EVACHIP-42

DESCRIPTION

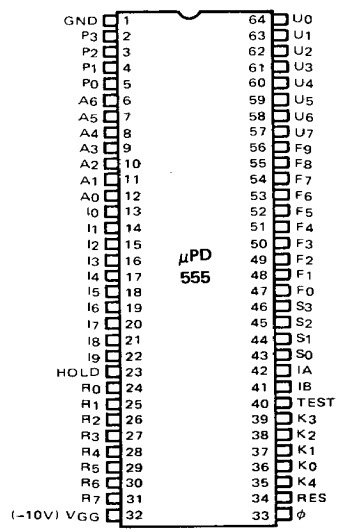
The μPD555 is a system evaluation chip designed to support both hardware and software debugging of the μCOM-42 (μPD548) one-chip microcomputer system.

The μPD555 and the μPD548 have the same functionality in all aspects except that the μPD555 does not contain a read only memory, but provides addressing capability to external memory and HOLD function for step-by-step operation.

FEATURES

- 4-Bit Parallel Processor
- Powerful 72 Instruction Set Including Decimal/Binary Arithmetic Operations
- 10 μs Instruction Cycle Time
- Addressing Capability up to 1920 Words by 10-Bits of External Program Memory
- 96 Words by 4-Bit Data Memory On Chip
- 4-Level Subroutines
- Two Interrupt Input Lines (IA and IB)
- HOLD Capability
- A Variety of Input/Output Ports —
  - 10 Discrete Output Ports (F_9-F_0)
  - Two 8-Bit Output Ports (U_7-U_0, R_7-R_0)
  - 4-Bit Input Port (K_3-K_0)
  - 4-Bit Input/Output Port (S_3-S_0)
    I/O Level Compatible with μPD5101
  - 1-Bit Test Input Line
- P-Channel MOS
- Open Drain Output
- Single Power Supply: −10V
- Available in a 64 Pin Ceramic Dual-in-Line Package

PIN CONFIGURATION



PIN NAMES

$P_0 - P_3$	Page Output
$A_0 - A_6$	Address Output
$I_0 - I_9$	Instruction Input
HOLD	HOLD Input
$R_0 - R_7$	Output Port R
φ	Clock Input
RES	Reset Input
K4	K4 Test Input Line
$K_0 - K_3$	K Input Port
TEST	IC Test Input
IA, IB	Interrupt Input
$S_0 - S_3$	Input/Output Port S
$F_0 - F_9$	Output Port F
$U_0 - U_7$	Output Port U

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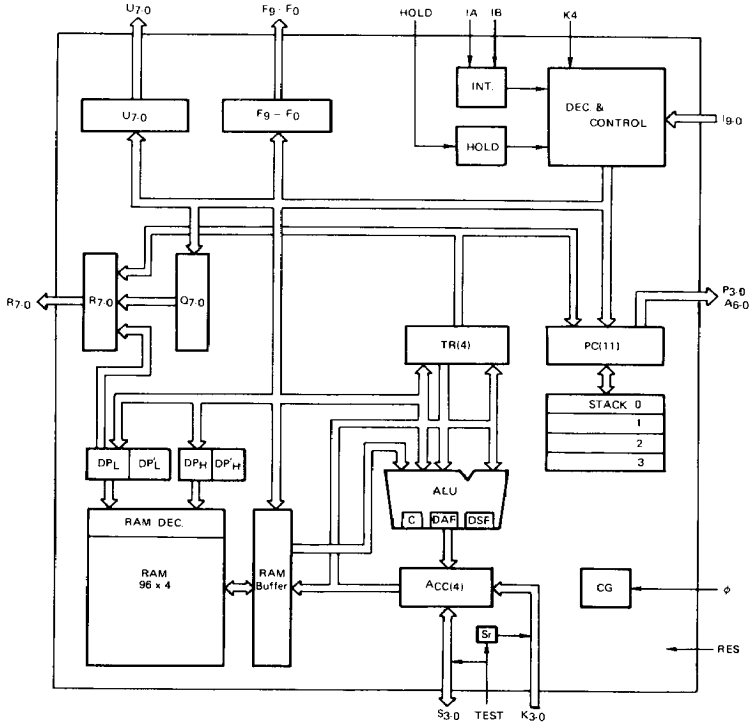
BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS*

Operating Temperature	−10°C to +70°C
Storage Temperature	−40°C to +125°C
Supply Voltage V_{GG}	−15 to +0.3 Volts
All Input Voltages	−20 to +0.3 Volts
All Output Voltages	−20 to +0.3 Volts

COMMENT: Stress above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

*T_a = 25°C

CAPACITANCE

T_a = 25°C

PARAMETER	SYMBOL	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT	TEST CONDITIONS
Input Capacitance	C_I			15	pf	f = 1 MHz
Output Capacitance	C_O			15	pf	
Input/Output Capacitance	C_{IO}			15	pf	

DC CHARACTERISTICS

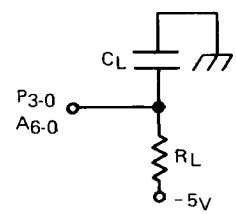
T_a = −10°C to +70°C; V_{GG} = −10V ± 10%, unless otherwise noted.

PARAMETER	SYMBOL	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT	TEST CONDITIONS
High Level Input Voltage	V_{IH}	0	-	−2.0	V	
Low Level Input Voltage	V_{IL1}	−4.3			V	S, ϕ, I_{9-0}
	V_{IL2}	−7.0			V	Except S, ϕ, I_{9-0}
High Level Input Leakage Current	I_{LIH}			+10	μA	V_I = −1V
Low Level Input Leakage Current	I_{LIL}			−10	μA	V_I = −11V
High Level Output Current	I_{OH}	−1.0			mA	V_O = −1V, except S port
Low Level Output Leakage Current	I_{LOL1}			−30	μA	V_O = −11V, except S port
High Level Output Voltage	V_{OH}			−1.75	V	I_{OH} = −100 μA, S port
Low Level Output Leakage Current	I_{LOL2}			−10	μA	V_O = −5V, S port
Power Supply Current	I_{GG}		−30	−60	mA	

AC CHARACTERISTICS

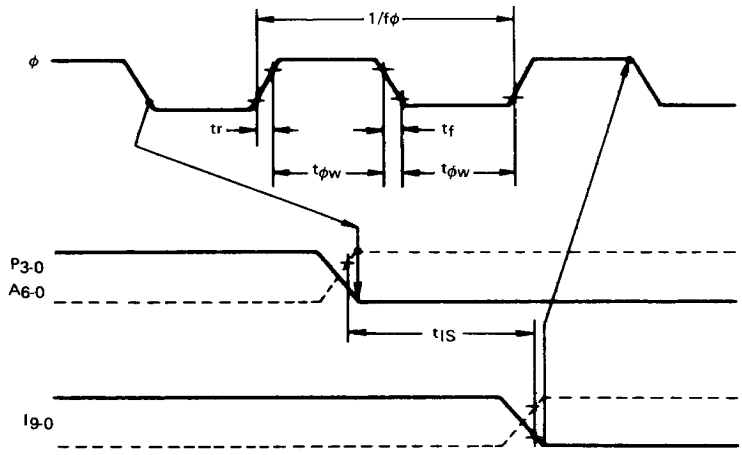
T_a = −10°C to +70°C, V_{GG} = −10V ± 10%, unless otherwise noted.

PARAMETER	SYMBOL	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT	TEST CONDITIONS
Clock Frequency	f_ϕ	100		200	KHz	
Clock Pulse Width	$t_{\phi w}$	2.25				
Clock Rise and Fall Times	tr, tf			0.5	μs	
Input Setup Time from Output	t_{IS}			2.5	μs	C_L = 100 pF, R_L = 5.1 KΩ

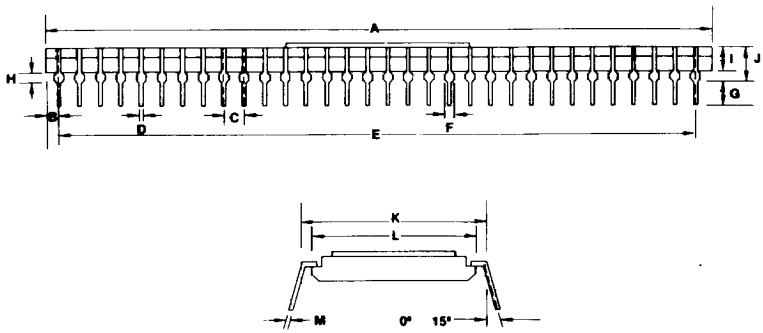


LOAD CIRCUIT

TIMING WAVEFORM



PACKAGE OUTLINE
μPD555D



ITEM	MILLIMETERS	INCHES
A	82.0 MAX	3.23 MAX
B	1.6	0.063
C	2.54	0.1
D	0.43 ± 0.1	0.017 ± 0.004
E	78.8	3.1
F	1.27	0.05
G	3.2 MIN	0.13 MIN
H	1.3 MIN	0.05 MIN
I	3.9	0.154
J	5.2 MAX	0.205 MAX
K	22.96	0.904
L	20.3	0.8
M	0.3 ± 0.1	0.012 ± 0.004