Am54S/74S378 • Am54S/74S379

Hex/Quad Parallel D Registers With Register Enable

Distinctive Characteristics

- 4-bit and 6-bit high-speed parallel registers
- Common clock and common enable
- Positive edge triggered D flip-flops
- 100% reliability assurance testing in compliance with MIL-STD-883.

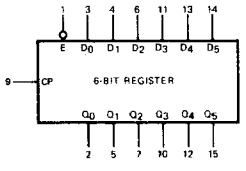
FUNCTIONAL DESCRIPTION

The Am54S/74S378 is a 6-bit, high-speed Schottky register with a buffered common register enable. The Am54S/74S379 is a 4-bit register with a buffered common register enable. The devices are similar to the Am54S/74S174 and Am54S/74S175 but feature the common register enable rather than common clear.

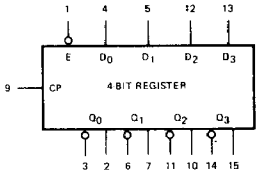
Both registers will find application in digital systems where information is associated with a logic gating signal. When the enable is LOW, data on the D inputs is stored in the register on the positive going edge of the clock pulse. When the enable is HIGH, the register will not change state regardless of the clock or data input transitions.

LOGIC SYMBOLS

Am54S/74S378



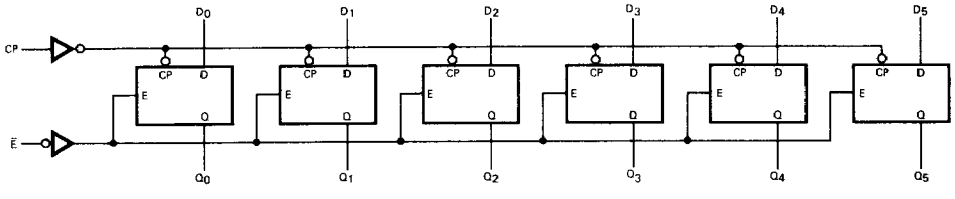
Am54S/74S379



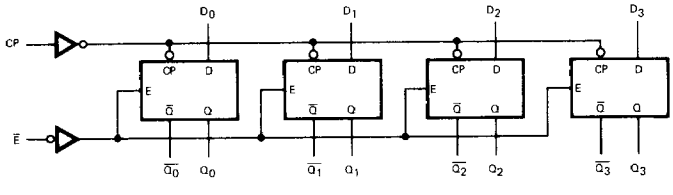
V_{CC} = Pin 16
GND = Pin 8

LOGIC DIAGRAMS

Am54S/74S378

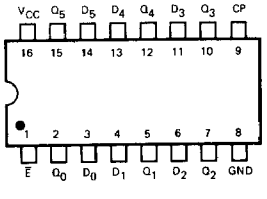


Am54S/74S379

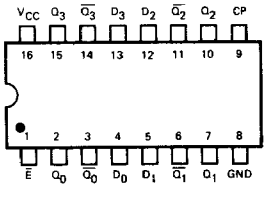


CONNECTION DIAGRAMS
Top Views

Am54S/74S378



Am54S/74S379



Note: Pin 1 is marked for orientation.

MAXIMUM RATINGS (Above which the useful life may be impaired)

Storage Temperature	−65°C to +150°C
Temperature (Ambient) Under Bias	−55°C to +125°C
Supply Voltage to Ground Potential (Pin 16 to Pin 8) Continuous	−0.5V to +7V
DC Voltage Applied to Outputs for HIGH Output State	−0.5V to +V_{CC} max.
DC Input Voltage	−0.5V to +5.5V
DC Output Current, Into Outputs	30mA
DC Input Current	−30mA to +5.0mA

ELECTRICAL CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (Unless Otherwise Noted)

SN74S378, SN74S379 T_A = 0°C to +70°C V_{CC} = 5.0V ±5% (COM'L) MIN. = 4.75V MAX. = 5.25V
SN54S378, SN54S379 T_A = −55°C to +125°C V_{CC} = 5.0V ±10% (MIL) MIN. = 4.5V MAX. = 5.5V

Parameters	Description	Test Conditions (Note 1)		Min.	Typ. (Note 2)	Max.	Units
V_{OH}	Output HIGH Voltage	V_{CC} = MIN., I_{OH} = −1mA V_{IN} = V_{IH} or V_{IL}	COM'L	2.7	3.4		Volts
			MIL	2.5	3.4		
V_{OL}	Output LOW Voltage	V_{CC} = MIN., I_{OL} = 20mA V_{IN} = V_{IH} or V_{IL}				0.5	Volts
V_{IH}	Input HIGH Level	Guaranteed input logical HIGH voltage for all inputs		2.0			Volts
V_{IL}	Input LOW Level	Guaranteed input logical LOW voltage for all inputs				0.8	Volts
V_I	Input Clamp Voltage	V_{CC} = MIN., I_{IN} = −18mA				−1.2	Volts
I_{IL}	Unit Load Input LOW Current	V_{CC} = MAX., V_{IN} = 0.5V				−2	mA
I_{IH}	Unit Load Input HIGH Current	V_{CC} = MAX., V_{IN} = 2.7V				50	μA
I_I	Input HIGH Current	V_{CC} = MAX., V_{IN} = 5.5V				1.0	mA
I_{SC}	Output Short Circuit Current (Note 3)	V_{CC} = MAX.		−40		−100	mA
I_{CC}	Power Supply Current (Note 4)	V_{CC} = MAX.	S378		90	144	mA
			S379		60	96	

Notes: 1. For conditions shown as MIN. or MAX., use the appropriate value specified under Electrical Characteristics for the applicable device type.
2. Typical limits are at V_{CC} = 5.0V, 25°C ambient and maximum loading.
3. Not more than one output should be shorted at a time. Duration of the short circuit test should not exceed one second.
4. Outputs open; enable grounded; data inputs at 4.5V, measured after a momentary ground, then 4.5V applied to the clock input.

Switching Characteristics (T_A = +25°C)

Parameters	Description	Test Conditions	Min.	Typ.	Max.	Units
t_{PLH}	Clock to Output	V_{CC} = 5.0V, C_L = 15pF, R_L = 280Ω	4	8	12	ns
t_{PHL}	Clock to Output		4	11.5	17	ns
t_{pw}	Clock Pulse Width		7			ns
t_s	Data		5.5			ns
t_s	Enable		9			ns
t_h	Data		3			ns
t_h	Enable		3			ns