VDA-7003
Video Distribution Amplifier

VM-7003-07

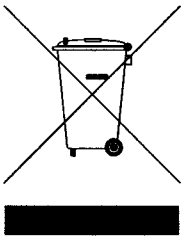
Cool Practical Technology™

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.



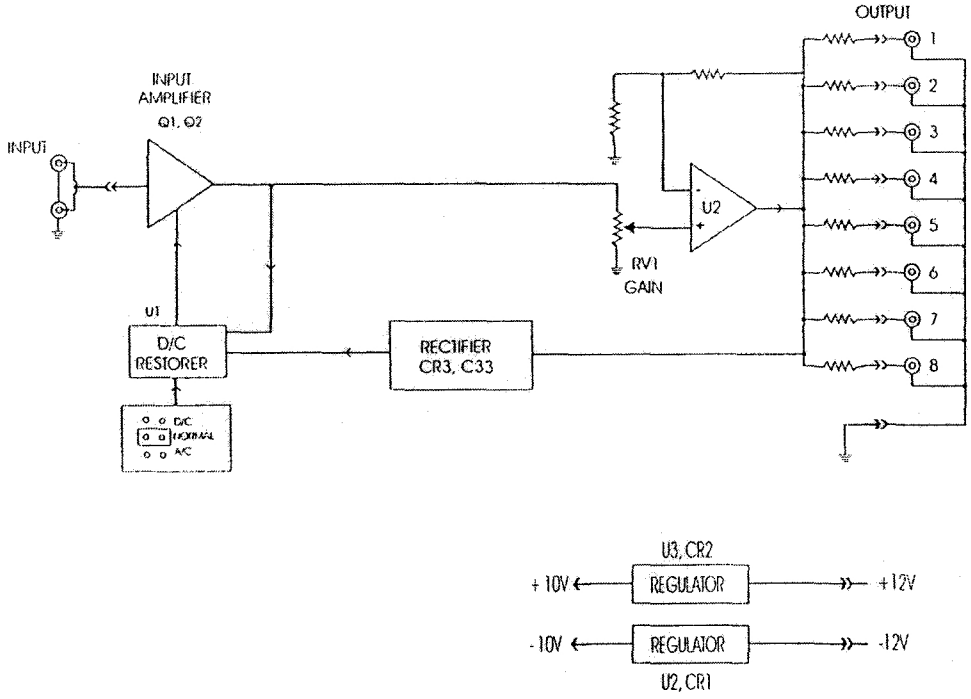
If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

Ross Video Ltd.: P.O. Box 220, 8 John Street, Iroquois, ON. Canada K0E 1K0 | Ross Video Inc.: P.O.Box 880, Ogdensburg, New York, USA 13699 0880

Tel: (613)652-4886 | Fax: (613)652-4425 | Email: solutions@rossvideo.com **www.rossvideo.com**

VDA 7003 BLOCK DIAGRAM



Operation

The only user-operated control is GAIN. This is set as required for the situation and cable length. Use any suitable test signal which would enable the signal gain to be correctly set. (e.g. pulse & bar or color bar).

The Coupling jumper is set as follows:

A/C: Used for component video signals.

Normal: Used for composite video signals.

D/C: The D.C. setting has been provided for use in special situations such as with computer video where pure D.C. coupling may be advantageous. This setting is not normally used in broadcast applications.

Circuit Description

When reading this description, also refer to the block diagram (on the facing page) and the schematic diagram.

The video input and input shield are connected to an input buffer amplifier (Q1 and Q2). This provides a high impedance, low capacitance input to ensure a good input return loss.

The output stage, U2, is a video op-amp with an internal power output stage. This is operated with a total gain of 12 dB (four times). This provides 6 dB to drive the 75 ohm output resistors and a 6 dB maximum gain reserve. CV1 and RV3 provide adjustment for basic frequency response.

Op-amp U1A is used to stabilize the D.C. component of the output video signal. Jumper JP1 is used to select the most appropriate mode of operation.

In the D.C. mode, the output closely tracks the D.C. component of the input signal. The input D.C. obtained via R1 is compared by U1A with the output of Q2 and correction applied via R8 to the base of Q1.

The Normal mode maintains the back porch nominally at ground level regardless of changes in the average picture level. This is achieved by clamping the sync tip to -0.3 volts. The sync tip is rectified by CR3 and the voltage stored in C33. U1A compares this voltage with ground level and corrects the base voltage of Q1 to maintain this condition.

The A.C. mode ensures that the D.C. component of any picture is equal to ground level.

Voltage regulation of the incoming raw DC (13.5volts) is accomplished by regulators U2 and U3 which output -10 volts and +10 volts respectively.

Settings for JP1 Coupling Jumper Plug

Composite Video: Use "NORMAL" setting.

Component Video: Use A.C. setting.

The D.C. setting has been provided for use in special situations such as with computer video where pure D.C. coupling may be advantageous. This setting is not normally used in broadcast applications.

Alignment

IMPORTANT: All Ross distribution amplifiers have been very accurately calibrated at the factory. Alignment should only be attempted if absolutely necessary and the required precision sweep measuring equipment is available.

1. TEST SETUP

Put the amplifier on the extender board and turn power on.

2. POWER REGULATORS

Use a voltmeter to test for the presence of regulated +10 volts at TP1 and -10 volts at TP3. (9.5 to 10.2 volts).

3. GAIN CALIBRATION

Set up a method of accurately measuring amplifier gain, using a window or pulse & bar signal. Adjust the gain control (RV1) to obtain unity gain.

4. FREQUENCY RESPONSE

Adjust CV1 and RV3 for flattest response to 14 MHz.

VDA 7003 Technical Specifications

Input	
Video input level	1 Vpp nominal
Input impedance	75 Ω bridging
Input return loss	46 dB to 5 MHz
Max DC on input	±11V

Output	
Number of outputs	8
Output impedance	75Ω
Ouput return loss	35 dB to 5MHz
Output isolation	34 dB to 5MHz
D.C. Offset	< 50 mV
Output loading per termination at 10MHz	0.01 dB
Performance	
Gain range	+6,–3 dB
Gain stability	< 0.10% per 10°C
Frequency response	± 0.02 dB to 10 MHz typically -0.2 dB at 20 MHz
Line rate window tilt	< 0.2%
Field rate window tilt	< 0.2%
50/60 Hz square wave tilt	< 0.3%
Bounce (black to white)	< 0.3%
Differential gain (10%-90% APL)	< 0.1%
Differential phase (10%-90% APL) all outputs loaded	< 0.1°
RMS noise 0-5 MHz (unweighted)	75 dB
Chrominance/luminance delay	< 2.0 ns
K rating 1T	0.3%

Specifications and designs are subject to change without notice.

VDA 7003
Bill of Materials

A7003-001 Issue 7

Item	QTY	REF	Part	Description	Part Number
1.	1	J1	CON\30P\156\E	NOT A BOUGHT PART	-------
2.	1	R32	NVR	NO VALUE RESISTOR 5%	-------
3.	1	C34	4p7	CAPACITOR, CERAMIC, 100V 0.25PF 683 4p7	200-470
4.	1	C32	5p6	CAPACITOR, CERAMIC, 100V 0.25PF 683 5p6	200-560
5.	1	C29	n68	CAPACITOR, CERAMIC, 100V 0.25PF 683 n68	202-680
6.	2	C13,C10	1u CER 50V	CAPACITOR, CERAMIC, 50V 10% 1u0	206-100
7.	3	C5,C20,C33	100n FILM 63V	CAPACITOR, FILM, 63V 10% 100n	210-007
8.	3	C1,C16,C17	100n	CAPACITOR, GLASS, 100n	225-100
9.	2	C2,C3	47u	CAPACITOR, TANTALUM, 35V 47u	250-006
10.	2	C6,C4	4u7	CAPACITOR, TANTALUM, 4u7	250-007
11.	2	C31,C30	22u ALUM	CAPACITOR, ALUMINUM, 16V 22u	250-011
12.	1	CV1	2p1-10p	VARIABLE, CAPICITOR, 2p1-10p	270-006
13.	1	CR3	1N4148	DIODE, SIGNAL, G, 1N4148	360-005
14.	3	CR1,CR2,CR4	1N4733A	DIODE, ZENER, 1N4733A	360-012
15.	1	MP4	365-001	PCB, EJECTOR,	365-001
16.	1	JP1	403-004-06	HEADER, 6 PIN, 2 ROW, MALE PL.23 BL.1 LL.1	403-004-06
17.	2	L2,L1	4u7 0.4IND	INDUCTOR ,4u7 0.4 SPACING	440-023
18.	1	U4	LM7805	POS.VOLTAGE REGULATOR	500-015
19.	1	U3	LM7905	NEG VOLTAGE REGULATOR	00-020
20.	1	U1	TL082	DUAL JFET, INPUT OPER.,AMP.	500-075
21.	1	U2	EL2099C	VIDEO DISTRIBUTION AMPLIFIER	504-097
22.	1	JPPLUG1	JP PLUG	JUMPER, 2-POSITION LOW PROFILE,	603-005
23.	3	NUT2,NUT3,NUT4	NUT	NUT, HEX,	650-012
24.	1	PCB	7003-001-07	UTILITY D.A., PCB	7003-001-07
25.	1	` RV3	1K 1T	VARIABLE RESISTOR, 1/4 DIA 1-TURN 1K	710-005
26.	1	RV1	1K 20T	VARIABLE RESISTOR, 1K 20-TURN	720-001
27.	1	R34	3M3 1/4W	RESISTOR, 1/4W 5%, 3M3	806-330
28.	1	R22	100R 1%	RESISTOR, 1/4W 1%, 100R	812-100
29.	1	R20	365R 1%	RESISTOR, 1/4W 1%, 365R	812-365
30.	1	R42	22R	RESISTOR, 1/2W 5%, 22R	825-220
31.	1	R35	36R	RESISTOR,1/2W 5% ,36R	825-360
32.	2	R14,R45	100R	RESISTOR, 1/2W 5%, 100R	826-100
33.	2	R5,R7	150R	RESISTOR, 1/2W 5%, 150R	826-150
34.	1	R4	220R	RESISTOR, 1/2W 5%, 220R	826-220
35.	2	R9,R25	470R	RESISTOR, 1/2W 5%,, 470R	826-470
36.	1	R44	1K	RESISTOR 1/2W 5%, 1K	827-100
37.	2	R2,R31	1K2	RESISTOR, 1/2W 5%, 1K2	827-120
38.	3	R3,R23,R27	10K	RESISTOR, 1/2W 5%, 10K	828-100
39.	1	R46	33K	RESISTOR, 1/2W 5%, 33K	828-330
40.	1	R6	100K	RESISTOR, 1/2W 5%, 100K	829-100
41.	1	R8	150K	RESISTOR, 1/2W 5%, 150K	829-150
42.	1	R33	220K	RESISTOR, 1/2W 5%, 220K	829-220
43.	1	R43	270K	RESISTOR, 1/2W 5%, 270K	829-270
44.	1	R1	470K	RESISTOR, 1/2W 5%, 470K	829-470
45.	8	R11,R13,R15,R16, R17,R24,R28,R29	75R 1/2%	RESISTOR, 1/4W 1/2%, 75R	840-004
46.	3	SCRW2,SCRW3, SCRW4	SCREW 1/4	SCREW, 1/4 #4 BIND	850-040
47.	3	TP1,TP2,TP3	TP	TEST POINT	910-010
48.	2	Q2,Q1	2N3906	TRANSISTOR, P-N-P	950-018
49.	3	WSHR2,WSHR3, WSHR4	WASHER1	WASHER, SPRING #4	960-015

NOTES

REVISION RECORD

ISSUE	REV BY	DCO	APPR BY	DATE

SQUARE PIN DESIGNATIONS:
INTEGRATED CIRCUIT = PIN 1
TRANSISTOR = EMITTER
DIODE = CATHODE (BAND)
POLARIZED CAPACITOR = POSITIVE PIN (+)
RESISTOR NETWORK = PIN 1

XX = NO VALUE COMPONENT (INSTALLED BY TEST)
LED = POSITIVE PIN (LONG LEG)

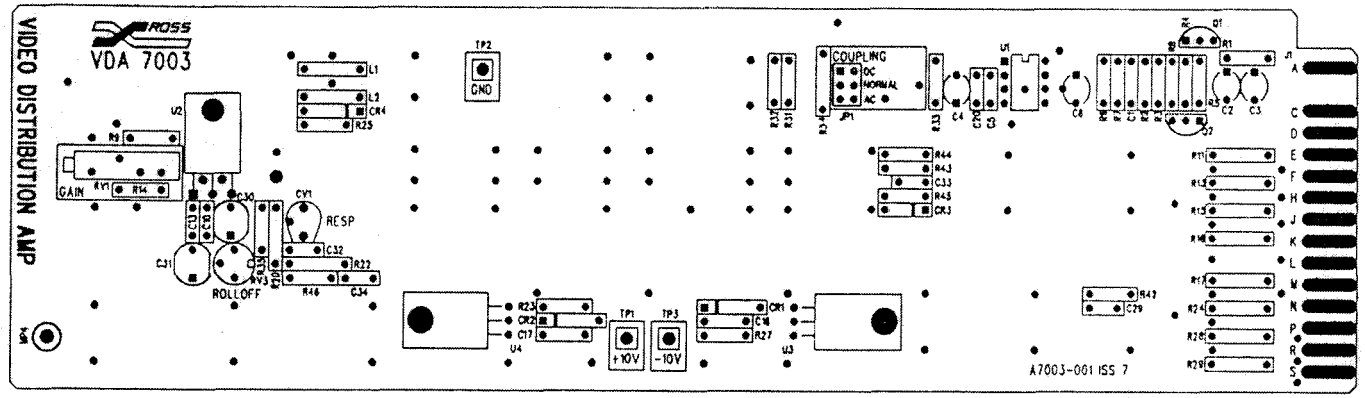
CV1 = RESPONSE

RV1 = GAIN

RV3 = ROLLOFF

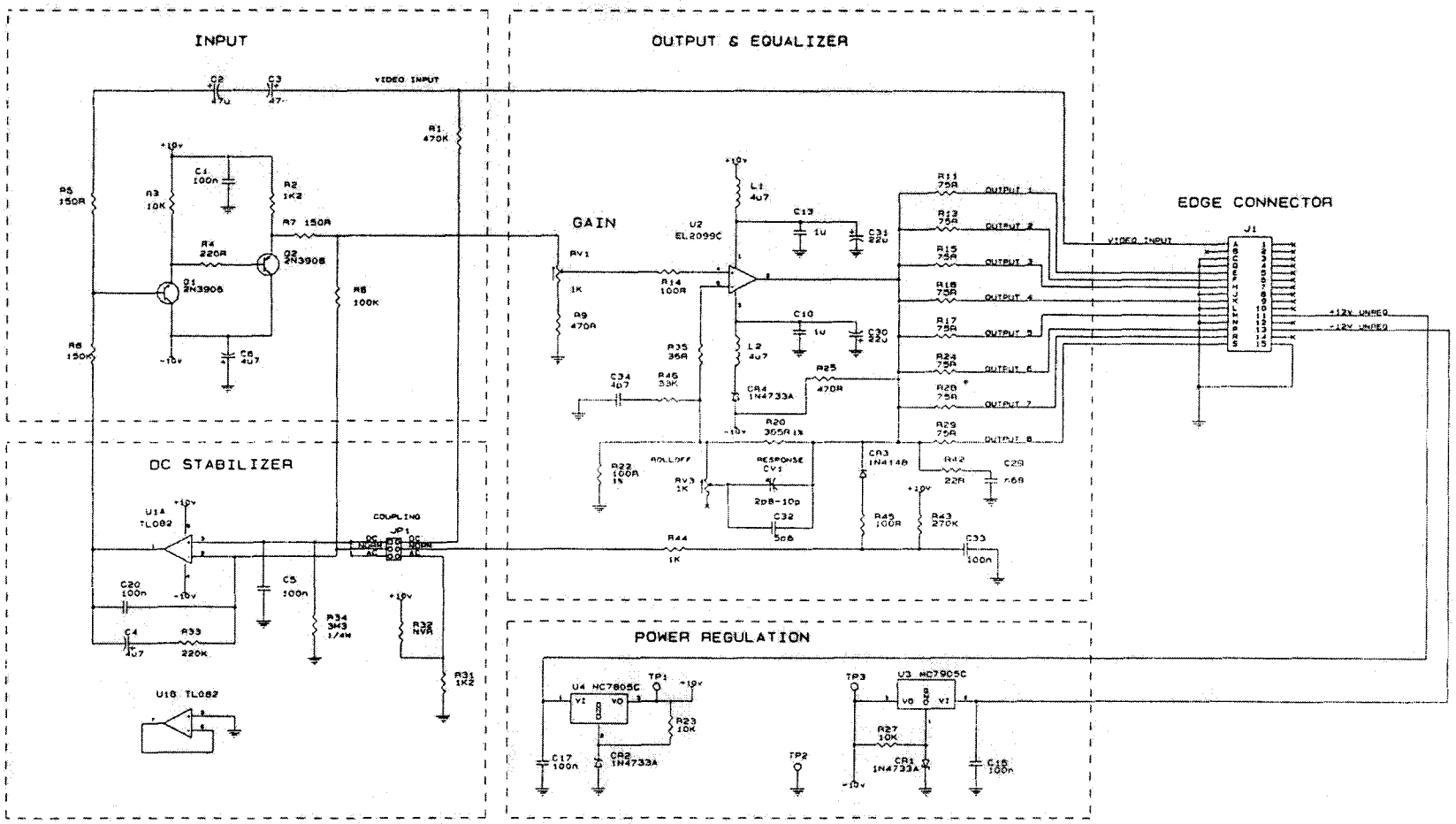
TP1 = +10V
TP2 = GROUND
TP3 = -10V

JP1 = COUPLING JUMPER



ROSS VIDEO LIMITED	FILE A7003-LAY2		TYPE LAYOUT	
	DRAWN BY SCD	DESIGNED BY JS	APPROVED BY	RELEASED BY
FUNCTION		DATE 7 OCT 94	DATE	DATE
TITLE VIDEO DISTRIBUTION AMP	NUMBER A7003-001		ISSUE 07	SHEET 1 of 1

REVISION RECORD				
ISS	REV	DCO	APP	DATE



ROSS VIDEO LIMITED	FILE 003-01.SCH	TYPE SCHEMATIC	
	DRAWN BY JR	DESIGNED BY JR	APPROVED BY
FUNCTION CIRCUIT DIAGRAM		DATE 18 JULY 93	DATE
TITLE VIDEO DISTRIBUTION AMP	NUMBER A7003-001	ISSUE 07	SHEET 1 OF 1

Ross ™, ROSS™ are

Ross Video Limited
8 John Street
Iroquois, Ontario
K0E 1K0

VIDEO DISTRIBUTION PRODUCTS
WARRANTY and REPAIR POLICY

1. Ross Video Limited (the Company) warrants its products to be free from defects in workmanship and material under normal use and service for a period of **FIVE** years from the date of shipment. If, within the warranty period, the customer notifies the Company that a product is defective, the Company will correct the defect, either by repairing the defective product or by shipping a replacement product to the customer, as determined by the Company.

2. Liabilities under this warranty is limited to the repair or replacement of the product as determined by the company and is in lieu of all other warranties expressed or implied.

3. This warranty does not extend to any product which has been subjected to misuse, neglect, accident, improper installation or application, nor does it extend to products which have been repaired or altered outside the factory by personnel other than those of the Company, unless expressly authorised in writing by the Company.

4. Warranty repairs will be made at the Company's plant unless otherwise specified in writing by the Company. All packing, shipping, and special handling costs will be paid for by the customer.

5. Non-warranty repair service made at the factory will be at customer expense. Cost of repairs will be quoted following examination of the product by Company personnel.

6. In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits).