



TA7613AP

LINEAR INTEGRATED CIRCUIT

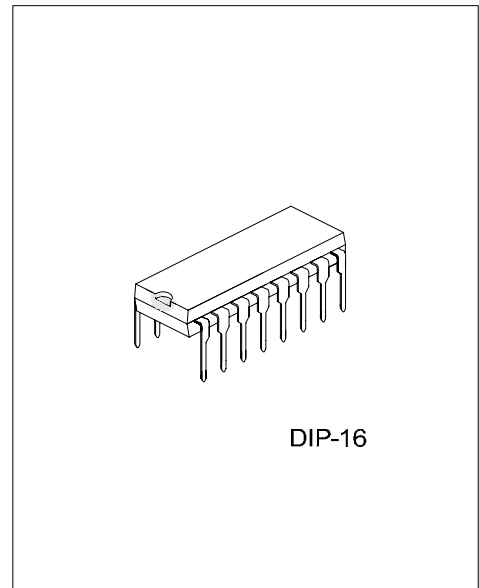
I-CHIP AM/FM RADIO IC

DESCRIPTION

UTC **TA7613AP** is a one-chip AM/FM radio integrated circuit that is suitable for portable radio applications. It includes an AM amplifier, local OSC, AM mixer, AM/FM amplifier, AM detector, FM detector circuit and also Class B audio power amplifier.

FEATURES

- *Low external components count.
- *Wide operating voltage: 3 - 13 V.
- *Internal regulated supply for constant current operation.
- *DC selection of AM/FM mode.



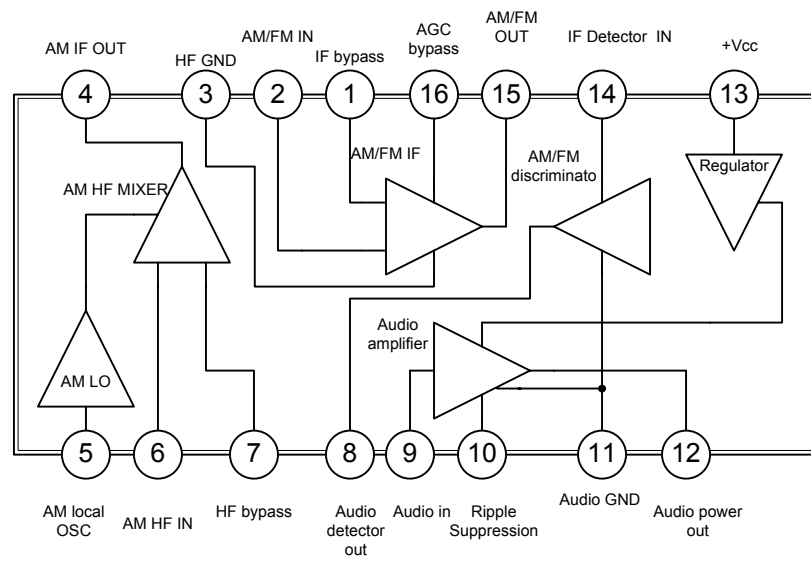
*Pb-free plating product number: TA7613APL

ORDERING INFORMATION

| Ordering Number | | Package | Packing |
|-----------------|-------------------|---------|---------|
| Normal | Lead Free Plating | | |
| TA7613AP-D16-T | TA7613APL-D16-T | DIP-16 | Tube |

| | | |
|------------------------|---|---|
| <p>TA7613APL-D16-T</p> | <p>(1) Packing Type (2) Package Type (3) Lead Plating</p> | <p>(1) T: Tube (2) D16: DIP-16 (3) L: Lead Free Plating, Blank: Pb/Sn</p> |
|------------------------|---|---|

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------|------------------|------------|------|
| Supply Voltage | V _{CC} | 11 | V |
| Supply Current | I _{CC} | 44 | mA |
| Power Dissipation | P _D | 600 | mW |
| Operating Temperature | T _{OPR} | -18 ~ +65 | °C |
| Storage Temperature | T _{STG} | -40 ~ +125 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|---------------------|-----------------|-----|-----|-----|------|
| Junction-to-Ambient | θ _{JA} | | | 100 | °C/W |

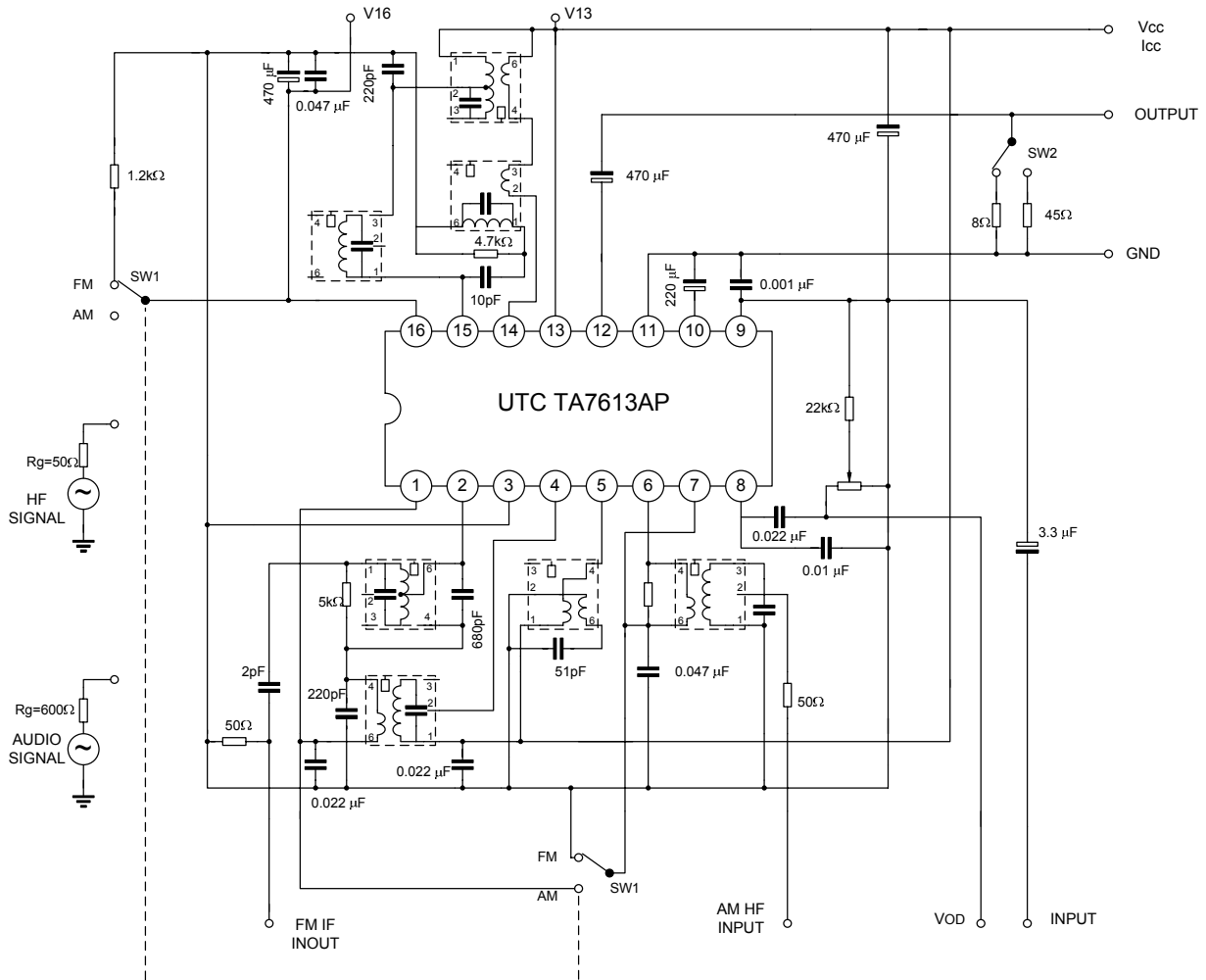
■ ELECTRICAL CHARACTERISTICS

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|----------------------------|------------------------|---|---------|----------|----------|------|
| V Pin 16 (FM) | V ₁₆ (FM) | SW1→FM, I _{CC} =42mA | 2.0 | 2.4 | 3.1 | V |
| Limiting Voltage | V _{IN(LIMIT)} | SW1→FM, V _{CC} =5.5V, -3db V ₁₆ =2.4V, V _R =Min. | | 57 | | dBμV |
| Internal Regulated Voltage | V _{CC} | SW1→AM, I _{CC} =42mA | 12.5 | 13.2 | 14.0 | V |
| V Pin 16 (AM) | V ₁₆ (AM) | SW1→AM, V _{CC} =9V | 1.4 | | 1.9 | V |
| Signal to Noise Ratio | V _O | SW1→AM, V _{CC} =12V, V _{IN} =37dB SW2→45Ω, V ₁₆ =1.4V | 1.5 | 3.0 | | V |
| Quiescent Circuit Current | I _{CCQ} | SW1→FM, V _{CC} =3V SW1→FM, V _{CC} =9V | 7 10 | 12 17 | 17 23 | mA |
| Maximum Sensitivity | S/N | SW1→AM, V _{CC} =5.5V, SW2→8Ω, V _{IN} =37.5dB | 15 | 20 | | dB |
| Power Output | P _{OUT} | SW2→8Ω, V _{CC} =5.5V, F=1KHZ V _R =Min. THD=10% | 0.28 | | | W |
| Total Harmonic Distortion | THD | SW2→45Ω, I _{CC} =42mA, F=1KHZ V _R =Min. V _{OUT} =2V | | 0.5 | 4.0 | % |
| Voltage Gain | G _V | SW2→8Ω, V _{CC} =5.5V, f=1KHZ V _R =Min. | | 40 | | dB |

■ INPUT - OUTPUT IMPEDANCE (Ta=25°C, V_{CC}=6V)

| PARAMETER | SYMBOL | TEST CONDITIONS | VALUE | UNIT |
|------------------|-----------|-----------------|-------|------|
| Pin 2 Input | Rip2(AM) | f=465KHZ | 200 | kΩ |
| Impedance (AM) | Cip2(AM) | f=465KHZ | 3 | pF |
| Pin 2 Input | Rip2(FM) | f=10.7MHZ | 30 | kΩ |
| Impedanc(FM) | Cip2(FM) | f=10.7MHZ | 3.5 | pF |
| Pin 4 Output | Rop4 | f=465KHZ | 300 | kΩ |
| Impedance | Cop4 | f=465KHZ | 6 | pF |
| Pin 6 Input | Rip6 | f=1MHZ | 50 | kΩ |
| Impedance | Cip6 | f=1MHZ | 5 | pF |
| Pin 14 Input | Rip14(AM) | f=465KHZ | 300 | kΩ |
| Impedance(AM) | Cip14(AM) | f=465KHZ | 3.5 | pF |
| Pin 14 Input | Rip14(FM) | f=10.7MHZ | 300 | kΩ |
| Impedance(FM) | Cip14(FM) | f=10.7MHZ | 4 | pF |
| Pin 15 Output | Rop15(AM) | f=465KHZ | 300 | kΩ |
| Impedance(AM) | Cop15(AM) | f=465KHZ | 5.5 | pF |
| Pin 15 Output | Rop15(FM) | f=10.7MHZ | 300 | kΩ |
| Impedanc(FM) | Cop15(FM) | f=10.7MHZ | 6 | pF |

■ TEST CIRCUIT



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