

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.



F100163 Dual 8-Input Multiplexer

General Description

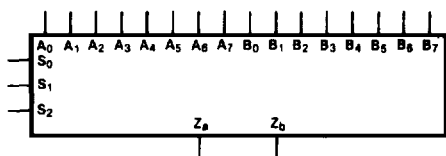
The F100163 is a dual 8-input multiplexer. The Data Select (S_n) inputs determine which bit (A_n and B_n) will be presented at the outputs (Z_a and Z_b respectively). The same bit (0-7) will be selected for both the Z_a and Z_b output. All inputs have 50 k Ω pulldown resistors.

Refer to the F100363 datasheet for:

- PCC packaging
- Lower power
- Military versions
- Extended voltage specs (-4.2V to -5.7V)

Ordering Code: See Section 8

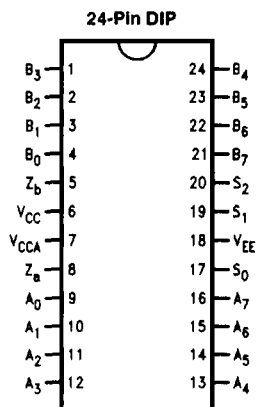
Logic Symbol



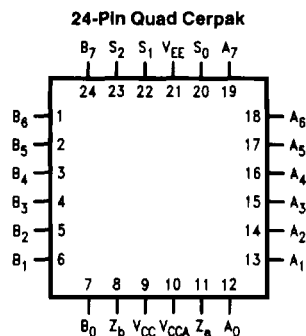
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Pin Names	Description
S_0 - S_2	Data Select Inputs
A_0 - A_7	A Data Inputs
B_0 - B_7	B Data Inputs
Z_a , Z_b	Data Outputs

Connection Diagrams

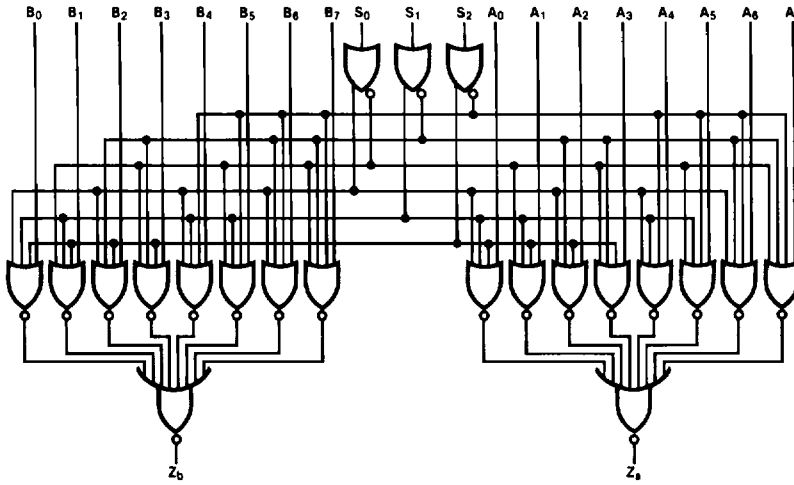


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Logic Diagram



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Truth Table

Select			Inputs								Outputs	
S ₂	S ₁	S ₀	Data								Z _a	Z _b
			A ₇ B ₇	A ₆ B ₆	A ₅ B ₅	A ₄ B ₄	A ₃ B ₃	A ₂ B ₂	A ₁ B ₁	A ₀ B ₀		
L	L	L									L	L
L	L	L									H	H
L	L	H								L		L
L	L	H								H		H
L	H	L							L			L
L	H	L						L				H
L	H	H						L				L
L	H	H						H				H
H	L	L				L						L
H	L	L				H						H
H	L	H			L							L
H	L	H			H							H
H	H	L		L								L
H	H	L		H								H
H	H	H	L									L
H	H	H	H									H

H = HIGH Voltage Level
 L = LOW Voltage Level
 Blank = X = Don't Care

Absolute Maximum Ratings

Above which the useful life may be impaired. (Note 1)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Storage Temperature -65°C to $+150^{\circ}\text{C}$
 Maximum Junction Temperature (T_{J}) $+150^{\circ}\text{C}$

Case Temperature under Bias (T_{C}) 0°C to $+85^{\circ}\text{C}$
 V_{EE} Pin Potential to Ground Pin -7.0V to $+0.5\text{V}$
 Input Voltage (DC) V_{EE} to $+0.5\text{V}$
 Output Current (DC Output HIGH) -50mA
 Operating Range (Note 2) -5.7V to -4.2V

DC Electrical Characteristics

$V_{\text{EE}} = -4.5\text{V}$, $V_{\text{CC}} = V_{\text{CCA}} = \text{GND}$, $T_{\text{C}} = 0^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ (Note 3)

Symbol	Parameter	Min	Typ	Max	Units	Conditions (Note 4)	
V_{OH}	Output HIGH Voltage	-1025	-955	-880	mV	$V_{\text{IN}} = V_{\text{IH}}(\text{Max})$ or $V_{\text{IL}}(\text{Min})$	Loading with 50Ω to -2.0V
V_{OL}	Output LOW Voltage	-1810	-1705	-1620			
V_{OHC}	Output HIGH Voltage	-1035			mV	$V_{\text{IN}} = V_{\text{IH}}(\text{Min})$ or $V_{\text{IL}}(\text{Max})$	Loading with 50Ω to -2.0V
V_{OLC}	Output LOW Voltage			-1610			
V_{IH}	Input HIGH Voltage	-1165		-880	mV	Guaranteed HIGH Signal for All Inputs	
V_{IL}	Input LOW Voltage	-1810		-1475	mV	Guaranteed LOW Signal for All Inputs	
I_{IL}	Input LOW Current	0.50			μA	$V_{\text{IN}} = V_{\text{IL}}(\text{Min})$	

DC Electrical Characteristics

$V_{\text{EE}} = -4.2\text{V}$, $V_{\text{CC}} = V_{\text{CCA}} = \text{GND}$, $T_{\text{C}} = 0^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ (Note 3)

Symbol	Parameter	Min	Typ	Max	Units	Conditions (Note 4)	
V_{OH}	Output HIGH Voltage	-1020		-870	mV	$V_{\text{IN}} = V_{\text{IH}}(\text{Max})$ or $V_{\text{IL}}(\text{Min})$	Loading with 50Ω to -2.0V
V_{OL}	Output LOW Voltage	-1810		-1605			
V_{OHC}	Output HIGH Voltage	-1030			mV	$V_{\text{IN}} = V_{\text{IH}}(\text{Min})$ or $V_{\text{IL}}(\text{Max})$	Loading with 50Ω to -2.0V
V_{OLC}	Output LOW Voltage			-1595			
V_{IH}	Input HIGH Voltage	-1150		-870	mV	Guaranteed HIGH Signal for All Inputs	
V_{IL}	Input LOW Voltage	-1810		-1475	mV	Guaranteed LOW Signal for All Inputs	
I_{IL}	Input LOW Current	0.50			μA	$V_{\text{IN}} = V_{\text{IL}}(\text{Min})$	

DC Electrical Characteristics

$V_{\text{EE}} = -4.8\text{V}$, $V_{\text{CC}} = V_{\text{CCA}} = \text{GND}$, $T_{\text{C}} = 0^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ (Note 3)

Symbol	Parameter	Min	Typ	Max	Units	Conditions (Note 4)	
V_{OH}	Output HIGH Voltage	-1035		-880	mV	$V_{\text{IN}} = V_{\text{IH}}(\text{Max})$ or $V_{\text{IL}}(\text{Min})$	Loading with 50Ω to -2.0V
V_{OL}	Output LOW Voltage	-1830		-1620			
V_{OHC}	Output HIGH Voltage	-1045			mV	$V_{\text{IN}} = V_{\text{IH}}(\text{Min})$ or $V_{\text{IL}}(\text{Max})$	Loading with 50Ω to -2.0V
V_{OLC}	Output LOW Voltage			-1610			
V_{IH}	Input HIGH Voltage	-1165		-880	mV	Guaranteed HIGH Signal for All Inputs	
V_{IL}	Input LOW Voltage	-1830		-1490	mV	Guaranteed LOW Signal for All Inputs	
I_{IL}	Input LOW Current	0.50			μA	$V_{\text{IN}} = V_{\text{IL}}(\text{Min})$	

Note 1: Absolute maximum ratings are those values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Parametric values specified at -4.2V to -4.8V .

Note 3: The specified limits represent the "worst case" value for the parameter. Since these "worst case" values normally occur at the temperature extremes, additional noise immunity and guard banding can be achieved by decreasing the allowable system operating ranges.

Note 4: Conditions for testing shown in the tables are chosen to guarantee operation under "worst case" conditions.

DC Electrical Characteristics
 $V_{EE} = -4.2V$ to $-4.8V$ unless otherwise specified, $V_{CC} = V_{CCA} = GND$, $T_C = 0^\circ C$ to $+85^\circ C$

Symbol	Parameter	Min	Typ	Max	Units	Conditions
I_{IH}	Input HIGH Current S_n A_n, B_n			265 340	μA	$V_{IN} = V_{IH} (Max)$
I_{EE}	Power Supply Current	-153	-110	-76	mA	Inputs Open

Ceramic Dual-In-Line Package AC Electrical Characteristics
 $V_{EE} = -4.2V$ to $-4.8V$, $V_{CC} = V_{CCA} = GND$

Symbol	Parameter	$T_C = 0^\circ C$		$T_C = +25^\circ C$		$T_C = +85^\circ C$		Units	Conditions
		Min	Max	Min	Max	Min	Max		
t_{PLH} t_{PHL}	Propagation Delay A_0-A_7, B_0-B_7 to Output	0.55	1.65	0.60	1.70	0.65	1.80	ns	<i>Figures 1 & 2</i>
t_{PLH} t_{PHL}	Propagation Delay S_0-S_2 to Output	1.10	2.80	1.10	2.80	1.20	3.10	ns	
t_{TLH} t_{THL}	Transition Time 20% to 80%, 80% to 20%	0.50	1.85	0.55	1.80	0.50	1.80	ns	

Cerpak AC Electrical Characteristics
 $V_{EE} = -4.2V$ to $-4.8V$, $V_{CC} = V_{CCA} = GND$

Symbol	Parameter	$T_C = 0^\circ C$		$T_C = +25^\circ C$		$T_C = +85^\circ C$		Units	Conditions
		Min	Max	Min	Max	Min	Max		
t_{PLH} t_{PHL}	Propagation Delay A_0-A_7, B_0-B_7 to Output	0.55	1.45	0.60	1.50	0.65	1.60	ns	<i>Figures 1 & 2</i>
t_{PLH} t_{PHL}	Propagation Delay S_0-S_2 to Output	1.10	2.60	1.10	2.60	1.20	2.90	ns	
t_{TLH} t_{THL}	Transition Time 20% to 80%, 80% to 20%	0.50	1.75	0.55	1.70	0.50	1.70	ns	

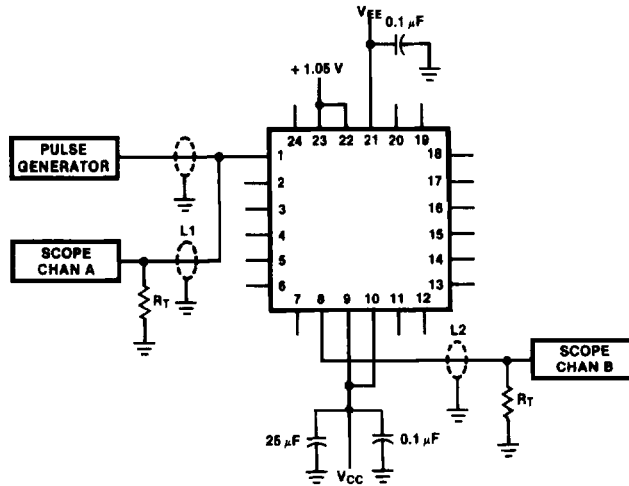


FIGURE 1. AC Test Circuit

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Notes:
 $V_{CC}, V_{CCA} = +2V, V_{EE} = -2.5V$
 $L1$ and $L2$ = equal length 50Ω impedance lines
 R_T = 50Ω terminator internal to scope
 Decoupling $0.1 \mu F$ from GND to V_{CC} and V_{EE}
 All unused outputs are loaded with 50Ω to GND
 C_L = Fixture and stray capacitance $\leq 3 pF$
 Pin numbers shown are for flatpak; for DIP see logic symbol

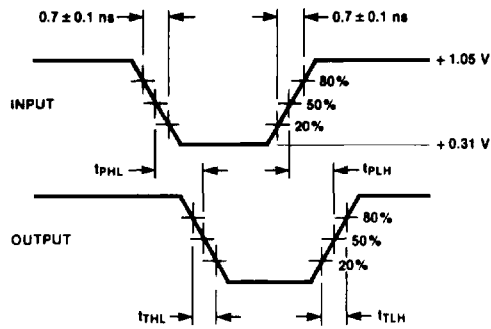


FIGURE 2. Propagation Delay and Transition Times

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