

ILA1519B

2 x 6 WATT STEREO CAR RADIO POWER AMPLIFIER

GENERAL DESCRIPTION

The ILA1519B is an integrated class-B dual output amplifier in a 9-lead single in-line (SIL) plastic medium power package. The device is primarily developed for car radio applications.

Features

| | |
|--|---|
| Requires very few external components | Thermally protected |
| High output power | Reverse polarity safe |
| Fixed gain | Compatible with TDA1517 (except gain) |
| Good ripple rejection | No switch-on/switch-off plop |
| Mute/stand-by switch | Protected against electrostatic discharge |
| Load dump protection | AC and DC short-circuit-safe to ground and Vp |
| Capability to handle high energy on outputs (Vp = 0 V) | |

QUICK REFERENCE DATA

| parameter | conditions | symbol | min. | typ. | max. | unit |
|---------------------------------|------------------|----------------------|------|------|------|------|
| Supply voltage range | | | | | | |
| operating | | V _p | 6,0 | 14,4 | 18,0 | V |
| non-operating | | V _p | - | - | 30 | V |
| load dump protected | | V _p | - | - | 45 | V |
| Repetitive peak output current | | I _{ORM} | - | - | 2,5 | A |
| Total quiescent current | | I _{tot} | | 40 | 80 | mA |
| Stand-by current | | I _{sb} | | 0,1 | 100 | mA |
| Switch-on current | | I _{sw} | | | 40 | mA |
| Input impedance | | Z _i | 50 | | | kΩ |
| Output power | THD= 0,5%;4 Ω | | | 5 | | W |
| | THD=10%;4 Ω | | | 6 | | W |
| Channel separation | | α | 40 | | | dB |
| Noise output voltage | | V _{no(rms)} | | | 150 | μV |
| Supply voltage ripple rejection | f=100Hz | SVRR | 40 | | | dB |
| | f=1kHz to 10 kHz | SVRR | 48 | | | dB |
| Crystal temperature | | T _c | | | 150 | °C |

PACKAGE OUTLINE: 9-lead SIL-bent-to-DIL; plastic (SOT110B).

PINNING

| | | |
|---|------|---------------------------------|
| 1 | NV1 | non-inverting input 1 |
| 2 | GND1 | ground (signal) |
| 3 | SVRR | supply voltage ripple rejection |
| 4 | OUT1 | output 1 |
| 5 | GND2 | ground (substrate) |
| 6 | OUT2 | output 2 |
| 7 | Vp | supply voltage |
| 8 | M/SS | mute/stand-by switch |
| 9 | INV2 | non-inverting input 2 |

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DC CHARACTERISTICS (note 1) $V_p = 14,4\text{ V}$; $T_{amb} = 25\text{ }^\circ\text{C}$; unless otherwise specified

| parameter | conditions | symbol | min. | Typ. | max. | unit |
|----------------------------------|--|------------|------|------|------|---------------|
| Supply | | | | | | |
| Supply voltage range | note 2 | V_p | 6,0 | 14,4 | 18,0 | V |
| Quiescent current | | I_P | - | 40 | 80 | mA |
| DC output voltage | note 3 | V_o | - | 6,95 | - | V |
| Mute/stand-by switch | | | | | | |
| Switch-on voltage level | see Fig.3 | V_{ON} | 8,5 | - | - | V |
| Mute condition | | | | | | |
| Output signal in mute position | $V_i = 1\text{ V (max.)}$; $f = 20\text{ Hz to }15\text{ kHz}$ | V_{mute} | 3,3 | - | 6,4 | V |
| | | V_o | - | - | 20 | mV |
| Stand-by condition | | | | | | |
| DC current in stand-by condition | | I_{sb} | 0 | - | 2 | V |
| Switch-on current | | I_{sw} | - | - | 100 | μA |
| | | | - | 12 | 40 | μA |

AC CHARACTERISTICS (note 1)

$V_p=14,4\text{V}$; $R_L=4\Omega$; $f=1\text{kHz}$; $T_{amb}=25^\circ\text{C}$ unless otherwise specified

| parameter | conditions | symbol | min. | typ. | max. | unit |
|---------------------------------|------------------------------------|---------------|------|------|------|------------------|
| Output power | note 4; | | | | | |
| | THD = 0,5% | P_o | 4 | 5 | - | W |
| | THD = 10% | P_o | 5,5 | 6,0 | - | W |
| Total harmonic distortion | $P_o=1\text{W}$ | THD | - | 0,1 | - | % |
| Low frequency roll-off | note 5; | | | | | |
| | -3 dB | f_L | - | 45 | - | Hz |
| High frequency roll-off | -1 dB | f_H | 20 | - | - | kHz |
| Closed loop voltage gain | | G_v | 39 | 40 | 41 | dB |
| Supply voltage ripple rejection | | | | | | |
| | note 6 | | | | | |
| ON | | | | | | |
| ON | $f= 100\text{ Hz}$ | SVRR | 40 | - | - | dB |
| | $f= 10\text{ Hz to }10\text{ kHz}$ | SVRR | 48 | - | - | dB |
| mute | | SVRR | 48 | - | - | dB |
| stand-by | | SVRR | 80 | - | - | dB |
| Input impedance | | I_{Zil} | 50 | 60 | 75 | $\text{k}\Omega$ |
| Noise output voltage | | | | | | |
| ON | note 7; | $V_{no(rms)}$ | - | 150 | - | mV |
| | $R_s=0\Omega$ | | | | | |
| ON | $R_s= 10\text{ k}\Omega$ | $V_{no(rms)}$ | - | 250 | 500 | mV |
| mute | note 8 | $V_{no(rms)}$ | - | 120 | - | mV |
| Channel separation | $R_s= 10\text{ k}\Omega$ | a | 40 | - | - | dB |
| Channel balance | | $IDGvl$ | - | 0,1 | 1 | dB |

Notes to the characteristics

1. All characteristics are measured using the circuit shown in Fig. 4.
2. The circuit is DC adjusted at $V_p = 6V$ to $18V$ and AC operating at $V_p = 8,5V$ to $18V$.
3. At $18V < V_p < 30V$ the DC output voltage $< V_p/2$.
4. Output power is measured directly at the output pins of the IC.
5. Frequency response externally fixed.
6. Ripple rejection measured at the output with a source impedance of 0Ω (maximum ripple amplitude of $2V$) and a frequency between $100Hz$ and $10kHz$.
7. Noise voltage measured in a bandwidth of $20Hz$ to $20kHz$.
8. Noise output voltage independent of R_n ($V_j = 0V$).