Resistance | R _{IN (IF)} | - | - | 330 | -- | Ω |
| IF AMP. Output Level | V _{O (IF)} | - | 0.4 | 0.5 | 0.6 | V _{P-P} |
| RSSI Output Voltage 1 | V _{RSSI1} | No Input | - | 0.15 | 0.4 | V |
| RSSI Output Voltage 2 | V _{RSSI2} | V _{IN (IF)} = 70dBuV | 1.0 | 1.2 | 1.4 | V |
| RSSI Output Voltage 3 | V _{RSSI3} | V _{IN (IF)} = 100dBuV | 1.8 | 2.0 | 2.2 | V |
| RSSI Dynamic Range | V _{D (RSSI)} | - | - | 70 | - | dB |
| RSSI Output Resistance | R _{O (RSSI)} | - | 12 | 15 | 18 | kΩ |
| Demodulation Output Level | V _{OD} | V _{IN(IF)} = 80dBuV | 50 | 70 | 90 | mV _{RMS} |
| Demodulation Frequency | f _{DET} | - | - | 100 | - | KHz |
| 12dB Sensitivity | 12dB SN | - | - | 14 | - | dBuV |
| SN Ratio | SN | V _{IN(IF)} = 80dBuV | - | 65 | - | dB |
| AM Rejection Ratio | AMR | V _{IN(IF)} = 80dBuV, AM = 30% | - | 40 | - | dB |

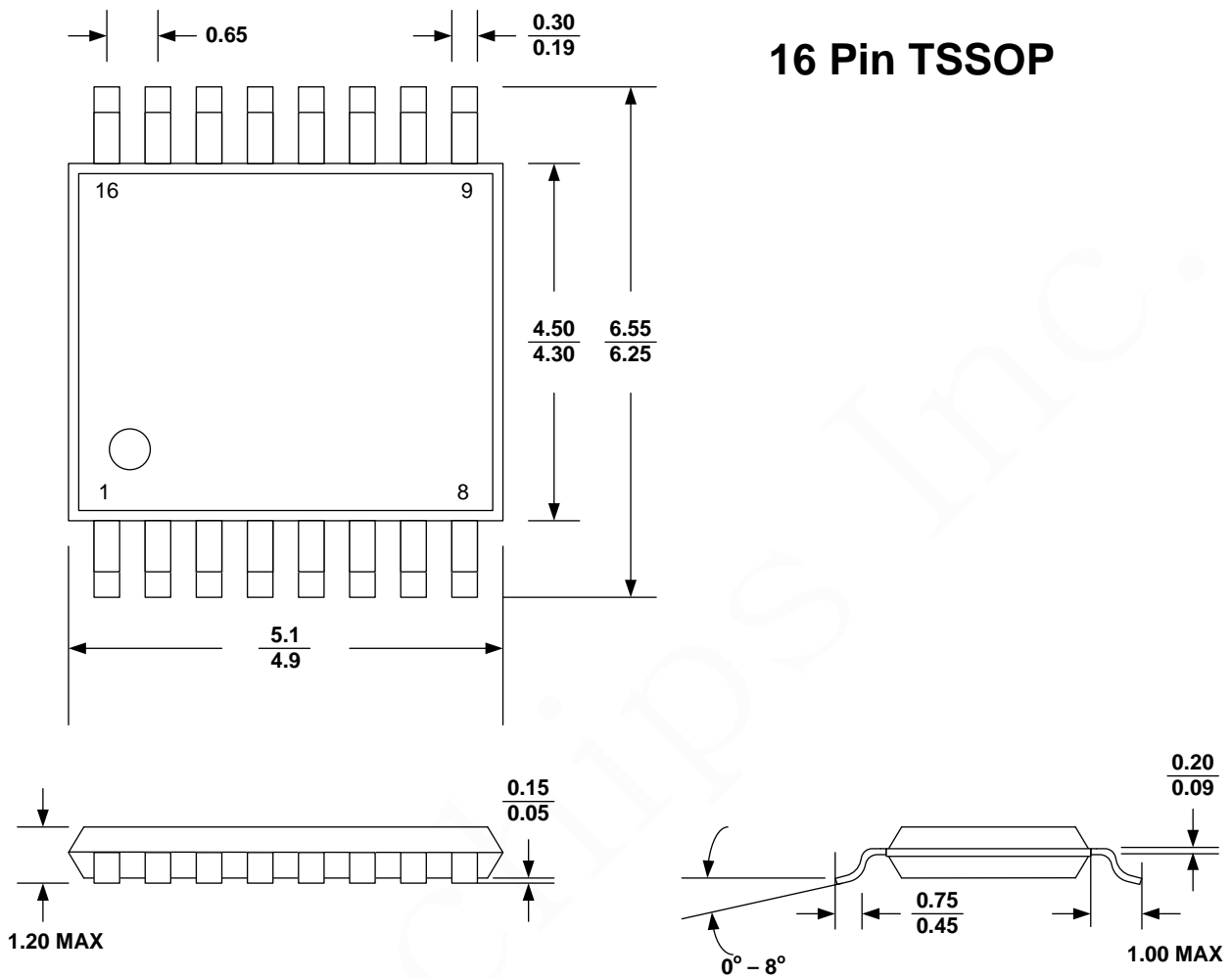
Typical Performance Characteristics





Package Dimensions

16 Pin TSSOP



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