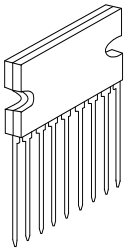
TDA1519B

LINEAR INTEGRATED CIRCUIT

12W BTL OR 2×6W STEREO CAR RADIO POWER AMPLIFIER



HSIP-9B

■ DESCRIPTION

The UTC **TDA1519B** is an integrated class - B dual output amplifier. It contains two identical amplifiers with differential input stages. The gain of each amplifier is fixed at 40dB. The device is primarily developed for car radio application.

■ FEATURES

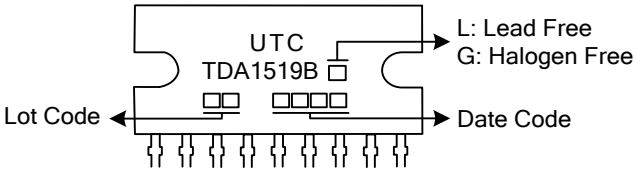
* Requires very few external components for Bridge-Tied Load (BTL) operation
* Stereo or BTL application
* High output power
* Low stand-by current (<100μ A)
* Low mute/stand-by switching current
* Load dump protection
* AC and DC short-circuit safe to ground and Vp
* Thermally protected

■ ORDERING INFORMATION

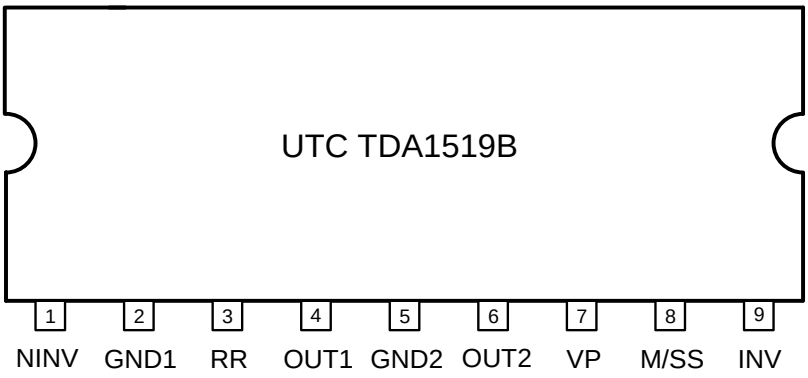
Ordering Number		Package	Packing
Lead Free	Halogen Free		
TDA1519BL-H09-B-T	TDA1519BG-H09-B-T	HSIP-9B	Tube

TDA1519BG-H09-B-T (1)Packing Type (2)Package Type (3)Green Package	(1) T: Tube (2) H09-B: HSIP-9B (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



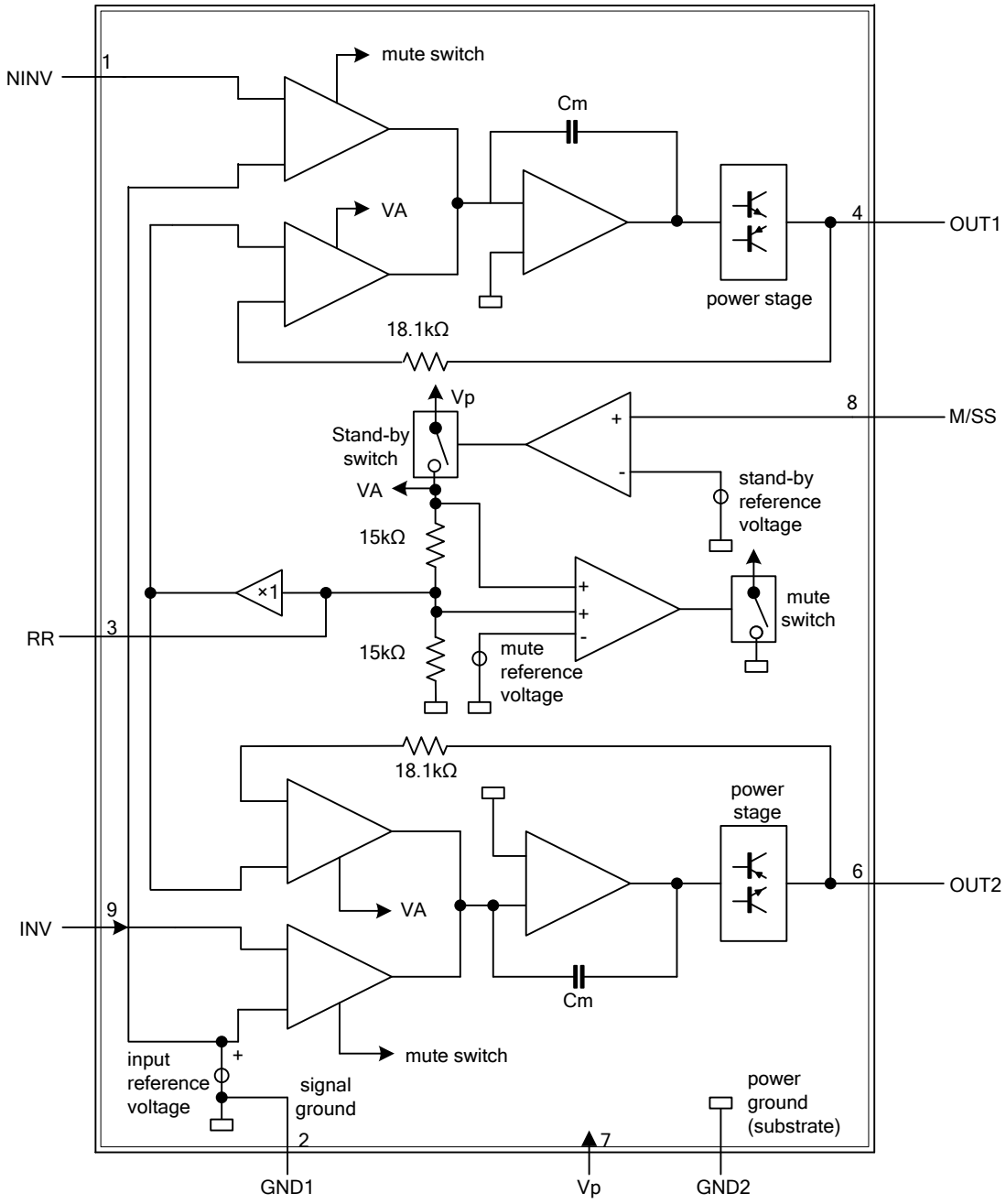
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO	PIN NAME	DESCRIPTION
1	NINV	Non-inverting input
2	GND1	Ground 1(sigal)
3	RR	Supply Voltage Ripple Rejection
4	OUT1	Output 1
5	GND2	Ground 2(substrate)
6	OUT2	Output 2
7	V_P	Positive Supply Voltage
8	M/SS	Mute/Standby Switch
9	INV	Inverting Input

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage	Operating	V_P	18	V
	Non-operating		30	
	Load dump protected (during 50ms, t_r≥2.5ms)		45	
AC and DC Short-circuit Safe Voltage		V_{PSC}	18	V
Reverse Polarity Voltage		V_{RP}	6	V
Peak Output Current	Non-Repetitive	I_{OSM}	6	A
	Repetitive	I_{ORM}	4	A
Power Dissipation		P_D	15	W
Energy Handling Capability at Outputs (V_P=0V)		Eo	200	mJ
Junction Temperature		T_J	+125	°C
Storage Temperature		T_{STG}	-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.

■ DC CHARACTERISTICS

(V_P=14.4V, T_A=25°C, measurements taken using Fig.1, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply						
Supply Voltage	V_P	Note 1	6.0	14.4	18.0	V
DC Output Voltage	V_{OUT}	Note 2		6.95		V
DC Output Offset Voltage	$\lvert \Delta V_{4-6} \rvert$				250	mV
Total Quiescent Current	$I_{Q(tot)}$			40	80	mA
Mute/Stand-By Switch						
Switch-On Voltage Level	V_{SW-ON}		8.5			V
Mute Condition						
Mute Voltage Level	V_{MUTE}		3.3		6.4	V
Output Signal in Mute Position	Vo	V_{IN}=1V(max.), f=20Hz ~ 15kHz			20	mV
DC Output Offset Voltage	$\lvert \Delta V_{4-6} \rvert$				250	mV
Stand-By Condition						
Stand-By Voltage Level	V_{ST-BY}		0		2	V
Stand-By Current	I_{ST-BY}				100	μA
Switch-On Current	I_{SW-ON}			12	40	μA

Notes: 1. The circuit is DC adjusted at V_P =6 ~18V and AC operating at V_P =8.5 ~ 18V.
2. At 18V<V_P<30V, the DC output voltage is ≤0.5Vp

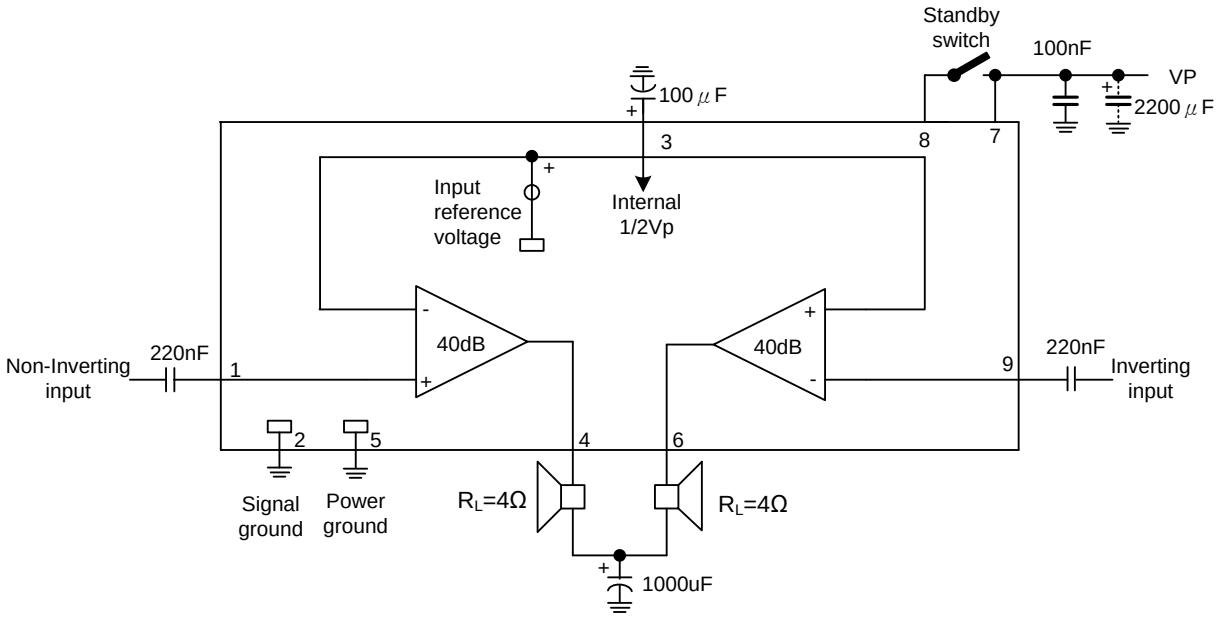
■ AC CHARACTERISTICS (V_P=14.4V, T_A=25°C, f=1kHz, unless otherwise specified.)

PARAMETER		SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Stereo Application (measurements taken using Fig.1), R_L=4Ω								
Noise Output Voltage (RMS value)	ON	$V_{no(rms)}$	f=20Hz~20kHz	R_S=0Ω		150		μV
	ON			R_S=10kΩ		250	500	μV
	MUTE			(Note 6)		120		μV
Input Impedance		|Zi|			50	60	75	kΩ
Output Power	THD=0.5%	P_{OUT}	(Note 1)		4	5		W
	THD=10%				5.5	6.0		
Output Power at Vp=13.2V	THD=0.5%	P_{OUT}	(Note 1)			3.5		W
	THD=10%					4.8		
Supply Voltage Ripple Rejection	ON	RR	f =100Hz (Note 3)		40			
	ON		f=1kHz ~ 10kHz (Note 3)		45			dB
	MUTE		(Note 3, 4, 5)		45			dB
	STAND-BY		(Note 3, 4, 5)		80			dB
Close Loop Voltage Gain		Gv			39	40	41	dB
High Frequency Roll-Off		f_H	-1dB		20			kHz
Low Frequency Roll-Off (Note 2)		f_L	-3dB			45		Hz
Total Harmonic Distortion		THD	P_{OUT}=1W			0.1		%
Channel Separation		α	R_S=10kΩ		40			dB
Channel Unbalance		| △Gv |				0.1	1	dB
BTL Application (measurements taken using Fig.2), R_L=8Ω								
Noise Output Voltage (RMS value)	ON	$V_{no(rms)}$	f=20Hz~20kHz	Rs=0Ω		150		μV
	ON			Rs=10kΩ		350	700	μV
	MUTE			Note 6		180		μV
Input Impedance		|Zi|			25	30	38	kΩ
Output Power	THD=0.5%	P_{OUT}	(Note 1)		8	10		W
	THD=10%				11	12		
Output Power at V_P=13.2V	THD=0.5%	P_{OUT}	(Note 1)			7.5		W
	THD=10%					10		
Supply Voltage Ripple Rejection	ON	RR	Notes 3, f =100Hz		34			dB
	ON		Notes 3, f=1kHz ~ 10kHz		48			dB
	MUTE		(Note 3, 4, 5)		48			dB
	STAND-BY		(Note 3, 4, 5)		80			dB
Close Loop Voltage Gain		Gv			45	46	47	dB
High Frequency Roll-Off		f_H	-1dB		20			kHz
Low Frequency Roll-Off (Note 2)		f_L	-1dB			45		Hz
Total Harmonic Distortion		THD	Po=1W			0.1		%
Power Bandwidth		B_W	THD=0.5%, Po=-1dB w.r.t 15W			35 ~ 15000		Hz

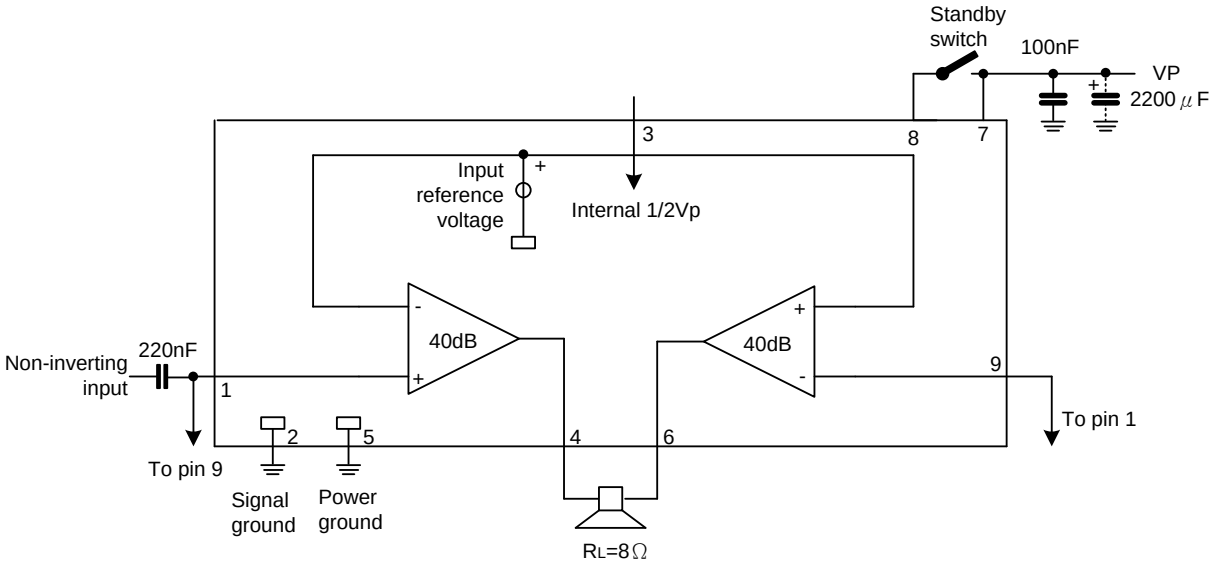
Notes: 1. Output power is measured directly at the output pins of the device.
2. Frequency response externally fixed.
3. Ripple rejection measured at he output with a source impedance of 0Ω(maximum ripple amplitude of 2V).
4. Frequency f =100Hz
5. Frequency between 1kHz and 10kHz
6. Noise output voltage independent of R_S (V_{IN}=0V)

■ TYPICAL APPLICATION CIRCUIT

Stereo application diagram



BTL application diagram



■ TYPICAL CHARACTERISTICS

Fig .3 Total Quiescent Current
As a Function Of The Supply Voltage

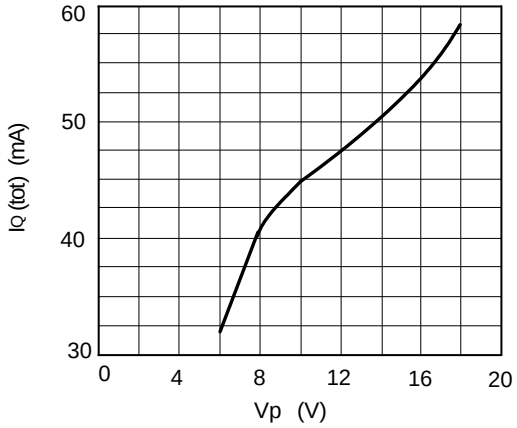


Fig.4 Output Power
As a Function Of The Supply Voltage

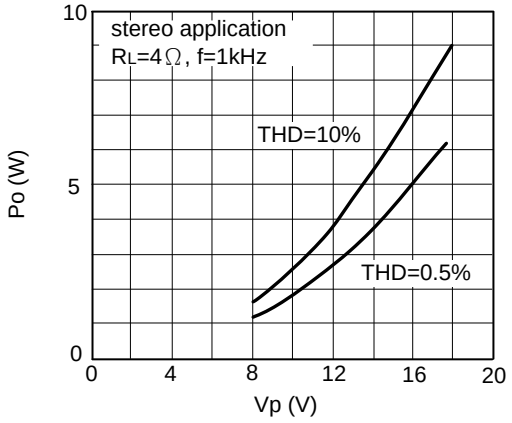


Fig.5 Total Harmonic Distortion
As a Function Of The Output Power

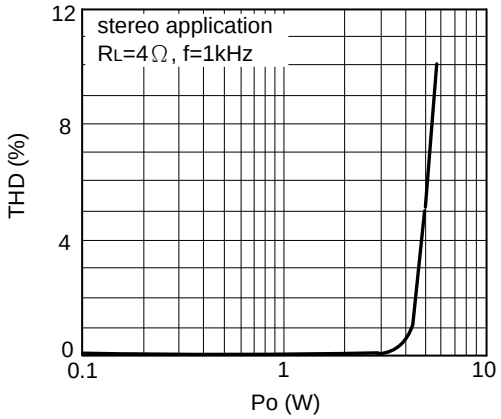


Fig.6 Total Harmonic Distortion
As a Function Of The Operating Frequency