TDA7297D

10W+10W DUAL BRIDGE AMPLIFIER

1 FEATURES

- TECHNOLOGY BI20II
- WIDE SUPPLY VOLTAGE RANGE (6.5 - 18V)
- OUTPUT POWER 10+10W @ THD = 10%, R_L = 8Ω, V_{CC} = 13V
- MINIMUM EXTERNAL COMPONENTS
  - NO SVR CAPACITOR
  - NO BOOTSTRAP
  - NO BOUCHEROT CELLS
  - INTERNALLY FIXED GAIN
- STAND-BY & MUTE FUNCTIONS
- SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTIONE

Figure 1. Package

PowerSO20 (SLUG UP)

Table 1. Order Codes

Part Number	Package
TDA7297D	PowerSO20 (SLUG UP)

2 DESCRIPTION

The TDA7297D is a dual bridge amplifier specially designed for Home Audio, Plasma TV, LCD TV applications.

Figure 2. TEST AND APPLICATION CIRCUIT

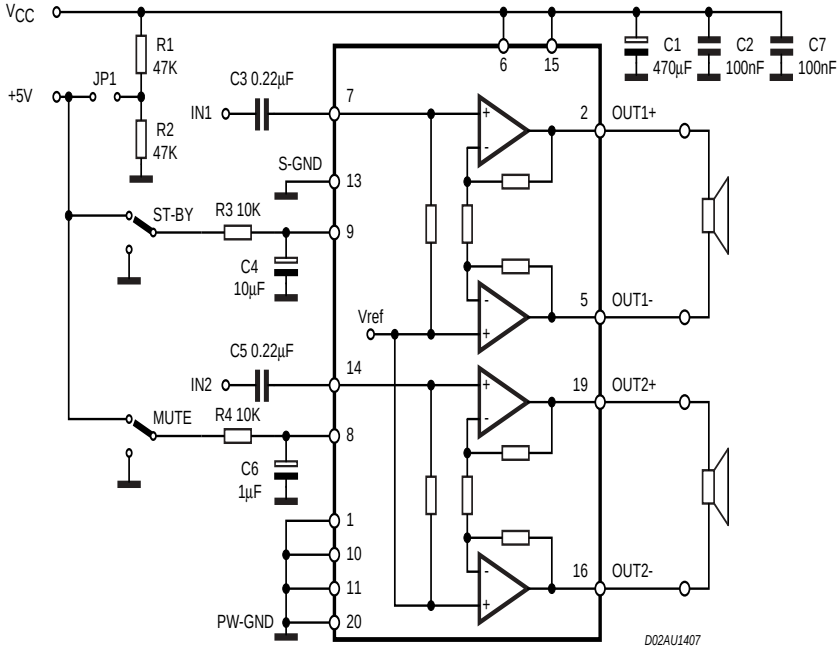


Table 2. Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_S	Supply Voltage	20	V
I_O	Output Peak Current (internally limited)	2	A
P_{tot}	Total Power Dissipation (T_{amb} = 70°C	33	W
T_{op}	Operating Temperature	0 to 70	°C
T_{stg}, T_j	Storage and Junction Temperature	-40 to 150	°C

Table 3. Thermal Data

Symbol	Parameter	Value	Unit
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	2.1	°C/W

Figure 3. PIN CONNECTION

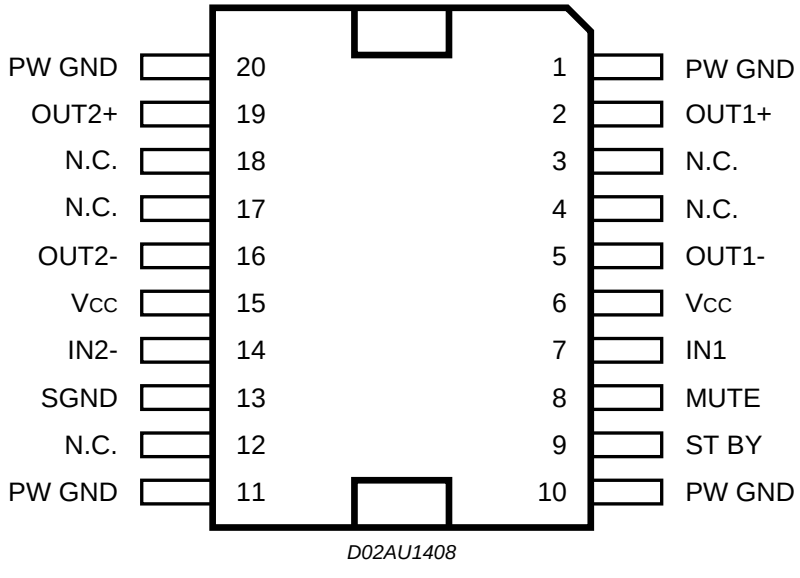


Table 4. Electrical Characteristcs (V_{CC} = 13V, R_L = 8Ω, f = 1KHz, T_{amb} = 25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_{CC}	Supply Range		6.5		18	V
I_q	Total Quiescent Current	$R_L = \infty$		50	65	mA
V_{OS}	Output Offset Voltage				120	mV
P_O	Output Power	THD 10%	8.3	10		W
THD	Total Harmonic Distortion	P_O = 1W		0.1	0.3	%
		P_O = 0.1W to 5W f = 100Hz to 15KHz			1	%
SVR	Supply Voltage Rejection	f = 100Hz, VR =0.5V	40	56		dB
CT	Crosstalk		46	60		dB
A_{MUTE}	Mute Attenuation		60	80		dB
T_w	Thermal Threshold			150		°C
G_V	Closed Loop Voltage Gain		31	32	33	dB
ΔG_V	Voltage Gain Matching				0.5	dB
R_i	Input Resistance		25	30		KΩ
VT_{MUTE}	Mute Threshold	Vo = -30dB	2.3	2.9	4.1	V
VT_{ST-BY}	St-by Threshold		0.8	1.3	1.8	V
I_{ST-BY}	St-by Current				100	µA
e_N	Total Output Noise Voltage	A Curve f = 20Hz to 20KHz		150 220	 500	µV µV

3 APPLICATIVE SUGGESTIONS

STAND-BY AND MUTE FUNCTIONS

3.1 Microprocessor Application

In order to avoid annoying "Pop-Noise" during Turn-On/Off transients, it is necessary to guarantee the right St-by and mute signals sequence.It is quite simple to obtain this function using a microprocessor (Fig. 4 and 5).

At first St-by signal (from µP) goes high and the voltage across the St-by terminal (Pin 9) starts to increase exponentially. The external RC network is intended to turn-on slowly the biasing circuits of the amplifier, this to avoid "POP" and "CLICK" on the outputs.

When this voltage reaches the St-by threshold level, the amplifier is switched-on and the external capacitors in series to the input terminals (C1, C3) start to charge.

It's necessary to mantain the mute signal low until the capacitors are fully charged, this to avoid that the device goes in play mode causing a loud "Pop Noise" on the speakers.

A delay of 100-200ms between St-by and mute signals is suitable for a proper operation.

Figure 4. Microprocessor Application

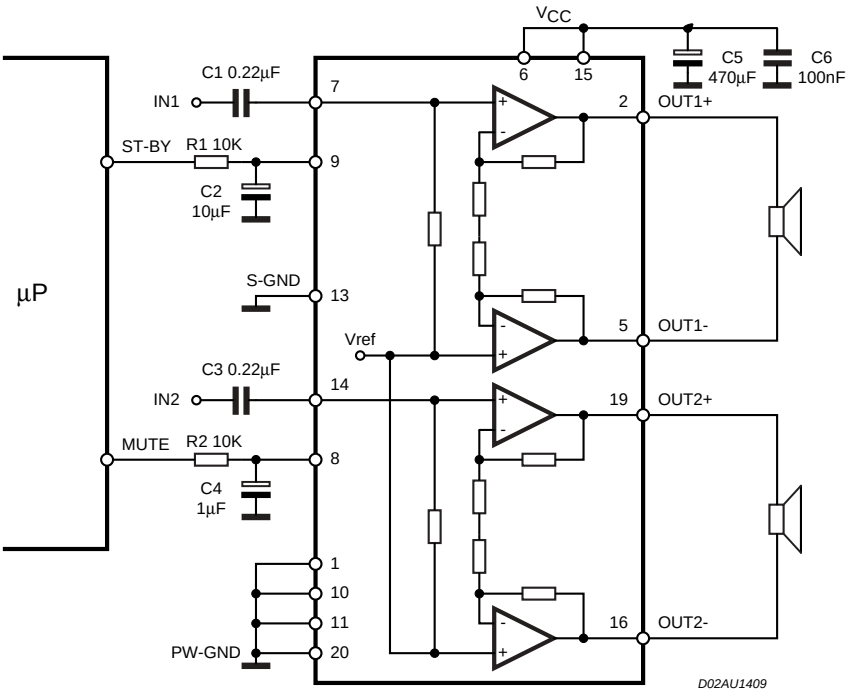


Figure 5. Microprocessor Driving Signals

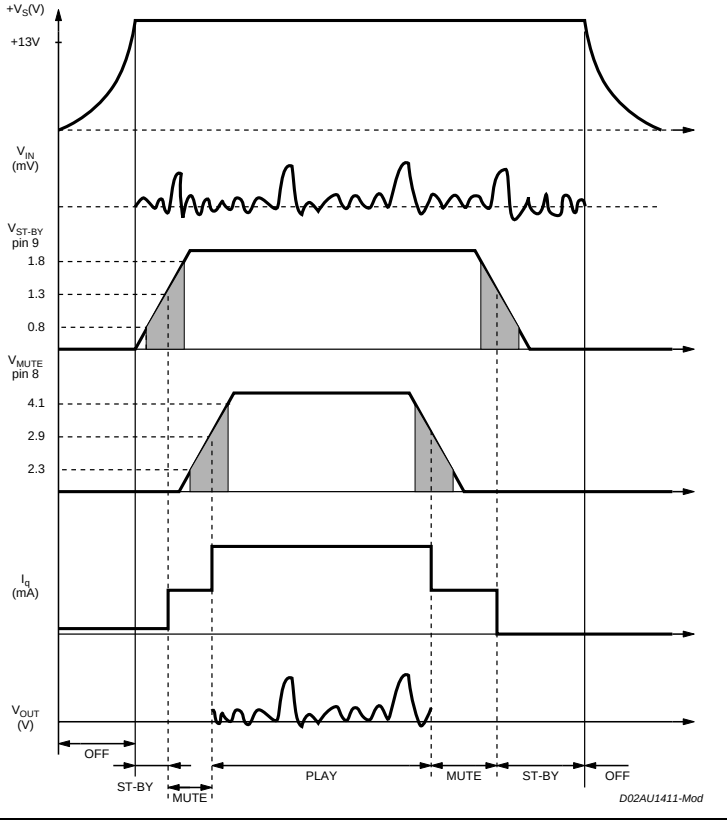


Figure 6. THD+N vs Output Power

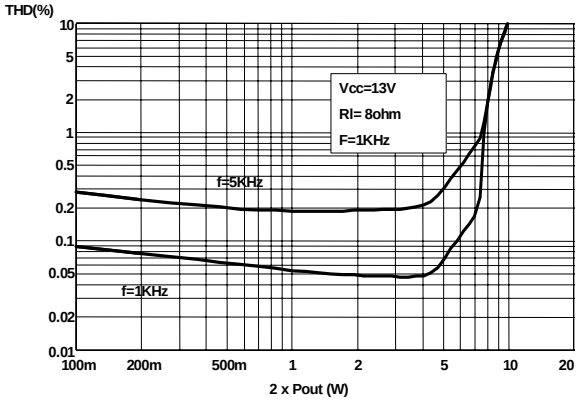


Figure 7. THD+N vs Output Power

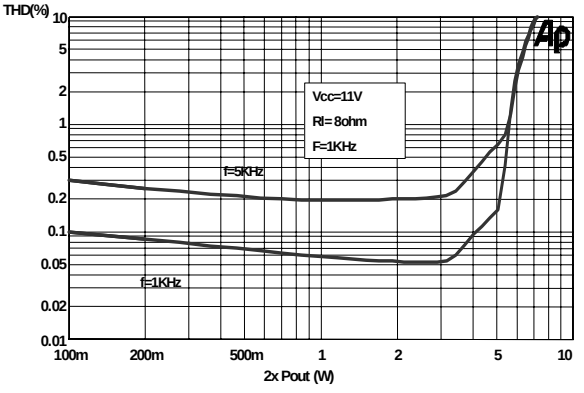


Figure 8. THD+N vs Frequency

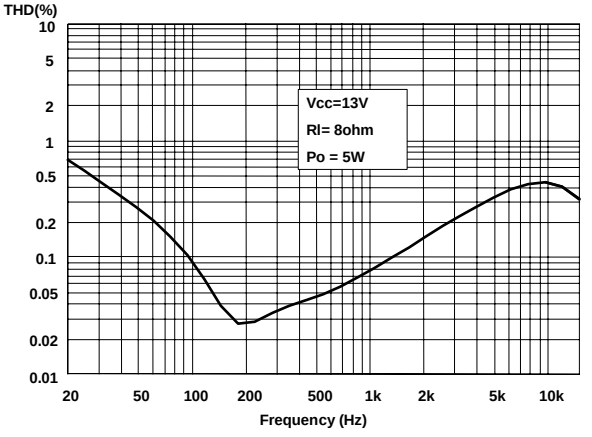


Figure 9. Frequency Response

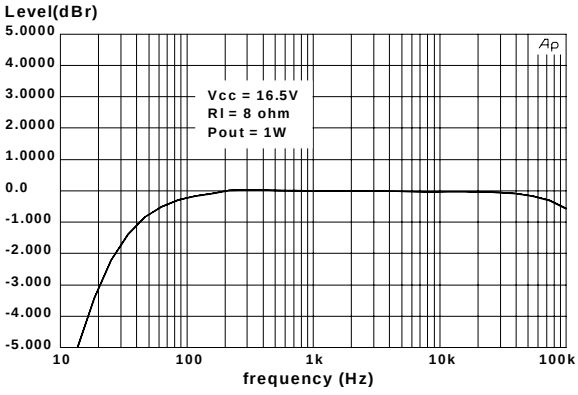


Figure 10. Output Power vs supply Voltage

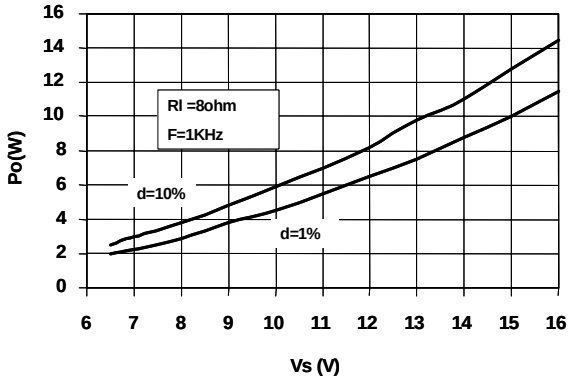


Figure 11. Power Dissipation vs Pout

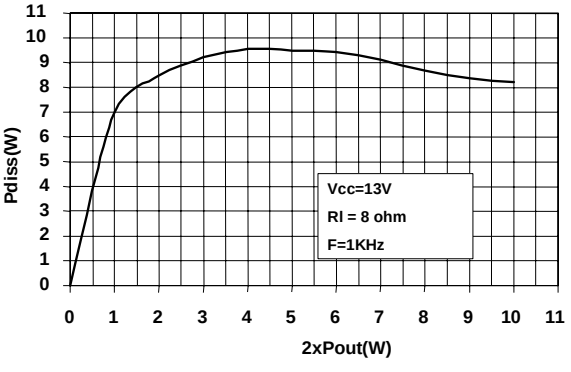


Figure 12. Mute Attenuation vs. Vpin 8t

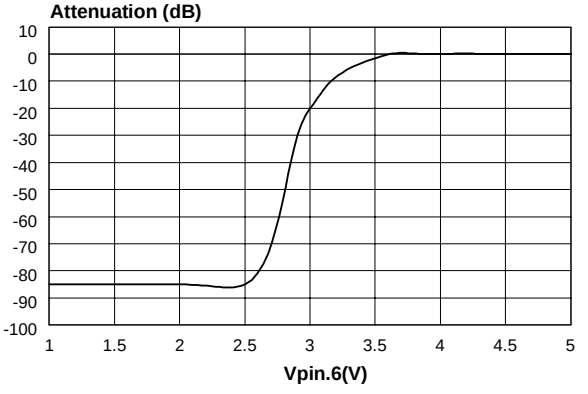


Figure 13. Standard-By Attenuation vs Vpin. 9

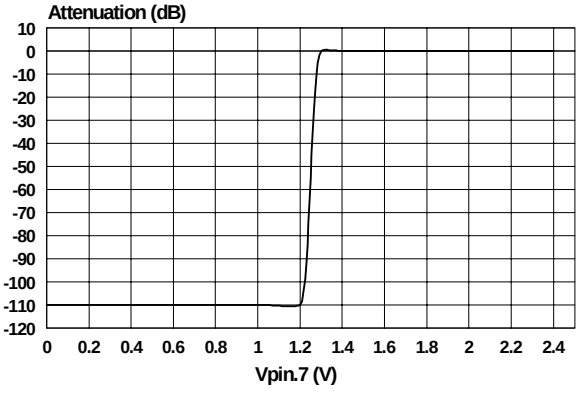


Figure 14. Quiescent Curent vs. Supply Voltage

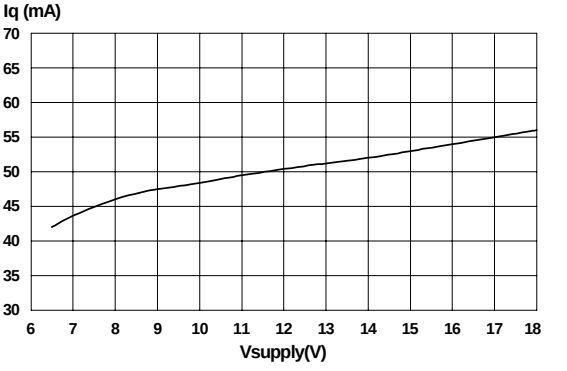


Figure 15. PC Board Component Layout

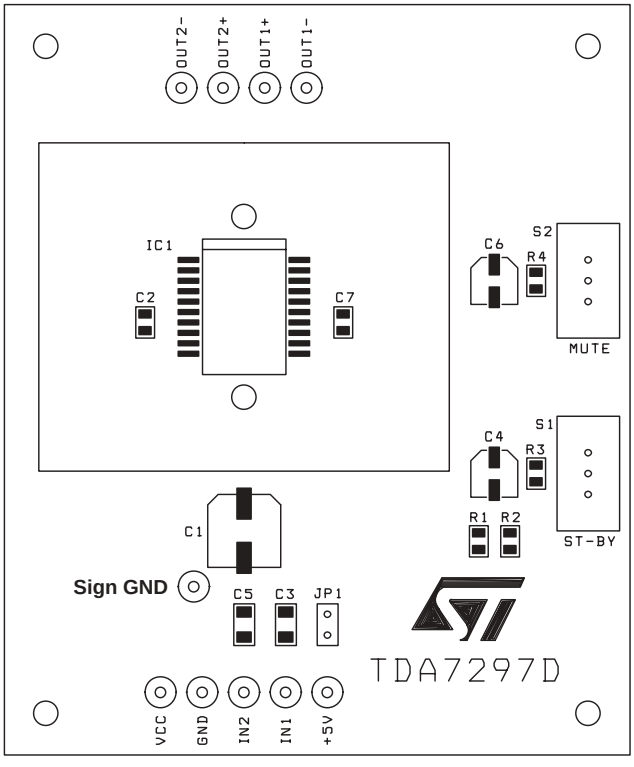


Figure 16. Evaluation Board Top Layer Layout

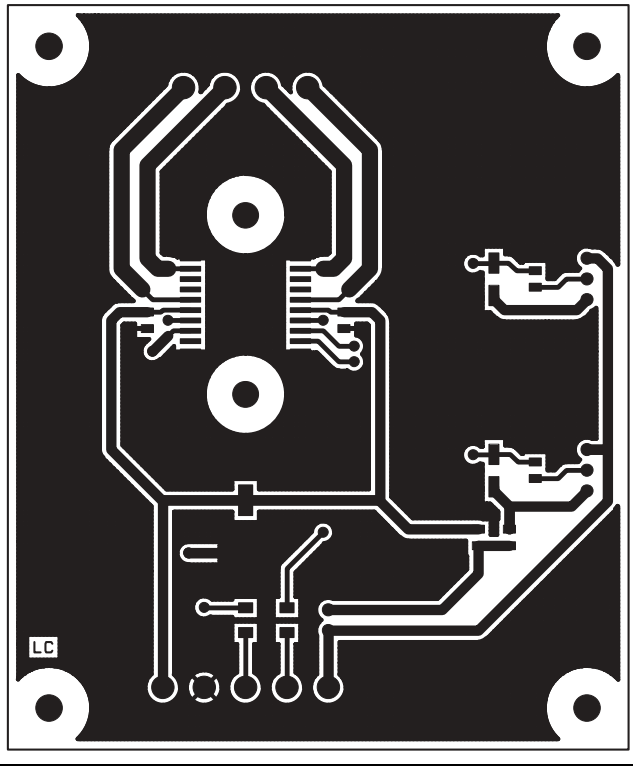


Figure 17. Evaluation Board Bottom Layer Layout

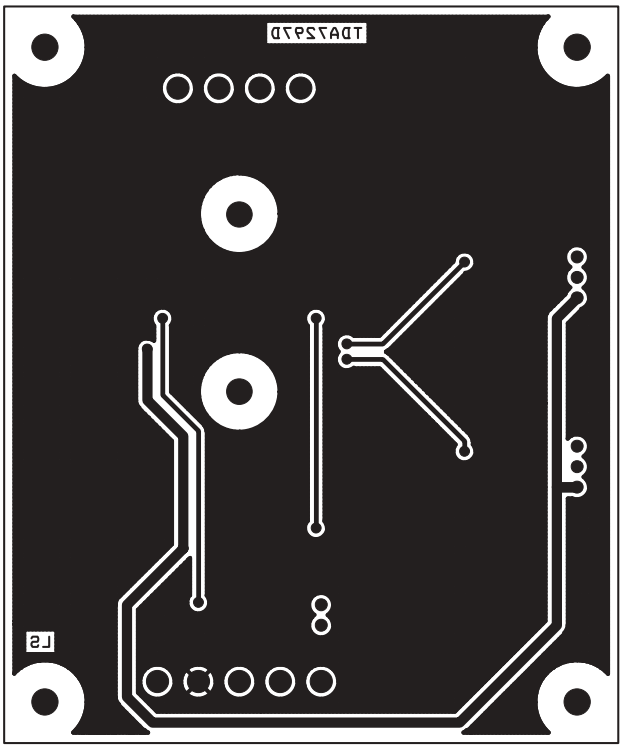
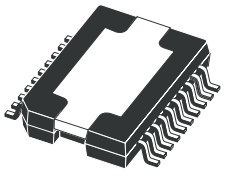


Figure 18. PowerSO20 (SLUG UP) Mechanical Data & Package Dimensions

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	3.25		3.5	0.128		0.138
A2	3	3.15	3.3	0.118	0.124	0.130
A4	0.8		1	0.031		0.039
A5	0.15	0.2	0.25	0.006	0.008	0.010
a1	0.030		-0.040	0.0012		-0.0016
b	0.4		0.53	0.016		0.021
c	0.23		0.32	0.009		0.012
D (1)	15.8		16	0.622		0.630
D1	9.4		9.8	0.370		0.385
D2		1			0.039	
E	13.9		14.5	0.547		0.570
E1 (1)	10.9		11.1	0.429		0.437
E2			2.9			0.114
E3	5.8		6.2	0.228		0.244
e	1.12	1.27	1.42	0.044	0.050	0.056
e3		11.43			0.450	
G	0		0.1	0		0.004
H	15.5		15.9	0.61		0.625
h			1.1			0.043
L	0.8		1.1	0.031		0.043
N	10¡ (max)					
R		0.6			0.024	
S	0¡ (min.) 8¡ (max.)					
V	5¡ (min.) 7¡ (max.)					

(1) ÒD and E1Ó do not include mold flash or protusions.
- Mold flash or protusions shall not exceed 0.15mm (0.006Ó)
- Critical dimensions: ÒEÓ, Òa1Ó, Òe and Ò6Ó.

OUTLINE AND MECHANICAL DATA



PowerSO20 (SLUG UP)

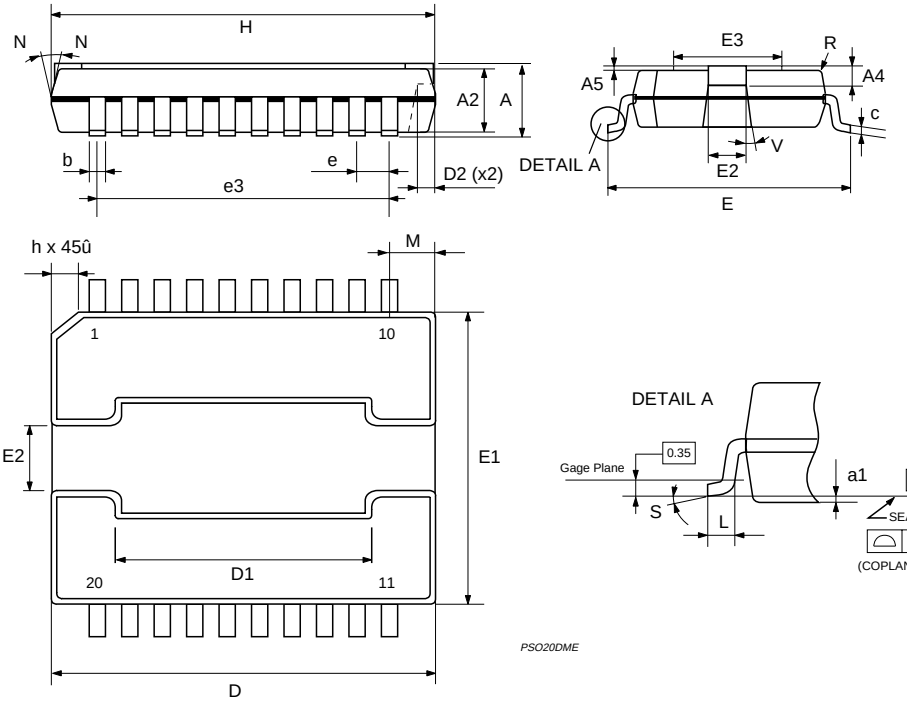


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Table 5. Revision History

Date	Revision	Description of Changes
May 2004	1	First Issue