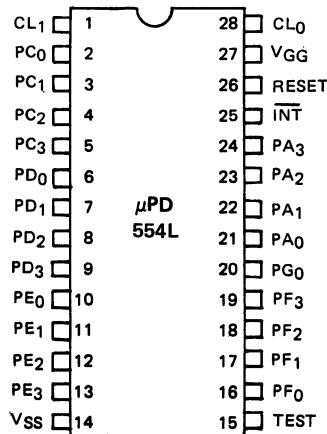


**4-BIT SINGLE CHIP MICROCOMPUTER**

**DESCRIPTION** The μPD554L is a μCOM-45 4-bit single chip microcomputer with high voltage outputs and low power consumption. The outputs can be pulled to -35V for direct interfacing to vacuum fluorescent displays. The μPD554L is manufactured with a low-power-consumption PMOS process, allowing use of a -8V, low current power supply. The μPD554L provides all of the hardware features of the μCOM-45 family, and executes all 58 instructions of the μCOM-45 instruction set.

**PIN CONFIGURATION**



**PIN NAMES**

PA <sub>0</sub> -PA <sub>3</sub>	Input Port A
PC <sub>0</sub> -PC <sub>3</sub>	Input/Output Port C
PD <sub>0</sub> -PD <sub>3</sub>	Input/Output Port D
PE <sub>0</sub> -PE <sub>3</sub>	Output Port E
PF <sub>0</sub> -PF <sub>3</sub>	Output Port F
PG <sub>0</sub>	Output Port G
CL <sub>0</sub> -CL <sub>1</sub>	External Clock Signals
INT̄	Interrupt Input
RESET	Reset
VGG	Power Supply Negative
VSS	Power Supply Positive
TEST	Factory Test Pin (Connect to VSS)

<b>ABSOLUTE MAXIMUM RATINGS*</b>	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, 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, D, each bit) . . . . .	-4 mA
	(Ports E, F, G, each bit) . . . . .	-15 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<sub>a</sub> = 25°C

# μ PD554L

T<sub>a</sub> = -10°C to +70°C; V<sub>GG</sub> = -8.0V ± 10%

## DC CHARACTERISTICS

PARAMETER	SYMBOL	LIMITS			UNIT	TEST CONDITIONS
		MIN	TYP	MAX		
Input Voltage High	V <sub>IH</sub>	0		-1.6	V	Ports A, C, D, $\overline{\text{INT}}$ , RESET
Input Voltage Low	V <sub>IL1</sub>	-4.5		V <sub>GG</sub>	V	Ports A, $\overline{\text{INT}}$ , RESET
	V <sub>IL2</sub>	-4.5		-35	V	Ports C, D
Clock Voltage High	V <sub>φH</sub>	0		-0.6	V	CL <sub>0</sub> Input, External Clock
Clock Voltage Low	V <sub>φL</sub>	-5.0		V <sub>GG</sub>	V	CL <sub>0</sub> Input, External Clock
Input Leakage Current High	I <sub>LIH</sub>			+10	μA	Ports A, C, D, $\overline{\text{INT}}$ , RESET V <sub>I</sub> = -1V
Input Leakage Current Low	I <sub>LIL1</sub>			-10	μA	Ports A, C, D, $\overline{\text{INT}}$ , RESET V <sub>I</sub> = -9V
	I <sub>LIL2</sub>			-30	μA	Ports C, D, V <sub>I</sub> = -35V
Clock Input Leakage Current High	I <sub>LφH</sub>			+200	μA	CL <sub>0</sub> Input, V <sub>φH</sub> = 0V
Clock Input Leakage Current Low	I <sub>LφL</sub>			-200	μA	CL <sub>0</sub> Input, V <sub>φL</sub> = -9V
Output Voltage High	V <sub>OH1</sub>			-1.0	V	Ports C, D, I <sub>OH</sub> = -2 mA
	V <sub>OH2</sub>			-2.5	V	Ports E, F, G, I <sub>OH</sub> = -10 mA
Output Leakage Current Low	I <sub>LOL1</sub>			-10	μA	Ports C through G, V <sub>O</sub> = -9V
	I <sub>LOL2</sub>			-30	μA	Ports C through G, V <sub>O</sub> = -35V
Supply Current	I <sub>GG</sub>		-12	-24	mA	

T<sub>a</sub> = 25°C

## CAPACITANCE

PARAMETER	SYMBOL	LIMITS			UNIT	TEST CONDITIONS
		MIN	TYP	MAX		
Input Capacitance	C <sub>I</sub>			15	pF	f = 1 MHz
Output Capacitance	C <sub>O</sub>			15	pF	
Input/Output Capacitance	C <sub>IO</sub>			15	pF	

T<sub>a</sub> = -10°C to +70°C; V<sub>GG</sub> = -8.0V ± 10%

## AC CHARACTERISTICS

PARAMETER	SYMBOL	LIMITS			UNIT	TEST CONDITIONS
		MIN	TYP	MAX		
Oscillator Frequency	f	100		180	KHz	
Rise and Fall Times	t <sub>r</sub> , t <sub>f</sub>	0		0.3	μs	External Clock
Clock Pulse Width High	t <sub>φWH</sub>	2.0		8.0	μs	
Clock Pulse Width Low	t <sub>φWL</sub>	2.0		8.0	μs	

## CLOCK WAVEFORM

