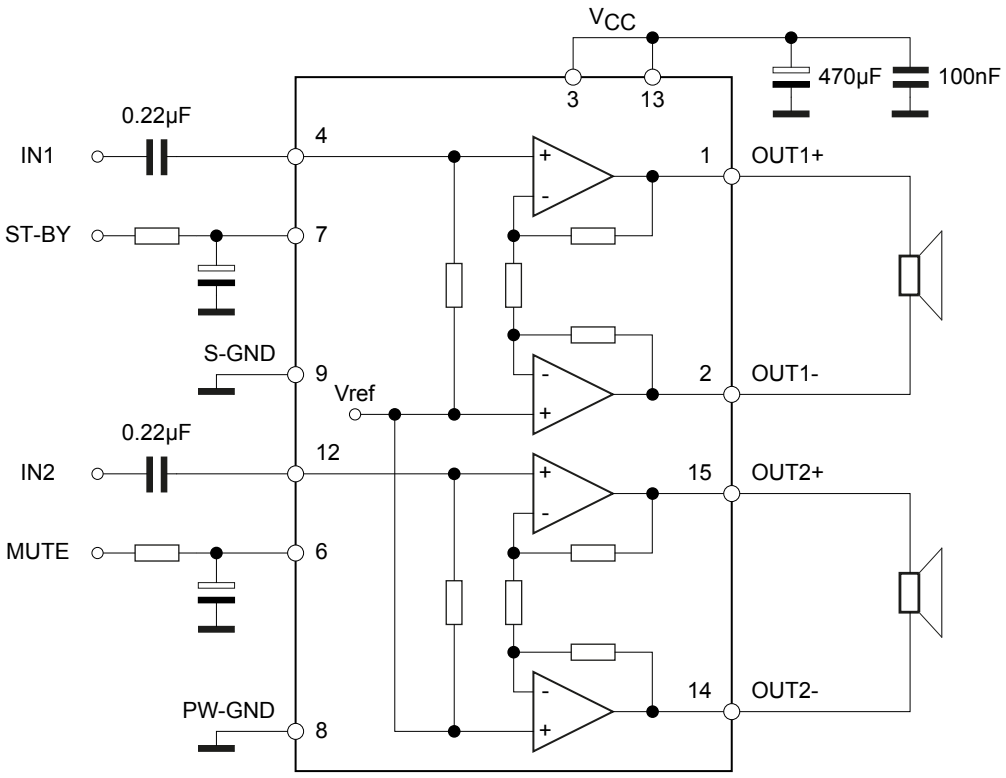
1 Block diagram

Figure 1. **Block and application diagram**



2 Maximum ratings

Table 1. Absolute maximum ratings

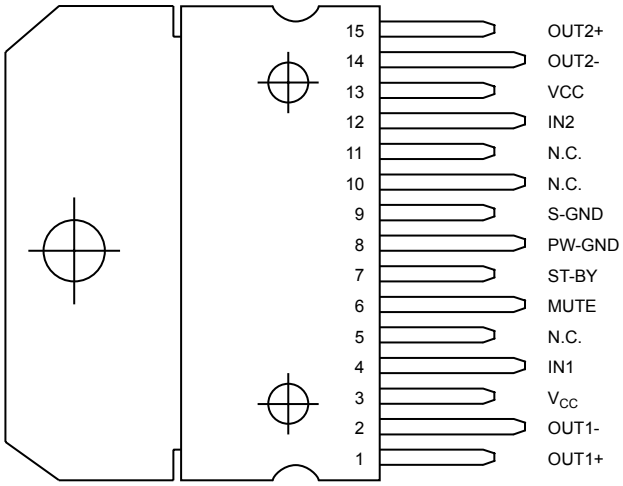
Symbol	Parameter	Value	Unit
V_S	Supply voltage	20	V
I_O	Output peak current (internally limited)	2	A
P_{tot}	Total power dissipation (T_{case}= 70 °C)	33	W
T_{op}	Operating temperature	-10 to +85	°C
T_{stg}	Storage temperature	-40 to +150	°C
T_j	Junction temperature		

Table 2. Thermal data

Symbol	Parameter	Typ.	Max.	Unit
$R_{th\text{-}jcase}$	Thermal resistance junction-case	1.4	2	°C/W

3 Pin connection

Figure 2. **Pin connection (top view)**



4 Electrical characteristics

V_{CC} = 11 V, R_L = 8 Ω, f = 1 kHz, T_{amb} = 25 °C unless otherwise specified.

Table 3. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_{CC}	Supply range		3	11	18	V
I_q	Total quiescent current			50	65	mA
V_{OS}	Output offset voltage				120	mV
P_O	Output power	THD = 10%	6.3	7		W
THD	Total harmonic distortion	P_O = 1 W		0.05	0.2	%
		P_O = 1 W to 2 W f = 100 Hz to 15 kHz			1	
SVR	Supply voltage rejection	f = 100 Hz, V_R = 0.5 V	40	56		dB
CT	Crosstalk		46	60		dB
A_{MUTE}	Mute attenuation					
T_W	Thermal threshold					
G_V	Closed loop voltage gain		25	26	27	dB
ΔG_V	Voltage gain matching				0.5	
R_I	Input resistance		25	30		kΩ
VT_{MUTE}	Mute threshold	for V_{CC} > 6.4 V; V_O = -30 dB	2.3	2.9	4.1	V
		for V_{CC} < 6.4 V; V_O = -30 dB	V_{CC}/2-1	V_{CC}/2-0.75	V_{CC}/2-0.5	
VT_{ST-BY}	ST-BY threshold		0.8	1.3	1.8	V
I_{ST-BY}	ST-BY current V6 = GND				100	µA
e_N	Total output noise voltage	A curve f = 20 Hz to 20 kHz		150		µV

5 Application suggestion

Standby and mute functions

(A) Microprocessor application

Turn-on/off transients, guarantee the right ST-BY and mute signal sequence.

This function can be got thanks to a microprocessor (Figure 3. Microprocessor application and Figure 4. Microprocessor driving signals).

At first ST-BY signal (from microprocessor) goes high and the voltage across the ST-BY terminal (Pin 7) starts to increase exponentially. The external RC network turns on slowly the biasing circuits of the amplifier, 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 (C3, C5) start to charge.

The mute signal must be kept low until the capacitors are fully charged, so to avoid that the device goes to play mode causing a loud "Pop Noise" on the speakers.

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

Figure 3. Microprocessor application

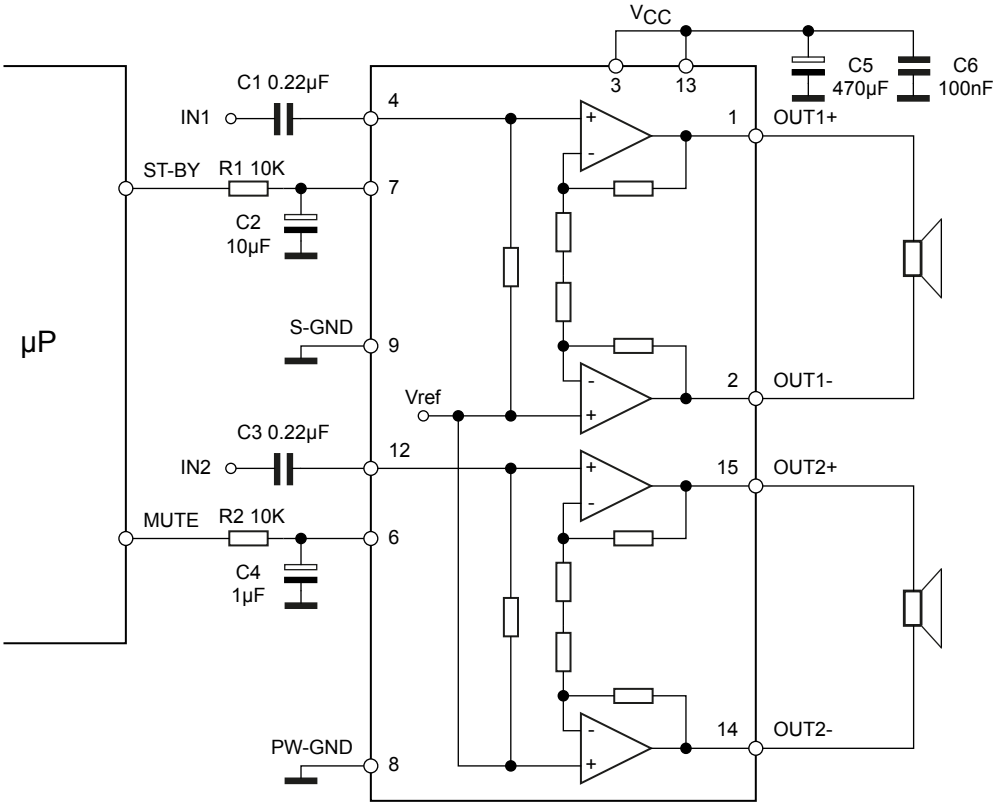
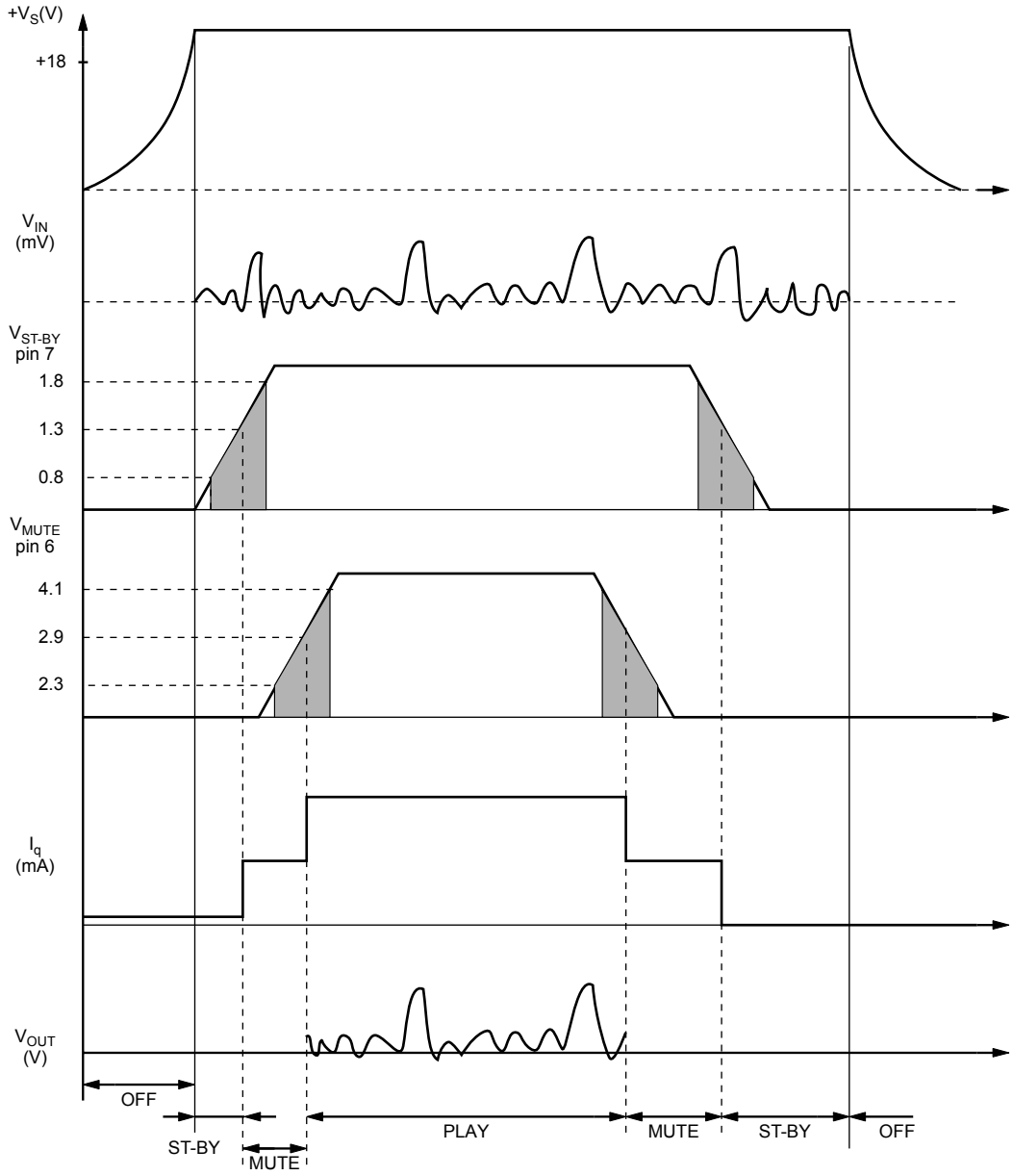


Figure 4. **Microprocessor driving signals**



(B) Low cost application

In low cost applications where the microprocessor is not present, the suggested circuit is shown in Figure 5. Stand-alone low-cost application.

The ST-BY and mute terminals are tied together and they are connected to the supply line via an external voltage divider.

The device is switched on/off from the supply line and the external capacitor C4 is intended to delay the ST-BY and mute threshold exceeding, avoiding "Popping" problems.

Figure 5. **Stand-alone low-cost application**

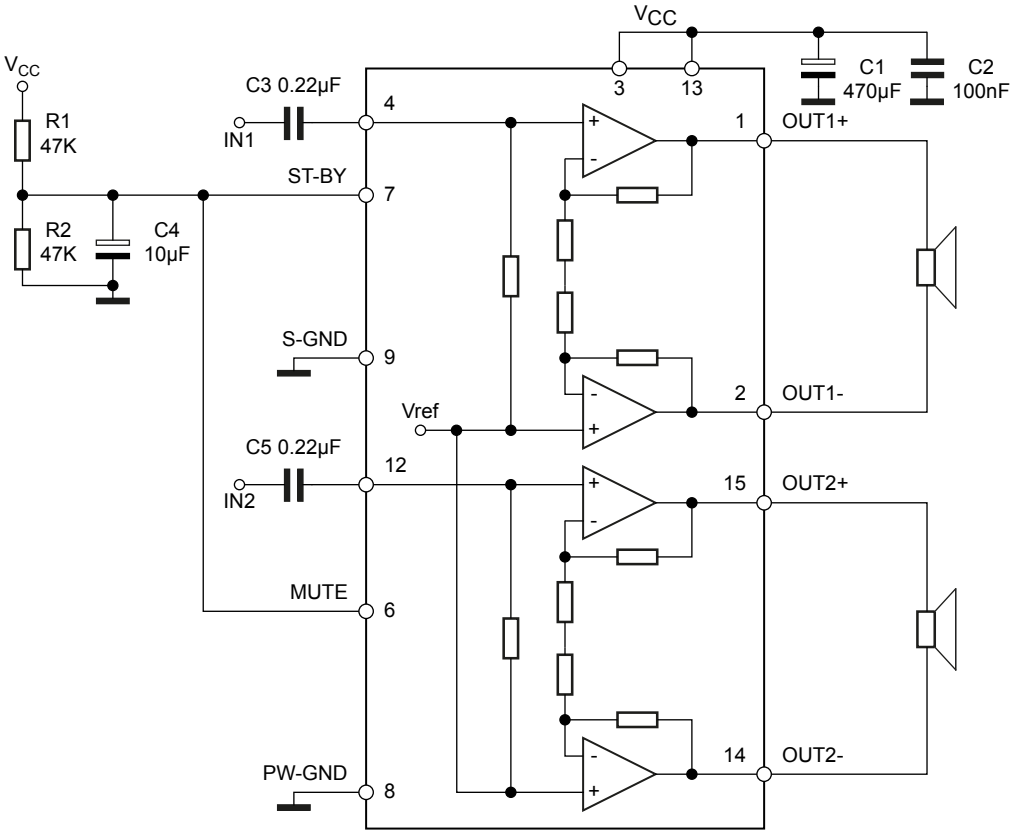
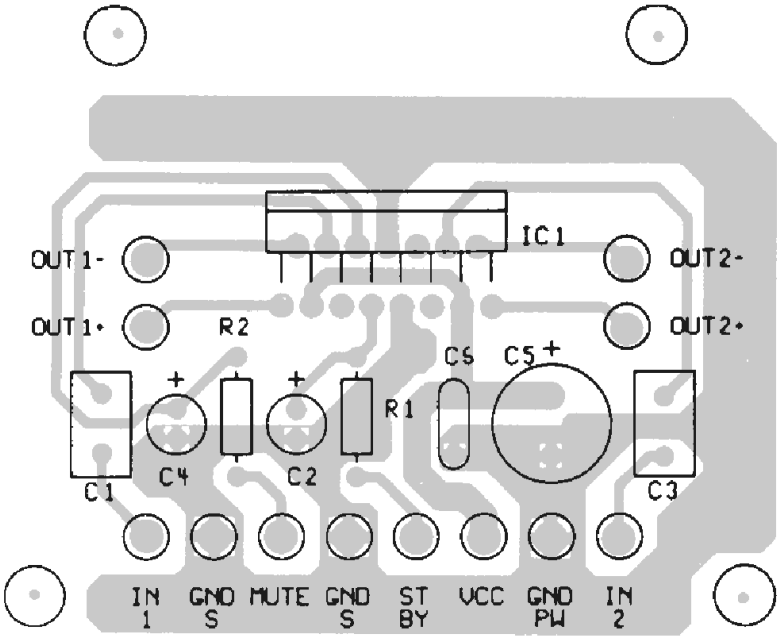


Figure 6. **PCB and component layout of the application circuit (Fig. 1)**



6 Typical characteristics

Figure 7. Distortion vs. output power (V_{CC} = 11 V)

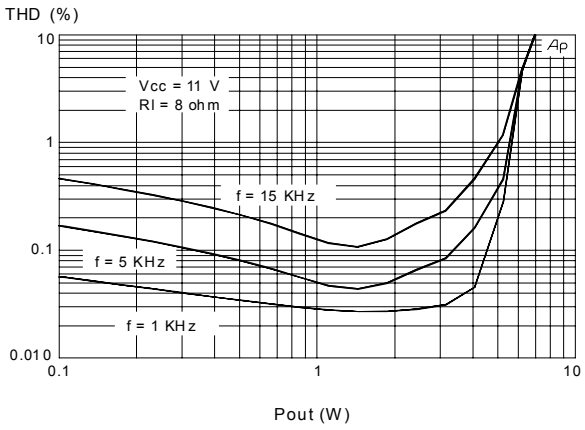


Figure 8. Distortion vs. output power (V_{CC} = 9 V)

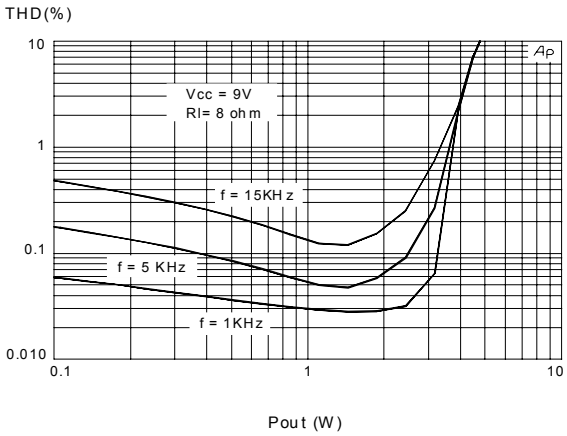


Figure 9. Distortion vs. frequency

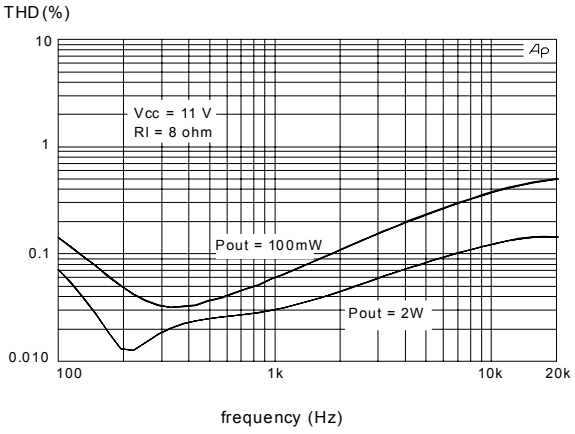


Figure 10. Gain vs. frequency

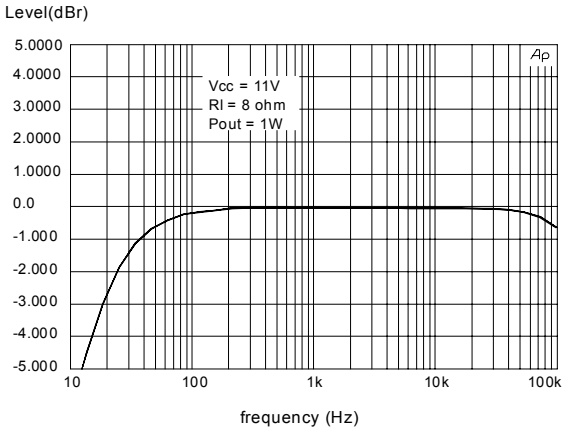


Figure 11. Output power vs. supply voltage

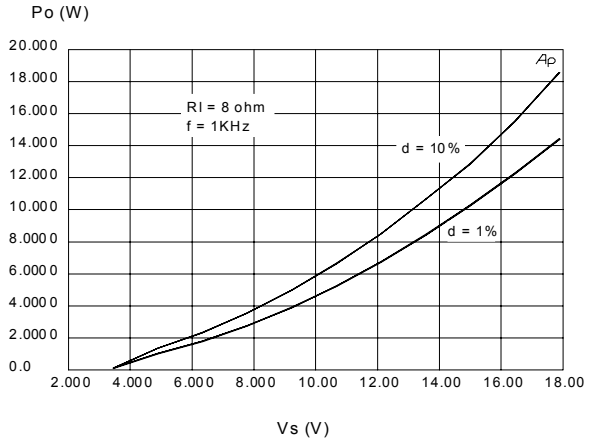


Figure 12. Total power dissipation & efficiency vs. output power

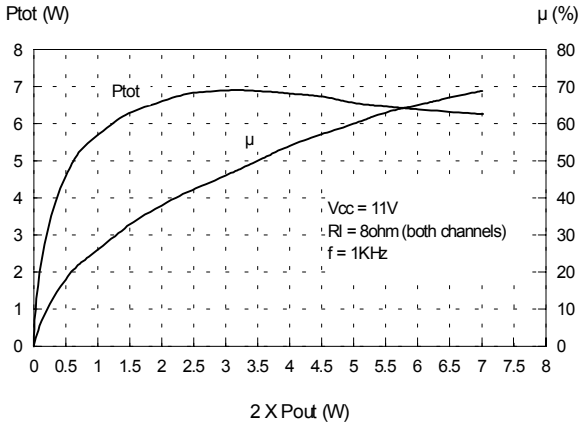


Figure 13. Mute attenuation vs. Vpin. 6

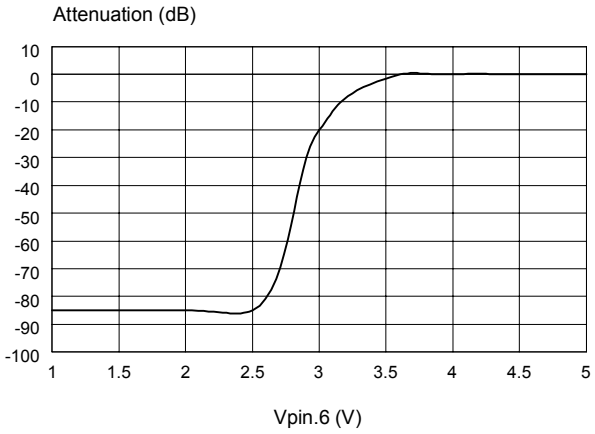


Figure 14. Standby attenuation vs. Vpin. 7

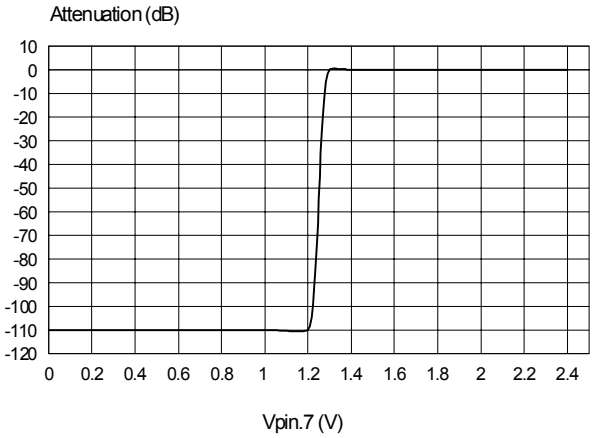
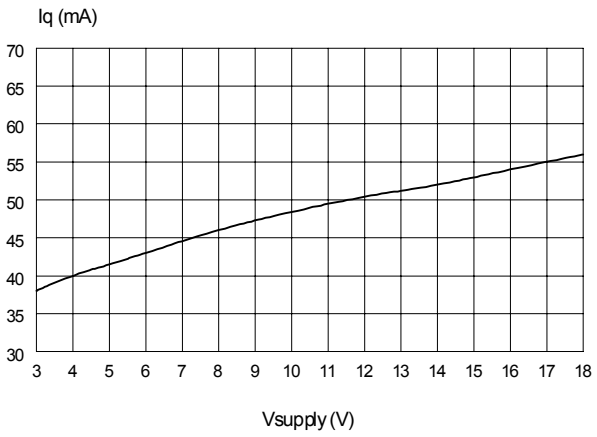


Figure 15. **Quiescent current vs. supply voltage**



7 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

7.1 Multiwatt15 V package information

Figure 16. **Multiwatt15 V package outline**

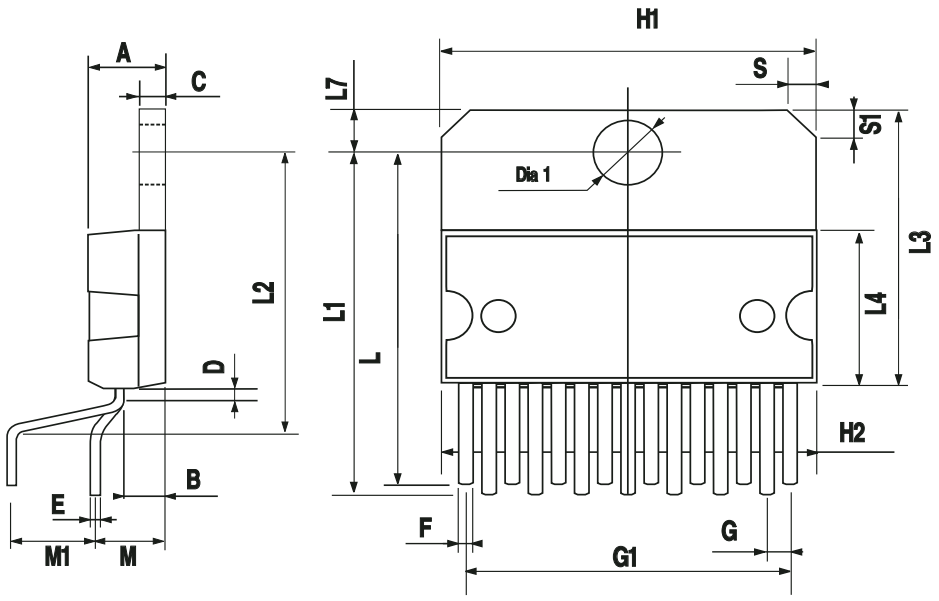


Table 4. **Multiwatt15 V package mechanical data**

Symbol	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.66		0.75	0.026		0.030
G	1.02	1.27	1.52	0.040	0.050	0.060
G1	17.53	17.78	18.03	0.690	0.700	0.710
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
L1	21.7	22.1	22.5	0.854	0.870	0.886
L2	17.65		18.1	0.695		0.713
L3	17.25	17.5	17.75	0.679	0.689	0.699
L4	10.3	10.7	10.9	0.406	0.421	0.429
L7	2.65		2.9	0.104		0.114
M	4.25	4.55	4.85	0.167	0.179	0.191
M1	4.63	5.08	5.53	0.182	0.200	0.218
S	1.9		2.6	0.075		0.102

Symbol	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
S1	1.9		2.6	0.075		0.102
Dia1	3.65		3.85	0.144		0.152

Revision history

Table 5. **Document revision history**

Date	Version	Changes
24-Mar-2002	10	No history because of migration.
18-Jun-2019	11	Updated operating temperature value in Table 1. Absolute maximum ratings.

Contents