

Sabre Series

D38999 Size 09-01 Optical Receiver,
PCB Mount, *ELIO[®], 1310nm, SD/
HD-SDI / SMPTE 259/292M

Optical Receiver, Flange Mount

FEATURES

- Compliant with SD/HD-SDI / SMPTE 259/292M applications from 270Mbps to 1.485Gbps
- Maximum optical channel bit error rate less than 1×10^{-12}
- Operating temperature range from -55°C to +85°C
- Shock and vibration resistant per RTCA / D0-160E
- Electroless nickel plating meets stringent corrosion performance specifications
- Six pin PCB footprint with Loss of Signal (LOS) function
- ELIO[®] 2.5mm ceramic optical fiber ferrule connector interface per EN 4531, ABS 1379 and ARINC 801
- Compatible with D38999 ELIO[®] size 09-01 connectors

APPLICATIONS

Sabre series D38999 size 09-01 optical receivers enable high speed network communications over long distances in harsh environments.

SD/HD-SDI / SMPTE 259/292M

- Cameras and Video Peripherals
- Switches and Converters
- Scalers and Adapters

Sabre series D38999 size 09-01 optical receivers provide a rugged optical interface that is compliant with ELIO[®] 2.5mm ceramic optical ferrules*.

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

*ELIO[®] is a registered trademark of Souriau



One RX Channel Operating from 270Mbps to 1.485Gbps

DESCRIPTION

Sabre series D38999 size 09-01 optical receivers consist of optoelectronic receiver functions integrated into a wall mount D38999 optical connector. The optical receivers are 1310nm PIN diodes + limiting amplifiers. Outputs from the receivers consist of differential electrical signals on the receiver (RX+ and RX-) lines. A CMOS output signal is generated on the Loss of Signal (LOS) line upon loss of a valid incoming optical data. The receiver data lines are squelched upon LOS assertion, preventing errant data generation when an invalid incoming optical signal is presented to the optical receiver.

The optical mating interface of the Sabre series D38999 size 09-01 optical receivers is an ELIO[®] 2.5mm ceramic fiber optic ferrule stub per EN 4531. The ferrule stub has an integral 62.5/125µ multimode optical fiber enabling it to interface to either 62.5/125µ or 50/125µ optical fiber cable.

The electrical interface to the Sabre series D38999 size 09-01 optical receivers is a six position pin header suitable for thru-hole soldering to a flexible or rigid printed circuit.

Sabre series D38999 size 09-01 optical receivers are vibration isolated, environmentally hardened components designed for use in harsh environment applications.

ORDERING INFORMATION

Application	Part Number
SD/HD-SDI from 0.270 to 1.485Gbps	P86F-RL1V-AF
See Appendix A3 for more part number options	

Single Fiber Sabre Series Mil-Dtl-38999 Optical Receiver,
Multimode, 1310m, SD/HD-SDI / SMPTE 259/292M Applications

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	-65		+100	°C
Supply Voltage	V_{cc}	-0.5		+4.5	V

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Operating Temperature	T_A	-55		+85	°C
Power Supply Voltage	V_{cc}	+3.135		+3.465	V
Power Supply Noise (p-p)	N_p			200	mV

SPECIFICATIONS COMPLIANCE

Requirement	Feature	Condition	Notes
RTCA / D0-160E	ESD	Class II	2200V
RTCA / D0-160E	Vibration	3.8g ² /Hz	43G rms
RTCA / D0-160E	Shock	40.0g	6-9mS
RTCA / D0-160E	Flame Resistance	Method 1012	30 Seconds
RTCA / D0-160E	Damp Heat	10 Cycles	24 Hours
ARINC 801	Mating Durability	500 Cycles	<0.5dB Change

MATERIALS

Item	Detail	Notes
D38999 Shell	Aluminum	
D38999 Shell Plating	Nickel	
Insert	Arcap	
Solder Pins	Brass	
Solder Pin Plating	Gold	
Ferrule	Ceramic	
Printed Circuits	Polyimide / FR-4	

Single Fiber Sabre Series Mil-Dtl-38999 Optical Receiver,
Multimode, 1310m, SD/HD-SDI / SMPTE 259/292M Applications

OPTICAL RECEIVERS T_A = Operating Temperature Range, V_{CC} = 3.135V to 3.465V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Optical Sensitivity (BER<10 ⁻¹² , ER=9.0)	P_I	-17.0		0.0	dBm
Optical Wavelength	λ_{IN}	1270		1340	nM
Signal Detect Deassert Level	P_{OFFr}	-28.0			dBm
Signal Detect Hysteresis	HYS	1.5	2.25	3.5	dB

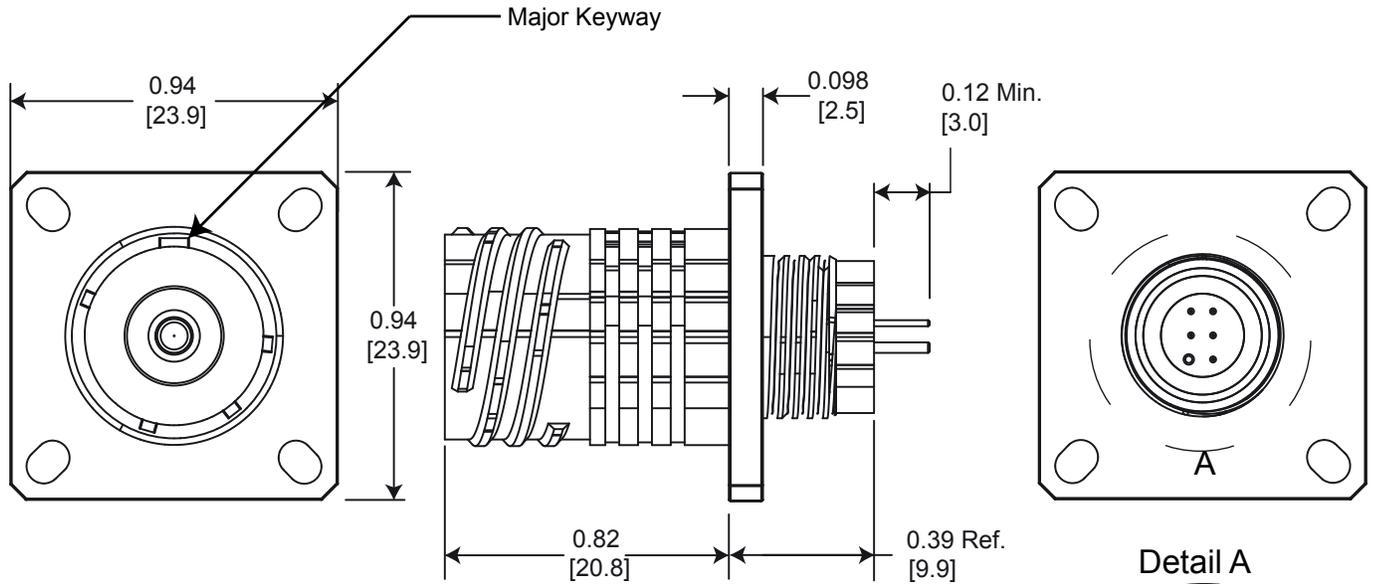
POWER SUPPLY CURRENT T_A = Operating Temperature Range, V_{CC} = 3.135V to 3.465V

Parameter	Symbol	Minimum	Typical	Maximum	Unit
Supply Current	I_{CCT}		75	95	mA

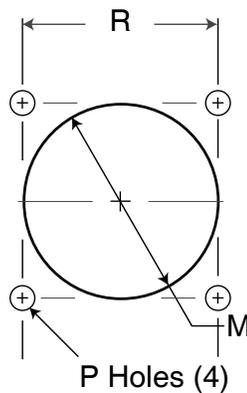
Single Fiber Sabre Series Mil-Dtl-38999 Optical Receiver,
Multimode, 1310m, SD/HD-SDI / SMPTE 259/292M Applications

OUTLINE DRAWING

Dimensions are shown as: inches [mm]



For complete dimensions refer to:
Mil-Dtl-38999 shell size A



Panel Cutout Dimensions
Rear Panel Mounting Only

Shell Size Code	Shell Size	M Hole	P Holes	R Bsc
A	09	0.685 (16.99)	0.133 (3.4) 0.123 (3.1)	0.719 (18.26)

Single Fiber Sabre Series Mil-Dtl-38999 Optical Receiver,
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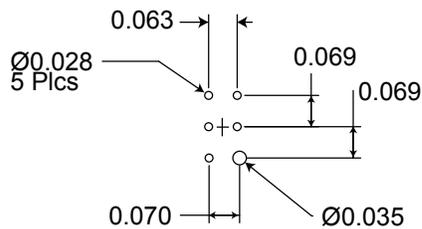
ELECTRICAL PIN ASSIGNMENTS

Pin Number	Symbol	Description	Logic Family
1	GND	Ground	N/A
2	V _{cc}	Power Supply - Input	N/A
3	GND	Ground	N/A
4	LOS	Loss of Signal - Output Satisfactory Optical Input: Logic "0" Output Unsatisfactory Optical Input: Logic "1" Output	Open Drain CMOS
5	RX-	Receiver Data - Output	SMPTE 259/292M
6	RX+	Receiver Data - Output	SMPTE 259/292M

PRINTED CIRCUIT BOARD FOOTPRINT

Dimensions are shown as: inches

PCB Hole Pattern
Mounting Side View



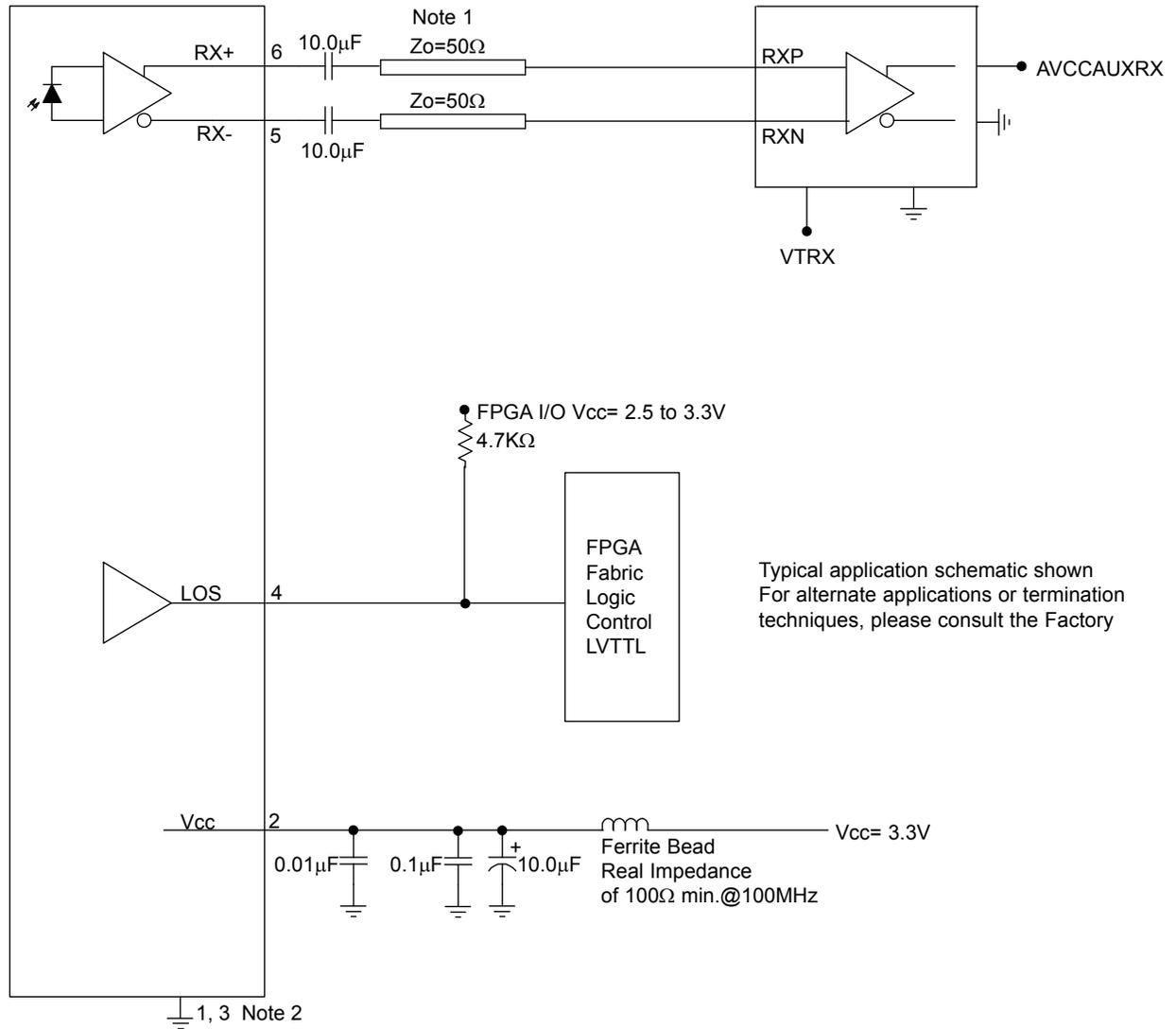
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APPLICATION SCHEMATIC

For SD/HD-SDI Interfaces

Optical Receivers

Gennum GS2961

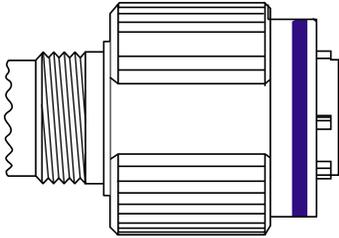


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APPENDIX A2

Mating Fiber Optic Connectors and Termini

ELIO® Plug Connector



	8D	5	E	09	W	01	A	N
Shell type:	5 = Plug							
Designation:	E							
Shell size:	09							
Plating:	W: Olive drab cadmium F: Nickel							
Insert arrangement:	01							
Insert:	Male							
Polarization:	N, A, B, C, D, E							

ELIO® Termini



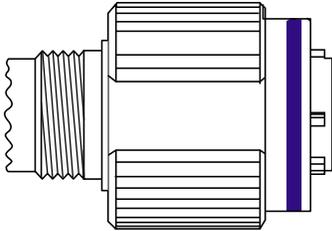
Ordering Information

	Elio	09	N	G	L	A
Cable external diameter:	09: 0.9 mm or cable wider than 1.9mm with 0.9mm jacket inside 18: from 1.5mm to 1.9mm					
Contact sealing:	W: waterproof (1.8mm +/- 0.1mm cable only) N: non waterproof					
Fibre type:	G: 50 or 62,5/125 µm D: 100/140 µm					
Boot type:	L: Long boot S: Short boot N: No boot (non waterproof version only)					
Contact version index						

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ELIO® Plug Connector



	8D	5	E	09	W	01	A	N
Shell type:	5 = Plug							
Designation:	E							
Shell size:	09							
Plating								
W:	Olive drab cadmium							
F:	Nickel							
Insert arrangement:	01							
Insert:	Male							
Polarization	N, A, B, C, D, E							

ELIO® Termini



Ordering Information

	Elio	09	N	G	L	A
Cable external diameter:						
09:	0.9 mm or cable wider than 1.9mm with 0.9mm jacket inside					
18:	from 1.5mm to 1.9mm					
Contact sealing:						
W:	waterproof (1.8mm +/- 0.1mm cable only)					
N:	non waterproof					
Fibre type:						
G:	50 or 62,5/125 µm					
D:	100/140 µm					
Boot type:						
L:	Long boot					
S:	Short boot					
N:	No boot (non waterproof version only)					
Contact version index						

APPENDIX A3 PART NUMBER OPTIONS

Sabre Series

P86 X - X L 1 V - A X X

Shell Configuration

P86= 38999 ELIO
Receptacle

Shell Configuration

F= Square Flange
J= Jam Nut

Function

T= Transmitter
R= Receiver

Wavelength

L = 1310nm

Cable Mode

1= Multimode

Datarate

V = 0.27 to 1.485Gbps

Shell Size Code

A = 09-01

Shell Plating

F = NI
W = OD CD
Z = ZN / NI

Polarization

(leave blank) **_** = N
A = A
B = B
C = C
D = D



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