

UNISONIC TECHNOLOGIES CO., LTD

A7240

LINEAR INTEGRATED CIRCUIT

20W BRIDGE AMPLIFIER FOR CAR RADIO

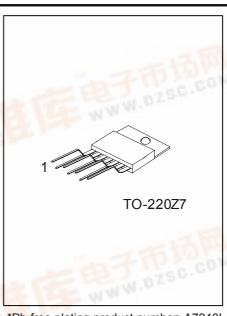
DESCRIPTION

The UTC **A7240** is a 20W bridge audio amplifier IC and designed for car radio applications.

A comprehensive array of on-chip protection, include protection against AC and DC output short circuits (to ground and across the load), load dump transients, and junction over temperature, is feature to provide reliable operation. Furthermore, the UTC A7240 protects the loudspeaker when one output is short-circuited to ground.

■ FEATURES

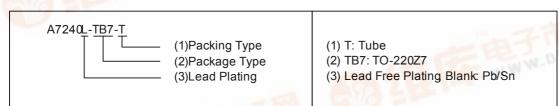
- * Few External Components
- * Output Protected Against short Circuits to Ground and Across Load
- * Dump Transient
- * Thermal Shutdown
- * Loudspeaker Protection
- * High Current Capability
- * Low Distortion/Low Noise



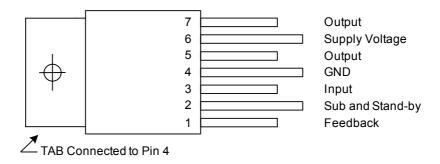
*Pb-free plating product number: A7240L

■ ORDERING INFORMATION

| Order | Dookogo | Dooking | | |
|-------------|-------------------|-----------|---------|--|
| Normal | Lead Free Plating | - Package | Packing | |
| A7240-TB7-T | A7240L-TB7-T | TO-220Z7 | Tube | |



■ PIN CONFIGURATION



■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATINGS | UNIT |
|--|-----------------------------------|----------|------|
| Operating Supply Voltage | V _{SS} | 18 | V |
| DC Supply Voltage | V _{SS} | 28 | V |
| Peak Supply Voltage (for 50ms) | V _{SS(PEAK)} | 40 | V |
| Peak Output Current (non repetitive t = 0.1ms) | I _{O(PEAK)} (*) | 4.5 | А |
| Peak Output Current (repetitive f .10Hz) | I _{O(PEAK)} (*) | 3.5 | А |
| Power Dissipation at T _C = 85°C | P _D | 16 | W |
| Storage and Junction Temperature | T _{STG} , T _J | -40~+150 | °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.

(*) Internally limited

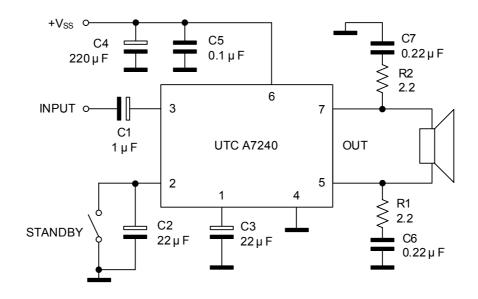
■ THERMAL DATA

| PARAMETER | SYMBOL | RATINGS | UNIT |
|----------------------------------|--------|---------|------|
| Thermal Resistance Junction-case | | 4 | V |

■ **ELECTRICAL CHARACTERISTICS**(Ta = 25°C, R_{TH} (heatsink)= 4°C/W, V_{SS} = 14.4V)

| PARAMETER | | SYMBOL | TEST CONDITIONS | | | MIN | TYP | MAX | UNIT | |
|---------------------------|---------------------------------------|--|--------------------------------|----------|-----------------|------|------|------|------|--|
| Supply Voltage | | V_{SS} | | | | | 18 | V | | |
| Output Offset Voltage | | V _{O(OFF)} | | | | | | 150 | mV | |
| Total Quiescent Current | | IQ | $R_L = 4\Omega$ | | | | 65 | 120 | mA | |
| Output Power | | P _{OUT} | f = 1kHz, d= 10% | | $R_L = 4\Omega$ | 18 | 20 | | ١٨/ | |
| | | | | | $R_L = 8\Omega$ | 10 | 12 | | W | |
| Distortion | | THD | f = 1kHz Pow = 50MW ~ 12W | | $R_L = 4\Omega$ | | 0.1 | 0.5 | % | |
| | | THD $f = 1kHz$, $P_{OUT} = 50MW \sim 12W$ | | - 1200 | $R_L = 8\Omega$ | | 0.05 | 0.5 | 70 | |
| Voltage Gain | | G_V | f = 1KHz | | | 39.5 | 40 | 40.5 | dB | |
| Supply Voltage Rejection | | SVR | $f = 100Hz$, $Rg = 10K\Omega$ | | 35 | 40 | | dB | | |
| Tatallas (Maiss | | - NI | B= Curve | | e A | | 2 | | \ | |
| Total Input Noise | | eN | $Rg = 10K\Omega$ $B = 22$ | B = 22H; | z~22KHz | | 3 | 10 | μV | |
| Efficiency | | η | $R_L = 4\Omega$, $f = 1KHz$ | | | 65 | | % | | |
| Input Resistance | t Resistance R _{IN} f = 1kHz | | | 70 | | | kΩ | | | |
| Input Sensitivity | | | | | 28 | | mV | | | |
| Fraguency Dall Off / 2dD) | Low | f_L | D = 15W D = 10 | | 88 | | 129 | Hz | | |
| Frequency Roll Off (-3dB) | High | f _H | $P_{OUT} = 15W, R_L = 4\Omega$ | | | 25 | | kHz | | |
| Stand-by Threshold | | V _{THD (PIN2)} | | · | | | | 1 | V | |
| Stand-by Current | | Istn-by | | | | | 200 | | μΑ | |
| Stand-by Attenuation | | A _{STN-BY} | V _{OUT} = 2Vrms | | | 70 | 90 | | dB | |

■ TEST AND APPLICATION CIRCUIT

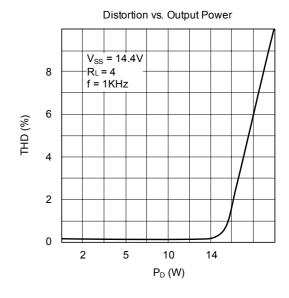


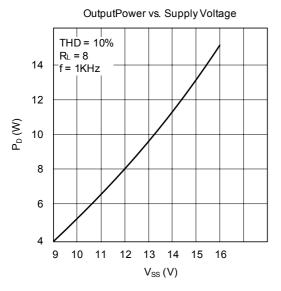
COMPONENT USAGE SUGGESTION

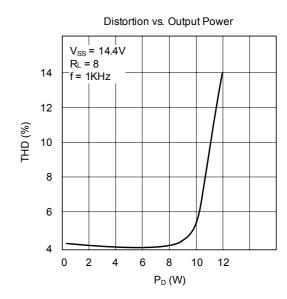
| Component | Suggest | Purpose | Larger than | Smaller than |
|-----------|------------|----------------------------------|---|--|
| R1, R2 | 2.2W | Frequency Stability | Danger of High Frequency Oscillation | |
| C1 | 1 μ F | Input DC Decoupling | Higher Turn On and Stand-by Delay | Higher Turn On Pop. Higher Low Frequency Cutoff |
| C2 | 22 µ F | Ripple Rejection | Increase of SVR Increase of the Turn On Delay | Degradation of SVR |
| C3 | 22 µ F | Feedback low Frequency Cutoff | | Higher Low Frequency Cutoff |
| C4 | 220 µ F | Supply Filter | | Danger of Oscillation |
| C5 | 0.1 μ F | Supply Bypass | | Danger of Oscillation |
| C6, C7 | $0.22\muF$ | Frequency Stability | | Danger of Oscillation |

■ TYPICAL CHARACTERISTICS

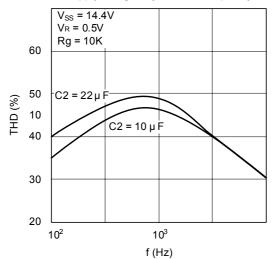
OutputPower vs. Supply Voltage Vss = 10% 22 RL = 4 f = 1KHz 18 P_D (W) 14 10 6 9 10 11 12 13 14 $V_{S}(V)$







SupplyVoltage Rejection vs Frequency



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