

## Wildcat Series

4+1 Port 1000Base-SX / T, Gigabit Ethernet Switch, Multimode, 850nm, 5.0VDC, MIL-DTL-38999

### Five Port (4+1), Receptacle

#### FEATURES

- 4x 1000Base-SX switched optical Ethernet ports with D38999 interface
- 1x 10/100/1000Base-T Ethernet internal connection through Samtec SMT connector
- Compliant with IEEE-802.3:2005 Gigabit Ethernet 1000Base-SX and 10/100/1000Base-T
- Optical fiber link distances up to 550 Meters (50/125)
- Operating temperature range from -40°C to +85°C
- Shock, vibration and immersion resistant per MIL-STD-810
- Olive Drab Cadmium plating meets stringent EMI / RFI and corrosion resistance performance specifications
- Aluminum housings are strong, durable and light weight
- MIL-T-29504 compliant optical fiber connector interface
- MIL-DTL-38999 fiber optic insert per MIL-STD-1560
- Samtec EQCD Series electrical connector for SMT interface

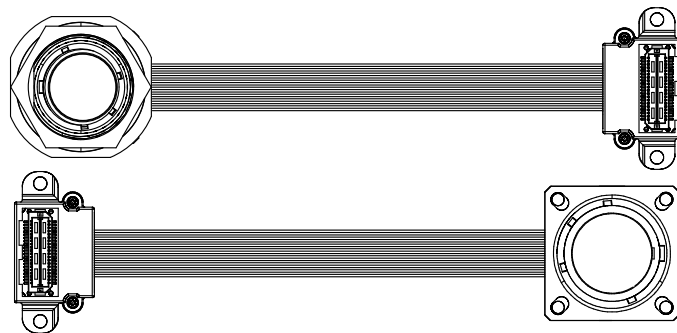
#### APPLICATIONS

Wildcat series bulkhead mounted Gigabit Ethernet switches enable high speed network communications over long distances in harsh environments.

- Gigabit Ethernet computers and peripherals
- Telecom and datacom switch / router rack-to-rack links
- Storage or computation clusters

The MIL-DTL-38999, Series III shell provides a sealed optical interface that is water-tight to MIL-STD-810 when mated.

The multimode optical fiber interface supports applications where copper cable link distance, bandwidth, weight or bulk make the use of twisted pair, twinax or quadrx copper conductors unacceptable.



**D38999 + SMT/PCB - 4+1 Port Gigabit Ethernet Optical Switch**

#### DESCRIPTION

Wildcat series panel mounted Gigabit Ethernet switches consist of 4x1000Base-SX plus 1x10/100/1000Base-T Ethernet switch functions integrated into a panel mounted MIL-DTL-38999 optical connector assembly.

The optical transmitters are high output 850nm VCSEL lasers. The optical receivers consist of GaAs PIN and preamplifier assemblies and limiting post-amplifiers.

The electrical interface to the Wildcat series bulkhead mounted Gigabit Ethernet switches is a ribbon coax to Samtec EQCD high density cable assembly enabling SMT interconnection to a customer's backplane, motherboard or daughtercard.

Wildcat series panel mounted D38999 Gigabit Ethernet switches are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

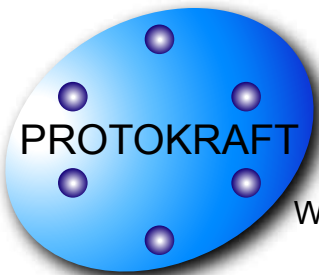
- Sealed against liquid and solid contaminants
- Shock and vibration resistant

#### ORDERING INFORMATION

Application	Product Number
Flange	W41F-5SCT-HW-Lxxx
Jam Nut	W41J-5SCT-HW-Lxxx

See page 6 for standard part number / cable length options

W41x-5SCT-Hx-Lxxx-DS - June 4, 2011 - Preliminary



## Facilitating Secure Communications in Harsh Environments

Wildcat Series, 5 Port Ethernet Switch, MIL-DTL-38999 + SAMTEC SMT  
4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nM

### ABSOLUTE MAXIMUM RATINGS

Absolute maximum limits mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values of more than one parameter can be applied to the product at the same time.

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Storage Temperature	$T_s$	-55		+100	°C

### RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature	$T_A$	-40		+85	°C
Supply Voltage xxxx-xxBx-xx xxxx-xxCx-xx	$V_{CC}$	+6.0 +4.5	12.0 5.0	+24.0 +5.5	VDC
Power Supply Noise (p-p)	$N_p$			200	mV

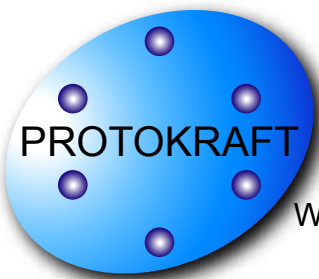
### INTERFACE SPECIFICATIONS COMPLIANCE

Requirement	Feature	Condition	Notes
MIL-STD-883	ESD	Class II	2200V
MIL-STD-810	Vibration	3.8g <sup>2</sup> /Hz	43G rms
MIL-STD-810	Shock	40.0g	6-9mS
MIL-STD-810	Immersion	1.0 meter	2.0Hours
MIL-STD-1344	Flame Resistance	Method 1012	30 Seconds
MIL-STD-1344	Damp Heat	10 Cycles	24 Hours

### MATERIALS

Item	Detail	Notes
Shell and housing	Aluminum Alloy	
Connector Shell Plating	OD-CD, NI or ZN-NI	
Insert	Thermoplastic	
Interfacial Seal	Elastomer	

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### OPTICAL TRANSMITTERS $T_A$ = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Output Power	$P_o$	-9.5		-4.0	dBm
Optical Output Wavelength	$\lambda_{OUT}$	830	850	860	nM
Spectral Width	$\Delta\lambda_{RMS}$			0.85	nM

### OPTICAL RECEIVERS $T_A$ = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity	$P_i$	-19.0		-2.0	dBm
Optical Wavelength	$\lambda_{IN}$	830	850	860	nM

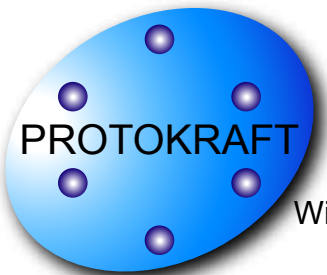
### POWER SUPPLY CURRENT $T_A$ = Operating Temperature Range

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Current	$I_{CCT}$		1500	2000	mA

### OPTICAL LINK DISTANCES

Protocol	Cable Specification	Distance
Gigabit Ethernet - IEEE-802.3:2005 - 1000BASE-SX	62.5/125 $\mu$ 200MHz*Km	275M
	50/125 $\mu$ 500MHz*Km	550M

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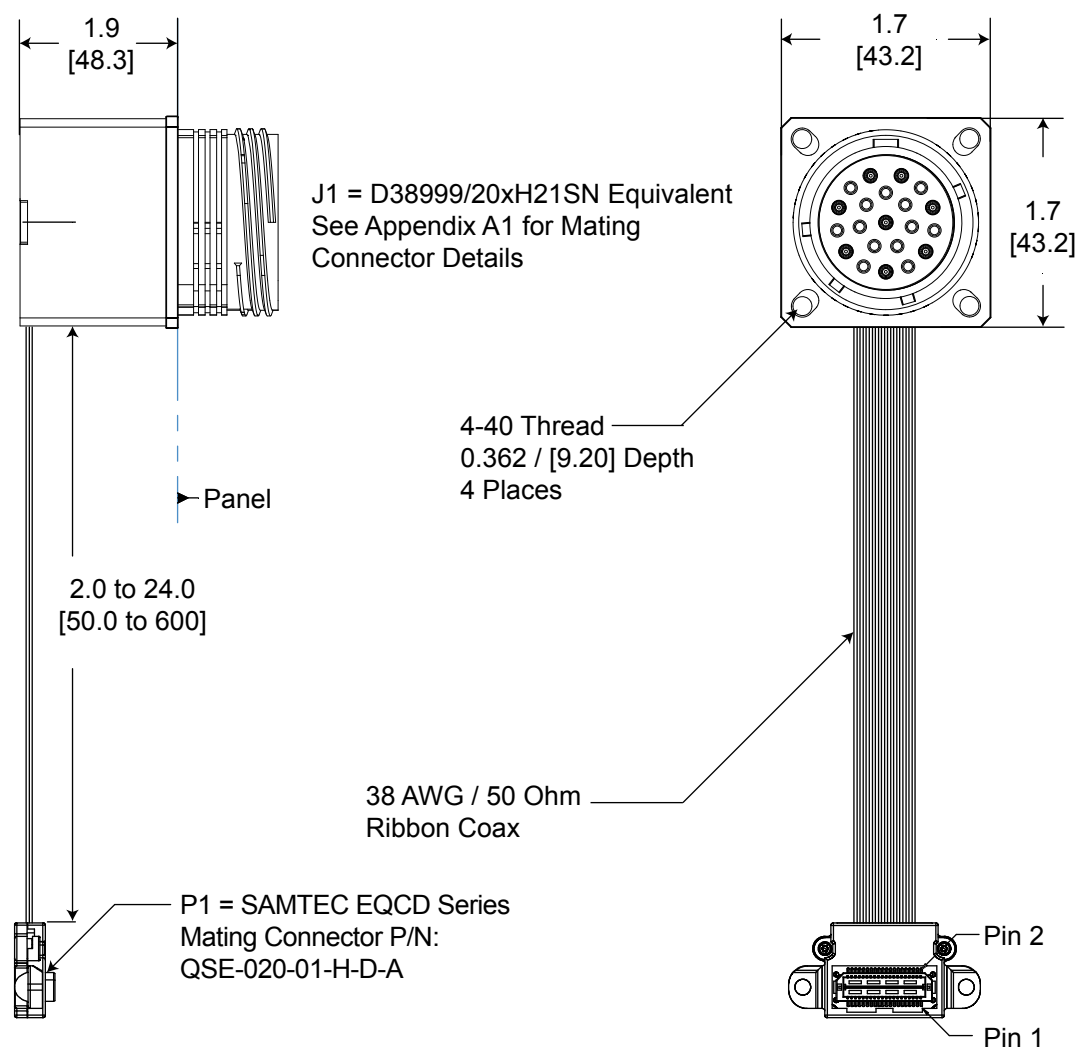
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4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nM

### OUTLINE DRAWING

#### Flange Mount Option

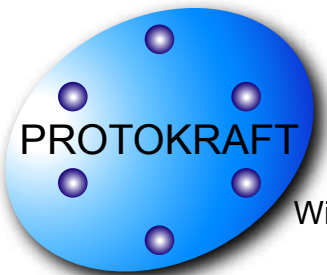
Dimensions are shown as: inches [mm]



Part Number = \*W41F-5xxx-Hx-Lxxx

\*See page 6 for standard part number / cable length options

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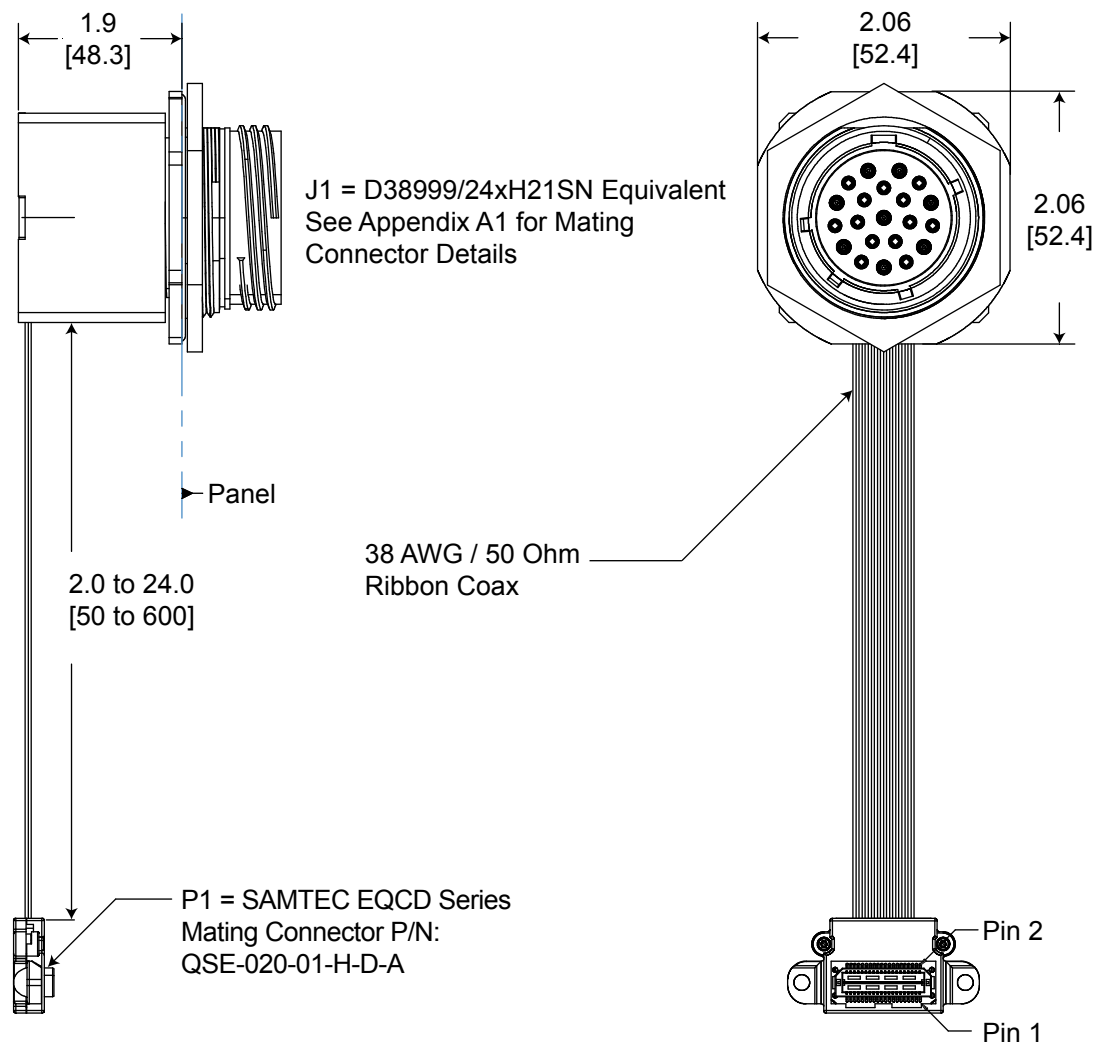
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Wildcat Series, 5 Port Ethernet Switch, MIL-DTL-38999 + SAMTEC SMT  
4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nM

### OUTLINE DRAWING

#### Jam Nut Option

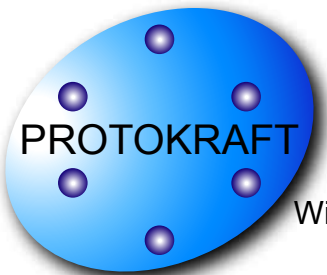
Dimensions are shown as: inches [mm]



Part Number = \*W41J-5xxx-Hx-Lxxx

\*See page 6 for standard part number / cable length options

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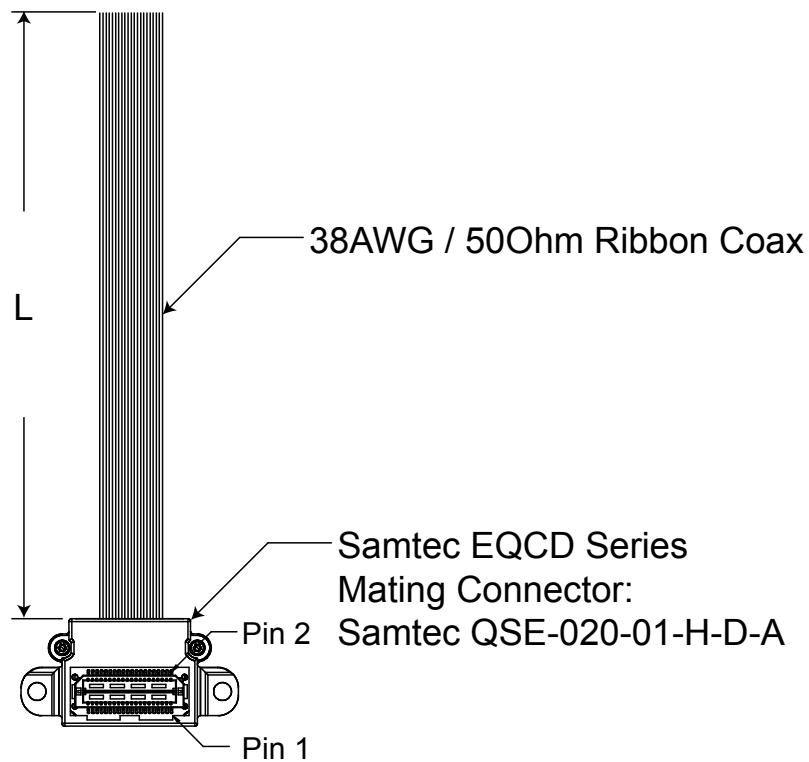


**Facilitating Secure Communications in Harsh Environments**

Wildcat Series, 5 Port Ethernet Switch, MIL-DTL-38999 + SAMTEC SMT  
 4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nM

**OUTLINE DRAWING**

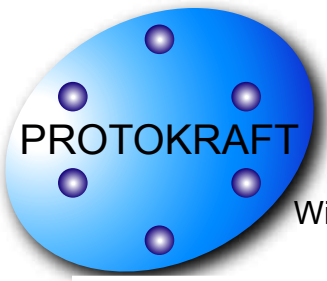
Cable Length Options



**Ribbon Coax Cable Length Options**

L (mm) +/- 6.0	ITEM #
50	xxxx-xxxx-xx-L050
100	xxxx-xxxx-xx-L100
150	xxxx-xxxx-xx-L150
200	xxxx-xxxx-xx-L200
250	xxxx-xxxx-xx-L250

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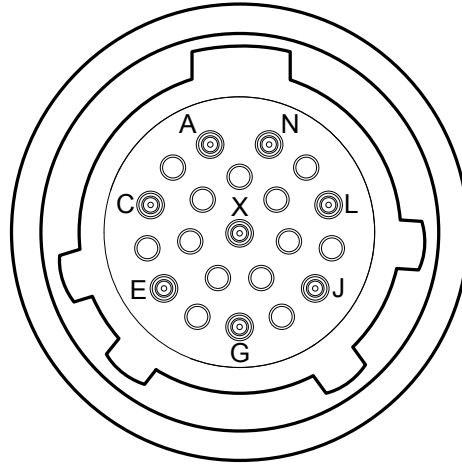


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### J1 D38999 PIN and PORT ASSIGNMENTS

#### TOP Optical Interface

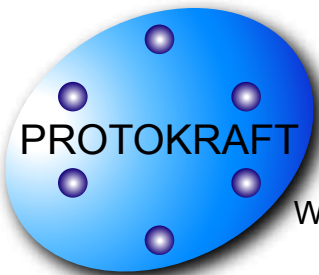


Front view of the D38999 optical insert shown, fiber optic cable plug opposite - see Appendix A1 for details

#### MIL-DTL-38999 OPTICAL INTERFACE

PORT NUMBER	TX	RX
0	J	L
1	N	G
2	X	A
3	E	C

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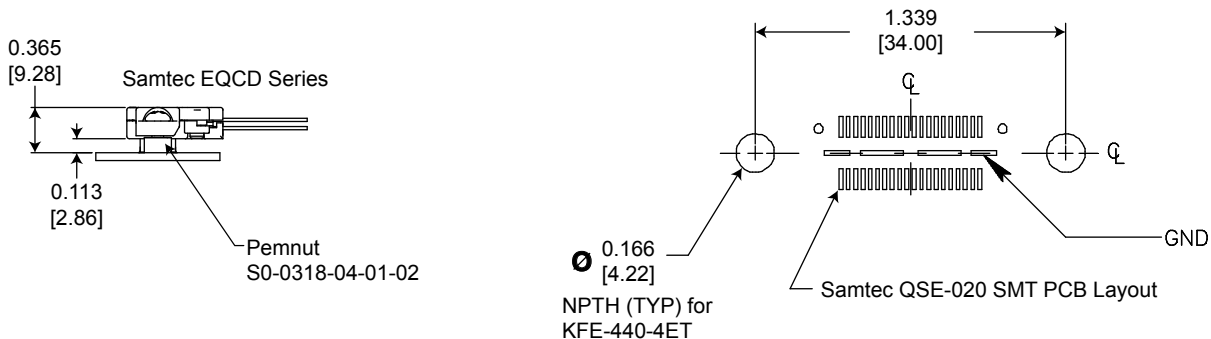


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### PRINTED CIRCUIT BOARD FOOTPRINT

Dimensions shown are: inches [mm]

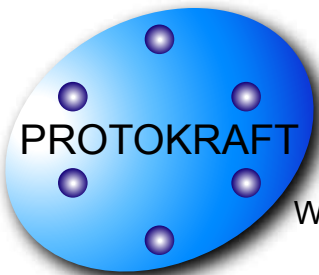


### Samtec EQCD PIN ASSIGNMENTS

PIN #	PORT #	FUNCTION	Input / Output	RJ-45 PIN#	Logic Family
1	4	MDA+	Input / Output	1	IEEE-802.3:2005 10/100/1000Base-T
3	4	MDA-	Input / Output	2	IEEE-802.3:2005 10/100/1000Base-T
5	4	MDB+	Input / Output	3	IEEE-802.3:2005 10/100/1000Base-T
7	4	MDB-	Input / Output	6	IEEE-802.3:2005 10/100/1000Base-T
9	4	MDC+	Input / Output	4	IEEE-802.3:2005 10/100/1000Base-T
11	4	MDC-	Input / Output	5	IEEE-802.3:2005 10/100/1000Base-T
13	4	MDD+	Input / Output	7	IEEE-802.3:2005 10/100/1000Base-T
15	4	MDD-	Input / Output	8	IEEE-802.3:2005 10/100/1000Base-T
17	0-4	*Reset_Low	Input	N/A	LVTTL with Internal Pullup
19	0-4	V <sub>CC</sub>	Input	N/A	N/A
20	0-4	V <sub>CC</sub>	Input	N/A	N/A
21	0-4	V <sub>CC</sub>	Input	N/A	N/A
22	0-4	V <sub>CC</sub>	Input	N/A	N/A

\*Reset Function: Logic "0" Input = Restart, registers initialized; Logic "1", Open or High Z Input = Normal Operation, all other pins are N/C, center slug is GND

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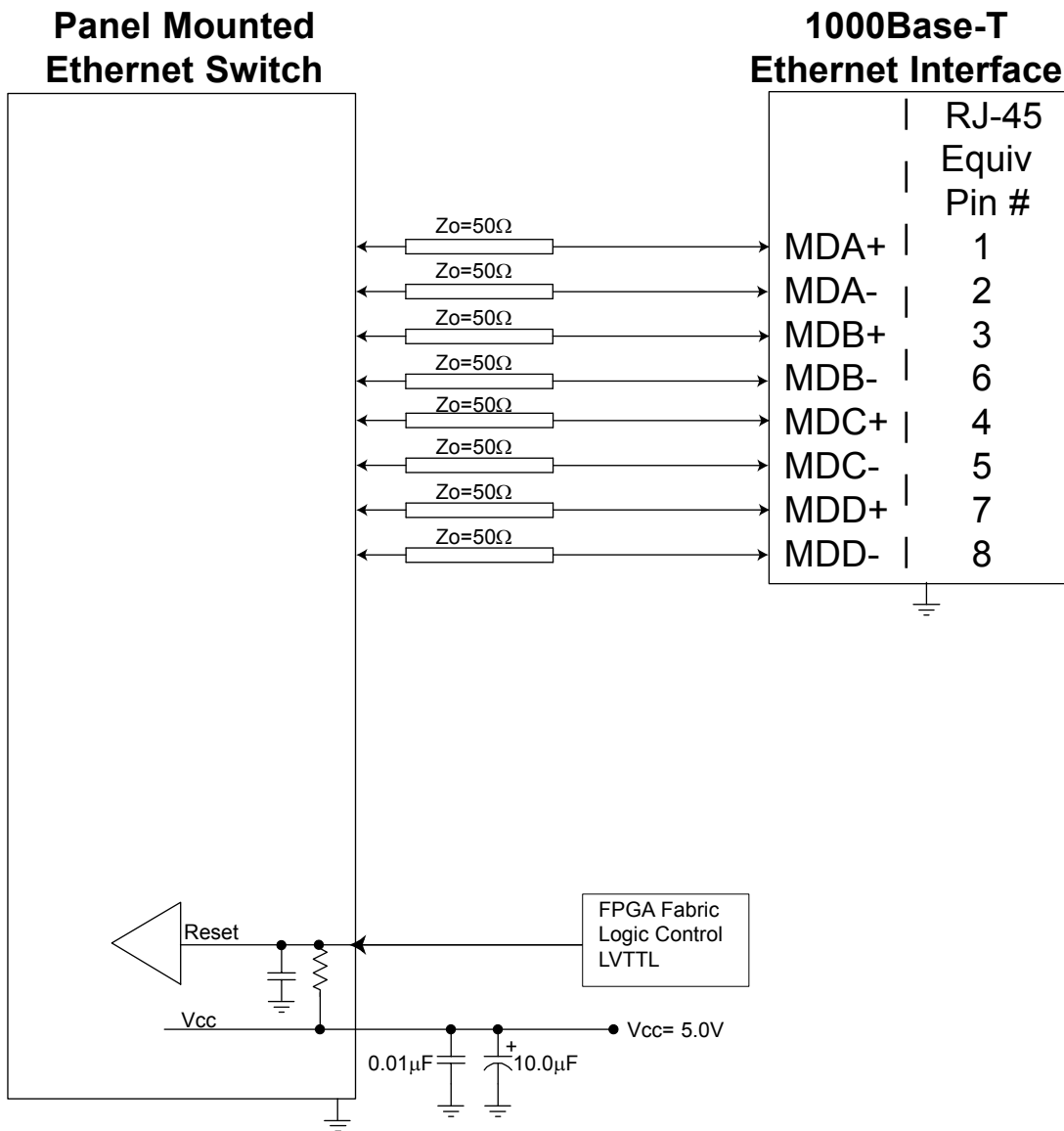


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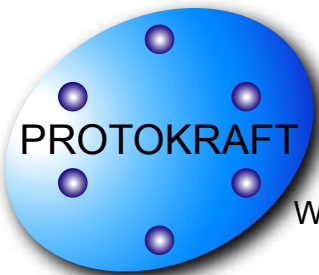
### APPLICATION SCHEMATIC

Panel Mounted Ethernet Switch



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Wildcat Series, 5 Port Ethernet Switch, MIL-DTL-38999 + SAMTEC SMT  
4x1000Base-SX+1x1000Base-T, Multimode, 5.0VDC, 850nm

## APPENDIX A1

### MIL-DTL-38999 FIBER OPTIC CABLE PLUG / MIL-T-29504 PIN TERMINI

\*See DSCC or SAE QPL for Approved Suppliers

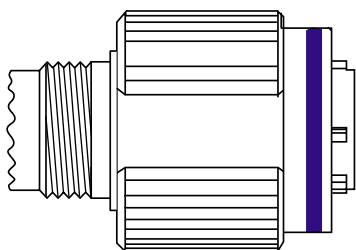
<http://www.dsccl.dla.mil/programs/qmlqpl/QPLdetail.asp?QPL=38999>

#### \*D38999 PLUG - PIN INSERT

##### MIL-DTL-38999 CABLE PLUG

MS PLUG P/N

\*D38999/26WH21PN

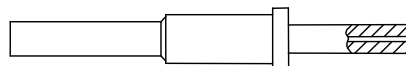


#### \*FIBER OPTIC PIN TERMINUS

##### MIL-T-29504 PIN TERMINUS

MS PIN TERMINUS P/N

\*M29504/04-xxxx\*\*



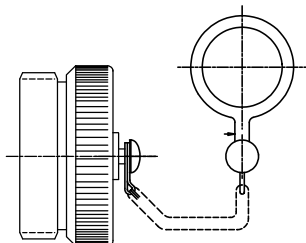
\*\*defined by fiber optic cable configuration

#### \*CABLE PROTECTION CAP

##### D38999/32 PLUG PROTECTION CAP

MS PLUG CAP P/N

\*D38999/32W23N



#### D38999 PLUG PORT FUNCTIONS

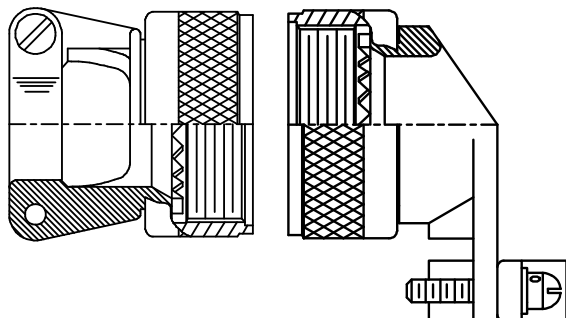
PORT NUMBER	TX	RX
0	J	L
1	N	G
2	X	A
3	E	C

#### \*CABLE BACKSHELL

##### MIL-C-85049 CABLE BACKSHELL

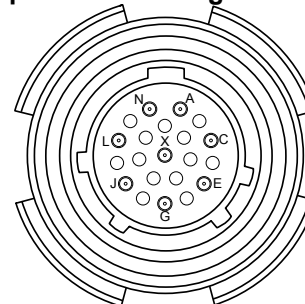
MS BACKSHELL P/N

\*MS85049/xxxxxx\*\*



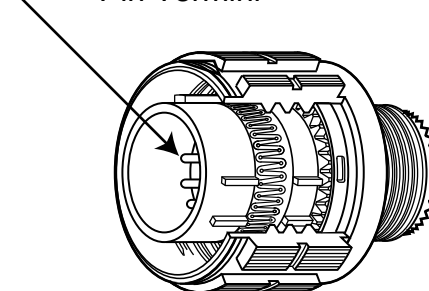
\*\*Straight or angled backshell - defined by application / mounting configuration

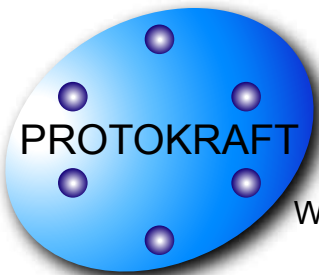
TOP  
Optical Cable Plug Interface



Front face of the optical cable plug pin insert shown. Transceiver insert opposite.

Pin Termini





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### APPENDIX A2 PART NUMBER OPTIONS

4+1 Port, GbE, 850nm, Samtec Ribbon Coax Assembly

**W41** **X** - **5** **S** **X** **T** - **H** **X** **X** - **L**

Shell Configuration  
W41= 38999 Receptacle

Shell Configuration  
F = Square Flange  
J = Jam Nut

# Channels (TX+RX)  
5 = 4x 1000Base-SX + 1x  
10/100/1000Base-T

Wavelength  
S= 850nm

Power Supply  
B = 6 to 24VDC  
C = 5.0VDC

Fiber Optic Interface  
T = 1.25 Gbps

Shell Size Code  
H = 23 - 21

D38999 Shell Plating  
F = NI  
W = OD CD / NI  
Z = ZN / NI

Shell Polarization  
(leave blank) \_ = N  
A = A  
B = B  
C = C  
D = D

Electrical Interface  
L = Ribbon Coax to Samtec  
EQCD Series - Cable Length  
TBD

Other wavelength, mounting and port count options are available.  
Please consult the Protokraft website for alternate configurations.

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