



TK2150

STEREO 200W (6Ω) CLASS-T DIGITAL AUDIO AMPLIFIER DRIVER USING DIGITAL POWER PROCESSING™ TECHNOLOGY

Technical Information

Revision 0.5 – May 2002

GENERAL DESCRIPTION

The TK2150 (TC2001/TP2150 chipset) is a two-channel, 200W (6Ω) per channel Amplifier Driver that uses Tripath's proprietary Digital Power Processing (DPP™) technology. Class-T amplifiers offer both the audio fidelity of Class-AB and the power efficiency of Class-D amplifiers.

Applications

- Audio/Video Amplifiers & Receivers
- Pro-audio Amplifiers
- Automobile Power Amplifiers
- Subwoofer Amplifiers

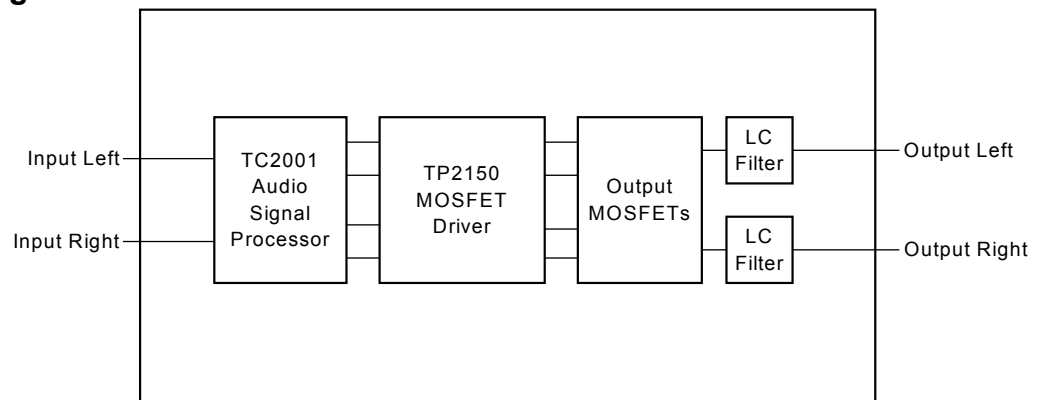
Benefits

- Reduced system cost with smaller/less expensive power supply and heat sink
- Signal fidelity equal to high quality Class-AB amplifiers
- High dynamic range compatible with digital media such as CD and DVD

Features

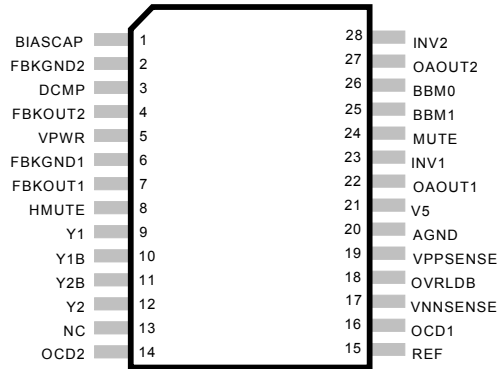
- Class-T architecture
- Pin compatible with Tripath TK2350
- Proprietary Digital Power Processing technology
- "Audiophile" Sound Quality
 - 0.02% THD+N @ 50W, 8Ω
 - 0.03% IHF-IM @ 30W, 8Ω
- High Efficiency
 - 90% @ 170W @ 8Ω
 - 85% @ 200W @ 6Ω
- Supports wide range of output power levels
 - Up to 200W/channel (6Ω), single-ended outputs
 - Up to 400W (8Ω), bridged outputs
- Output over-current protection
- Over- and under-voltage protection
- Over-temperature protection

Block Diagram



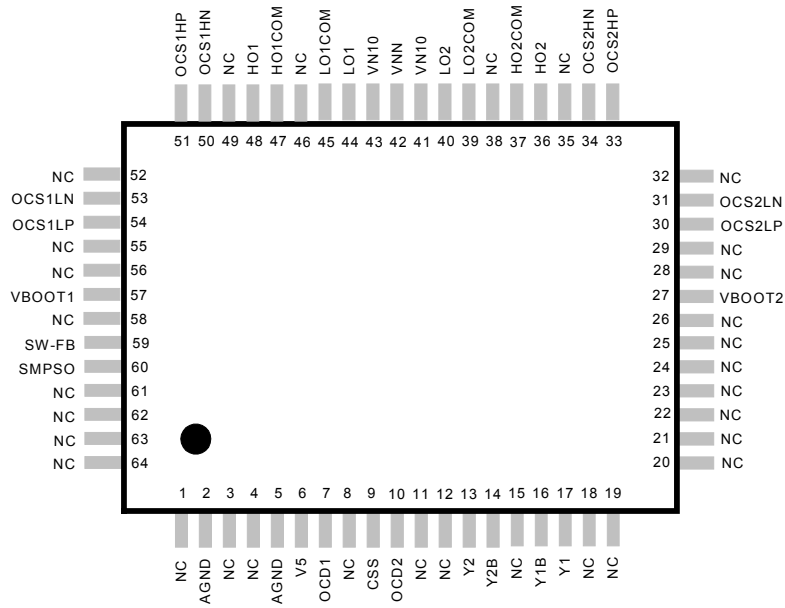
TC2001 Pinout

28-pin SOIC
(Top View)



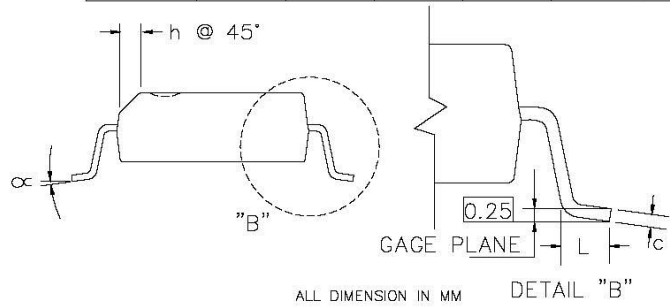
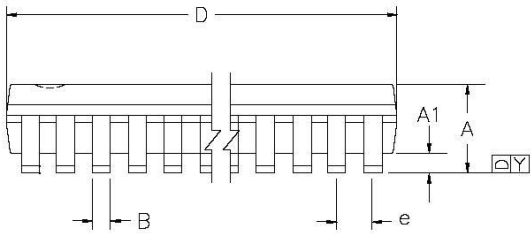
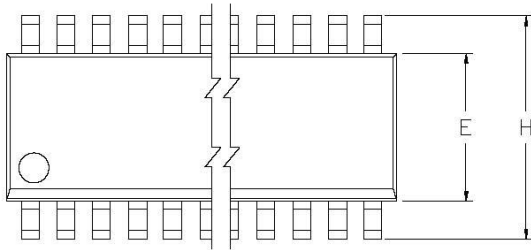
TP2150 Pinout

64-pin LQFP
(Top View)



TC2001 Package Information

28-pin SOIC



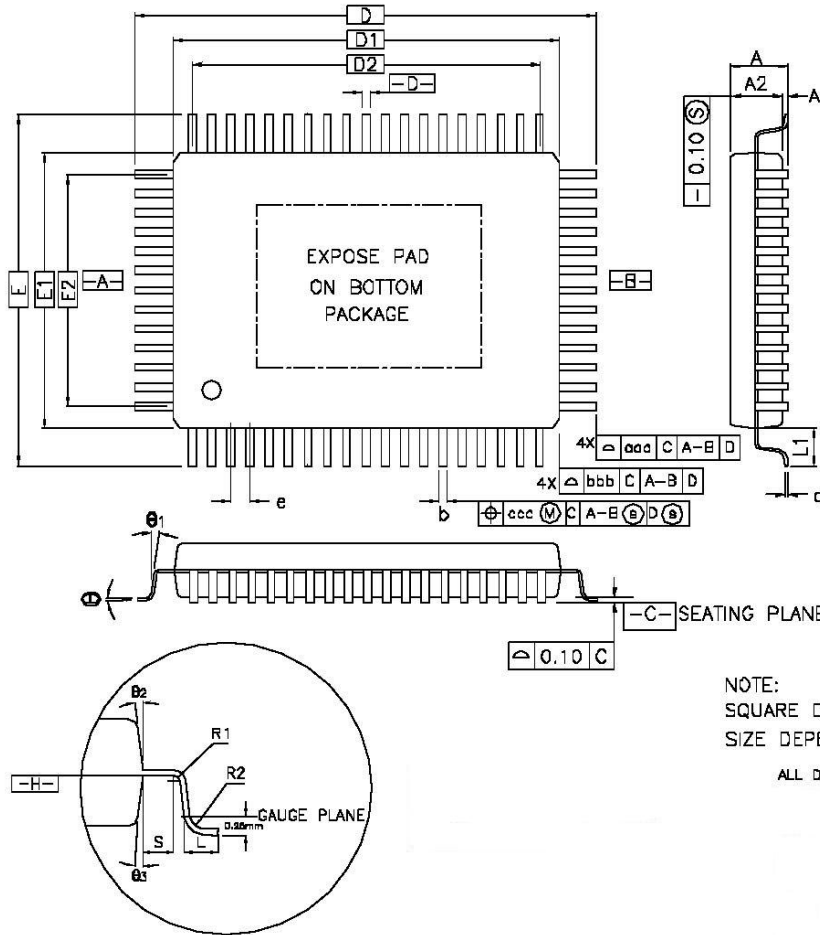
| SYMBOL | CONTROL DIMENSIONS ARE IN MM | | | | | |
|--------|------------------------------|----------|-------|-------|-----------|-------|
| | MILLIMETER | | | INCH | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 2.35 | 2.54 | 2.65 | 0.092 | 0.100 | 0.104 |
| A1 | 0.10 | 0.17 | 0.30 | 0.004 | 0.006 | 0.012 |
| B | 0.33 | 0.42 | 0.51 | 0.013 | 0.016 | 0.020 |
| C | 0.23 | 0.25 | 0.32 | 0.009 | 0.010 | 0.012 |
| E | 7.40 | 7.50 | 7.60 | 0.291 | 0.295 | 0.299 |
| e | | 1.27 BSC | | | 0.050 BSC | |
| H | 10.00 | 10.30 | 10.65 | 0.394 | 0.406 | 0.419 |
| h | 0.25 | 0.50 | 0.75 | 0.009 | 0.020 | 0.029 |
| L | 0.40 | 0.70 | 1.27 | 0.015 | 0.028 | 0.050 |
| α | 0° | | 8° | 0° | | 8° |
| Y | 0 | | 0.10 | 0 | | 0.004 |
| D16 | 10.10 | 10.31 | 10.50 | 0.398 | 0.406 | 0.413 |
| D20 | 12.60 | 12.80 | 13.00 | 0.496 | 0.504 | 0.512 |
| D24 | 15.20 | 15.40 | 15.60 | 0.598 | 0.608 | 0.614 |
| D28 | 17.70 | 17.90 | 18.10 | 0.697 | 0.705 | 0.712 |

ALL DIMENSION IN MM

DETAIL "B"

TP2150 Package Information

64-pin LQFP



CONTROL DIMENSIONS ARE IN MM

| SYMBOL | MILLIMETER | | | INCH | | |
|----------------|-------------|------|------|-------------|-------|-------|
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| A | — | — | 1.60 | — | — | 0.063 |
| A1 | 0.05 | — | 0.15 | 0.002 | — | 0.006 |
| A2 | 1.35 | 1.40 | 1.45 | 0.053 | 0.055 | 0.057 |
| D | 23.20 BASIC | | | 0.913 BASIC | | |
| D1 | 20.00 BASIC | | | 0.787 BASIC | | |
| E | 17.20 BASIC | | | 0.677 BASIC | | |
| E1 | 14.00 BASIC | | | 0.551 BASIC | | |
| R2 | 0.13 | — | 0.30 | 0.005 | — | 0.012 |
| R1 | 0.13 | — | — | 0.005 | — | — |
| theta | 0° | 3.5° | 7° | 0° | 3.5° | 7° |
| theta1 | 0° | — | — | 0° | — | — |
| theta2, theta3 | 11° | 12° | 13° | 11° | 12° | 13° |
| c | 0.09 | — | 0.20 | 0.004 | — | 0.008 |
| L | 0.73 | 0.88 | 1.03 | 0.029 | 0.035 | 0.041 |
| L1 | 1.60 REF | | | 0.063 REF | | |
| S | 0.20 | — | — | 0.008 | — | — |

NOTE:
 SQUARE DOTTED LINE IS E-PAD OUTLINE
 SIZE DEPENDENT ON DIE ATTACH PAD

ALL DIMENSION IN MM

TP2150 Package Information

64-pin LQFP

| SYMBOL | 64L | | | | | |
|---------------------------------|------------|------|------|------------|-------|-------|
| | MILLIMETER | | | INCH | | |
| | MIN. | NOM. | MAX. | MIN. | NOM. | MAX. |
| b | 0.35 | 0.40 | 0.50 | 0.014 | 0.016 | 0.020 |
| e | 1.00 BSC. | | | 0.039 BSC. | | |
| D2 | 18.00 REF | | | 0.709 REF | | |
| E2 | 12.00 REF | | | 0.472 REF | | |
| TOLERANCES OF FORM AND POSITION | | | | | | |
| aaa | 0.25 | | | 0.010 | | |
| bbb | 0.20 | | | 0.008 | | |
| ccc | — | 0.20 | — | — | 0.008 | — |

NOTES :

1. DIMENSION D1 AND E1 DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS 0.25mm PER SIDE. DIMENSIONS D1 AND E1 DO INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE $\boxed{-H-}$
2. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED. THE MAXIMUM b DIMENSION BY MORE THAN 0.08 mm. DAMBAR CANNOT BE LOCATED ON THE LOWER RADIUS OR THE LEAD FOOT.

PRELIMINARY – This product is still in development. Tripath Technology Inc. reserves the right to make any changes without further notice to improve reliability, function or design.

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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