PRELIMINARY PRODUCT INFORMATION

NEC
ELECTRON DEVICE

BIPOLAR ANALOG INTEGRATED CIRCUIT

μPC2502

19W BTL DUAL AUDIO POWER AMPLIFIER

DESCRIPTION

The μPC2502V is an audio power amplifier in a 15-lead-vertical-dual-in-line package, specifically designed for car stereo applications.

Typically it provides output power of 19W at 13.2V to a 4Ω load.

This IC can be used without output capacitors, because its two output terminals have the same potential and it includes original short circuit protection function which protects internal output power transistors and a speaker at the same time when one output terminal is shorted to ground or Vcc.

FEATURES

- Internal stand-by switch circuit; CMOS drive possible.
- Can be used as OCL connection.
- Very low output offset voltage: V_{offset}=300mV(MAX.)
- High output power: P_O=19W(TYP.) @R_L=4Ω, Vcc=13.2V, THD=10%
- Very low distortion: THD=0.03%(TYP.) @R_L=4Ω, Vcc=13.2V, P_O=4W, f=1kHz
- Following protection circuits are included.
  (1) Load dump voltage surge protection circuit.
  (2) Thermal shut down protection circuit.
  (3) Output terminal short circuit protection circuit.(Vcc to OUT, OUT to GND, OUT to OUT)
  (4) Loadspeaker protection circuit.

ORDERING INFORMATION

ORDER NAME	PACKAGE
μPC2502V	15PIN PLASTIC POWER V-DIP

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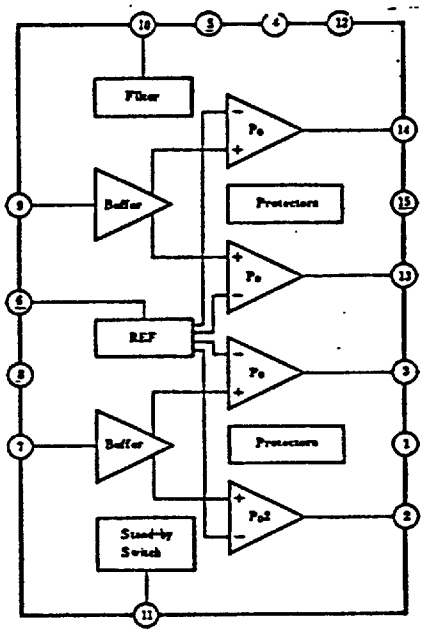
BLOCK DIAGRAM

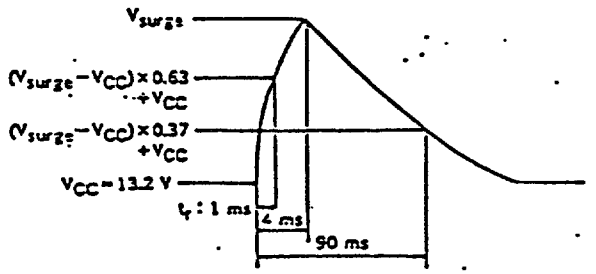


PIN CONNECTION

PIN NO.	CONNECTION	PIN NO.	CONNECTION
1	GND for OUTPUT2	9	INPUT1
2	OUTPUT2 (negative phase)	10	FILTER
3	OUTPUT2(in-phase)	11	STAND-BY SWITCH
4	V_{CC2}	12	V_{CC1}
5	GND(Sub)	13	OUTPUT1 (negative phase)
6	REFERENCE	14	OUTPUT1(in-phase)
7	INPUT2	15	GND for OUTPUT1
8	GND for INPUT		

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Supply Voltage (Note)	$V_{CC\ surge}$	60*	V
Supply Voltage (Operational)	V_{CC}	18	V
Output Current (Instantaneous)	I_o	8	A
Power Dissipation	P_D	50	W
Operating Temperature	T_{opt}	−30 to +85	°C
Storage Temperature	T_{stg}	−40 to +150	°C



Surge Pulse Waveform

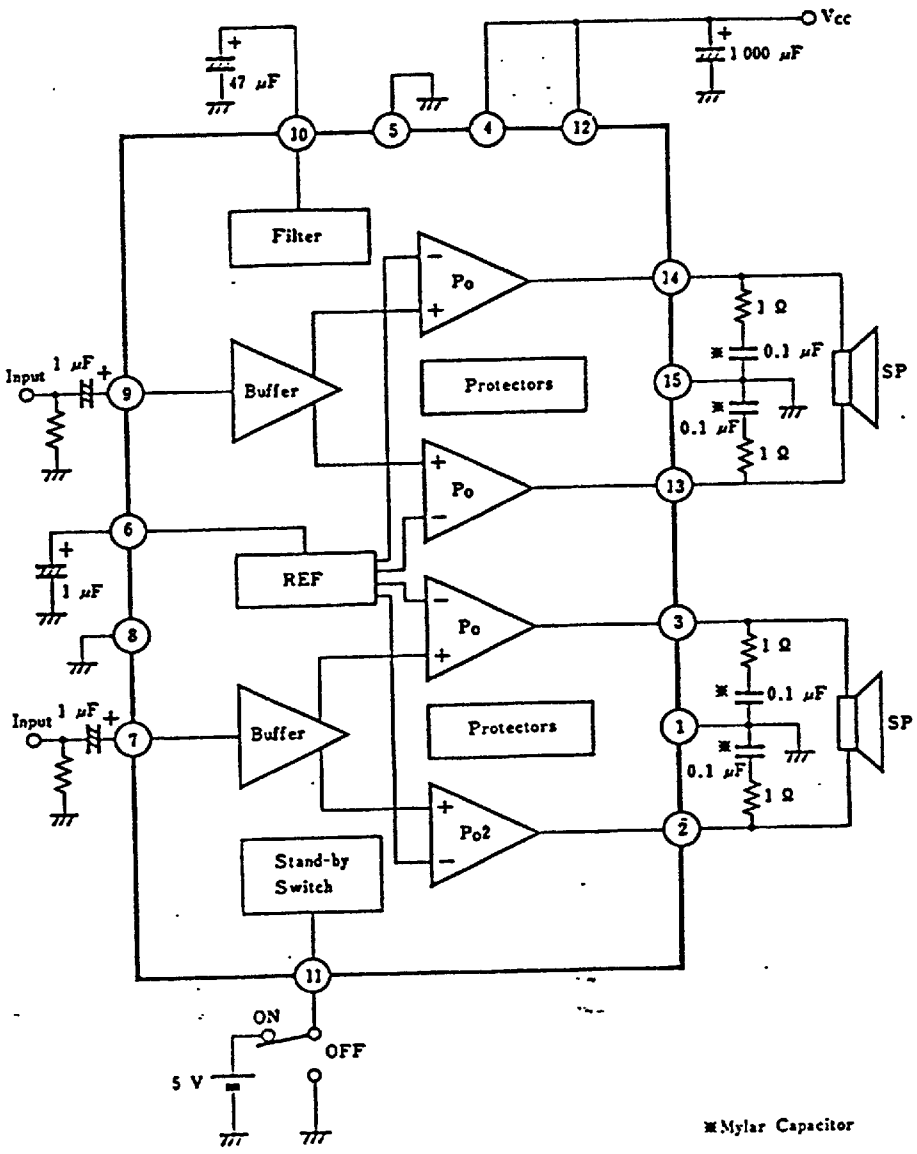
RECOMMENDED OPERATING CONDITIONS (T_a = 25 °C)

Supply Voltage Range	9 to 16	V
Load Impedance	4 to 8	Ω
Pin Voltage (Operating)	3.5 to V_{CC}	V
Pin Voltage (Stand-by)	0 to 1.5	V
Voltage Gain	34 MIN.	dB
Input Voltage Level	1 MAX.	$V_{r.m.s.}$

ELECTRICAL CHARACTERISTICS (T_a = 25 °C, V_{CC} = 13.2 V, R_L = 4 Ω, f = 1 kHz)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Quiescent Current	I_{CC}		80		mA	V_i = 0
Output Offset Voltage	V_{offset}		0		mV	V_i = 0
Output Power	P_{O1}		19		W	R_L = 4 Ω, THD = 10 %
	P_{O2}		12		W	R_L = 4 Ω, THD = 1 %
Voltage Gain	A_v		40		dB	P_O = 2 W
Total Harmonic Distortion	THD_1		0.03		%	R_L = 4 Ω, P_O = 1 W
	THD_2				%	R_L = 4 Ω, P_O = 4 W
Output Noise Level	V_n		0.4		mV	R_G = 0, BW = 20 Hz to 20 kHz
Supply Voltage Rejection Ratio	SVR		50		dB	R_G = 0, f_{rip} = 100 Hz, V_{rip} = 1.0 V
Input Resistance	R_i		30		kΩ	
Roll-off Frequency	f_H		250		kHz	A_v = −3 dB from 1 kHz Ref High
	f_L		5		Hz	A_v = −3 dB from 1 kHz Ref Low
Stand-by Current	$I_{CC(SB)}$		1		μA	$0 \le V_{IL} \le 1.5$ V

APPLICATION CIRCUIT

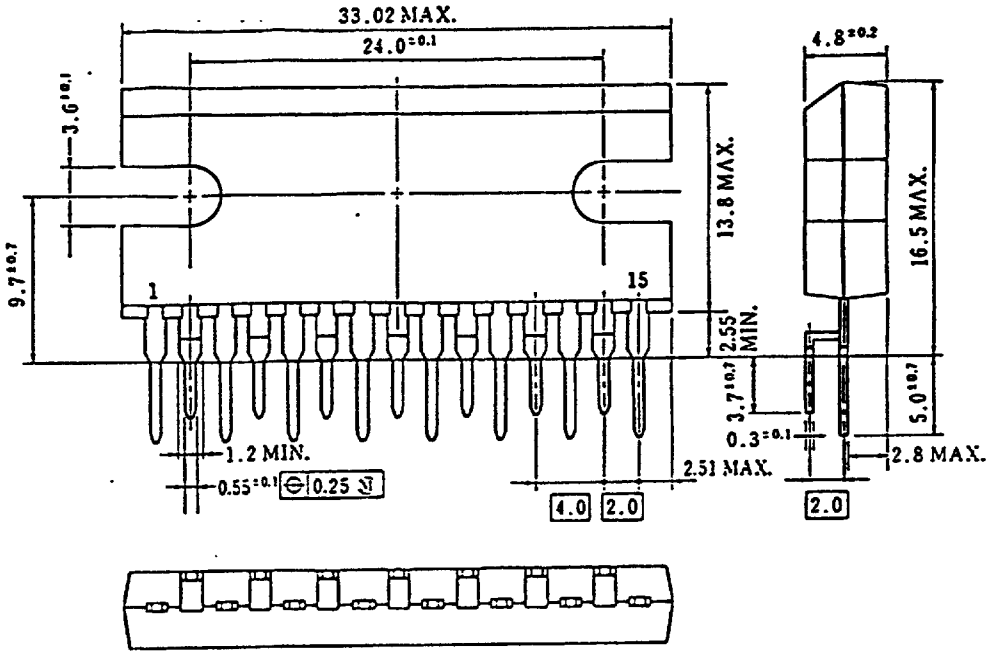


INSTRUCTION FOR USE

(1) How to attach the heatsink.

- Surely use the silicon grease.
- Please keep the fastening torque for the screw in the range of 5 to 8 kg-cm.
- Flatness of attached area of heatsink should be kept within 0.1 mm.

15PIN PLASTIC POWER V-DIP (Unit : mm)



P15VP-400B