

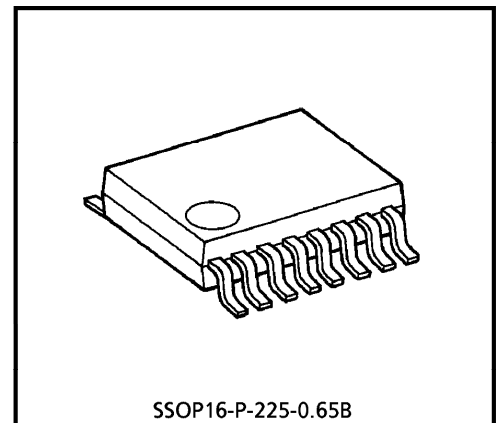
TA8145FN

STEREO HEADPHONE AMPLIFIER (1.5V USE)

The TA8145FN is a stereo headphone power amplifier IC, which is developed for low voltage operation (1.5V). It is especially suitable for a stereo headphone cassette player.

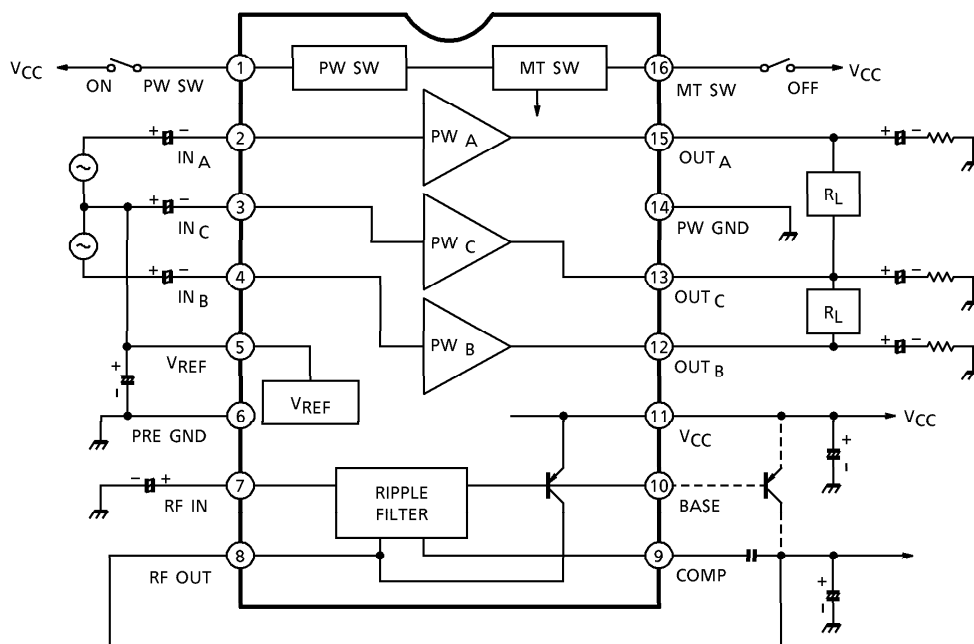
FEATURES

- OCL (Output Condenser-Less)
- Built-in a ripple filter
- $G_V = 22\text{dB}$ (Typ.)
- Output power : $P_O = 8\text{mW}$ (Typ.)
($V_{CC} = 1.5\text{V}$, $R_L = 16\Omega$, $\text{THD} = 10\%$, $T_a = 25^\circ\text{C}$)
- Built-in a power switch.
- Built-in a power amplifier mute.
- Excellent ripple rejection ratio : $\text{RR} = 52\text{dB}$ (Typ.)
- Low noise : $V_{no} = 27\mu\text{V}_{\text{rms}}$ (Typ.)
- Operating supply voltage range ($T_a = 25^\circ\text{C}$)
 $V_{CC}(\text{opr}) = 0.9 \sim 2.2\text{V}$



Weight : 0.09g (Typ.)

BLOCK DIAGRAM



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	4.5	V
Output Current	Power amplifier	$I_{O(peak)}$	60	mA
	Ripple Filter (Built-in transistor)	I_{RF}	5	
Power Dissipation (Note)		P_D	400	mW
Operating Temperature		T_{opr}	-25~75	°C
Storage Temperature		T_{stg}	-55~150	

Note : Derated above Ta = 25°C in the proportion of 3.2mW/°C.

ELECTRICAL CHARACTERISTICS

Unless otherwise specified. $V_{CC} = 1.2V$, $R_L = 16\Omega$, $R_g = 600\Omega$, $f = 1kHz$, $T_a = 25^\circ C$
 $SW_1 : a$, $SW_2 : a$, $SW_3 : a$, $SW_4 : ON$, $SW_5 : ON$

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current		I_{CCQ1}	—	Power off, $SW_1 : b$, $SW_2 : b$	—	0.1	5	μA
		I_{CCQ2}	—	Mute on, $SW_2 : b$	—	1.6	3	mA
		I_{CCQ3}	—	$V_{in} = 0$, $SW_3 : b$	—	10	14	
Power Amplifier	Voltage Gain	G_V	—	$V_O(A) = V_O(B) = -22dBV$	20	22	24	dB
	Channel Balance	CB	—	$V_O = -22dBV$	—	0	1.5	
	Output Power	P_O	—	$V_{CC} = 1.5V$, THD = 10% $V_{in}(A) = V_{in}(B)$	5	8	—	mW
	Total Harmonic Distortion	THD	—	$V_{CC} = 1V$ $P_O(A) = P_O(B) = 0.5mW$	—	0.7	1.5	%
	Output Noise Voltage	V_{no}	—	$SW_3 : b$, BPF = 20Hz~20kHz	—	27	40	μV_{rms}
	Cross Talk	CT	—	$V_O = -22dBV$	31	37	—	dB
	Ripple Rejection Ratio	RR1	—	$V_{CC} = 1V$, $f_r = 100Hz$ $V_r = -32dBV$, $SW_4 : OPEN$	45	52	—	
	Muting Attenuation	ATT	—	$V_O = -22dBV$, $SW_2 : a \rightarrow b$	65	80	—	
Ripple Filter Output Voltage		V_{RF}	—	$V_{CC} = 1V$, $I_{RF} = 30mA$	0.86	0.9	—	V
Ripple Rejection Ratio Of Ripple Filter Output		RR2	—	$V_{CC} = 1V$, $I_{RF} = 30mA$ $f_r = 100Hz$, $V_r = -32dBV$ $SW_4 : OPEN$	30	37	—	dB
Power Switch	Power On Current	I_1	—	$V_{CC} = 0.9V$, $V_5 \geq 0.5V$, $SW_1 : c$	5	—	—	μA
	Power Off Voltage	V_1	—	$V_{CC} = 0.9V$, $V_5 \leq 0.1V$ $SW_1 : d$	0	—	0.3	V
Mute Switch	Mute Off Current	I_{16}	—	$V_{CC} = 0.9V$, $V_{13} \geq 0.3V$, $SW_2 : c$	5	—	—	μA
	Mute On Voltage	V_{16}	—	$V_{CC} = 0.9V$, $V_{13} \leq 0.3V$ $SW_2 : d$	0	—	0.3	V

TEST CIRCUIT

