10W AUDIO AMPLIFIER

DESCRIPTION

The main features of ILA 2003, very low number of external components, ease of assembly, space and cost saving, are maintained.
The device provides a high output current capability (up to 3.5A) very low harmonic and cross-over distortion.
Completely safe operation is guaranteed due to protection against DC and AC short circuit between all pins and ground, thermal over-range, load dump voltage surge up to 40V and fortuitous open ground.

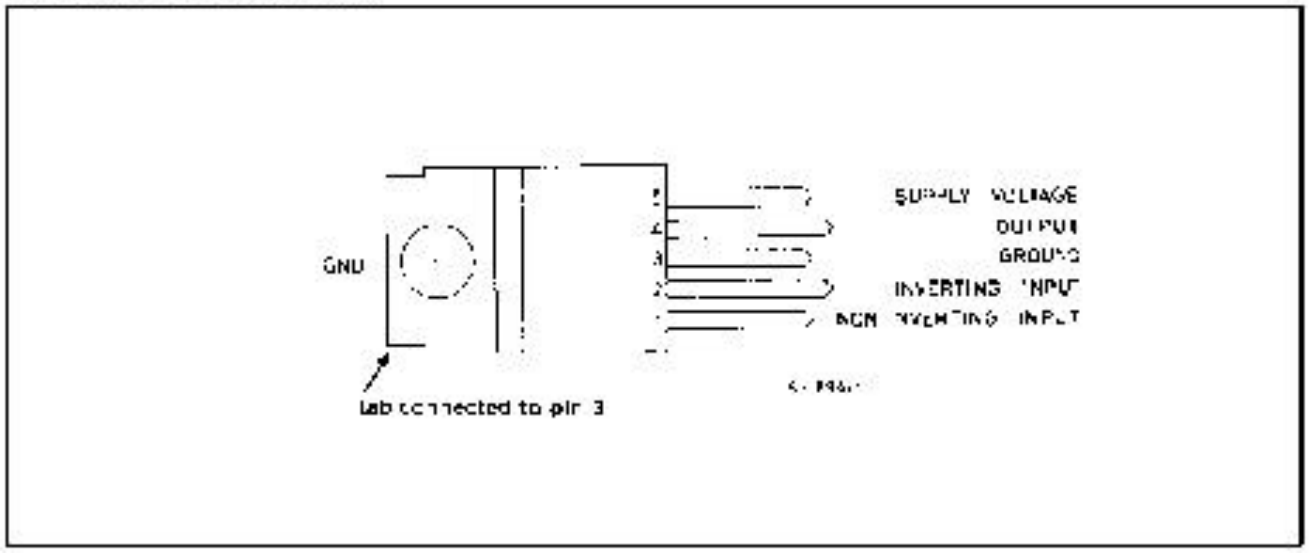
PENTAWATT

ORDERING NUMBERS : **ILA2003**

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_s	Peak supply voltage (50 ms)	40	V
V_s	DC supply voltage	28	V
V_s	Operating supply voltage	18	V
I_o	Output peak current (repetitive)	3.5	A
I_o	Output peak current (non repetitive)	4.5	A
P_{tot}	Power dissipation at T_{case} = 90 °C	20	W
T_{stg}, T_j	Storage and junction temperature	-40 to 150	°C

PIN CONNECTION (top view)



THERMAL DATA

Symbol	Parameter		Value	Unit
$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	3	°C/W

ELECTRICAL CHARACTERISTICS (V_s = 14.4V, T_{amb} = 25 °C unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
DC CHARACTERISTICS (Refer to DC test circuit)						
V_s	Supply voltage		8		18	V
V_o	Quiescent output voltage (pin 4)		6.1	6.9	7.7	V
I_d	Quiescent drain current (pin 5)			44	50	mA
AC CHARACTERISTICS (Refer to AC test circuit, Gv = 40 dB)						
P_o	Output power	d = 10% f = 1 kHz 	R_L = 4Ω R_L = 2Ω R_L = 3.2Ω R_L = 1.6Ω	5.5 9 	6 10 7.5 12	 	W W W W
$V_{i(rms)}$	Input saturation voltage			300			mV
V_i	Input sensitivity	f = 1 kHz P_o = 0.5W P_o = 6W P_o = 0.5W P_o 10W	 R_L = 4Ω R_L = 4Ω R_L = 2Ω R_L = 2Ω	 	 14 55 10 50	 	 mV mV mV mV

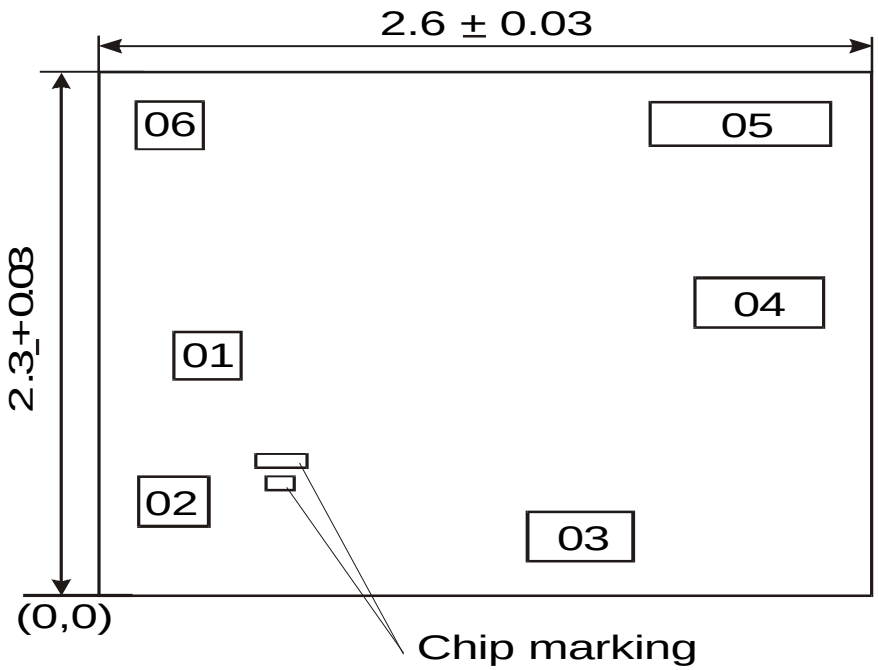
ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
B	Frequency response (-3 dB)	P_o = 1W R_L = 4Ω		40 to 15,000		Hz
d	Distortion	f = 1 kHz P_o = 0.05 to4.5W R_L = 4Ω P_o = 0.05 to 7.5W R_L = 2Ω		 0.15 0.15		 % %
R_i	Input resistance (pin 1)	f = 1 kHz	70	150		kΩ
G_v	Voltage gain (open loop)	f = 1 kHz f = 10 kHz		80 60		dB dB
G_v	Voltage gain (closed loop)	f = 1 kHz R_L = 4Ω	39.3	40	40.3	dB
e_N	Input noise voltage (0)			1	5	μV
i_N	Input noise current (0)			60	200	pA
η	Efficiency	f = 1 Hz P_o = 6W P_o = 10W	 R_L = 4Ω R_L = 2Ω	 69 65	 	 % %
SVR	Supply voltage rejection	f = 100 Hz V_{ripple} = 0.5V R_g = 10 kΩ	 R_L = 4Ω	 30	 36	 	 dB

(0) Filter with noise bandwidth: 22 Hz to 22 kHz

IZ2003

CHIP DIAGRAM



Chip marking (X=0,540, Y=0,530) **YH14**

PAD LOCATION

Pin No	Pad No	Symbol	X	Y	Pad size (mm)
01	01	IN	0.224	0.890	0.230 x 0.219
02	02	$\overline{\text{IN}}$	0.113	0.291	0.230 x 0.209
03	03	GND	1.367	0.195	0.437 x 0.266
04	04	OUT	1.985	1.078	0.500 x 0.238
05	05	Ud	1.812	1.942	0.673 x 0.230
03	06	GND	0.132	1.957	0.258 x 0.230

Pad size is given as per metallization layer

PENTAWATT PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.8		1.05	0.031		0.041
F1	1		1.4	0.039		0.055
G		3.4		0.126	0.134	0.142
G1		6.8		0.260	0.268	0.276
H2			10.4			0.409
H3	10.05		10.4	0.396		0.409
L		17.85			0.703	
L1		15.75			0.620	
L2		21.4			0.843	
L3		22.5			0.886	
L5	2.6		3	0.102		0.118
L6	15.1		15.8	0.594		0.622
L7	6		6.6	0.236		0.260
M		4.5			0.177	
M1		4			0.157	
Dia	3.65		3.85	0.144		0.152