2 × 6 W Hi-fi stereo power amplifier TDA1517P/TDA1517S

FEATURES

- Requires very few external components
- High output power
- Fixed gain
- Good ripple rejection
- Mute/standby switch
- AC and DC short-circuit safe to ground and V_P
- Thermally protected
- Meet the Hi-Fi audio performance
- Capability to handle high energy on outputs (V_P = 0 V)
- Almost no switch-on/switch-off pop noise
- Electrostatic discharge protection.

GENERAL DESCRIPTION

The BM TDA1517P is an integrated class-AB dual output amplifier in a plastic DIP18 power package. It can delivery 2*6W with a great low Iq standby mode. The device is primarily designed for LCD-TV, monitor and for multi-media AV center Hi-Fi applications.

TDA1517P is DIP18 package , TDA1517S is HSOP28 pacakge.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_P	supply voltage		6.0	14.4	18.0	V
I_{ORM}	repetitive peak output current		–	–	2.5	A
$I_{q(tot)}$	total quiescent current		–	40	80	mA
I_{sb}	standby current		–	0.1	100	µA
I_{sw}	switch-on current		–	–	40	µA
$\|Z_I\|$	input impedance		50	–	–	kΩ
P_o	output power	R_L = 4 Ω; THD = 0.5%	–	5	–	W
		R_L = 4 Ω; THD = 10%	–	6	–	W
SVRR	supply voltage ripple rejection	f_i = 100 Hz to 10 kHz	48	–	–	dB
α_{cs}	channel separation		40	–	–	dB
G_v	closed loop voltage gain		19	20	21	dB
$V_{no(rms)}$	noise output voltage (RMS value)		–	50	–	µV
T_c	crystal temperature		–	–	150	°C

Notes: Not only the Signal to Noise(S/N), also the Frequency Response(FR), the Hi-Fi BM-TDA1517P is much better than SL1517 and YD1517, and the switch on-off pop noise is lowest, which the performance customer can verify ! It can pin to pin replace YD1517 and SL1517 or D1517 without changing PCB or external.

2 × 6 W stereo power amplifier TDA1517P

BLOCK DIAGRAM

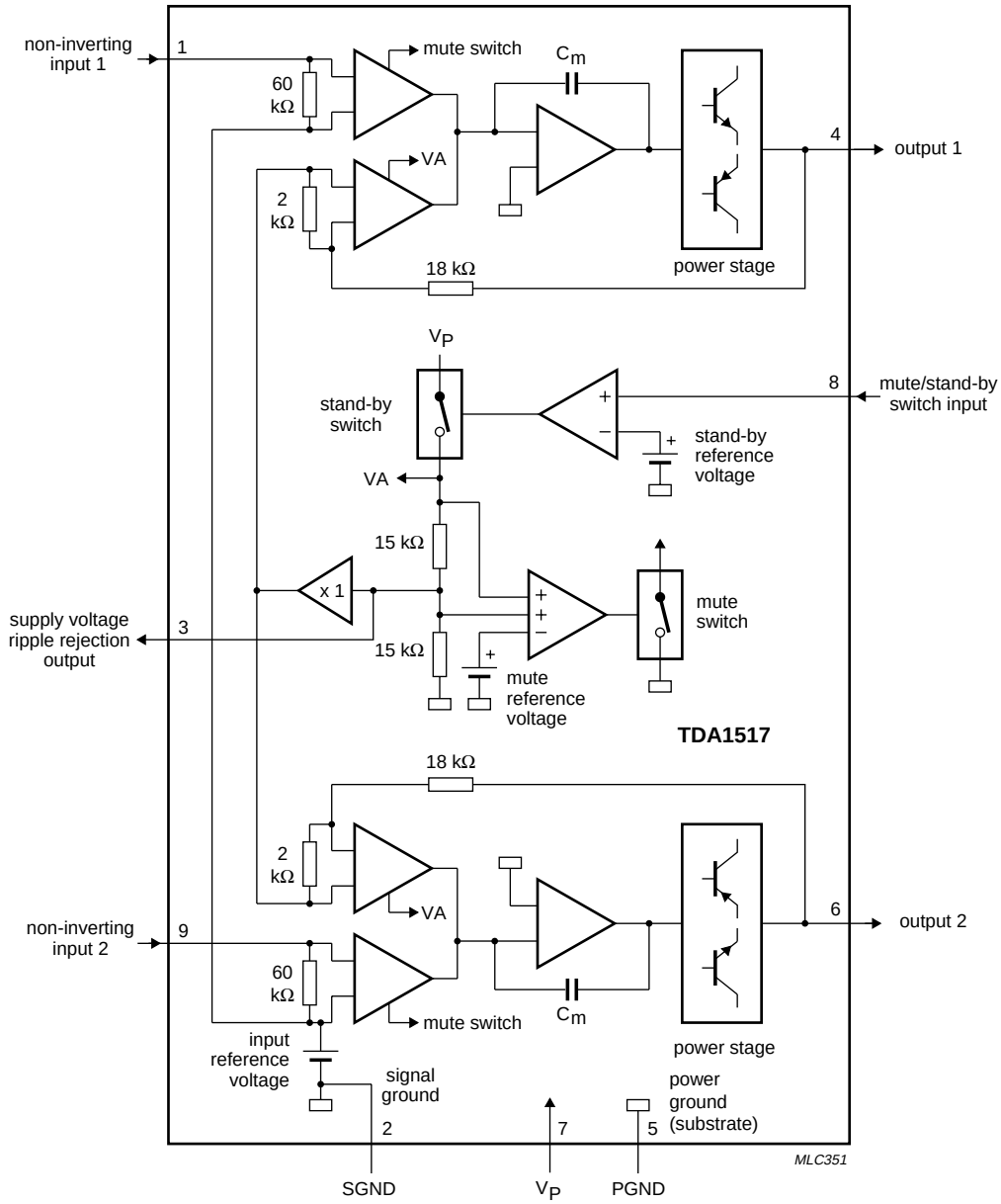
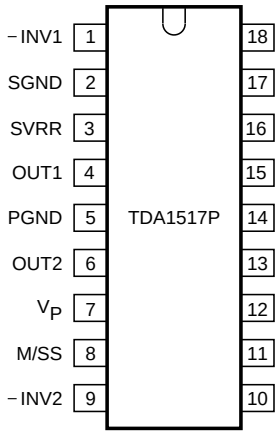


Fig.1 Block diagram.

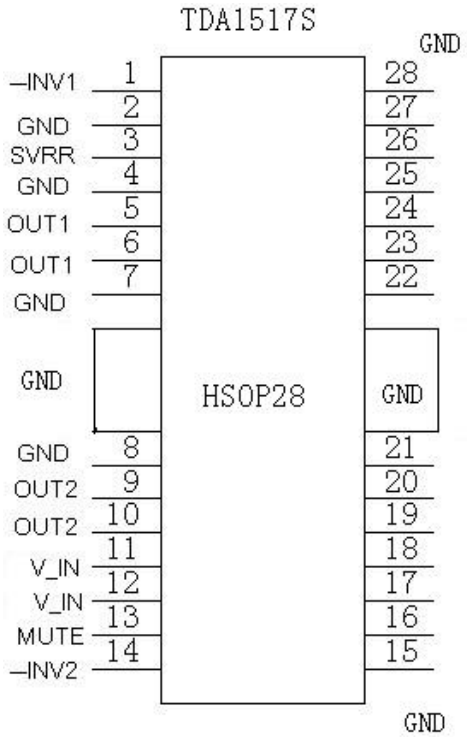
PINNING

	DIP18(HSOP28) PIN	DESCRIPTION
–INV1	1 (1)	input 1
SGND	2 (2,4)	signal ground
SVRR	3 (3)	supply voltage ripple rejection output
OUT1	4 (5,6)	output 1
PGND	5 (7,8)	power ground
OUT2	6 (9,10)	output 2
V_P	7 (11,12)	supply voltage
M/SS	8 (13)	mute/standby switch input
–INV2	9 (14)	input 2



Pins 10 to 18 should be connected to large area GND for heatsink .

Fig.3 Pin configuration for DIP18



FUNCTIONAL DESCRIPTION

The TDA1517 contains two identical amplifiers with differential input stages. The gain of each amplifier is fixed at 20 dB. A special feature of the device is the mute/standby switch which has the following features:

- Low standby current (<100 μA)
- Low mute/standby switching current (low cost supply switch)
- Mute condition.

2 × 6 W stereo power amplifier TDA1517

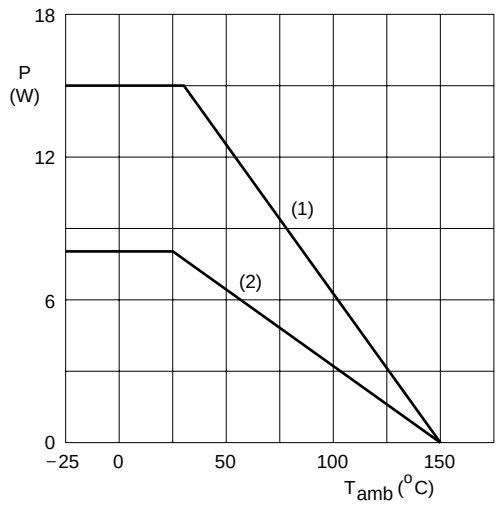
LIMITING VALUES

In accordance with the Absolute Maximum Rating System .

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_P	supply voltage		–	18	V
$V_{P(sc)}$	AC and DC short-circuit safe voltage		–	18	V
$V_{P(r)}$	reverse polarity		–	6	V
ERG_O	energy handling capability at outputs	V_P = 0 V	–	200	mJ
I_{OSM}	non-repetitive peak output current		–	4	A
I_{ORM}	repetitive peak output current		–	2.5	A
P_{tot}	total power dissipation	see Fig.4	–	15	W
T_{stg}	storage temperature		–45	+150	°C
T_{amb}	operating ambient temperature		–20	+85	°C
T_c	crystal temperature		–	150	°C

THERMAL RESISTANCE

SYMBOL	TYPE NUMBER	PARAMETER	VALUE	UNIT
$R_{th\ j\text{-}c}$	TDA1517	thermal resistance from junction to case	8	K/W
$R_{th\ j\text{-}p}$	TDA1517	thermal resistance from junction to pins	15	K/W
$R_{th\ j\text{-}a}$	TDA1517	thermal resistance from junction to ambient	50	K/W



(1) $R_{th\ j\text{-}c}$ = 8 K/W.
(2) $R_{th\ j\text{-}p}$ = 15 K/W.

Fig.4 Power derating curve.

DC CHARACTERISTICS

V_P = 14.4 V; T_{amb} = 25 °C; measured in Fig.6; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supply						
V_P	supply voltage	note 1	6.0	14.4	18.0	V
$I_{q(tot)}$	total quiescent current		–	40	80	mA
V_O	DC output voltage		–	6.95	–	V
Mute/standby switch						
V_8	switch-on voltage level	see Fig.5	8.5	–	–	V
Mute condition						
V_O	output signal in mute position	$V_{I(max)}$ = 1 V; f_i = 20 Hz to 15 kHz	–	–	2	mV
Standby condition						
I_{sb}	DC current in standby condition		–	–	100	µA
V_{sw}	switch-on current		–	12	40	µA

Note

1. The circuit is DC adjusted at V_P = 6 to 18 V and AC operating at V_P = 8.5 to 18 V.

AC CHARACTERISTICS

V_P = 14.4 V; R_L = 4 Ω; f = 1 kHz; T_{amb} = 25 °C; measured in Fig.6; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
P_o	output power	THD = 0.5%; note 1	4	5	–	W
		THD = 10%; note 1	5.5	6.0	–	W
THD	total harmonic distortion	P_o = 1 W	–	0.1	–	%
f_{lr}	low frequency roll-off	at –3 dB; note 2	–	45	–	Hz
f_{hr}	high frequency roll-off	at –1 dB	20	–	–	kHz
G_v	closed loop voltage gain		19	20	21	dB
SVRR	supply voltage ripple rejection	note 3				
	on		48	–	–	dB
	mute		48	–	–	dB
	standby		80	–	–	dB
$\|Z_i\|$	input impedance		50	60	75	kΩ
V_{no}	noise output voltage					
	on	R_s = 0 Ω; note 4	–	50	–	μV
	on	R_s = 10 Ω; note 4	–	70	100	μV
	mute	note 5	–	50	–	μV
α_{cs}	channel separation	R_s = 10 Ω	40	–	–	dB
$\|\Delta G_v\|$	channel unbalance		–	0.1	1	dB

Notes

1. Output power is measured directly at the output pins of the IC.
2. Frequency response externally fixed.
3. Ripple rejection measured at the output with a source impedance of 0 Ω, maximum ripple amplitude of 2 V (p-p) and a frequency between 100 Hz and 10 kHz.
4. Noise voltage measured in a bandwidth of 20 Hz to 20 kHz.
5. Noise output voltage independent of R_s (V_I = 0 V).

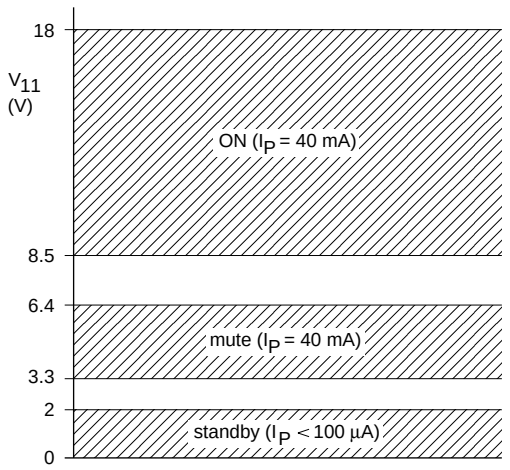


Fig.5 Standby, mute and on conditions.

APPLICATION INFORMATION

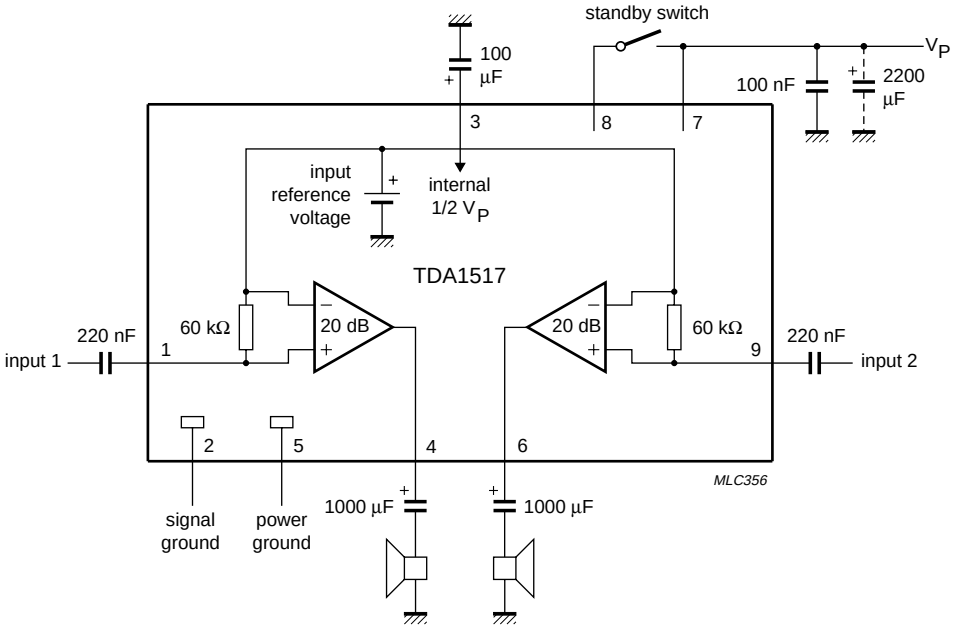
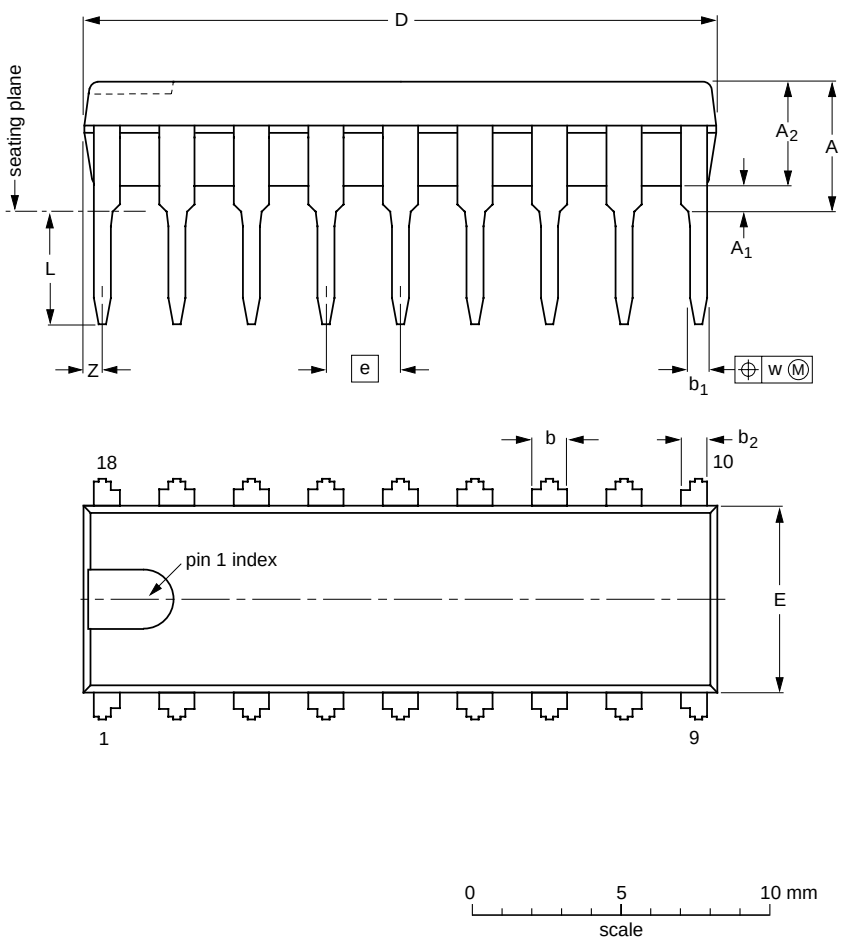


Fig.6 Application circuit diagram.

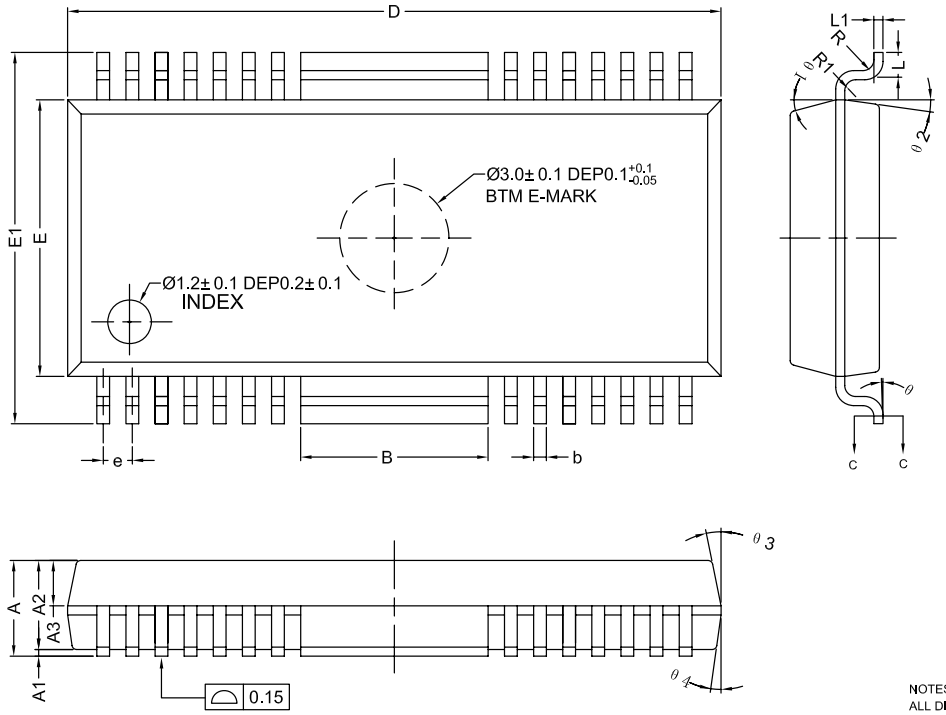
DIP18: plastic heat-dissipating dual in-line package; 18 leads



DIMENSIONS (inch dimensions are derived from the original mm dimensions)

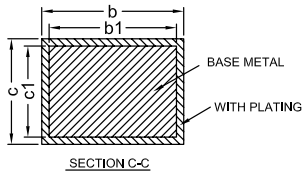
UNIT	A max.	A_1 min.	A_2 max.	b	b_1	b_2	c	D (1)	E (1)	e	e_1	L	M_E	M_H	w	Z (1) max.
mm	4.7	0.51	3.7	1.40 1.14	0.67 0.50	1.05 0.75	0.47 0.38	21.85 21.35	6.5 6.2	2.54	7.62	3.9 3.1	8.32 8.02	8.7 7.7	0.25	1.0
inches	0.19	0.02	0.15	0.06 0.04	0.03 0.02	0.04 0.03	0.02 0.01	0.87 0.84	0.26 0.24	0.10	0.30	0.15 0.12	0.33 0.32	0.34 0.30	0.01	0.04

HSOP28 package outline size



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	2.35	2.55	2.75
A1	0	-	0.25
A2	2.35	2.45	2.55
A3	1.15	1.25	1.35
B	5.00	5.15	5.30
b	0.31	-	0.44
b1	0.30	0.35	0.40
c	0.21	-	0.34
c1	0.20	0.25	0.30
D	17.85	17.95	18.05
E	7.50	7.60	7.70
E1	10.00	-	10.60
e	0.70	0.80	0.90
L	0.50	0.65	0.80
L1		0.25BSC	
R	0.10	-	-
R1	0.10	-	-
θ	0°	-	8°
θ1	13°	15°	17°
θ2	6°	8°	10°
θ3	9.5°	11.5°	13.5°
θ4	6°	8°	10°



NOTES:
ALL DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.