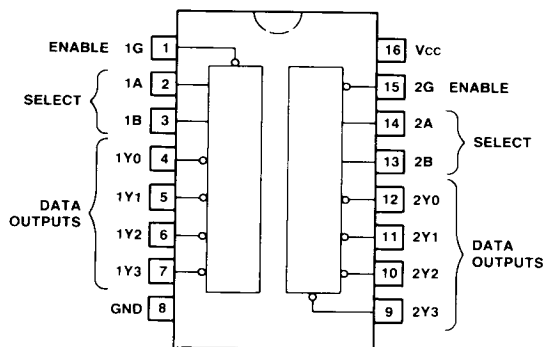


Dual 2- to 4-Line Decoder/Multiplexer

The LS139 is a bipolar, NPN, sealed-junction, silicon integrated circuit. It is manufactured in low-power Schottky technology and is available in a wire-bonded, 16-pin plastic DIP or surface mount package.

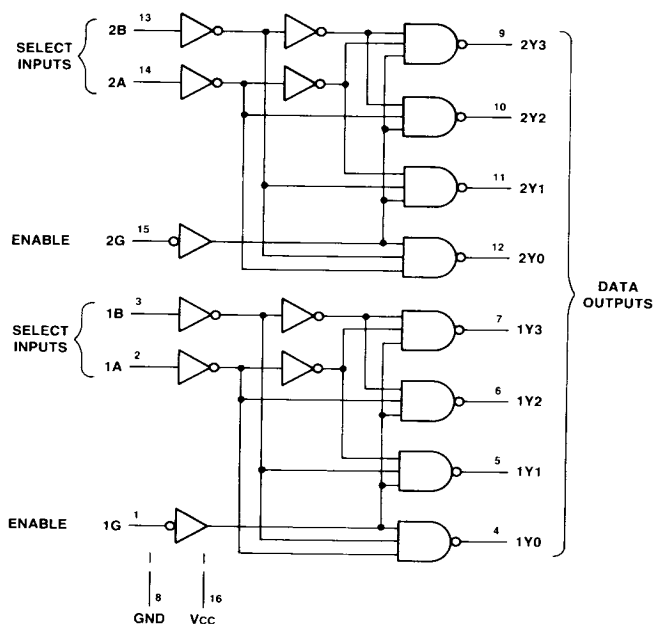


Truth Table

Inputs			Outputs			
Enable	Select					
G	B	A	Y0	Y1	Y2	Y3
H	X	X	H	H	H	H
L	L	L	L	H	H	H
L	L	H	H	L	H	H
L	H	L	H	H	L	H
L	H	H	H	H	H	L

H = High Level
L = Low Level
X = Irrelevant

Logic Diagram



Electrical Characteristics

VCC = 5.0 ±0.5 V, TA = -55 to +125°C (WA-LS)

VCC = 5.0 ±0.25 V, TA = 0 to 70°C (WP90225L4)

VCC = 5.0 ±0.5 V, TA = -40 to +85°C (WA-LSD, WP91404L2)

Parameter	Symbol	WA-LS		WP, WA-LSD		Units
		Min	Max	Min	Max	
Output Voltage, VCC = 4.5 V (WA-LS), 4.75 V (WP, WA-LSD)						
Low, IOL = 4.0 mA	VOL	—	0.4	—	0.4	V
IOL = 8.0 mA	VOL	—	0.5	—	0.5	V
High, IOH = -0.4 mA	VOH	2.5	—	2.7	—	V
Input Voltage, VCC = 4.5 V (WA-LS), 4.75 V (WP, WA-LSD)						
Low	VIL	—	0.7	—	0.8*	V
High	VIH	2.0	7.5	2.0	5.5	V
Clamp, IIN = -18.0 mA	VIK	—	-1.5	—	-1.5	V
Input Current, VCC = 5.5 V (WA-LS), 5.25 V (WP, WA-LSD)						
Low, VIL = 0.4 V	IIL	—	-0.4	—	-0.4	mA
High, VIH = 2.7 V	IIH	—	20.0	—	20.0	μA
@ VI max, VI = 7.0 V (WA-LS), 5.5 V (WP, WA-LSD)	II	—	0.1	—	0.1	mA
Output Current, VCC = 5.5 V (WA-LS), 5.25 V (WP, WA-LSD)						
Short-Circuit	Ios	-20.0	-100.0	-20.0	-100.0	mA
Supply Current, VCC = 5.5 V (WA-LS), 5.25 V (WP, WA-LSD)	Icc	—	11.0	—	11.0	mA

* WA-LSD, WP91404L2: VIL = 0.7 V

Timing Characteristics

VCC = 5.0 V, TA = 25°C, CL = 15 pF

Parameter	Symbol	WA-LS		WP, WA-LSD		Units
		Min	Max	Min	Max	
Propagation Delay						
Binary Select-to-Output						
2 Levels, Low-to-High	tPLH	—	20.0	—	20.0	ns
High-to-Low	tPHL	—	23.0	—	33.0	ns
3 Levels, Low-to-High	tPLH	—	29.0	—	29.0	ns
High-to-Low	tPHL	—	38.0	—	38.0	ns
Enable-to-Output						
2 Levels, Low-to-High	tPLH	—	24.0	—	24.0	ns
High-to-Low	tPHL	—	32.0	—	32.0	ns

Maximum Ratings

Power supply voltage (V _{CC})	7.0 V
Operating temperature (T _A)	WA-LS: -55 to +125°C WP90225L4: 0 to 70°C WA-LSD, WP91404L2: -40 to +85°C
Storage temperature (T _{stg})	-65 to +150°C

Maximum ratings are defined as the limiting conditions that the user can apply to the device under all variations of circuit and environmental conditions. If any rating is exceeded, permanent damage to the device may result.

Bonding or soldering of the external leads of this device can be performed safely at temperatures up to 300°C.