COMPLEMENTARY GERMANIUM MEDIUM POWER TRANSISTORS

AC128 AC176

N-P-N (AC176) and P-N-P (AC128) germanium alloy junction transistors for use in complementary symmetrical class 'B' output stages for radio receivers, amplifiers and tape recorders. For information on the individual types reference should be made to the relevant data sheets.

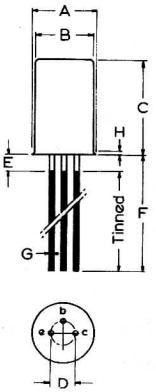
QUICK REFERENCE DATA

	AC128	AC176	
V_{CB} max.	-32	+32	V
V_{CE} max. (cut-off)	-32	+32	V
I_C max.	1.0	1.0	A
P_{tot} max. (T_{amb} = 45°C)	155	155	mW
(T_{case} = 60°C)	700	700	mW
T_j max.	90	90	°C
h_{FE} typ. (V_{CB}=0, I_E=1.0A)	80	83	
f_T min.	1.0	1.0	Mc/s

Matching ratio for matched pairs see page D3.

OUTLINE AND DIMENSIONS

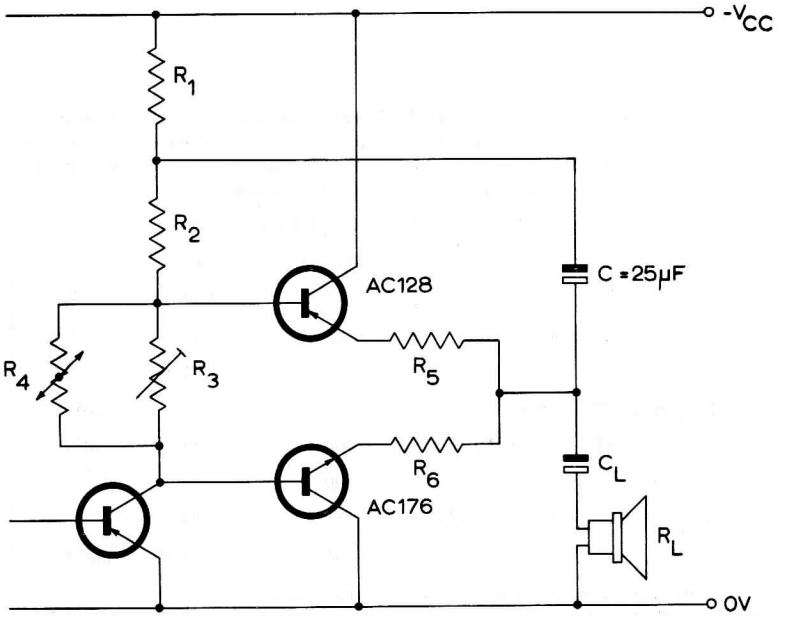
Conforms to J.E.D.E.C. TO-1
V.A.S.C.A. SO-21/SB3-10



	Millimetres		
	Min.	Nom.	Max.
A	-	-	6.48
B	-	-	6.1
C	-	-	9.4
D	-	1.8	-
E	-	-	1.5
F	38	-	-
G	-	-	0.48
H	-	-	2.05

OPERATING CONDITIONS IN CLASS 'B' COMPLEMENTARY SYMMETRICAL OUTPUT STAGE

B4952



*Nominal supply voltage	-24	-24	V
Power supply internal resistance	20	20	Ω
Load resistance	25	15	Ω
**Thermal resistance $\Theta_{case-amb}$ per transistor	40	20	degC/W
†Load power			
Speech and music	2.0	3.0	W
Sustained music	1.8	2.7	W
Sinewave	1.4	2.1	W
Driver quiescent current	11.5	18	mA
Nominal driver current (r.m.s.) for P_{load} = 50mW	0.65	0.8	mA
Peak collector current	485	675	mA
Peak load current	405	620	mA
R_1	330	180	Ω
R_2	680	470	Ω
††R_3	100	40	Ω

R_4	VA1077	VA1077	
R_5	2.2	2.2	Ω
R_6	2.2	2.2	Ω
†††C_L	120	200	μF

*Based on an absolute maximum supply voltage of 26.5V for this circuit.

**Based on $T_{amb} = 45^oC$. These maximum values of $\Theta_{case-amb}$ include the thermal resistance of the transistor mounting.

†The P_{load} figures are at the onset of clipping and approximately 10% more output can be obtained for $D_{tot} = 10\%$.
The P_{load} figures take account of the fact that a practical power supply has a finite internal resistance. For a value of 20Ω internal resistance three values of P_{load} are given.

1. The speach and music value is the output which will be obtained when peaks occur in low level passages.

2. The sustained music value is the equivalent sinewave power output which will be obtained during sustained high level passages of music.

3. Normal sinewave rating.

The first two values constitute a useful measure of the power output capability of the circuit. The sinewave value is quoted because it is load power which will be obtained when, for test purposes, the equipment is driven with a sinewave because of the internal resistance of the power supply, the dissipations with sinewave drive are lower than with a constant line voltage. The thermal resistances required are given assuming these lower dissipations. The value of the supply impedance is, therefore, important and the regulation should not be improved without making compensating changes in the thermal resistance Θ_{j-amb}.

††Preset to give $I_q = 3.0mA$ at $T_{amb} = 25^oC$.

†††Value of C_L for L.F. response -3.0dB at 50c/s. The results obtained are with a series resistance of $C_L \leq 1.0\Omega$.

CHARACTERISTICS FOR MATCHED PAIR

$\frac{h_{FEL1}}{h_{FEL2}}$	Ratio of large signal forward current transfer ratio of the two transistors $I_E = 500mA$, $V_{CB} = 0$	<1.2

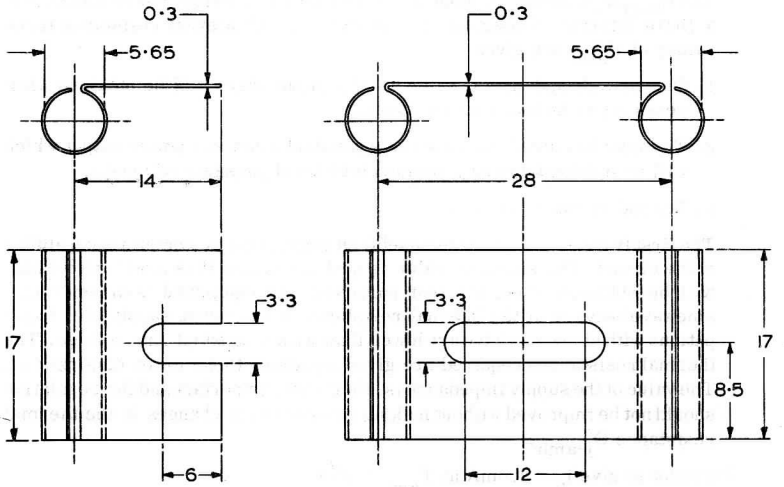
SOLDERING AND WIRING RECOMMENDATIONS

1. When using a soldering iron, transistors may be soldered directly into the circuit, but heat conducted to the junction should if possible be kept to a minimum by the use of a thermal shunt.

2. Transistors may be dip-soldered at a solder temperature of 245°C for a maximum soldering time of 5 seconds. The case temperature during dip-soldering may exceed the maximum storage temperature for a period not greater than 2 minutes, provided that it at no time exceeds 115°C. These recommendations apply to a transistor mounted flush on a board having punched-through holes, or spaced at least 1.5mm away from a board having plated-through holes.

3. Care should be taken not to bend the leads nearer than 1.5mm from the seal.

OUTLINE AND DIMENSIONS OF COOLING CLIP



Nominal dimensions in mm

Type a
Part No.56227

Type b.
Part No.56226

NOTE - Fitting of cooling clips
To ensure good thermal contact with the transistor envelope, the cooling clips should not be distorted by forcing it over the "belling" at the base of the transistors.