OPERATIONAL AMPLIFIER

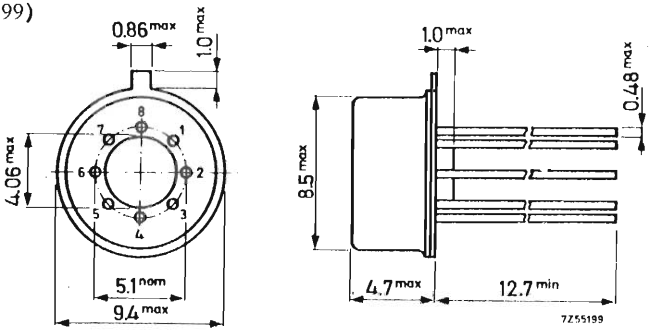
The TAA242 is a silicon monolithic integrated d.c. amplifier in a TO-99 metal envelope for applications in the temperature range from −55 to +125 °C.

QUICK REFERENCE DATA				
Positive supply voltage	V_P		12	V
Negative supply voltage	$-V_N$		6	V
Characteristics at T_{amb} = 25 °C				
Voltage gain	G_v	typ.	3600	
Common mode rejection ratio	CMRR	typ.	100	dB
Input offset voltage drift	$\frac{\Delta V_{io}}{\Delta T}$	typ.	2.5	μV/°C
Differential input resistance	R_i	typ.	40	kΩ
Output resistance	R_o	typ.	200	Ω
Power dissipation	P_{tot}	typ.	90	mW

PACKAGE OUTLINE

Dimensions in mm

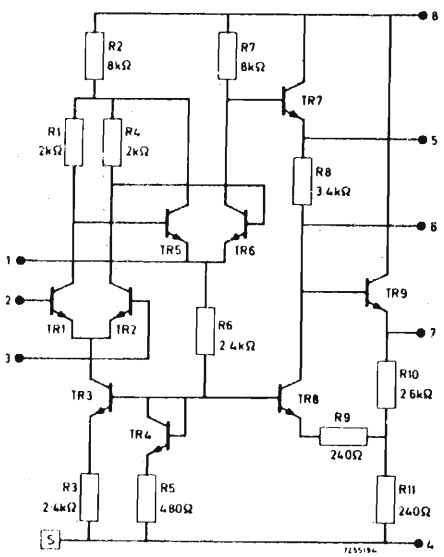
XA8 (TO-99)



RATINGS Limiting values in accordance with the Absolute Maximum System (IEC134)

Voltages				
Total supply voltage	V_{8-4}	max.	21	V
Common mode voltage	V_i		−6 to +1.5	V
Differential mode voltage	V_{2-3}	max.	±5	V
Output current (peak value)	I_{OM}	max.	50	mA
Power dissipation up to T_{amb} = 105 °C [1]	P_{tot}	max.	300	mW
at T_{amb} = 125 °C	P_{tot}	max.	170	mW
Temperatures				
Operating ambient temperature	T_{amb}		−55 to +125	°C
Storage temperature	T_{stg}		−65 to +150	°C

CIRCUIT DIAGRAM



1. Ground
2. Inverting input
3. Non-inverting input
4. Negative supply
5. Lead frequency compensation
6. Lag frequency compensation
7. Output
8. Positive supply

[1]) Derate linearly at 6.6 mW/°C for ambient temperatures above 105 °C.

CHARACTERISTICS at V_P = 12 V; $-V_N$ = 6 V; T_{amb} = −55 °C

Input bias current	I_i	typ.	4.3	μA
		<	10	μA
Input offset current	I_{io}	typ.	0.4	μA
		<	1.5	μA
Supply current at V_o = 0	I_{tot}	typ.	5	mA
		<	7.5	mA
Power dissipation at V_o = 0	P_{tot}	typ.	90	mW
		<	135	mW

CHARACTERISTICS at V_P = 12 V; $-V_N$ = 6 V; T_{amb} = 25 °C

Voltage gain; $R_L \geq 100$ kΩ; $V_o = \pm 5$ V	G_v	2500 to 6000		
		typ.	3600	
Input offset voltage; $R_S \leq 2$ kΩ	V_{io}	typ.	0.5	mV
		<	2	mV
Input bias current	I_i	typ.	2	μA
		<	5	μA
Input offset current	I_{io}	typ.	0.18	μA
		<	0.5	μA
Common mode rejection ratio at $f \leq 1$ kHz; $R_S \leq 2$ kΩ	CMRR	>	80	dB
		typ.	100	dB
Input voltage range	V_i	−4 to +0.5		V
Supply current at V_o = 0	I_{tot}	typ.	5	mA
		<	6.7	mA
Differential input resistance	R_i	>	16	kΩ
		typ.	40	kΩ
Output resistance	R_o	typ.	200	Ω
		<	500	Ω
Power dissipation at V_o = 0	P_{tot}	typ.	90	mW
		<	120	mW

CHARACTERISTICS at V_P = 12 V; $-V_N$ = 6 V; T_{amb} = 125 °C

Supply current at V_o = 0	I_{tot}	typ.	4.4	mA
		<	6.7	mA
Input offset current	I_{io}	typ.	80	nA
		<	0.5	μA
Power dissipation at V_o = 0	P_{tot}	typ.	80	mW
		<	120	mW

CHARACTERISTICS at $V_P = 12$; $-V_N = 6$ V; $T_{amb} = -55$ to $+125$ °C

Voltage gain; $R_L \geq 100$ kΩ; $V_o = \pm 5$ V	G_v	>	2000	
Input offset voltage; $R_S \leq 2$ kΩ	V_{io}	<	3	mV
Average input offset voltage drift; $R_S = 50$ Ω				
$T_{amb} = -55$ to $+25$ °C	$\frac{\Delta V_{io}}{\Delta T}$	typ.	2	μV/°C
		<	10	μV/°C
$T_{amb} = +25$ to $+125$ °C	$\frac{\Delta V_{io}}{\Delta T}$	typ.	2.5	μV/°C
		<	10	μV/°C
Average input offset current drift; $R_S = 50$ Ω				
$T_{amb} = -55$ to $+25$ °C	$\frac{\Delta I_{io}}{\Delta T}$	typ.	3	nA/°C
		<	16	nA/°C
$T_{amb} = +25$ to $+125$ °C	$\frac{\Delta I_{io}}{\Delta T}$	typ.	1	nA/°C
		<	5	nA/°C
Common mode rejection ratio at $f \leq 1$ kHz; $R_S \leq 2$ kΩ	CMRR	>	70	dB
		typ.	95	dB
Supply voltage rejection ratio $V_8 = +12$ to $+6$ V; $V_4 = -6$ to -3 V; $R_S \leq 2$ kΩ	SVRR	typ.	75	μV/V
		<	200	μV/V
Peak output voltage swing at $R_L \geq 10$ kΩ	V_{OM}	>	± 3.5	V
		typ.	± 4	V
$R_L \geq 100$ kΩ	V_{OM}	>	± 5	V
		typ.	± 5.3	V