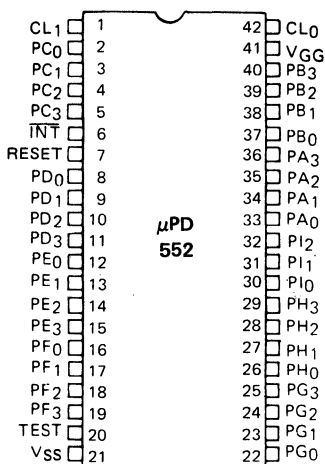


4-BIT SINGLE CHIP MICROCOMPUTER

DESCRIPTION

The μPD552 is a μCOM-44 4-bit single chip microcomputer with high voltage outputs that can be pulled to -35V for direct interfacing to vacuum fluorescent displays. The μPD552 is manufactured with a standard PMOS process, allowing use of a single -10V power supply. The μPD552 provides all of the hardware features of the μCOM-44 family, and executes all 58 instructions of the μCOM-44 instruction set.

PIN CONFIGURATION



PIN NAMES

PA ₀ -PA ₃	Input Port A
PB ₀ -PB ₃	Input Port B
PC ₀ -PC ₃	Input/Output Port C
PD ₀ -PD ₃	Input/Output Port D
PE ₀ -PE ₃	Output Port E
PF ₀ -PF ₃	Output Port F
PG ₀ -PG ₃	Output Port G
PH ₀ -PH ₃	Output Port H
PI ₀ -PI ₂	Output Port I
INT	Interrupt Input
CL ₀ -CL ₁	External Clock Signals
RESET	Reset
VGG	Power Supply Negative
VSS	Power Supply Positive
TEST	Factory Test Pin (Connect to VSS)

ABSOLUTE MAXIMUM RATINGS*

Operating Temperature	-10°C to +70°C
Storage Temperature	-40°C to +125°C
Supply Voltage	-15 to +0.3 Volts
Input Voltages (Port A, B, INT, RESET)	-15 to +0.3 Volts
(Ports C, D)	-40 to +0.3 Volts
Output Voltages	-40 to +0.3 Volts
Output Current (Ports C through I, each bit)	-12 mA
(Total, all ports)	-60 mA

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

μ PD552

$T_a = -10^\circ\text{C to } +70^\circ\text{C}; V_{GG} = -10\text{V} \pm 10\%$

DC CHARACTERISTICS

PARAMETER	SYMBOL	LIMITS			UNIT	TEST CONDITIONS
		MIN	TYP	MAX		
Input Voltage High	V_{IH}	0		-3.5	V	Ports A through D, INT, RESET
Input Voltage Low	V_{IL1}	-7.5		V_{GG}	V	Ports A, B, INT, RESET
	V_{IL2}	-7.5		-35	V	Ports C, D
Clock Voltage High	$V_{\phi H}$	0		-0.8	V	CL _Q Input, External Clock
Clock Voltage Low	$V_{\phi L}$	-6.0		V_{GG}	V	CL _Q Input, External Clock
Input Leakage Current High	$I_{L IH}$			+10	μA	Ports A through D, INT, RESET, $V_I = -1\text{V}$
Input Leakage Current Low	$I_{L IL1}$			-10	μA	Ports A through D, INT, RESET, $V_I = -11\text{V}$
	$I_{L IL2}$			-30	μA	Ports C, D, $V_I = -35\text{V}$
Clock Input Leakage Current High	$I_{L\phi H}$			+200	μA	CL _Q Input, $V_{\phi H} = 0\text{V}$
Clock Input Leakage Current Low	$I_{L\phi L}$			-200	μA	CL _Q Input, $V_{\phi L} = -11\text{V}$
Output Voltage High	V_{OH}			-2.0	V	Ports C through I, $I_{OH} = -8\text{mA}$
Output Leakage Current Low	$I_{L OL1}$			-10	μA	Ports C through I, $V_O = -11\text{V}$
	$I_{L OL2}$			-30	μA	Ports C through I, $V_O = -35\text{V}$
Supply Current	I_{GG}		-30	-50	mA	

$T_a = 25^\circ\text{C}$

CAPACITANCE

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

$T_a = -10^\circ\text{C to } +70^\circ\text{C}; V_{GG} = -10\text{V} \pm 10\%$

AC CHARACTERISTICS

PARAMETER	SYMBOL	LIMITS			UNIT	TEST CONDITIONS
		MIN	TYP	MAX		
Oscillator Frequency	f	150		440	KHz	External Clock
Rise and Fall Times	t_r, t_f	0		0.3	μs	
Clock Pulse Width High	$t_{\phi W_H}$	0.5		5.6	μs	
Clock Pulse Width Low	$t_{\phi W_L}$	0.5		5.6	μs	

CLOCK WAVEFORM

