

UTC TA2003 LINEAR INTEGRATED CIRCUIT

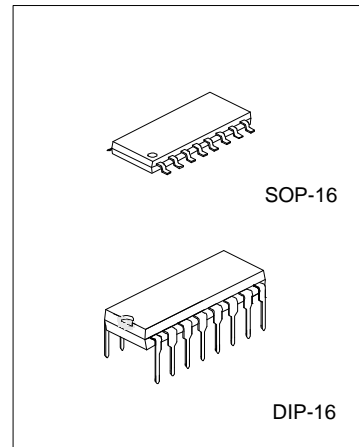
AM/FM RADIO IC

DESCRIPTION

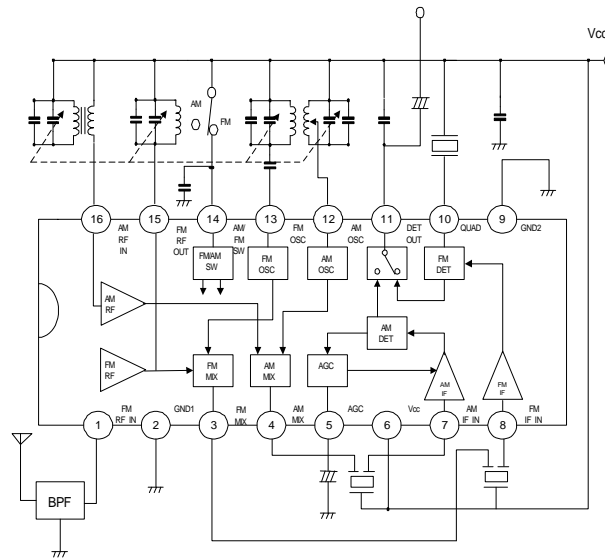
The UTC TA2003 is AM/FM Radio IC (FM F/E + AM/FM IF) which is designed for AM/FM Radios.

FEATURES

- * FM IFT, AM IFT and FM Detector Coil aren't needed.
- * Operating Supply Voltage Range
- * VCC(opr) = 1.8 ~ 7V (Ta=25°C).



BLOCK DIAGRAM



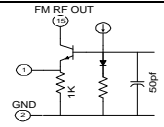
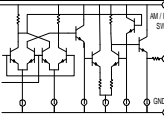
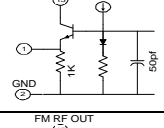
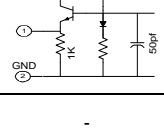
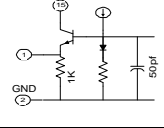
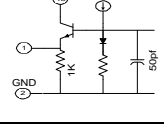
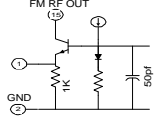
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QW-R110-011,A

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EXPLANATION OF TERMINAL

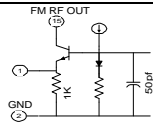
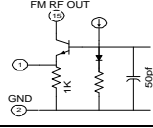
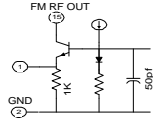
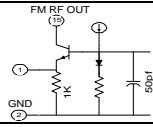
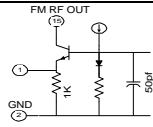
TERMINAL VOLTAGE : Typical DC voltage at Ta=25°C, Vcc=3V and no signal with Test Circuit

| NO | SYMBOL | CONTENTS | INTERNAL CIRCUIT | TERMINAL VOLTAGE | |
|----|----------|--|--|------------------|-----|
| | | | | AM | FM |
| 1 | FM AF IN | Input of FM RF Amplifier |  | 0 | 0.7 |
| 2 | GND1 | GND for RF, DSC and MIX Stage | - | 0 | 0 |
| 3 | FM MIX | Output of FM MIX |  | 0.4 | 1.7 |
| 4 | AM MIX | Output of AM MIX |  | 0.6 | 0 |
| 5 | AGC | By pass of AM AGC |  | 0 | 0 |
| 6 | Vcc | - | - | 3.0 | 3.0 |
| 7 | AM IF IN | Input of AM IF Amplifier |  | 3.0 | 3.0 |
| 8 | FM IF IN | Input of FM IF Amplifier |  | 3.0 | 3.0 |
| 9 | GND2 | GND for IF stage | - | 0 | 0 |
| 10 | QUAD | FM QUAD Detector Ceramic Discriminator is connected. Recommendation CDA 10.7MG31 (MURATA MFG. CO., LTD) |  | 2.5 | 2.2 |

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| NO | SYMBOL | CONTENTS | INTERNAL CIRCUIT | TERMINAL VOLTAGE | |
|----|-----------|--|--|------------------|-----|
| | | | | AM | FM |
| 11 | DET OUT | Output of FM/AM Detector |  | 1.4 | 1.1 |
| 12 | AM OSC | AM local Oscillator Terminal Oscillator Coil is connected. |  | 3.0 | 3.0 |
| 13 | FM OSC | FM local Oscillator Terminal Oscillator Coil is connected |  | 0.9 | 3.0 |
| 14 | AM/FM SW | AM/FM switch connected to Pin14 Vcc->FM mode Pin14 OPEN->AM mode |  | 0.9 | 3.0 |
| 15 | FM RF OUT | FM RF Coil is conected | cf. PIN 1 | 3.0 | 3.0 |
| 16 | AM RF IN | input of AM RF Amplifier |  | 3.0 | 3.0 |

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ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| PARAMETER | | SYMBOL | VALUE | UNITS |
|-----------------------|--------|----------|---------|-------|
| Supply Voltage | | Vcc | 8 | V |
| Power Dissipation | DIP-16 | PD(Note) | 750 | mW |
| | SOP-16 | | 350 | |
| Operating Temperature | | Topr | -25~75 | °C |
| Storage Temperature | | Tstg | -55~150 | °C |

ELECTRICAL CHARACTERISTICS

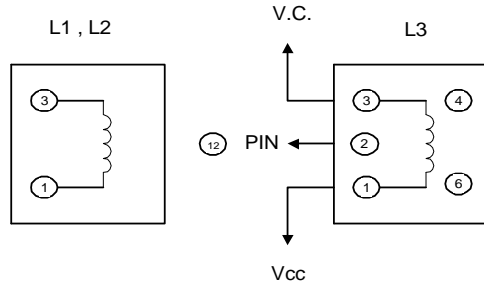
Unless otherwise specified, Ta=25°C, VCC=3V, FE : f = 98MHz, fm = 1KHz
 FM IF : f = 10.7MHz, fm = 1KHz
 AM : f = 1MHz, MOD = 30%, fm = 1 KHz

| PARAMETER | | SYMBOL | TEST CIRC-UIT | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------|---------------------------|-------------|---------------|---------------------|-----|------|------|----------|
| Supply Current | | Icc (FM) | 1 | FM Mode, Vin=0 | - | 10.5 | 16.5 | mA |
| | | Icc (AM) | 1 | AM Mode, Vin=0 | - | 5.0 | 8.0 | |
| F/E | Input Limiting Voltage | Vin(lim) | 1 | -3dB limiting point | - | 12 | - | dB V EMF |
| | Quiescent Sensitivity | Qs | 1 | S/N=30dB | - | 12 | - | dB V EMF |
| | Local OSC Voltage | Vosc | 2 | fosc=108MHz | 160 | 240 | 320 | mVrms |
| | Local OSC Stop Voltage | Vstop(FM) | 2 | Vin=0 | - | 1.2 | - | V |
| FM IF | Input Limiting Voltage | Vin(lim) IF | 1 | -3dB limiting point | 42 | 47 | 52 | dB V EMF |
| | Recovered Output Voltage | VOD | 1 | Vin=80dB V EMF | 50 | 70 | 90 | mVrms |
| | Signal To Noise Ratio | S/N | 1 | Vin=80dB V EMF | - | 62 | - | dB |
| | Total Harmonic Distortion | THD | 1 | Vin=80dB V EMF | - | 0.4 | - | % |
| AM | AM Rejection Ratio | AMR | 1 | Vin=80dB V EMF | - | 33 | - | dB |
| | Voltage Gain | Gv | 1 | Vin=27dB V EMF | 15 | 32 | 50 | mVrms |
| | Recovered Output Voltage | VOD | 1 | Vin=60dB V EMF | 35 | 60 | 85 | mVrms |
| | Signal To Noise Ratio | S/N | 1 | Vin=60dB V EMF | - | 43 | - | dB |
| | Total Harmonic Distortion | THD | 1 | Vin=60dB V EMF | - | 1.0 | - | % |
| Local DSC Stop Voltage | | Vstop (AM) | 1 | Vin=0 | - | 1.6 | - | V |

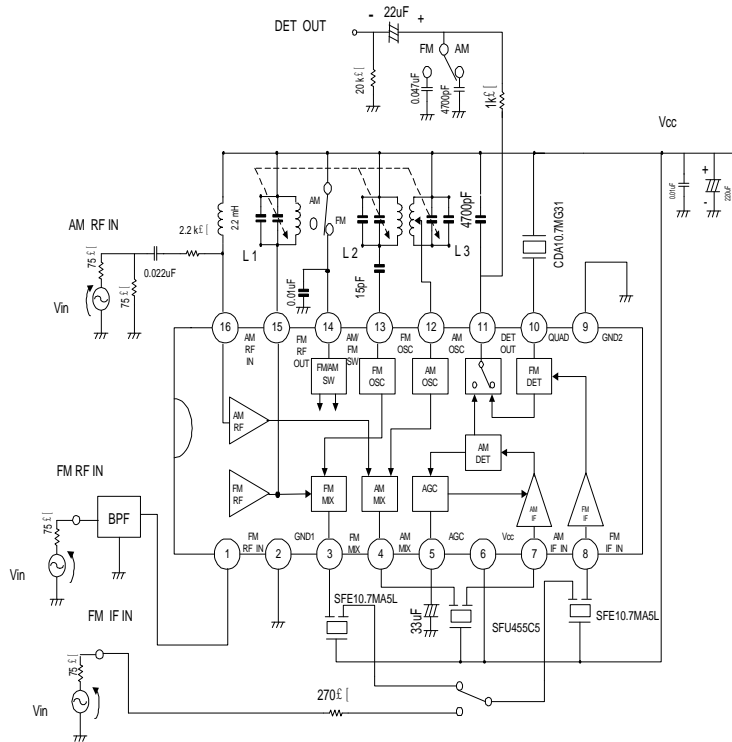
COIL DATA (Test circuit)

| COIL NO. | TEST FREQ (Hz) | L (mH) | Co (pF) | Qo | TURNS | | | | | WIRE |
|-----------|----------------|--------|---------|-----|-------|-----|------|------|-----|----------|
| | | | | | 1-2 | 2-3 | 1-3 | 1-4 | 4-6 | |
| L1 FM RF | 100M | - | - | 100 | - | - | - | 2.25 | - | 0.5 UEW |
| L2 FM OSC | 100M | - | - | 100 | - | - | 1.75 | - | - | 0.5 UEW |
| L3 AM OSC | 796K | 26B | - | 125 | 14 | 86 | - | - | - | 0.06 UEW |

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TEST CIRCUIT 1



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TEST CIRCUIT 2

