TCA940 10W
Audio Power Amplifier

REFERENCE TABLE

Code	Stock No.
TCA940	34320F

DESCRIPTION

The TCA 940 is a monolithic integrated circuit in a 12-lead quad in-line plastic package, intended for use as a low frequency class B amplifier. The TCA 940 provides 10W output power @ 20V/4Ω, 9W @ 18V/4Ω, 7W @ 16V/4Ω, 6.5W @ 20V/8Ω and 5W @ 18V/8Ω.

It gives high output current (up to 3A), very low harmonic and cross-over distortion. Besides the thermal shut-down, the device contains a current limiting circuit which restricts the operation within the safe operating area of the power transistors. The TCA 940 is pin to pin equivalent to the TBA 810 AS.

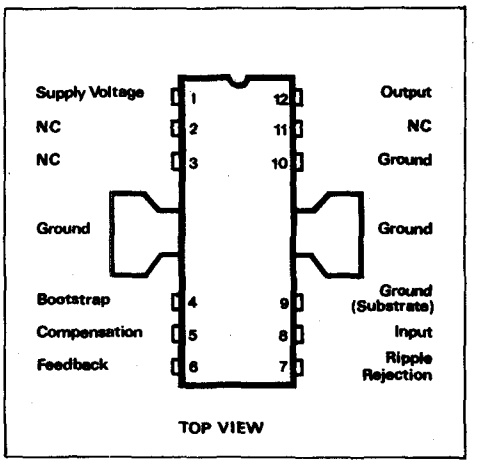
ABSOLUTE MAXIMUM RATINGS

Supply voltage	24V
Output peak current (non-repetitive)	3.5A
Output peak current (repetitive)	3A
Power dissipation at T_{amb} = 50°C	1.25W
Power dissipation: at T_{tab} = 70°C	8W
Storage and junction temperature	−40 to 150°C

FEATURES

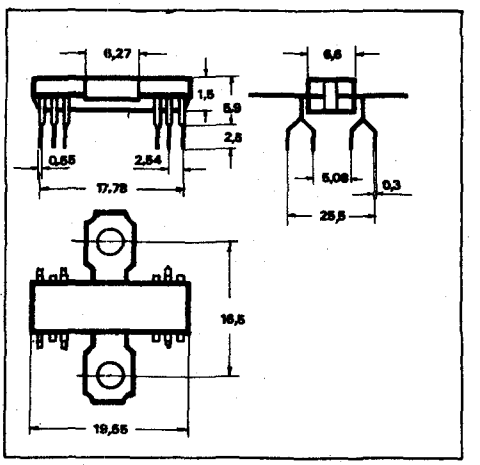
High output current
Short circuit protection
Thermal shut-down
Very low harmonic and cross-over distortion

CONNECTION DIAGRAM



TOP VIEW

PHYSICAL DIMENSIONS



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ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C)

Parameter		Test conditions	Min.	Typ.	Max.	Unit
V_s	Supply voltage (pin 1)		6		24	V
V_o	Quiescent output voltage (pin 12)	V_s = 18 V	8.2	9	9.8	V
I_d	Quiescent drain current	V_s = 24 V		20		mA
I_b	Bias current (pin 8)	V_s = =18 V		0.5		µA
P_o	Output power	d = 10% f = 1 kHz V_s = 20 V, R_L = 4Ω V_s = 18 V, R_L = 4Ω V_s = 16 V, R_L = 4Ω V_s = 20 V, R_L = 8Ω V_s = 18 V, R_L = 8Ω	 7 	10 9 7 6.5 5	 	 W W W W W
$V_{i(rms)}$	Voltage for input saturation		250			mV
V_i	Input sensitivity	P_o = 9 W V_s = 18 V R_L = 4Ω f = 1 kHz		90		mV
B	Frequency response (−3 dB)	V_s = 18 V R_L = 4Ω C_3 = 1000 pF		40 to 20,000		Hz
d	Distortion	P_o = 50 mW to 5 W V_s = 18 V R_L = 4Ω f = 1 kHz		0.3		%
R_i	Input resistance (pin 8)			5		MΩ
G_v	Voltage gain (open loop)	V_s = 18 V R_L = 4Ω f = 1 kHz	—	75		dB
G_v	Voltage gain (closed loop)	V_s = 18 V R_L = 4Ω f = 1 kHz	34	37	40	dB
e_N	Input noise voltage	V_s = 18 V R_g = 0 B (−3 dB) = 40 Hz to 20,000 Hz		3 3		µV µV
i_N	Input noise current	V_s = =18 V B (−3 dB) = 40 Hz to 20,000 Hz		0.15		nA
η	Efficiency	P_o = 9 W V_s = 18 V R_L = 4Ω f = 1 kHz			65	%
SVR	Supply voltage rejection ratio	V_s = 24 V R_L = 4Ω f_{ripple} = 100 Hz		45		dB
I_d	Drain current	P_o = 9 W V_s = 18 V R_L = 4Ω		770		mA
	Thermal shut-down* Case temperature	P_{tot} = 4.8 W		110		°C

THERMAL DATA

$R_{th\ j\text{-}tab}$	Thermal resistance junction-tab	max	10 °C/W
$R_{th\ j\text{-}amb}$	Thermal resistance junction-ambient	max	80 °C/W