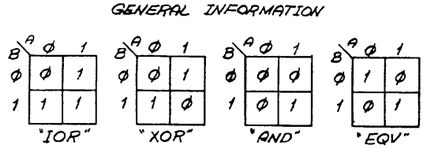
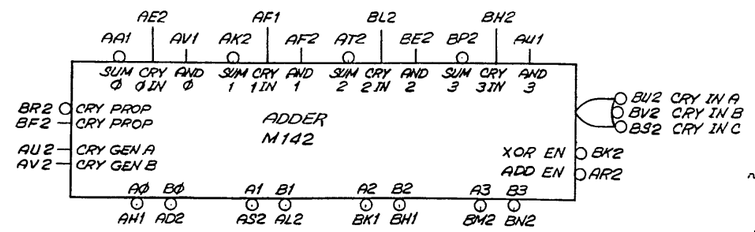
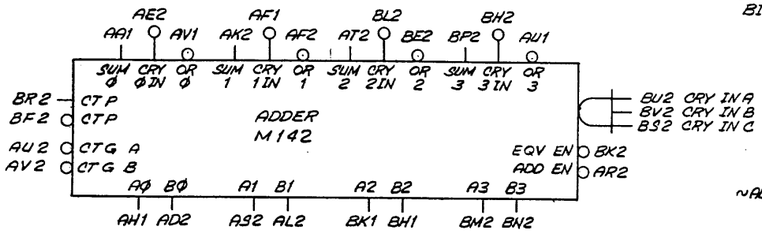
GENERAL INFORMATION



A_n "+" B_n = $A_n \forall B_n \forall CRY_n IN$
= $(A_n \wedge \sim B_n \wedge \sim CRY_n IN) \vee$
$(\sim A_n \wedge B_n \wedge \sim CRY_n IN) \vee$
$(\sim A_n \wedge \sim B_n \wedge CRY_n IN) \vee$
$(A_n \wedge B_n \wedge CRY_n IN)$



M142 USED FOR LOW INPUTS



M142 USED FOR HIGH INPUTS

THE SUM OUTPUTS REPRESENT VARIOUS FUNCTIONS DEPENDING ON THE ENABLES

	~XOR EN	XOR EN
~ADD EN	SUM = A "IOR" B	SUM = A "XOR" B
ADD EN	SUM = NON-STANDARD FUNCTION	SUM = A "+" B

THE NON-STANDARD FUNCTION DEPENDS UPON CARRIES AND IS DIFFERENT FOR DIFFERENT BITS.

THE SUM OUTPUTS REPRESENT VARIOUS FUNCTIONS DEPENDING ON THE ENABLES

	~EQV EN	EQV EN
~ADD EN	SUM = A "AND" B	SUM = A "EQV" B
ADD EN	SUM = NON-STANDARD FUNCTION	SUM = A "+" B

THE NON-STANDARD FUNCTION DEPENDS UPON CARRIES AND IS DIFFERENT FOR DIFFERENT BITS.

THE AND OUTPUTS REPRESENT THE "AND" OF THE INPUTS

THE CRY$_n$ IN OUTPUTS REPRESENT THE PROPER CARRY IN TO THE PARTICULAR BIT FOR ADDITION. CRY 1 IN IS THE PROPER CARRY TERM ONLY WHEN ADD EN AND XOR EN ARE ASSERTED. CRY 1 IN IS ASSERTED IF XOR EN IS NOT ASSERTED. CRY 1 IN IS NOT ASSERTED IF XOR EN IS ASSERTED BUT ADD EN IS NOT ASSERTED. THE OTHER CRY$_n$ IN OUTPUTS ARE ALWAYS THE PROPER CARRY INTO THE PARTICULAR BITS.

THE OR OUTPUTS REPRESENT THE "OR" OF THE INPUTS

THE CRY$_n$ IN OUTPUTS REPRESENT THE PROPER CARRY IN TO THE PARTICULAR BIT FOR ADDITION. CRY 2 IN IS THE PROPER CARRY TERM ONLY WHEN ADD EN AND EQV EN ARE ASSERTED. CRY 1 IN IS NOT ASSERTED IF EQV EN IS NOT ASSERTED. CRY 1 IN IS ASSERTED IF EQV EN IS ASSERTED BUT ADD EN IS NOT ASSERTED. THE OTHER CRY$_n$ IN OUTPUTS ARE ALWAYS THE PROPER CARRY INTO THE PARTICULAR BITS.

FOR LOW INPUTS

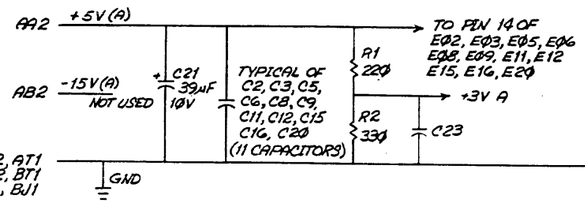
CRY 3 IN = CRY IN A ∨ CRY IN B ∨ CRY IN C
CRY 2 IN = (CRY 3 IN ∧ A3) ∨ (CRY 3 IN ∧ B3) ∨ (A3 ∧ B3)
CRY 1 IN* = (CRY 2 IN ∧ A2) ∨ (CRY 2 IN ∧ B2) ∨ (A2 ∧ B2)
CRY 1 IN = (CRY 1 IN* ∧ ADD EN) ∨ ~XOR EN
CRY Ø IN = (CRY 1 IN* ∧ A1) ∨ (CRY 1 IN* ∧ B1) ∨ (A1 ∧ B1)
CRY PROP = (A3 ∨ B3) ∧ (A2 ∨ B2) ∧ (A1 ∨ B1) ∧ (AØ ∨ BØ)
CRY GEN = {AØ ∧ BØ} ∨ {A1 ∧ B1 ∧ (AØ ∨ BØ)} ∨ {A2 ∧ B2 ∧ (A1 ∨ B1) ∧ (AØ ∨ BØ)} ∨ {A3 ∧ B3 ∧ (A2 ∨ B2) ∧ (A1 ∨ B1) ∧ (AØ ∨ BØ)}

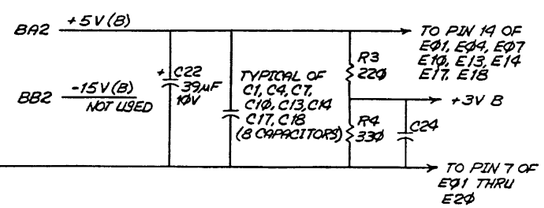
FOR HIGH INPUTS

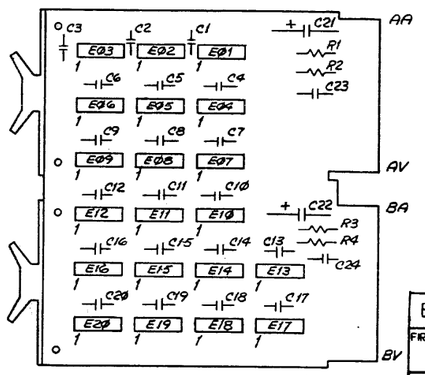
CRY 3 IN = CRY IN A ∧ CRY IN B ∧ CRY IN C
CRY 2 IN = (CRY 3 IN ∧ A3) ∨ (CRY 3 IN ∧ B3) ∨ (A3 ∧ B3)
CRY 1 IN* = (CRY 2 IN ∧ A2) ∨ (CRY 2 IN ∧ B2) ∨ (A2 ∧ B2)
CRY 1 IN = (CRY 1 IN* ∧ EQV EN) ∨ (~ADD EN ∧ EQV EN)
CRY Ø IN = (CRY 1 IN* ∧ A1) ∨ (CRY 1 IN* ∧ B1) ∨ (A1 ∧ B1)
CTP = (A3 ∧ B3) ∨ (A2 ∧ B2) ∨ (A1 ∧ B1) ∨ (AØ ∧ BØ)
CTG = {AØ ∧ BØ} ∨ {A1 ∧ B1 ∧ (AØ ∨ BØ)} ∨ {A2 ∧ B2 ∧ (A1 ∨ B1) ∧ (AØ ∨ BØ)} ∨ {(A3 ∨ B3) ∧ (A2 ∨ B2) ∧ (A1 ∨ B1) ∧ (AØ ∨ BØ)}

NOTE SUBTLE DIFFERENCE FROM CRY GEN ABOVE

UNLESS OTHERWISE INDICATED:
IC'S ARE DEC 1074H - - N AS NOTED
CAPACITORS ARE .Ø1 μF 1ØØV
RESISTORS ARE 1/4 W







NOTE
ALL SIGNAL NAMES ON THIS SHEET CONNECTED TO LOW ASSERTION DESIGNATION CIRCLES "O" ARE AS IF SUFFIXED WITH "L". ALL SIGNAL NAMES ON THIS SHEET NOT CONNECTED TO LOW ASSERTION DESIGNATION CIRCLES ARE AS IF SUFFIXED WITH "H".

REVISIONS	CHK	CHANGE NO.	REV.
		M142-00001 K. Thomas 6-20-71 WALTON	A
		M142-00002 W.D. WALTON	B
		M142-00003 B.J. Nelson 7-12-72 B. WALTON	C

ETCH REV A

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
		PARTS LIST		

UNLESS OTHERWISE SPECIFIED
UNLESS OTHERWISE SPECIFIED DIMENSION IN INCHES TOLERANCES DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30' FINAL SURFACE QUALITY REMOVE BURRS AND BREAK SHARP CORNERS
MATERIAL
FINISH
NEXT HIGHER ASSY
SCALE
SHEET 1 OF 2

DRN.	W. Stephenson	DATE 9/1/70
CHK'D.		DATE 3-3-71
ENG.		DATE 3-3-71
PROJ. ENG.		DATE 3-3-71
PROD.		DATE

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

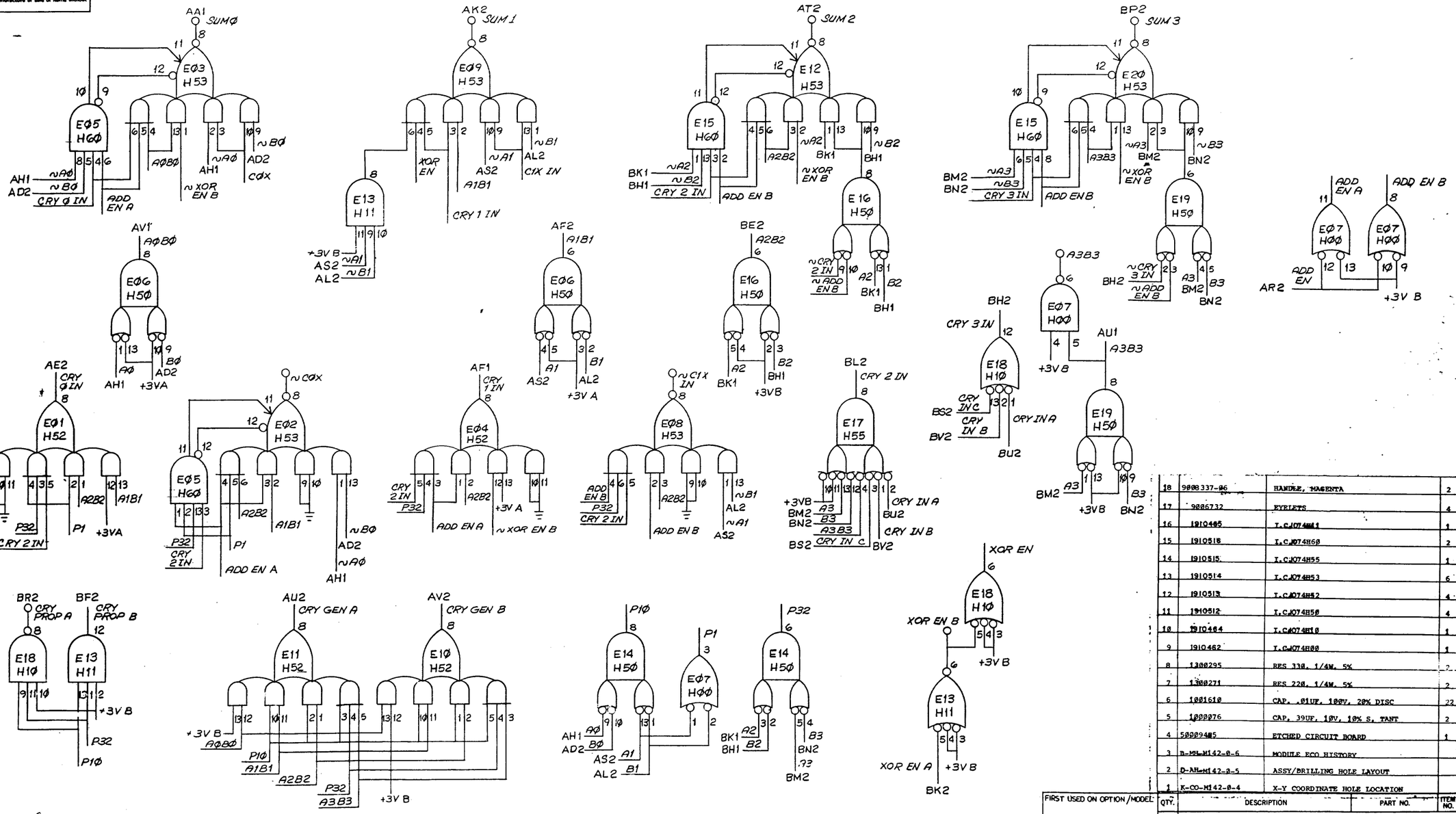
TITLE
M142
4 BIT
ADDER

SIZE	CODE	NUMBER	REV.
D	CS	M142-Ø-1	C

DIST.

DEC FORM NO CPD 102A

SIZE D CODE CS NUMBER M142-Ø-1 REV C



NOTE
ALL SIGNAL NAMES ON THIS SHEET CONNECTED TO LOW ASSERTION DESIGNATION CIRCLES "0" ARE AS IF SUFFIXED WITH "L". ALL SIGNAL NAMES ON THIS SHEET NOT CONNECTED TO LOW ASSERTION DESIGNATION CIRCLES ARE AS IF SUFFIXED WITH "H".

ITEM NO.	PART NO.	DESCRIPTION	QTY.
18	9008337-00	HANDLE, MAGENTA	2
17	9006732	EYELETS	4
16	1910485	I.C.#074H81	1
15	1910518	I.C.#074H60	2
14	1910515	I.C.#074H55	1
13	1910514	I.C.#074H53	6
12	1910513	I.C.#074H52	4
11	1910512	I.C.#074H50	4
10	1910484	I.C.#074H10	1
9	1910482	I.C.#074H00	1
8	1300295	RES 33Ω, 1/4W, 5%	2
7	1300271	RES 22Ω, 1/4W, 5%	2
6	1001610	CAP, .01UF, 100V, 20% DISC	22
5	1000076	CAP, 39UF, 10V, 10% S, TANT	2
4	50009485	ETCHED CIRCUIT BOARD	1
3	D-MTL-M142-0-6	MODULE ECO HISTORY	
2	D-AH-M142-0-5	ASSY/DRILLING HOLE LAYOUT	
1	K-CO-M142-0-4	X-Y COORDINATE HOLE LOCATION	

PARTS LIST

FIRST USED ON OPTION/MODEL:

UNLESS OTHERWISE SPECIFIED
DIMENSION IN INCHES
TOLERANCES
DECIMALS ± .005 FRACTIONS ± 1/64 ANGLES ± 0°30'
FINAL SURFACE QUALITY
REMOVE BURRS AND BREAK SHARP CORNERS

MATERIAL

FINISH

DRN. W. Stephenson DATE 3/25/70
CHK'D. DATE 3-3-71
ENG. DATE
PROJ. ENG. DATE
PROD. DATE

FIRST USED ON

SCALE

SHEET 2 OF 2

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

TITLE
M142
4 BIT
ADDER

SIZE D CODE CS NUMBER M142 - Ø - 1 REV. C

DIST.

REVISIONS
REV. | CHANGE NO.