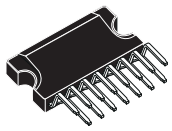
TDA7497SA

8W+8W+15W TRIPLE AMPLIFIER

PRODUCT PREVIEW

- 8+8W (RL = 8Ω) + 15W (RL = 4Ω) OUTPUT POWER @THD = 10%, Vcc = 25V
- INDEPENDENT MUTE FOR CENTER CHANNEL AND MAIN CHANNELS
- NO TURN-ON TURN-OFF POP NOISE
- NO BOUCHEROT CELL
- SINGLE SUPPLY RANGING UP TO 35V
- SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION
- INTERNALLY FIXED GAIN
- SOFT CLIPPING
- CLIPWATT 15 PACKAGE

MULTIPOWER BI50II TECHNOLOGY



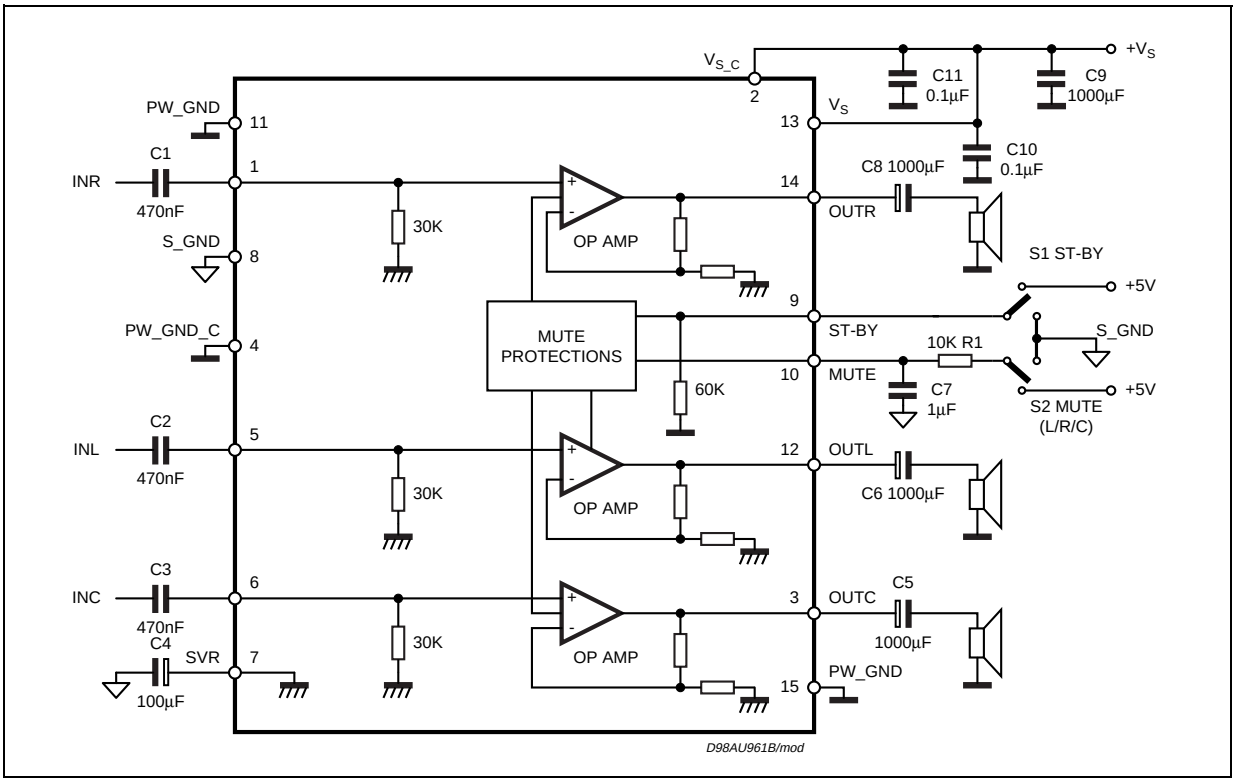
Clipwatt15
ORDERING NUMBER: TDA7497SA

DESCRIPTION

The TDA7497SA is a triple 8+8+15W class AB power amplifier assembled in the @ Clipwatt 15 package, specially designed for high quality sound, TV applications.

Features of the TDA7497SA include mute and St-By functions, independently controller for main and center channels.

BLOCK DIAGRAM

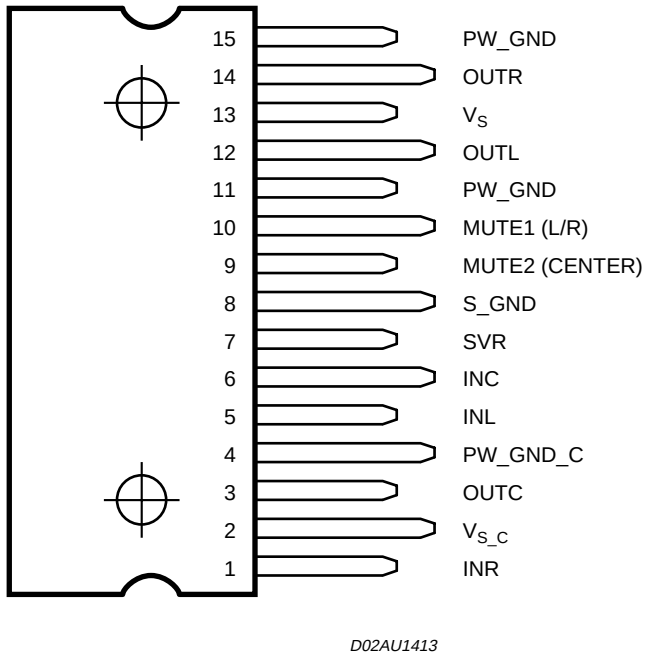


ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_S	DC Supply Voltage	35	V
P_{tot}	Total Power Dissipation (Tamb = 70°C)	30	W
T_{amb}	Ambient Operating Temperature (1)	0 to 70	°C
T_{stg}, T_j	Storage and Junction Temperature	-40 to 150	°C

(1) Operation between -20 to 85 °C guaranteed by correlation with 0 to 70°C.

PIN CONNECTION (Top view)



THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Typ.=1.5 max = 2.5	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	max = 48	°C/W

ELECTRICAL CHARACTERISTCS (Refer to the test circuit V_S = 25V; R_g = 50Ω; f = 1KHz; T_{amb} = 25°C)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_S	Supply Voltage Range		11		30	V
I_q	Total Quiescent Current			60	100	mA
V_O	Quiescent Output Voltage		11.5	12.5	13.5	V
$P_{O\_L/R}$	Output Power Left / RightChannels	THD = 10%; RL = 8Ω; THD = 1%; RL = 8Ω;	6 5	8 6		W W
P_{O_C}	Output Power Center Channel	THD = 10%; RL = 4Ω THD = 1%; RL = 4Ω	12 10	15 12		W W
THD	Total Harmonic Distortion	P_O = 1W; f = 1KHz;			0.4	%
$I_{peak\ L/R}$	Output Peak Current	(internally limited)		2.0		A
$I_{peak\ C}$	Output Peak Current Central Channel	(internally limited)		2.5		A
GV	Closed Loop Gain		28.5	29.5	30.5	dB
ΔGV	L/R Voltage GainMatching		-1		1	dB
BW				0.6		MHz
e_N	Total Output Noise	f = 20Hz to 22KHz		60	150	µV
SR	Slew Rate		5	8		V/µs
R_i	Input Resistance		22.5	30		KΩ
SVR	Supply Voltage Rejection	f = 1kHzCSVR = 470mF; VRIP = 1Vrms	50	60		dB
T_M	Thermal Muting			150		°C
T_s	Thermal Shut-down			160		°C
MUTE & INPUT SELECTION FUNCTIONS						
V_{MUTE1}	Mute 1 ON threshold (L/R/C)		3.5			V
	Mute 1 OFF threshold (L/R/C)				1.5	V
V_{MUTE2}	Mute 2 ON threshold (center)		3.5			V
	Mute 2 OFF threshold (center)				1.5	V
A_{MUTE}	Mute Attenuation		50	65		dB
$I_{muteBIAS}$	Mute bias currentMute1/Mute2	Mute		1	5	µA
		St-By		0.2	2	µA

Figure 1. PC Board and Component Layout

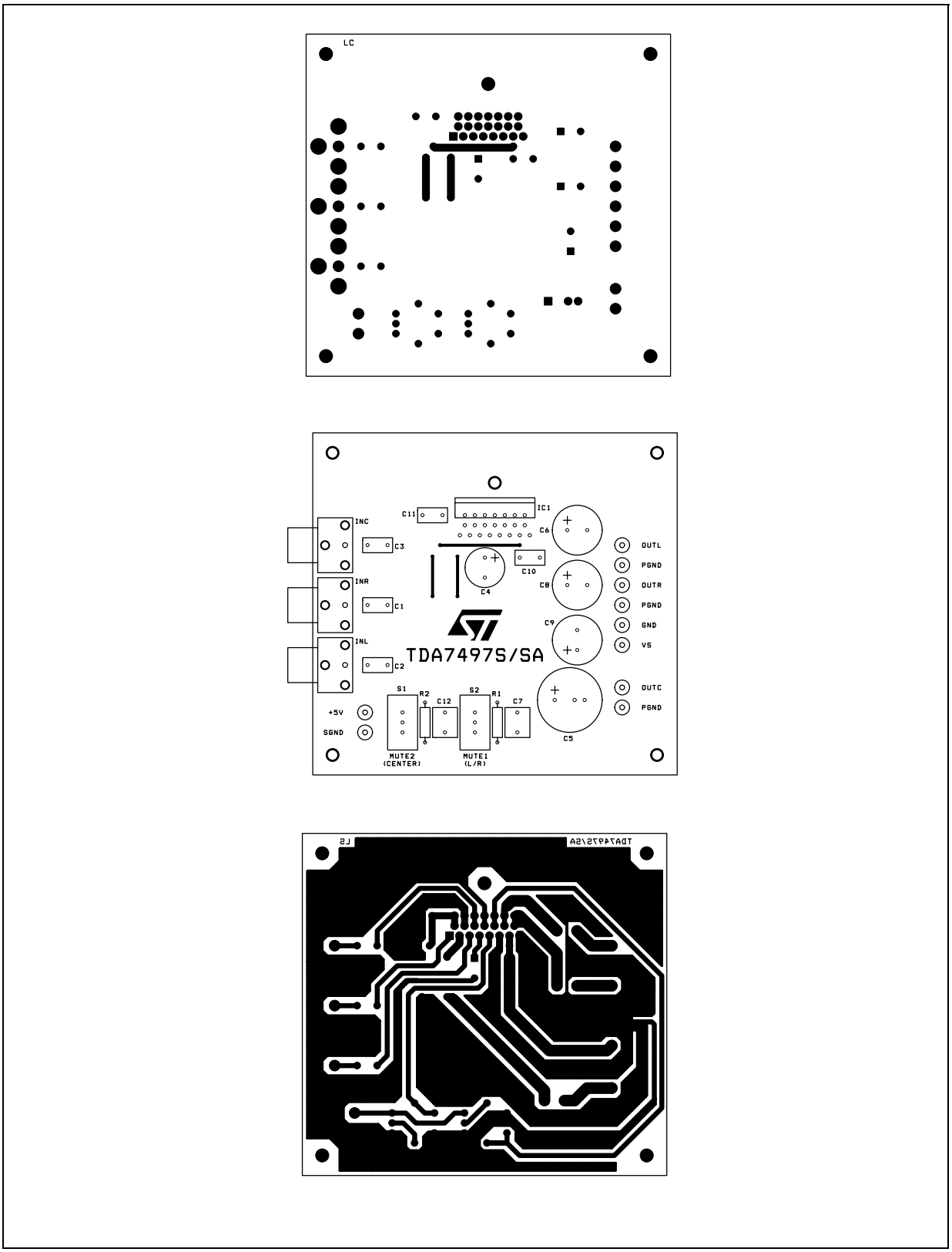


Figure 2. Output Power vs Supply Voltage

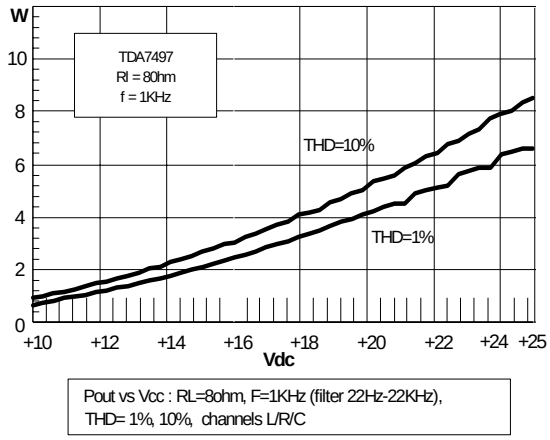


Figure 3. Frequency Response

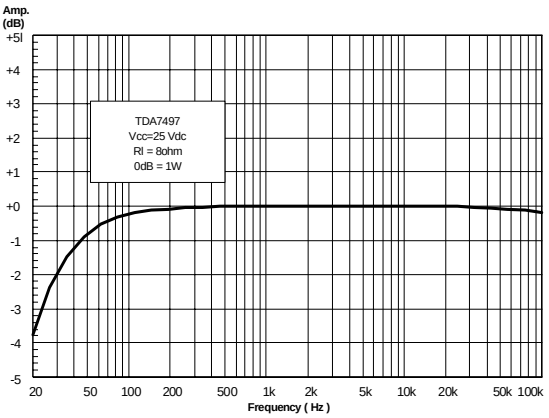


Figure 4. THD+N vs Output Power

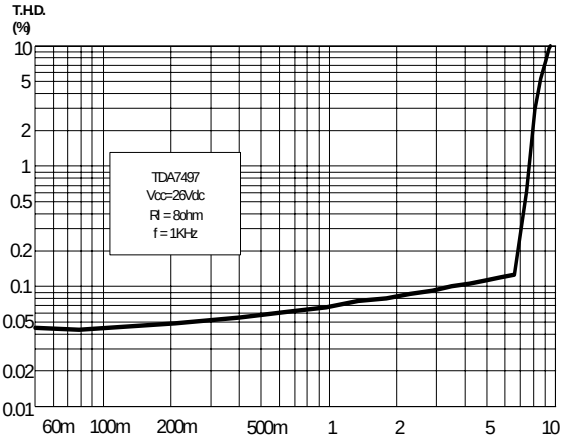
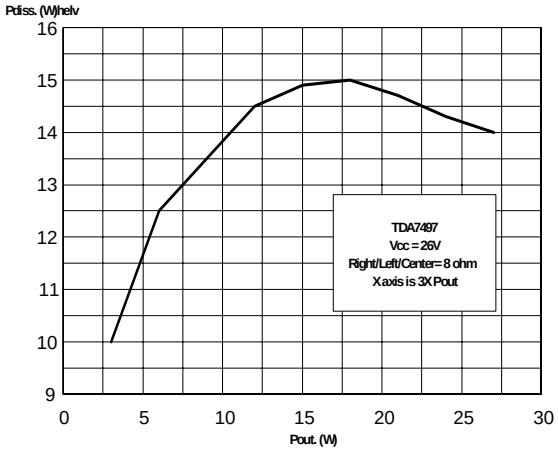


Figure 5. Pdiss vs Output Power



HEAT SINK DIMENSIONING:

In order to avoid the thermal protection intervention, that is placed approximatively at T_j = 150°C, it is important the dimensioning of the Heat Sinker R_{Th} (°C/W).

The parameters that influence the dimensioning are:

– Maximum dissipated power for the device (P_{dmax})

– Max thermal resistance Junction to case ($R_{Th\ j\text{-}c}$)

– Max. ambient temperature $T_{amb\ max}$

– Quiescent current I_q (mA)

Example:

V_{CC} = 28V, R_{load} = 8ohm (left/right), Rload = 4ohm (centre), $R_{Th\ j\text{-}c}$ = 2.5°C/W , $T_{amb\ max}$ = 50°C

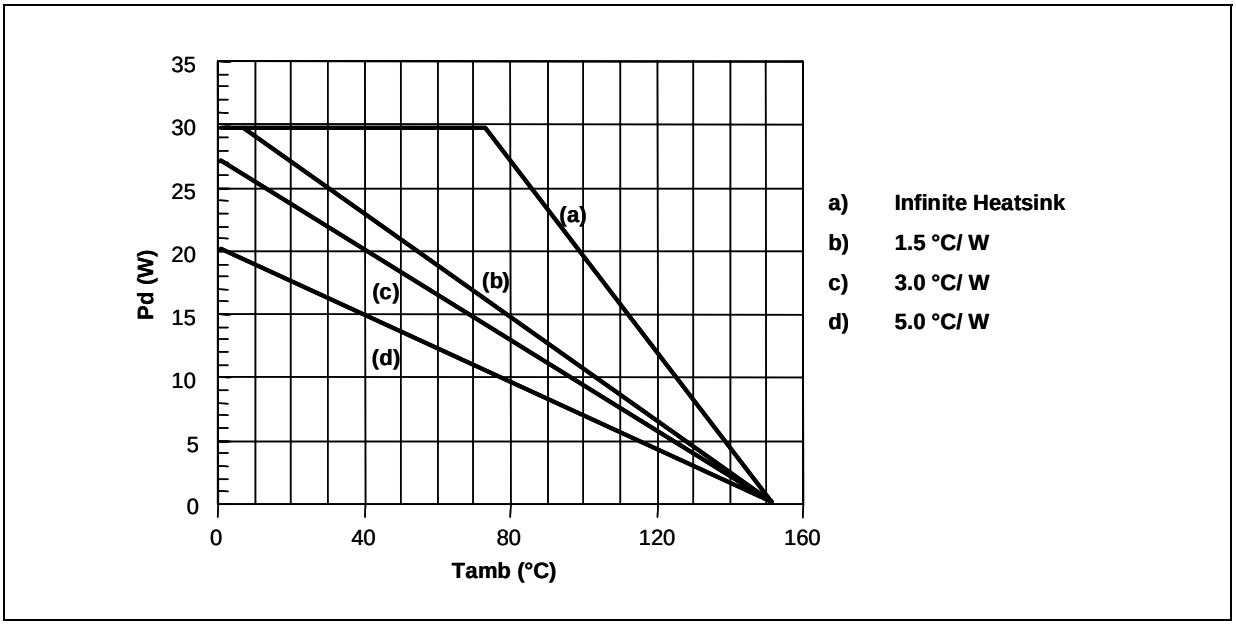
$$P_{dmax} = (N° \text{ channels}) \cdot \frac{V_{cc}^2}{2\Pi^2 \cdot R_{load}} + I_q \cdot V_{cc}$$

$P_{dmax} = 2 \cdot (3.95) + 1 \cdot (7.9) + 1.2 = 17W$

$$\text{(Heat Sinker)}\quad R_{Th\ c\text{-}a} = \frac{150 - T_{amb\ max}}{P_{d\ max}} - R_{Th\ j\text{-}c} = \frac{150 - 50}{17} - 2.5 = 3.3°C/W$$

In figure 6 is shown the Power derating curve for the device.

Figure 6. Power derating curve



Clipwatt Assembling Suggestions

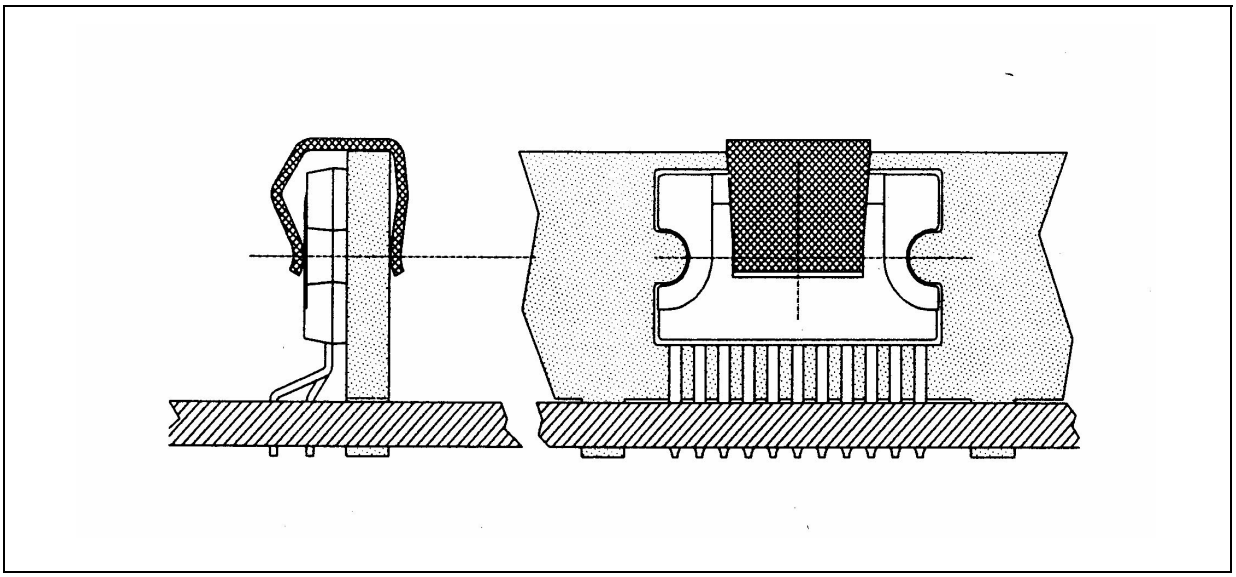
The suggested mounting method of Clipwatt on external heat sink, requires the use of a clip placed as much as possible in the plastic body center, as indicated in the example of figure 7.

A thermal grease can be used in order to reduce the additional thermal resistance of the contact between package and heatsink.

A pressing force of 7 - 10 Kg gives a good contact and the clip must be designed in order to avoid a maximum contact pressure of 15 Kg/mm2 between it and the plastic body case.

As example , if a 15Kg force is applied by the clip on the package , the clip must have a contact area of 1mm2 at least.

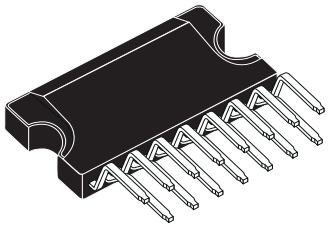
Figure 7. Example of right placement of the clip



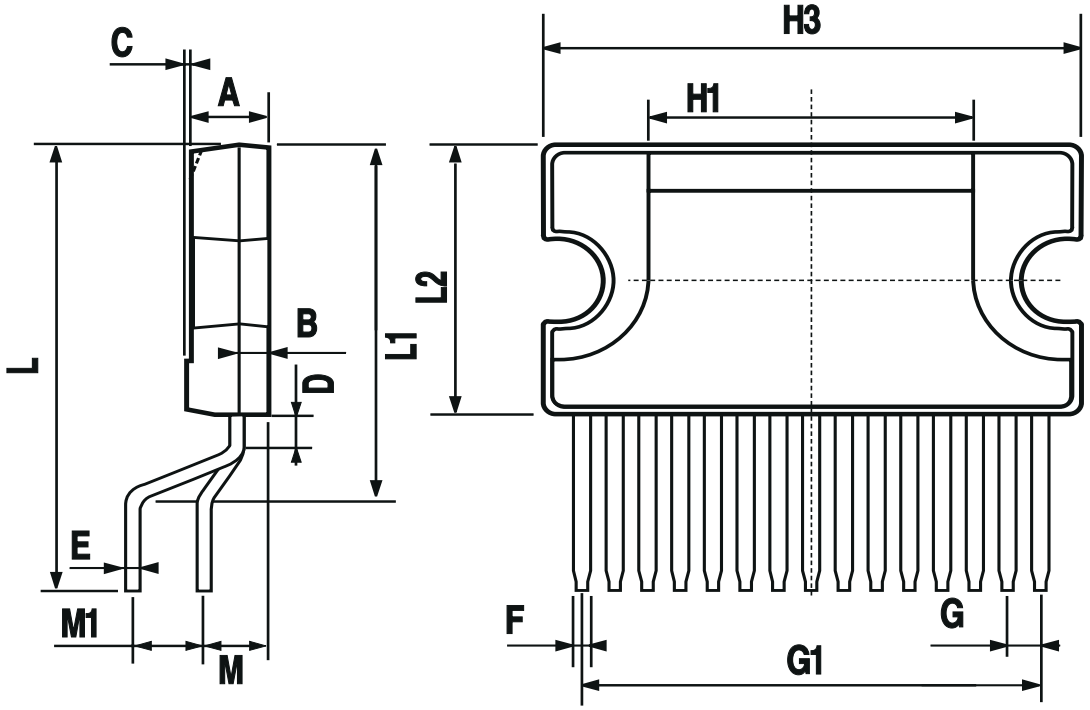
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			3.2			0.126
B			1.05			0.041
C		0.15			0.006	
D		1.55			0.061	
E	0.49		0.55	0.019		0.022
F	0.67		0.73	0.026		0.029
G	1.14	1.27	1.4	0.045	0.050	0.055
G1	17.57	17.78	17.91	0.692	0.700	0.705
H1		12			0.480	
H2		18.6			0.732	
H3	19.85			0.781		
L		17.95			0.707	
L1		14.45			0.569	
L2	10.7	11	11.2	0.421	0.433	0.441
L3		5.5			0.217	
M		2.54			0.100	
M1		2.54			0.100	

OUTLINE AND MECHANICAL DATA

Weight: 1.92gr



Clipwatt15



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