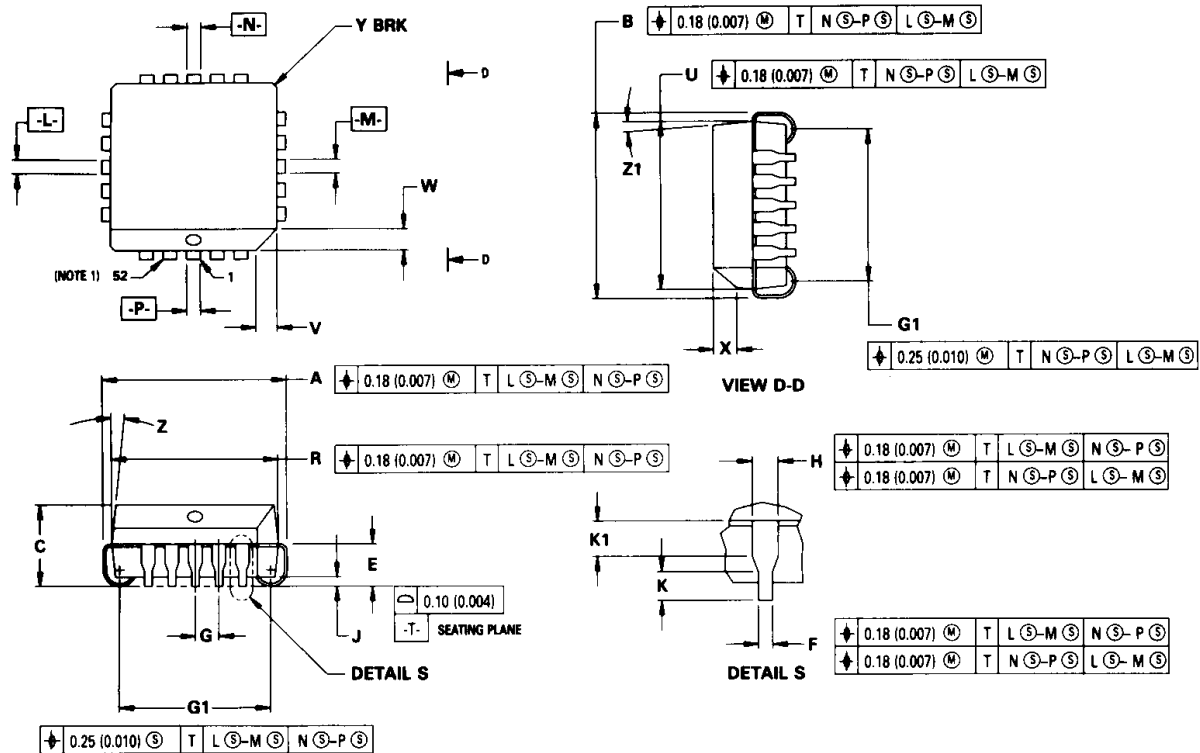| APPLICATION		REVISION				
NEXT ASSY.	USED ON	LTR	DESCRIPTION		DATE	APPROVED
	A300/A500Plus/CDTV CR	A	**SPECIFICATION RELEASE**			

1.0   DESCRIPTION

This Specification describes the requirements for a Display ENcoder Integrated Circuit (I.C.).

Main Function:

- Display data buffer, encode display object to RGB colors.

- Bitplane & Sprite display. Parallel data from data bus is retained in six (6) Bitplane and eight pairs of Sprite data buffers.

- Bitplane Data loaded and serialized during display activity.

- Sprite Data loaded during display inactivity - individual serialization occurs when Sprite position Compare logic detects equality between the Sync Counter and any Sprite Position Register.

- Six (6) lines of Bitplane & eight (8) pairs of serial data go to Priority control logic which selects only one (1) of the Sprites or one (1) of the separate Bitmap images to produce the five (5) bit color select code at its' output. This five (5) bit code then selects one of the thirty-two (32) color registers to produce the twelve (12) bit RGB video output.

- The Bitplane and Sprite serial lines also go to the Collision Detect Logic, which detects real time coincidence between them, and sets appropriate bits in the Collision Storage register. This register is read and cleared by the 68000.

- The four (4) "mouse counters" are controlled by the two (2) mouse-joystick connectors. These count the pulses representing the horizontal and vertical motion of two (2) "mouse" controllers, and are read by the 68000.

COMMODORE P. N.	STATUS				
391081-01	ACTIVE				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES: ANGLES +/- 1 DEGREE 2 PLACE DECIMALS +/- 0.02 3 PLACE DECIMALS +/- 0.010	DRAWN Mike Rivers	DATE	**Commodore**	
	SYSTEM ENG.	DATE	1200 WILSON DRIVE WEST CHESTER, PA. 19380 (215) 431-9100	
	TEST ENG	DATE		
COPYRIGHT 1991 COMMODORE ELECTRONICS LTD INFORMATION CONTAINED HEREIN IS THE UNPUB- LISHED AND CONFIDENTIAL PROPERTY OF COMMO- DORE ELECTRONICS LIMITED. USE, REPRODUCTION OR DISCLOSURE OF THIS INFORMATION WITHOUT THE PRIOR WRITTEN PERMISSION OF COMMODORE IS STRICTLY PROHIBITED. ALL RIGHTS RESERVED.	COMP. ENG Drew Shannon	DATE	TITLE:	
	CIRCUIT ENG.	DATE	**IC, SM, LSI, DISPLAY ENCODER, HI RES DENISE, 8373**	
			SIZE A	DRAWING NUMBER **391081**
			SCALE	SHEET 1 OF 4

FIGURE 1 - PACKAGE DIMENSIONS

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	19.94	20.19	0.785	0.795
B	19.94	20.19	0.785	0.795
C	4.20	4.57	0.165	0.180
E	2.29	2.79	0.090	0.110
F	0.33	0.48	0.013	0.019
G	1.27 BSC		0.050 BSC	
H	0.66	0.81	0.026	0.032
J	0.51	—	0.020	—
K	0.64	—	0.025	—
R	19.05	19.20	0.750	0.756
U	19.05	19.20	0.750	0.756
V	1.07	1.21	0.042	0.048
W	1.07	1.21	0.042	0.048
X	1.07	1.42	0.042	0.056
Y	—	0.50	—	0.020
Z	2°	10°	2°	10°
G1	18.04	18.54	0.710	0.730
K1	1.02	—	0.040	—
Z1	2°	10°	2°	10°

NOTES:
1. DUE TO SPACE LIMITATION, CASE SHALL BE REPRESENTED BY A GENERAL (SMALLER) CASE OUTLINE DRAWING RATHER THAN SHOWING ALL 52 LEADS.
2. DATUMS -L-, -M-, -N-, AND -P- DETERMINED WHERE TOP OF LEAD SHOULDER EXIT PLASTIC BODY AT MOLD PARTING LINE.
3. DIM G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
4. DIM R AND U DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE MOLD PROTRUSION IS 0.25 (0.010) PER SIDE.
5. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
6. CONTROLLING DIMENSION: INCH.

DENISE Chip Elements: 32 Color Registers. Bitplane Priority and Control Registers. Color Select Decoder. Priority Control Logic. 16 Sprite Serial Lines. Sprite Data Registers. Bit Plane Control Registers. Two (2) Mouse Connectors. Sprite Position Compare Logic. Sprite Horizontal Control Registers. Bit Plane Serializer Collision Detect Logic. Collision Control Register. Collision Storage Register. Buffer - Data Bus. Buffer - Register Address Decode. Bit Plane Data Registers Video: RGB. Sprite Serialization

1.1 CONFIGURATION

This device shall configured as a 52-pin PLCC plastic package with dimensions as in Figure 1.

1.2 SOURCES

Refer to Approved Vendors List.

1.3 APPLICABLE DOCUMENTS

Commodore Engineering Policy 1.02.007   Integrated Circuit Qualification Procedure
Commodore Engineering Policy 1.02.008   Integrated Circuit Process Test Specification

2.0 PIN DESCRIPTIONS

PIN	DESC	PIN	DESC
1	DRD6	27	B1
2	DRD5	28	B2
3	DRD4	29	B3
4	DRD3	30	G0
5	DRD2	31	G1
6	DRD1	32	G2
7	NC	33	G3
8	DRD0	34	NC(BLANK)
9	MLH	35	NC
10	M0H	36	PIXELSW
11	RGA8	37	NC
12	RGA7	38	$\overline{7}$M
13	RGA6	39	CCK
14	RGA5	40	GND1
15	RGA4	41	M0V
16	RGA3	42	M1V
17	RGA2	43	DRD15
18	RGA1	44	DRD14
19	BURST	45	DRD13
20	NC	46	DRD12
21	VCC1	47	DRD13
22	R0	48	DRD11
23	R1	49	DRD10
24	R2	50	DRD9
25	R3	51	DRD8
26	B0	52	DRD7

Commodore

3.0   PHYSICAL REQUIREMENTS

3.1   MARKING

Parts shall be marked with Manufacturer's Part Number, Manufacturer's Identification, and EIA Date Code.

3.2   PACKAGING

The interconnected logic circuitry shall be contained in a 52-pin PLCC plastic package with exterior dimensions per Figure 1.

4.0 ENVIRONMENTAL REQUIREMENTS

Units furnished to the requirements of this specification shall meet the following environmental resistance requirements (vendors shall furnish supporting documentation upon request):

Operating Temperature	0 to 70 deg. C
Operating Humidity	5 to 95% RH non-condensing
Operating Altitude	0 to 3000 meters
Storage Temperature	- 20 to + 85 deg. C
Storage Humidity	5 to 95% RH non-condensing
Storage Altitude	0 to 15,000 meters

4.1   PROCESS QUALIFICATION TESTS

Integrated circuits supplied to the requirements of this specification shall meet the requirements of Engineering Policy No. 1.02.008. Supporting documentation shall be supplied by vendor upon request.

4.2   ENVIRONMENTAL TEST CONDITIONS

Devices shall comply with the following environmental resistance tests per Commodore Engineering Policy 1.02.007.

1. Temperature/humidity (85 deg. C and 95% RH non-condensing) for 168 hours.
2. Operating life (1000 hours at 70 deg. C ambient temperature)
3. Solderability per MIL-STD-883, Method 2003
4. Pressure cooker (15 psig, 120 deg. C, and 100% RH for 24 hours)
5. Solvent resistance per MIL-STD-883,Method 2015, using water and trichloroethane
6. Solder temperature resistance (250 deg. C for five seconds)
7. ESD requirement MIL-STD 1686 Group 3

Note: Devices shall meet this specification's operating performance requirements after the above tests are completed.

4.3   MINIMUM ACCEPTANCE LEVEL

The minimum acceptance level of any lot shall be an AQL of 0.65 as defined by MIL-STD 105 single sampling techniques.

4.4   AGE OF DEVICES

Unit shall be rejected if EIA Date Code indicates an age of three (3) or more years.

Commodore	TITLE		
	IC, SM, LSI, DISPLAY ENCODER, HI RES DENISE, 8373		

SIZE	DRAWING NUMBER	REV.	SCALE	SHEET 4 OF 4
	391081	A		

APPROVED VENDOR LIST

This sheet must be removed from this document before the document is shown or transmitted
to a vendor.

Commodore Part Number	Vendor	Vendor Part Number
391081-01	CSG	8373 R4

Commodore