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## 10W+10W DUAL BRIDGE AMPLIFIER

### 1 FEATURES

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

Figure 1. Package



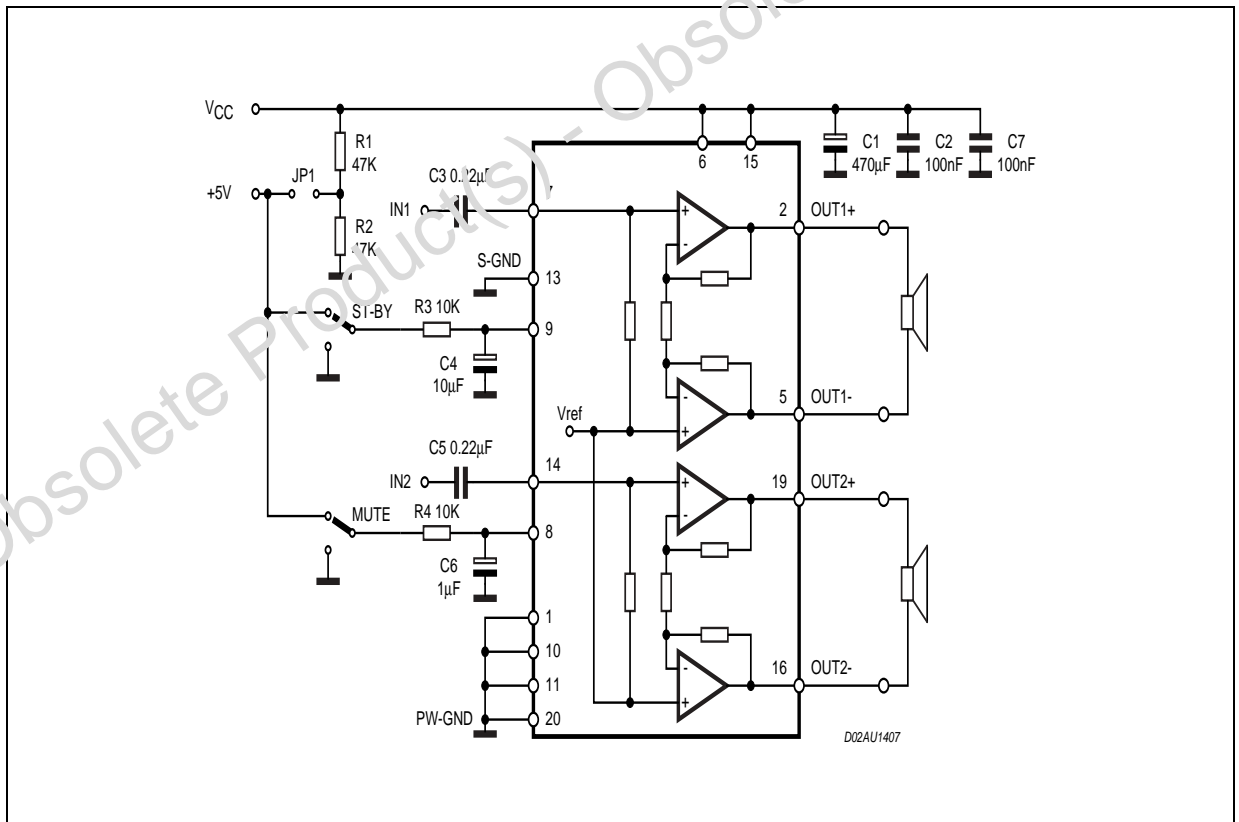
Table 1. Order Codes

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



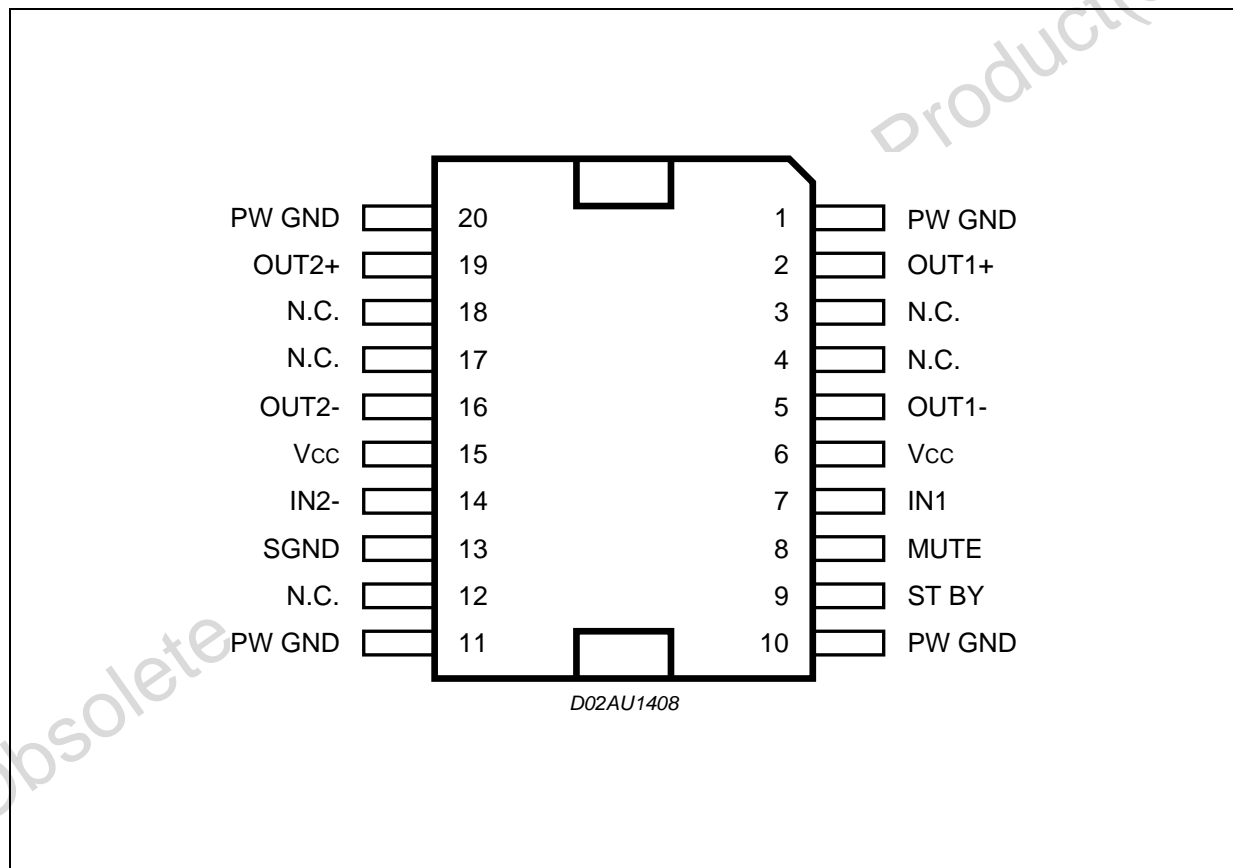
**Table 2. Absolute Maximum Ratings**

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

**Table 3. Thermal Data**

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

**Figure 3. PIN CONNECTION**



**Table 4. Electrical Characteristics ( $V_{CC} = 13V$ ,  $R_L = 8\Omega$ ,  $f = 1KHz$ ,  $T_{amb} = 25^\circ C$  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	$f = 100Hz$ , $V_R = 0.5V$	40	56		dB
CT	Crosstalk		46	60		dB
$A_{MUTE}$	Mute Attenuation		60	80		dB
$T_w$	Thermal Threshold			150		$^\circ C$
$G_V$	Closed Loop Voltage Gain		31	32	33	dB
$\Delta G_V$	Voltage Gain Matching				0.5	dB
$R_i$	Input Resistance		25	30		$K\Omega$
$V_{TMUTE}$	Mute Threshold	$V_o = -30dB$	2.3	2.9	4.1	V
$V_{TST-BY}$	St-by Threshold		0.8	1.3	1.8	V
$I_{ST-BY}$	St-by Current				100	$\mu A$
$e_N$	Total Output Noise Voltage	A Curve $f = 20Hz$ to $20KHz$		150 220	500	$\mu V$ $\mu V$

### 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  $\mu P$ ) 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 maintain 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

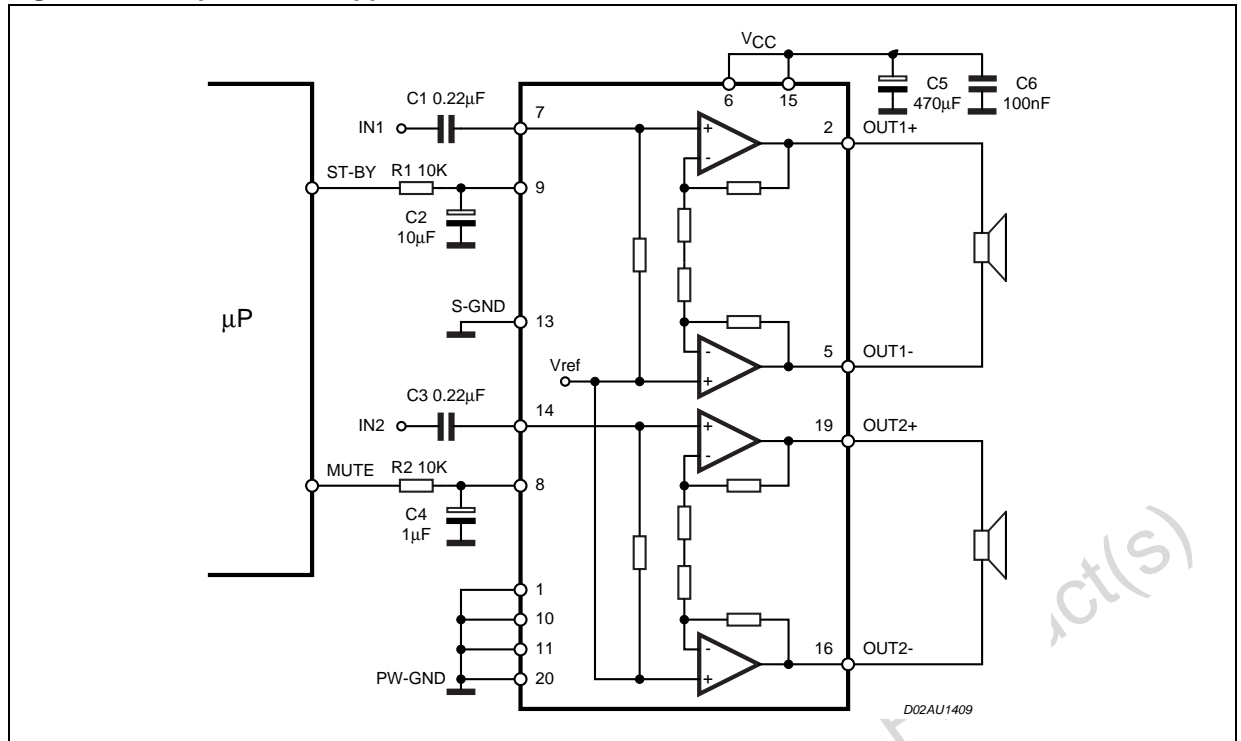


Figure 5. Microprocessor Driving Signals

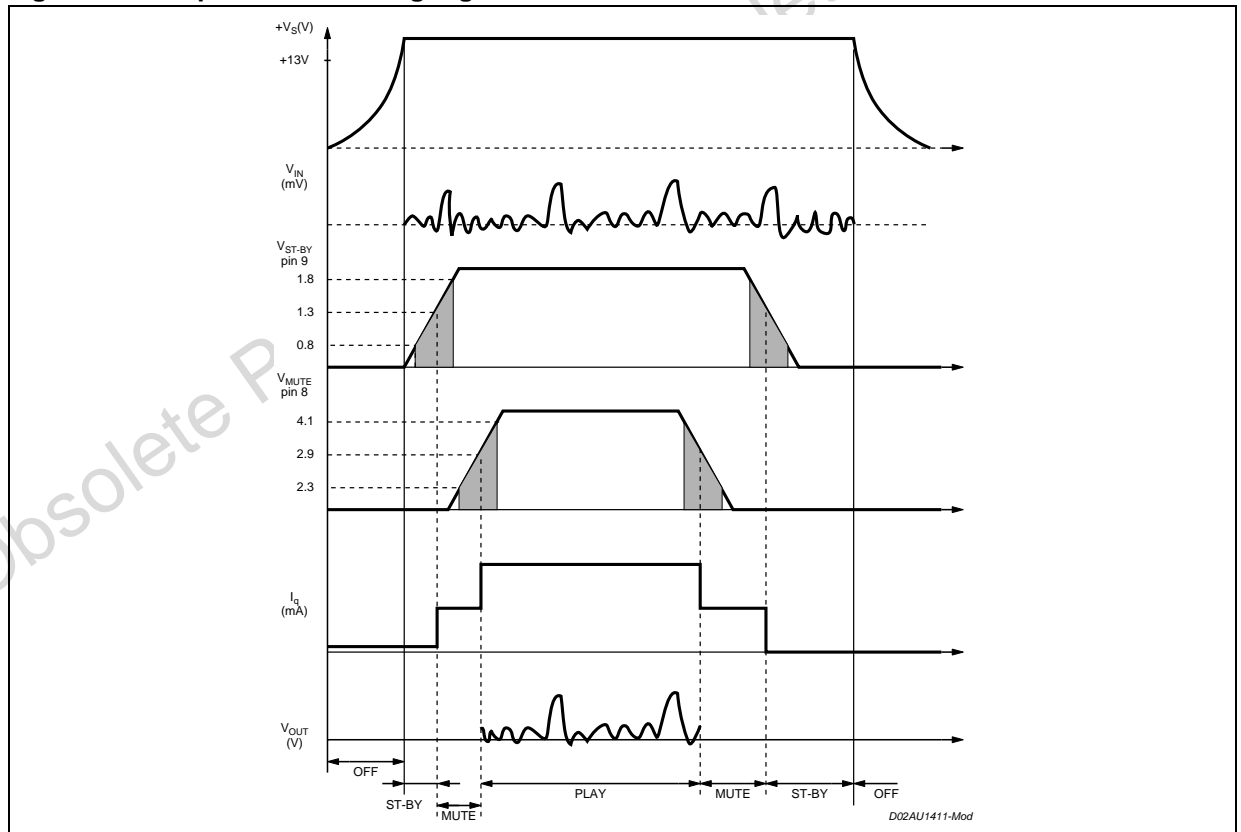


Figure 6. THD+N vs Output Power

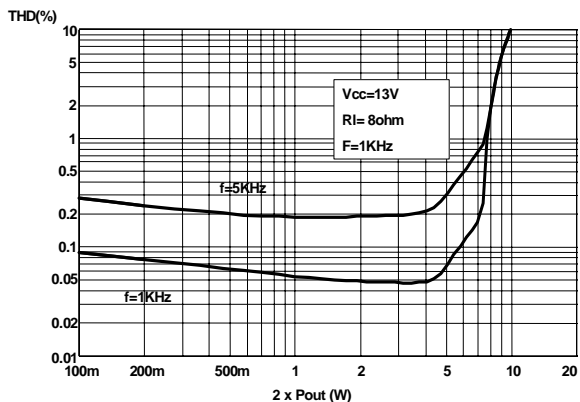


Figure 9. Frequency Response

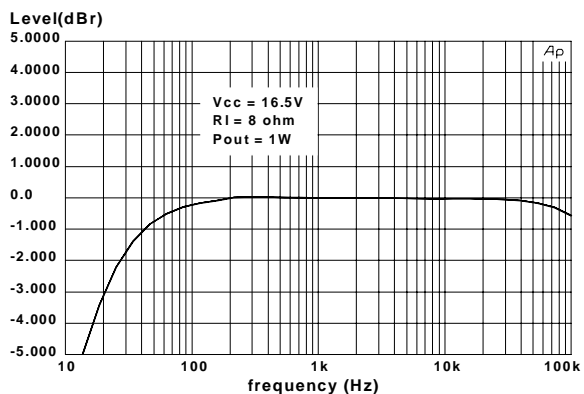


Figure 7. THD+N vs Output Power

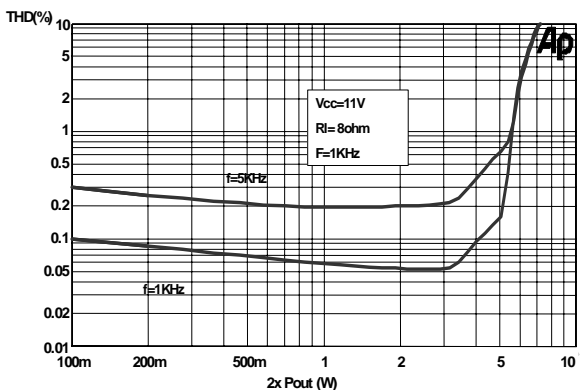


Figure 10. Output Power vs supply Voltage

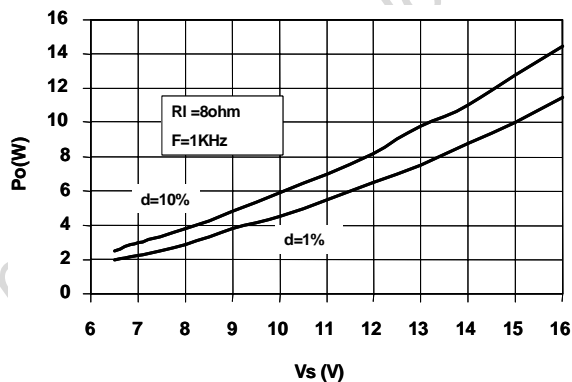


Figure 8. THD+N vs Frequency

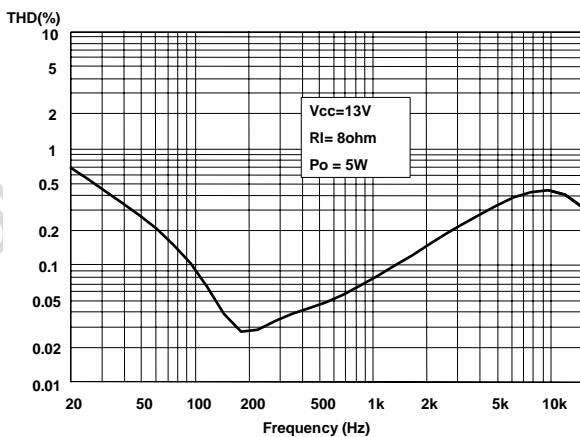


Figure 11. Power Dissipation vs Pout

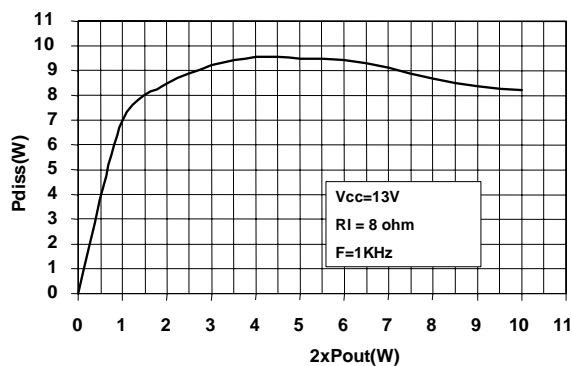


Figure 12. Mute Attenuation vs. Vpin 8t

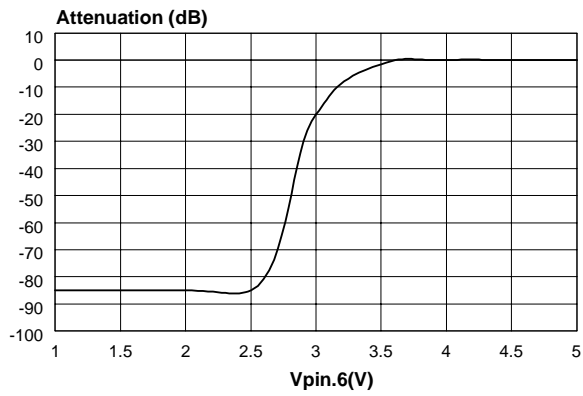


Figure 14. Quiescent Current vs. Supply Voltage

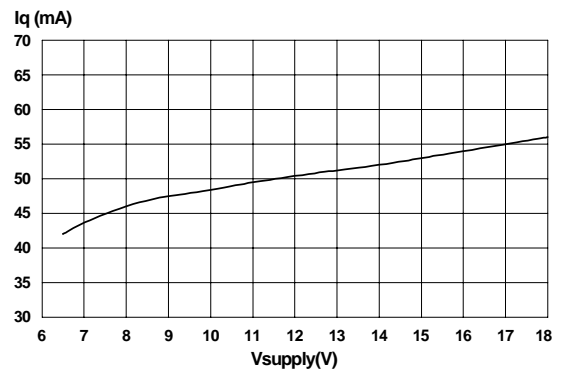
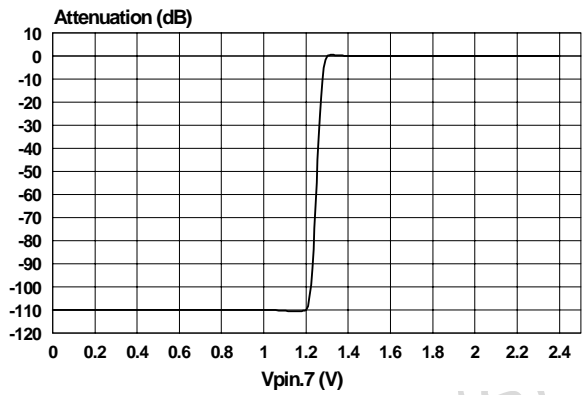


Figure 13. Standard-By Attenuation vs Vpin. 9



Obsolete Product(s), Obsolete Product(s)

Figure 15. PC Board Component Layout

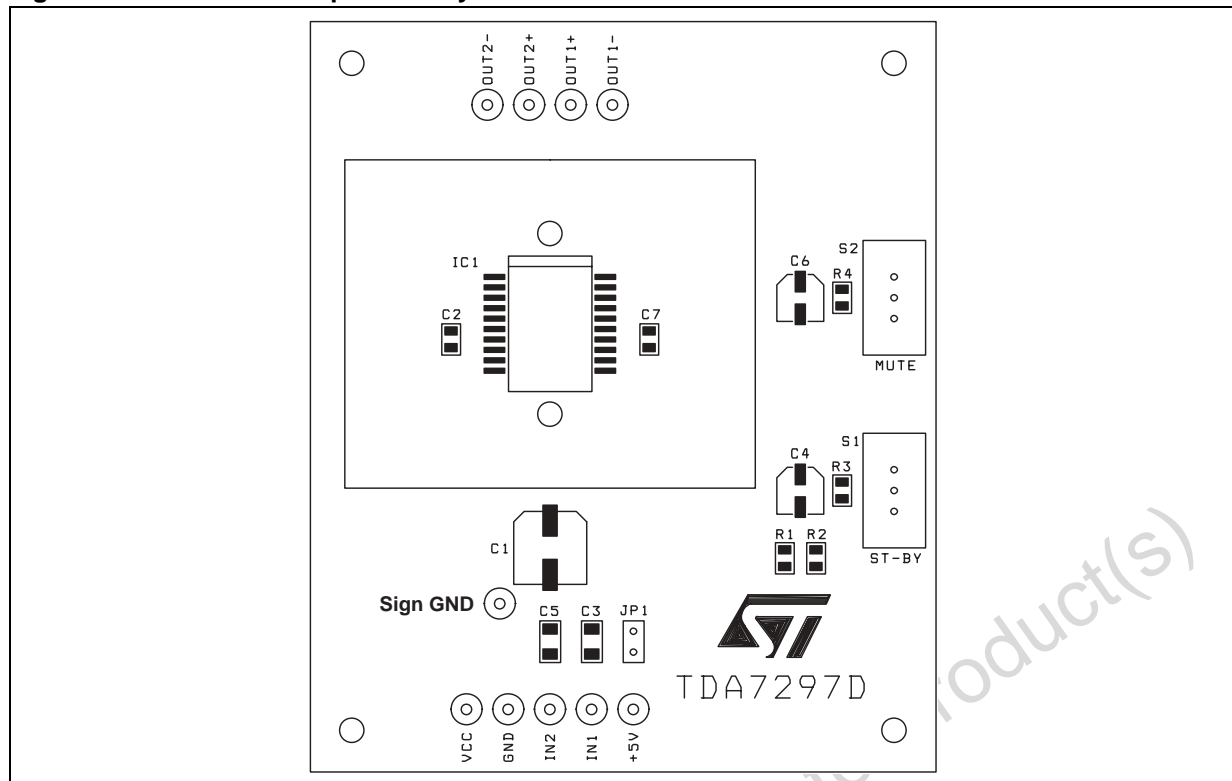


Figure 16. Evaluation Board Top Layer Layout

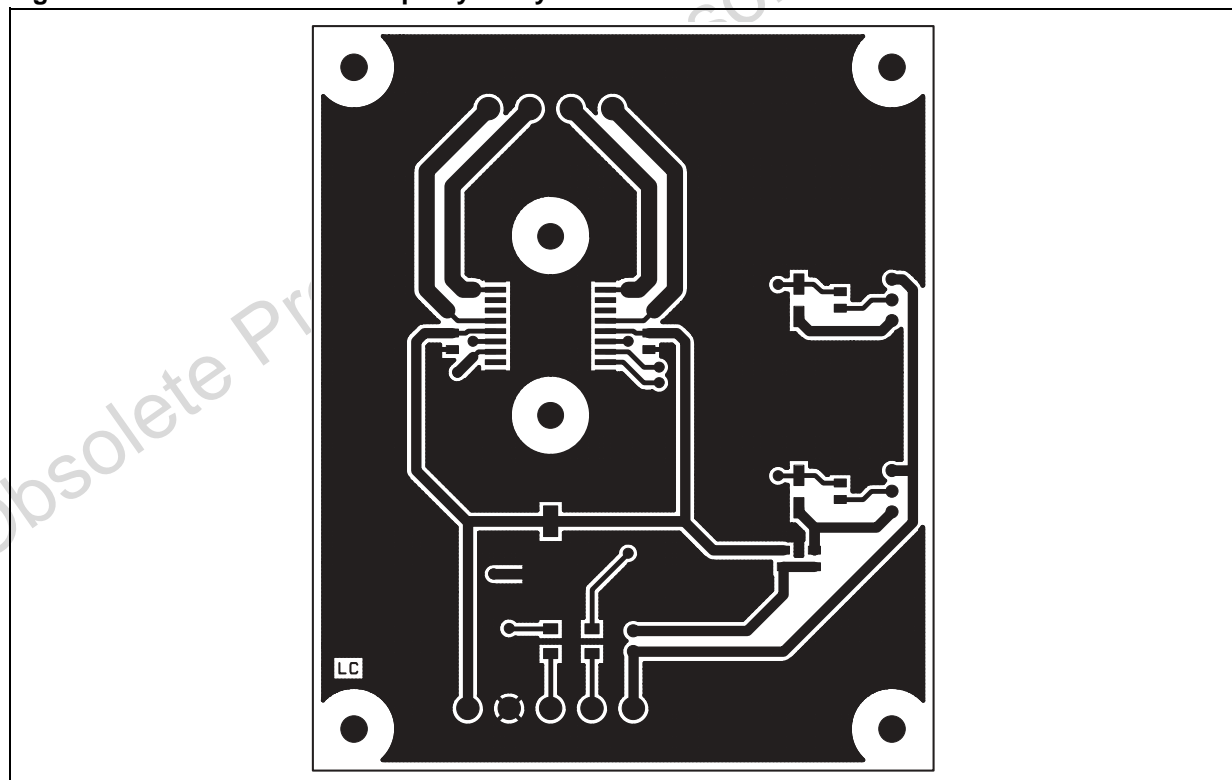




Figure 17. Evaluation Board Bottom Layer Layout

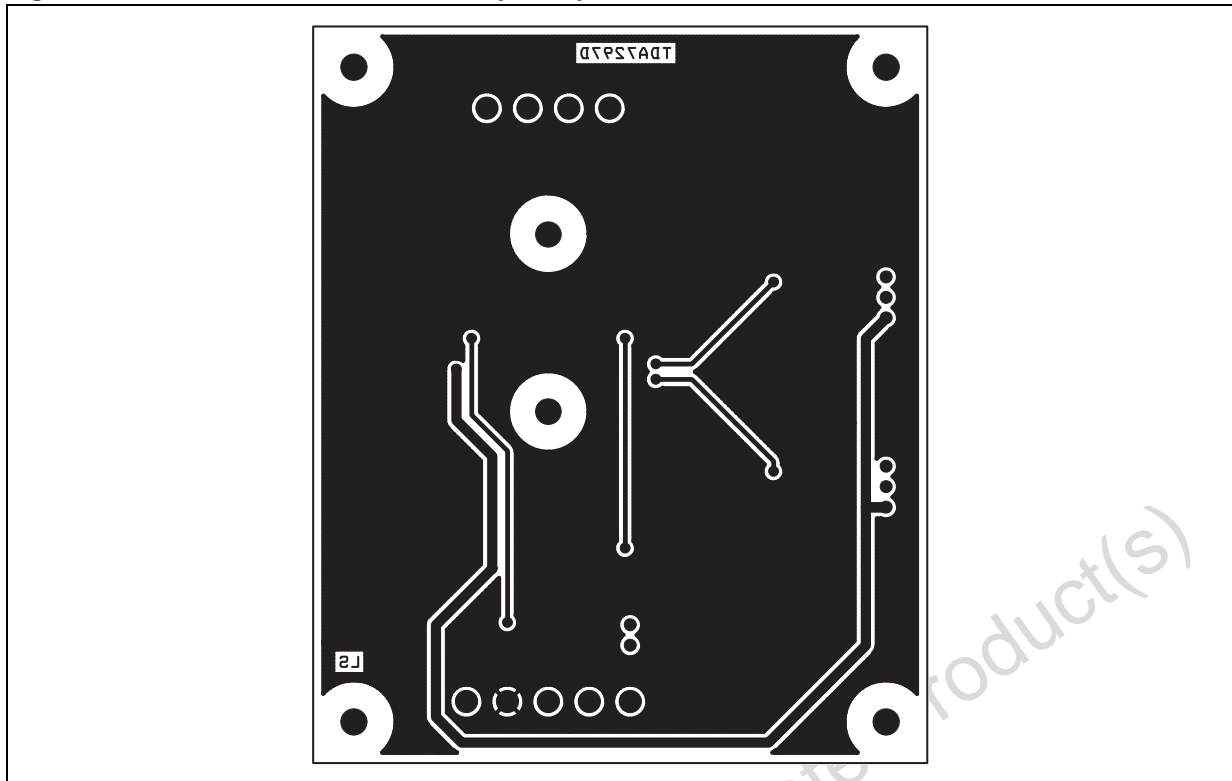
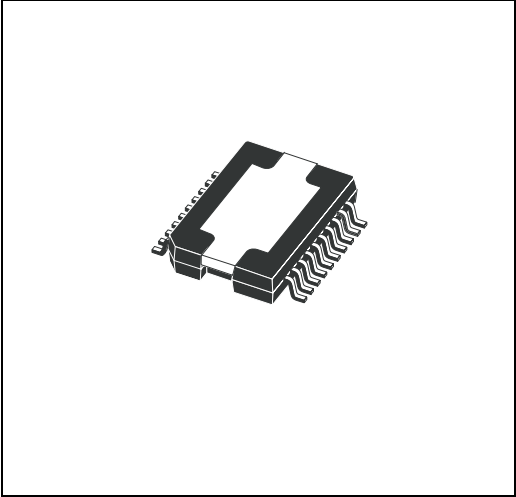


Figure 18. PowerSO20 (SLUG UP) Mechanical Data & Package Dimensions

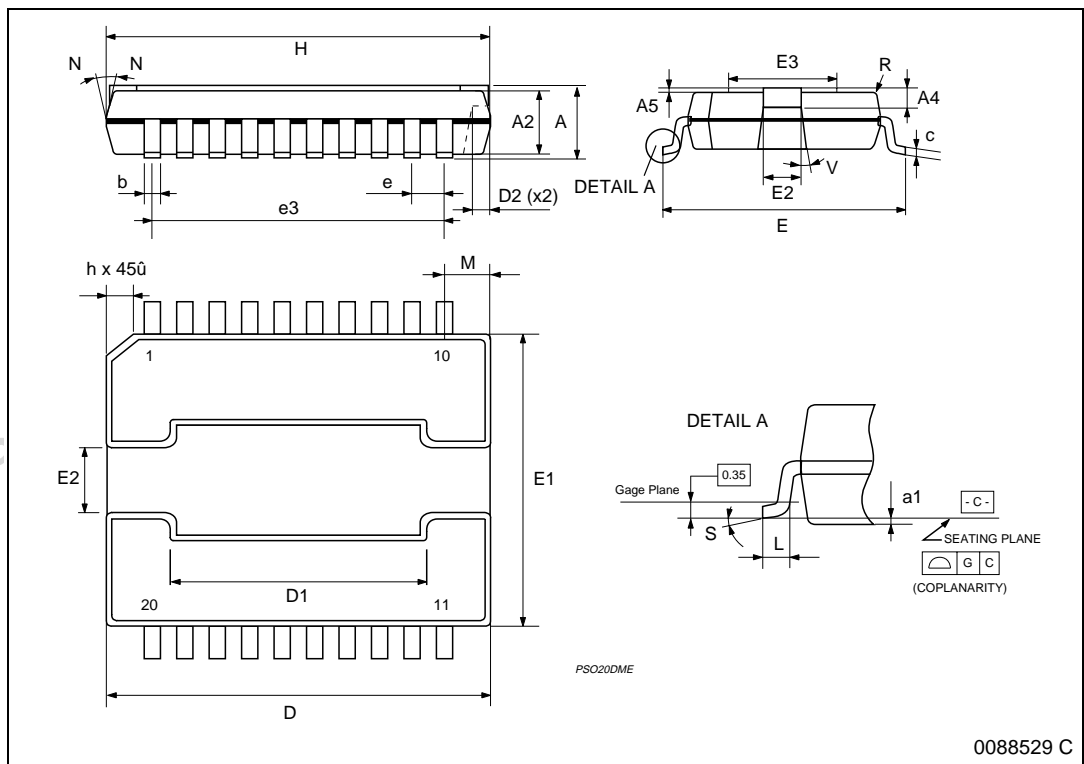
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	3.25		3.5	0.128		0.138
A2	3	3.15	3.3	0.118	0.124	0.130
A4	0.8		1	0.031		0.039
A5	0.15	0.2	0.25	0.006	0.008	0.010
a1	0.030		-0.040	0.0012		-0.0016
b	0.4		0.53	0.016		0.021
c	0.23		0.32	0.009		0.012
D (1)	15.8		16	0.622		0.630
D1	9.4		9.8	0.370		0.385
D2		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 <sub>i</sub> (max)					
R		0.6			0.024	
S	0 <sub>i</sub> (min.) 8 <sub>j</sub> (max.)					
V	5 <sub>j</sub> (min.) 7 <sub>i</sub> (max.)					

**OUTLINE AND MECHANICAL DATA**



**PowerSO20 (SLUG UP)**

(1)  $\text{OD}$  and  $E1$  do not include mold flash or protrusions.  
 - Mold flash or protrusions shall not exceed 0.15mm (0.0060)  
 - Critical dimensions:  $\text{E}$ ,  $\text{D}$ ,  $\text{A}$ ,  $\text{E}1$ ,  $\text{E}2$ ,  $\text{E}3$ ,  $\text{E}$ ,  $\text{D}$ .



**Table 5. Revision History**

Date	Revision	Description of Changes
May 2004	1	First Issue

Obsolete Product(s) - Obsolete Product(s)

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