

ULTIMA[®] UNIVERSAL HYBRID

90925-000

Type: AGCI / AGCO
Amplifier Type: Class B or D
Output Stage: Class B Push-Pull
Filtering: 2 Pole Active Low Cut

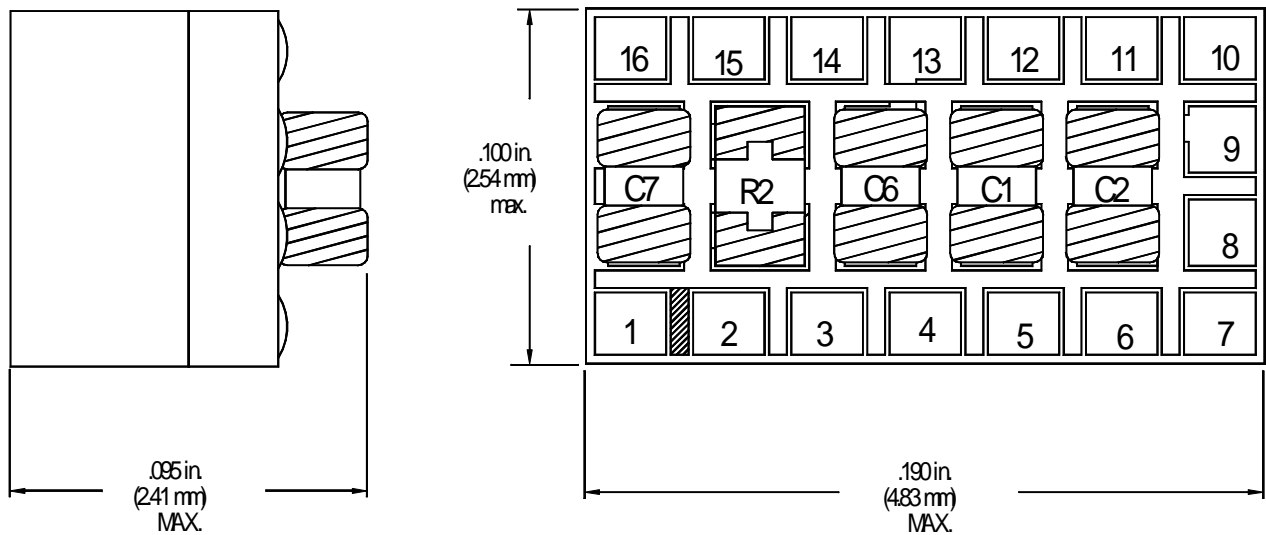
Features:

- Adjustable Knee Threshold
- 55 dB max. Acoustical Gain
- Gain Trim Adjustments
- Compression Ration 3:1 to 10:1

Technical Data

RTI -Hybrids

90925-000



PAD DESCRIPTION

1	OUTPUT AMP IN -
2	FILTER OUT
3	FILTER CONTROL
4	FILTER GAIN ADJUST
5	COMPRESSION RATIO
6	FEEDBACK SIGNAL
7	VCC
8	VREG

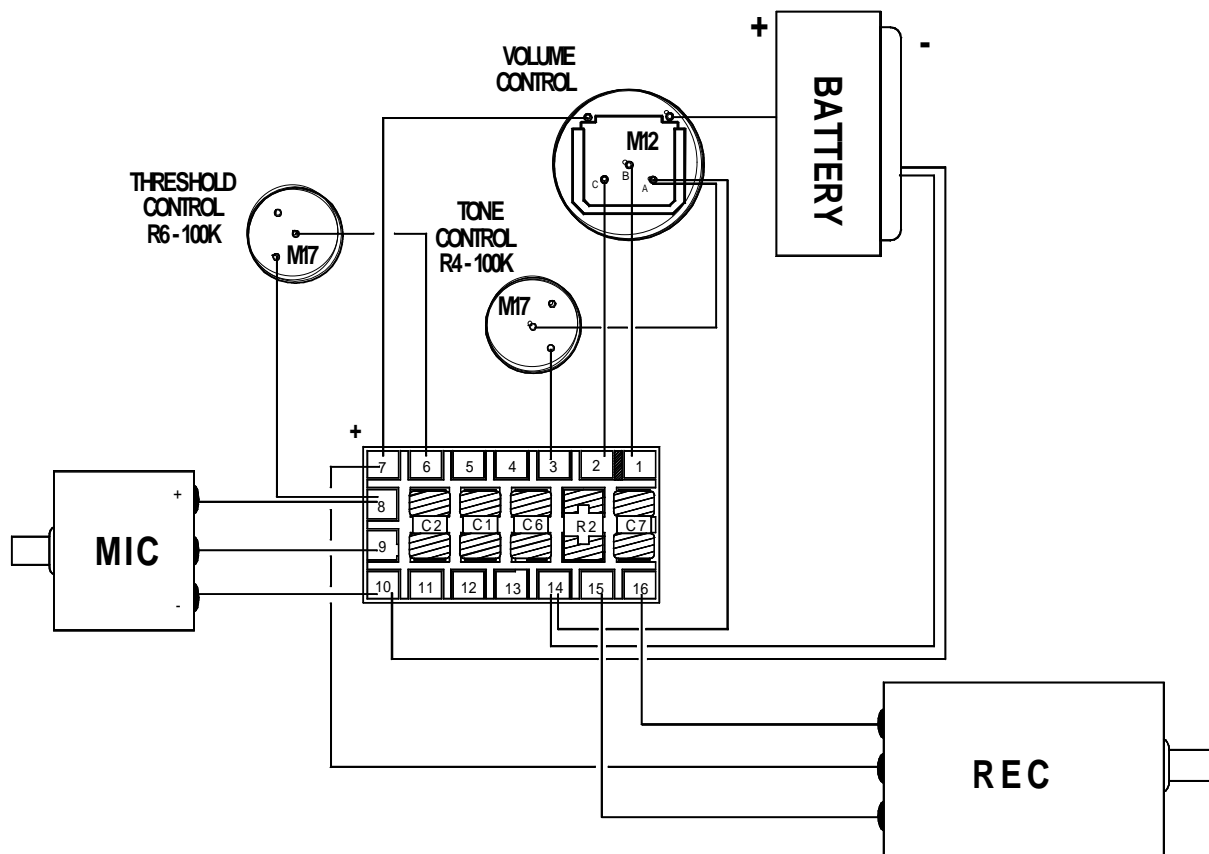
PAD DESCRIPTION

9	MIC IN
10	GROUND
11	E1
12	PREAMP OUT
13	GAIN TRIM
14	POWER GND
15	OUTPUT -
16	OUTPUT +

Technical Data

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4	FILTER GAIN ADJUST
5	COMPRESSION RATIO
6	FEEDBACK SIGNAL
7	VCC
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PAD DESCRIPTION

9	MC IN
10	GROUND
11	E1
12	PREAMP OUT
13	GAIN TRIM
14	POWER GND
15	OUTPUT-
16	OUTPUT+

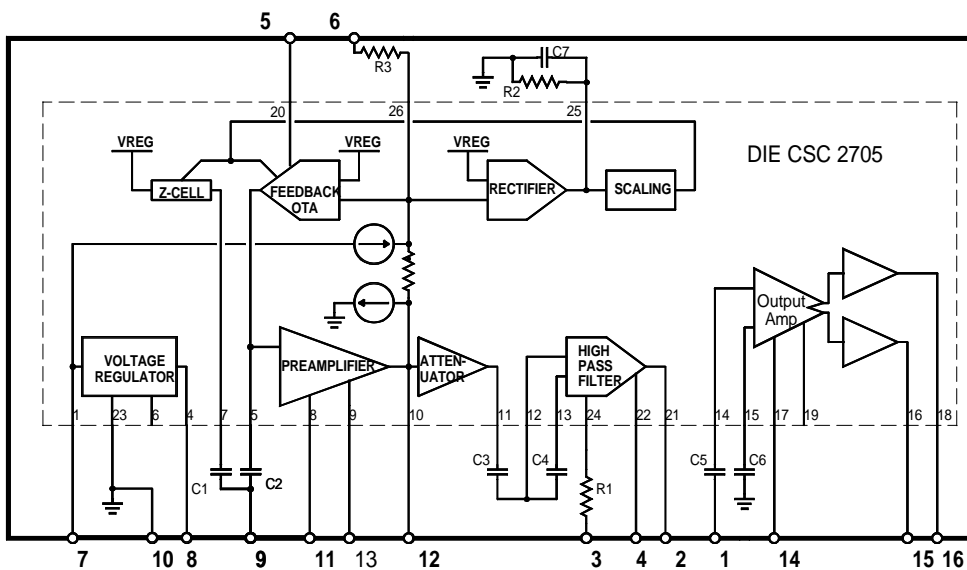
Reference material only

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HYBRID SCHEMATIC



C1 - .1 μ F
 C2 - .1 μ F
 C3 - .0047 μ F
 C4 - .0047 μ F
 C5 - .022 μ F
 C6 - .022 μ F
 C7 - .033 μ F(RELEASE TIME)

R1 - 3.9K
 R2 - 22MEG)
 R3 - 470 OHM

PAD DESCRIPTION

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7	VCC
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PAD DESCRIPTION

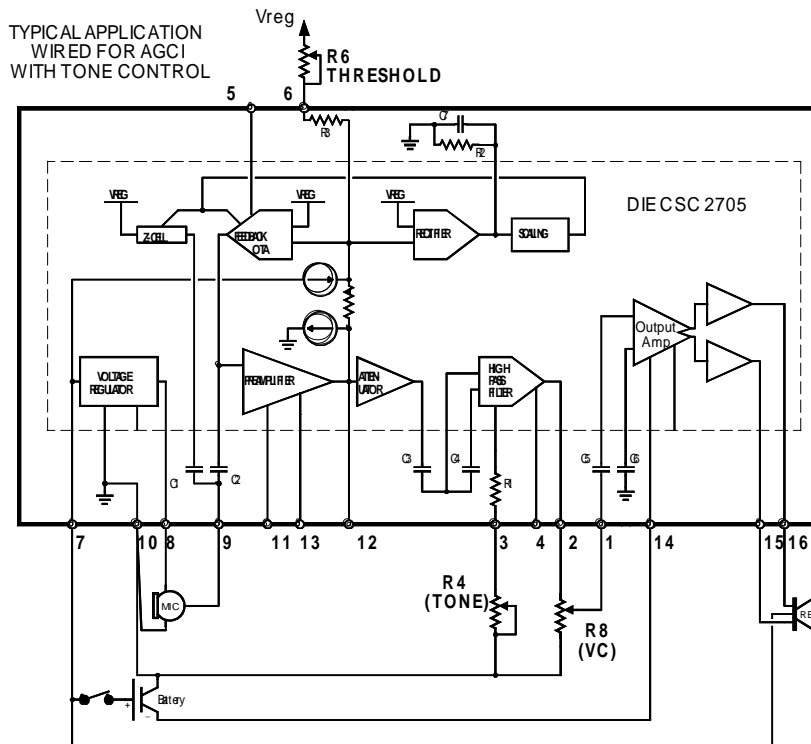
9	MIC IN
10	GROUND
11	E1
12	PREAMP OUT
13	GAIN TRIM
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15	OUTPUT -
16	OUTPUT +

Reference material only

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C1 - .1 μ F
C2 - .1 μ F
C3 - .0047 μ F
C4 - .0047 μ F
C5 - .022 μ F
C6 - .022 μ F
C7 - .033 μ F (RELEASE TIME)

R1 - 3.9K
R2 - 22MEG
R3 - 470 OHM
R4 - 100K (HIGH PASS FILTER)
R6 - THRESHOLD CONTROL (100K)
R8 - 50K (VOLUME CONTROL)

MIC - EK3024(TYP)
REC - ED 1932(TYP)

PAD DESCRIPTION

1	OUTPUT AMP N-
2	FILTER OUT
3	FILTER CONTROL
4	FILTER GAIN ADJUST
5	COMPRESSION RATIO
6	FEEDBACK SIGNAL
7	VCC
8	VREG

PAD DESCRIPTION

9	MIC IN
10	GROUND
11	E1
12	PREAMP OUT
13	GAIN TRIM
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15	OUTPUT-
16	OUTPUT+

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90925-000 PRODUCT SPECIFICATIONS

2705 DIE	MIN.	TYP	MAX.	UNITS
Dropout Voltage	--	--	1.05	V dc
Quiescent Current (see Figure 1)	--	325	450	A
2705 VOLTAGE REGULATOR				
Output Voltage	.86	--	.91	V dc
Power Supply Rejection Ratio @ 1kHz	60	70	--	dB
Noise (BW = 10kHz)	--	25	32	mV
Output Impedance @ 1kHz	.25	.50	1.50	
Output Current	50	--	--	A
Temperature Coefficient of Output Voltage	-.17	-.12	-.07	%/°C
2705 PREAMPLIFIER				
Equivalent Input Noise ¹	--	2.7	3.8	V rms
Input Impedance at Preamp Input Pin @ 1kHz	80	100	120	k
Output Impedance @ 1kHz	35	75	250	
Voltage Gain Preamp In to Preamp Out @ 1kHz	42	43	44	dB
Output Bias Voltage	500	--	700	mV
Output Voltage Swing (open loop) ²	600	--	--	mV p-p
Output Bandwidth ³	3.0	4.8	--	kHz
Output Current Capability	300	--	--	A
Distortion (Input 1mV @ 1kHz)	--	--	2	
2705 ATTENUATOR & FILTER				
Output Impedance @ 1kHz	280	510	910	
Voltage Gain @ 1kHz	-1	0	2	dB
2705 RECTIFIER (see Figure 4)				
Output Current ⁴	2.2	3.1	5.3	A
Threshold Voltage	10	14	19	mVpk
Compression Ratio ⁵	3:1		10:1	
2705 OUTPUT AMPLIFIER (see Figure 5)				
Quiescent Current ⁶	--	90	320	A
Input Impedance	70	92	114	k
Voltage Gain ⁷	27	30	32	dB
Output Current Capability	40	--	--	m

¹ The preamplifier input is capacitor coupled to a 3.9kΩ load (to simulate the output impedance of a typical microphone), and the voltage spectral noise density, in dB, is measured at the output of the preamplifier. An approximation of EIN is obtained by subtracting the dc gain, in dB, from the measured output noise giving a referred input noise floor of $\approx -150\text{dB}$ (or $\approx 31.6\text{nV}$), then, assuming a frequency range of 0 to 10kHz, $\text{EIN} = 31.6\text{nV} \cdot \sqrt{(10\text{kHz})} \approx 3\mu\text{V}$. A detailed method, using piecewise integration and spectral gain, is outlined in figures 2 and 3.

² In order to have the open loop condition and get a large signal at the output of the preamplifier, connect the FB signal to Vreg, which causes the amplifier to operate in a linear mode.

³ The preamplifier is a dc amplifier, which has been internally compensated to prevent oscillation. With this compensation the gain is guaranteed to be flat with a -3dB knee of $\geq 3\text{kHz}$.

⁴ The maximum output with $\pm 100\text{mV}$ of offset applied to the differential input of the rectifier (one side connected to Vreg).

⁵ The compression ratio is calculated from the slope of the I/O curve (above the threshold knee of the ANSI I/O curve), where the ratio is the input dB change vs. the output dB change. Adjusted with Compression Ratio control (open is 10:1).

⁶ The quiescent (no-signal) current will vary with the receiver impedance and the settings of the output drive control and the current feedback control.

⁷ The voltage gain specification shown assumes that the boost function is not used to increase the gain, and that the current feedback or output drive control are not used to reduce the gain.

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Notes: