



ASSOCIATION CONNECTING
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Optoelectronic Assembly and Packaging Technology

Developed by the Optoelectronics Assembly Subcommittee (5-25) of the
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Users of this publication are encouraged to participate in the
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Table of Contents

1 SCOPE	1	4.1 Level 1 Design Consideration	21
1.1 Purpose	1	4.1.1 Optical Design	21
1.2 Categorization	1	4.1.2 Coupling Between Lensed Fiber and Laser Waveguide	22
1.2.1 Complexity or Producibility Level	2	4.1.3 Passive Alignment	24
1.3 Classification of Products	3	4.1.4 Active Alignment	24
1.3.1 Performance Classes	3	4.1.5 Optical Microsubmounts	24
1.4 Applicable Documents	3	4.1.6 Alignment Technology	25
1.4.1 Reference Documents	3	4.1.7 Design/Process for Rework	28
2 TECHNOLOGY OVERVIEW	4	4.1.8 Single Fiber	30
2.1 Optoelectronics in Optical Communication Systems	5	4.1.9 Fiber Ribbon Cable	30
2.2 History of Optoelectronic Packaging	5	4.1.10 Axis Change Coupling of Multifiber	31
2.3 Optoelectronic Modules	6	4.1.11 Multifiber Termination Using Cost-Efficient Plastic Parts, Suitable for MT-Connector	31
2.4 Packaging and Hermeticity	7	4.1.12 Package Interconnection	31
2.4.1 Hermetic Packaging	7	4.1.13 Package Interconnect	32
2.4.2 Nonhermetic Packaging	8	4.2 Level 1 Components	34
2.5 Theory of Optical Fiber	8	4.2.1 Component Housings	35
2.5.1 Multimode Fiber	9	4.2.2 Mechanical and Environmental Protection	36
2.5.2 Single-Mode Fiber	10	4.2.3 Heat Transfer from the Component to the Outside of Component Housing	36
2.6 Automation Requirements	11	4.2.4 Optical Train Stability	36
2.6.1 Fiber Manufacturing	12	4.2.5 Electrical Feedthrough Component Housing	36
2.6.2 Component Manufacturing	12	4.3 Level 1C Design Consideration	41
2.6.3 Connectorization	14	4.3.1 Multichip Module	41
2.6.4 Optical Testing	14	4.4 Packaging Level 2	42
2.6.5 Fusion Splicing, Other Optical Coupling Techniques	15	4.4.1 Optical Signal Management	42
2.6.6 Fiber Handling	16	4.4.2 Electrical Interconnect Consideration Management	44
2.6.7 Buffer Jacket Damage	16	4.4.3 Thermal Concepts and Implementation	45
2.6.8 Bend Radius	16	4.4.4 Assembly Methodology Considerations	47
2.6.9 Fiber Ends	16	4.5 Packaging Level 3	47
2.6.10 Summary	16	4.5.1 System Integration	47
3 APPLICATIONS OF OPTOELECTRONIC PRODUCTS	17	5 COMPONENTS (ELEMENTS AND MATERIALS)	48
3.1 Consumer Products (Previously Low Cost)	17	5.1 Level 1 Components	48
3.1.1 Component Characteristics	18	5.1.1 Active Optical Components	48
3.1.2 Board Assembly Issues	18	5.1.2 Passive Optical Components	52
3.2 High Performance (Office and Large Business Systems)	19	5.1.3 Electrical Components	56
3.2.1 Component Characteristics	20	5.1.4 Mechanical Components	59
3.2.2 Board Assembly Issues	20	5.1.5 Thermal Components	60
3.3 Portable Products	20	5.2 Level 2 Type Components	66
3.4 Harsh Environments	20	5.2.1 Active Optical Component Packages	66
4 DESIGN CONSIDERATIONS	21	5.2.2 Passive Optical Components	67

5.2.3	Waveguide	68	7.6	Substrate Preparation for Level 1 and Level 2	98
5.2.4	Electrical Components	72	7.7	Optical Fiber Splicing (Mechanical/Fusion)	99
5.3	Level 3 System Integration Components	78	7.7.1	General Optical Fiber Splicing Process Flow	99
5.3.1	Patch Cords	78	7.7.2	Stripping	99
6	MATERIAL PROPERTIES	78	7.7.3	Fiber Cleaning	101
6.1	Optical Materials	78	7.7.4	Fiber Cleaving	101
6.1.1	Glass	78	7.7.5	Mechanical Splicing	101
6.1.2	Polymer	79	7.7.6	Fusion Splicing	103
6.1.3	Optical Jelly/Index Matching Fluids	79	7.7.7	Loss Estimation/Measurement	105
6.1.4	Reflective Materials	79	7.7.8	Splice Protection	106
6.2	Attachment Material	79	7.7.9	Automation	108
6.2.1	Electrically Conductive Adhesives	81	7.8	Electrical Attachment	108
6.2.2	Solder	81	7.9	Fiber Termination	109
6.2.3	Low Temp Melting Glass	82	7.9.1	Fiber Cutting	109
6.2.4	Brazing Material	83	7.9.2	Fiber Ferrule Attach	109
6.2.5	Wire Bonding Material	83	7.9.3	Fiber Connectorization	109
6.3	Substrate Material	83	7.9.4	Fiber End Shaping	109
6.3.1	Substrates for Optical Systems	83	7.10	Fiber Management	109
6.3.2	Copper Clad Laminate (Rigid)	84	7.11	Mechanical Assembly	110
6.3.3	Flexible Material (Clad and Unclad)	85	7.12	In-Circuit and Functional Test	110
6.4	Heat Transfer Materials	87	7.13	HAST Test	110
6.4.1	Filled Polymers	87	7.14	Modification and Rework	111
6.4.2	Composites	87	7.14.1	Level 1 Repairs	111
6.4.3	Thermally Conductive Grease	87	7.14.2	Tape Automation Bond Repairs	111
6.4.4	Diamond Thin Film	87	7.14.3	Adhesive Conditioning	112
6.5	Housing Materials	87	8	TESTING TECHNIQUES	112
6.5.1	Iron/Cobalt/Nickel Alloys (Kovar)	87	8.1	Insertion Loss Measurement	113
6.5.2	Iron/Nickel (Alloy 42) Laminated Multilayer Ceramic	87	8.2	Splice Loss Measurement Via OTDR	113
7	ASSEMBLY PROCESSES	88	8.2.1	Operating Principles of OTDR	113
7.1	Assembly Process Overview	88	8.2.2	Negative Losses	115
7.1.1	Land Finishes - Lid Sealing	88	8.2.3	Directional Dependence of OTDR Measurement	115
7.2	Die and Component Bonding	88	8.2.4	Calculation of True Splice Loss	115
7.2.1	Metallurgical Die Attach and Bonding	89	8.3	Splice Loss Measurement Via Power Source and Meter	115
7.2.2	Polymer Adhesive Die Attach and Bonding	90	8.3.1	Method 1	117
7.2.3	Inorganic Glass-Based Die Attach and Bonding	91	8.3.2	Method 2	117
7.3	Electrical Connection to Components	91	9	RELIABILITY REQUIREMENTS	117
7.3.1	Wire Bonding for Electronic Interconnect	92	9.1	Optical Safety Precautions	117
7.3.2	Flip Chip Attach Process of Active and Passive Devices	94	9.2	General Requirements	118
7.3.3	Flip Chip for Optoelectronic Assembly	94	9.3	Cleanliness	118
7.3.4	Forms of Flip Chip Contacts	96	9.3.1	Fiber Cleanliness	118
7.4	Encapsulation	96	9.3.2	Connector Cleanliness	118
7.4.1	Wire Bonded Devices	96	9.3.3	Dust Cap Contamination	119
7.5	Fiber Sealing in a Hermetic Assembly	97			

9.4	Mechanical Integrity Tests	119	Figure 2-6	Dimensions and Propagation of Multimode Step-Index Fiber	9
9.4.1	Mechanical Shock	120	Figure 2-7	Output Pattern of Light of MMF	9
9.4.2	Vibration	120	Figure 2-8	Propagation Modes of MMF	10
9.4.3	Thermal Shock	121	Figure 2-9	Effect of Modal Dispersion on Optical Pulses	10
9.4.4	Solderability	121	Figure 2-10	Dimensions and Propagation of Graded Index Multimode Fiber	10
9.4.5	Fiber Pull	121	Figure 2-11	Dimensions and Propagation of SMF	11
9.5	Endurance	121	Figure 2-12	Chromatic Dispersion Effect on Optical Pulses	11
9.5.1	Accelerated Aging or Life Tests	121	Figure 2-13	Single-Mode and Multimode Fiber Capability	12
9.5.2	High Temperature and Low Temperature Storage	122	Figure 3-1	Market to Technology Driver Correlation with Optoelectronics Intersection Focus	17
9.5.3	Temperature Cycling (T/C)	122	Figure 3-2	Optoelectronic Peripheral Exchange Functions	19
9.5.4	Damp Heat	122	Figure 3-3	Typical Optical Transmitter Board Assembly	21
9.5.5	Cyclic Moisture Resistance	122	Figure 4-1	Design Configuration Hierarchy	22
9.6	Special Tests (Level 1 Components)	122	Figure 4-2	One Lens Coupling System Diagram	24
9.6.1	ESD	122	Figure 4-3	Two Lens Coupling System Diagram	24
9.6.2	Internal Moisture	123	Figure 4-4	Wafer Optical/Electronic Combination	25
9.7	Level 2 Products (Subassemblies) Reliability Tests	123	Figure 4-5	Mirror and Lens Alignment	25
10 STANDARDIZATION			Figure 4-6	Coaxial Module Assembly	26
10.1	Standards for Development	124	Figure 4-7	TO-Can Alignment	26
APPENDIX A	Bibliography	129	Figure 4-8	Two Lens System Alignment	27
APPENDIX B	Glossary	130	Figure 4-9	Quasi-Planar Optoelectronic Package Assembly Principle	27
APPENDIX C	Standards Development Organizations and Other Related Associations Involved in the Area of Optoelectronics	138	Figure 4-10	Micromachined Flexures and Mini-Module Platform with Aligned Fiber	27
APPENDIX D	IEC Standards in the Area of Optoelectronics	141	Figure 4-11	Flexure Alignment Process Steps	28
APPENDIX E	Telcordia Technologies	152	Figure 4-12	Example of Industry Alignment Clips	28
APPENDIX F	Japan Industrial Standards	153	Figure 4-13	Magnifying Lens and Infrared Camera Relationship	29
APPENDIX G	Military Standards	156	Figure 4-14	Multifiber Array Attachment	29
APPENDIX H	JEDEC Standards	157	Figure 4-15	Glass Lid to Handle Lensed Fibers	29
APPENDIX I	NIST Documents	158	Figure 4-16	Example of AWG Package	29
			Figure 4-17	Multiple Fiber Ribbon Terminated in a V-Groove Block	31
			Figure 4-18	V-Groove Substrate	31
			Figure 4-19	Example of Couple Axis Change	31
			Figure 4-20	Examples of Plastic Encapsulation	32
			Figure 4-21	Single Fiber Pigtail	32
			Figure 4-22	Typical 1x9 SC Duplex Transceiver Footprint	33
			Figure 4-23	Typical 2x9 SC Duplex Transceiver Footprint	34
			Figure 4-24	Typical GBIC Transceiver Footprint	35
			Figure 4-25	Typical SFF 2x5 Transceiver Footprint	36
			Figure 4-26	Typical SFF 2x10 Transceiver Footprint	37
			Figure 4-27	Typical SFP Transceiver	38
			Figure 4-28	Housings - Application Specific	39
Figures					
Figure 1-1	Optoelectronic Communication System Structure	1			
Figure 1-2	Typical Optoelectronic Assembly Hierarchy	2			
Figure 1-3	Typical Optoelectronic Components	2			
Figure 2-1	Network Example	5			
Figure 2-2	Optoelectronic in Fiber Optic Systems	6			
Figure 2-3	Example of Hermetic TO Can Package	7			
Figure 2-4	Example of an Optical Subassembly	7			
Figure 2-5	Operational Principles of Optical Fiber	9			

Figure 4-29	Glass Seal Pins	39	Figure 5-28	Fiber Interconnection Methods	68
Figure 4-30	Single Layer Ceramic Feedthrough	40	Figure 5-29	Causes of Loss from Splicing	69
Figure 4-31	Wire Bondable Pads	40	Figure 5-30	Left Mems Adjustable Optical Attenuator, Right Adjustable Optically Attenuated Receiver	69
Figure 4-32	Differential Signal Configuration	40	Figure 5-31	Mismatch Between Different Components in a Lightwave Communication System	70
Figure 4-33	Coax Connector	40	Figure 5-32	Laser-to-Fiber Coupling	71
Figure 4-34	Incorporated Lens	41	Figure 5-33	4x4 SOA Switch	71
Figure 4-35	Incorporated Lens	41	Figure 5-34	Out of Plane Coupling	71
Figure 4-36	Split Housing	41	Figure 5-35	Embossed Waveguide Structure	72
Figure 4-37	Cover on Split Housing	41	Figure 5-36	Multiplexing and Demultiplexing of Digital Signals	72
Figure 4-38	Example of Waveguide Added to Printed Board	44	Figure 5-37	Wavelength Multiplexing and Demultiplexing	73
Figure 4-39	Flexible Material Used for Routing Fiberoptic Cable	44	Figure 5-38	Semiconductor Device in Heat Removal Housing	78
Figure 4-40	Two-Piece Connector Example Connecting Level 2 to Level 3 Optoelectronic Assemblies	46	Figure 5-39	Patch Cords with FC, LC and SC	78
Figure 4-41	Eight-Layer MCM-L	46	Figure 6-1	Wavelength Characteristics	80
Figure 4-42	Methods of 3D Die Integration	47	Figure 6-2	Micromirrors on Silicon	80
Figure 5-1	Spontaneous vs. Stimulated Emission	49	Figure 6-3	Example of Waveguides in PWB Technology	84
Figure 5-2	Light Reflecting in a Lasing Cavity	49	Figure 6-4	In Plane (X-Y) Coefficient of Expansion - ppm/°C	84
Figure 5-3	Photodiode Principles	50	Figure 6-5	Frequency to Loss Tangent Comparisons	86
Figure 5-4	Schematic of Detector	50	Figure 6-6	Heat Transfer Planes - Thermal Conductivity	87
Figure 5-5	APD Internal Gain	51	Figure 7-1	Example of a Lifted Au Ball Bond Wire Showing Adhering Bond Pad and Bulk Silicon Material Adhering Due to Cratering of the Die During Bonding	92
Figure 5-6	Employing Waveguides on Lithium Niobate to Form a Modulator	51	Figure 7-2	Gold Wire Ball Bonds at 45 μm Bond Pad Pitch on Silicon IC	93
Figure 5-7	2x2 Electrostatic Mems Optical Switch	53	Figure 7-3	Stitch Bond at Gold Wire End Opposing the 45 μm Pitch Ball Bonds Exemplified in the Previous Figure	93
Figure 5-8	1x8 Optical Mems Switch	53	Figure 7-4	Typical Aluminum Wire Wedge Bond on an IC Bond Pad	93
Figure 5-9	Optical Cross Connect and Mirror	54	Figure 7-5	Flip Chip Bump Metallurgy	94
Figure 5-10	Polymer Optical Fiber for 1 Gbs Transmission @ 200-500 m	55	Figure 7-6	Standard Flip Chip Array With Eutectic Sn/Pb Solder Bumps	95
Figure 5-11	Functional Representation of Isolator	56	Figure 7-7	Au and Sn Electroplated in Two Stages on InP Laser	95
Figure 5-12	Shows Flow of Energy in a Circulator	56	Figure 7-8	Au and Sn Reflowed on InP Laser Forming AuSn20 Solder	95
Figure 5-13	Example of Wavelength Coupling	57	Figure 7-9	InP Laser Diode Flip Chip Soldered with AuSn Bumps Using Self-Alignment	96
Figure 5-14	Prototype Amplifier - Brackets and Housing	60	Figure 7-10	Schematic of Metallized Fiber End	97
Figure 5-15	Submount - Optical Bench & Platform	61	Figure 7-11	Example of a Complex Optical Cable With Multiple Fibers	99
Figure 5-16	Silicon V-Groove Alignment Block	61	Figure 7-12	General Optical Fiber/Cable Splicing Schematic	100
Figure 5-17	Ferrule Options	62	Figure 7-13	Schematic of Typical Buffer-Coated Optical Fiber	101
Figure 5-18	Mechanical Ferrule Assembly	62	Figure 7-14	Fiber End Face Defects Caused by Poor Cleaving Practice	102
Figure 5-19	Forced Convection and Natural Convection Cooling Using Die Cast Designs	63			
Figure 5-20	Aluminum Nitride (170 W/mK) Submounts	64			
Figure 5-21	Typical Thermo-Electric Module	64			
Figure 5-22	Thermoelectric Coolers	65			
Figure 5-23	Optoelectronic Applications of Thermoelectric Cooler	65			
Figure 5-24a	Heat Pipe Operation and Microelectronics	66			
Figure 5-24b	Variety - Heat Pipes for Many Applications	66			
Figure 5-25	Example of a Transponder Design	67			
Figure 5-26	Multiport Fiber Component	67			
Figure 5-27	Conventional Biconic Taper - Star Combiner	68			

Figure 7-15	Losses Due to Refraction at Fiber End Faces in Mechanical Splices	103	Table 4-2	Optical Communication Technology Roadmap	23
Figure 7-16	Schematic of V-Block Fiber Alignment in Mechanical Splicing Illustrating Misalignment From Contamination and Core-Clad Eccentricity	103	Table 4-3	Spot Size for Various Optoelectronic Components	23
Figure 7-17	Active Alignment Methods	104	Table 4-4	Fiber Tip Characteristics	24
Figure 7-18	Profile Alignment Method	104	Table 4-5	Commonly Used Solder With Melting Temperature	29
Figure 7-19	End View of Types of PM Fibers	105	Table 4-6	Common Brazing Materials and Melting Temperature Range °C	30
Figure 7-20	Power Losses Through Splice Misalignment	106	Table 4-7	Evolution of MCM Technologies	42
Figure 7-21	Mechanical Rod Sleeve	107	Table 4-8	MCM-L Processes	42
Figure 7-22	A Typical Recoated 250 µm Fiber	107	Table 4-9	MCM-C Processes	43
Figure 7-23	Recoating Example	108	Table 4-10	MCM-D Processes	43
Figure 7-24	An Acceptable 250 Micron Recoat - Barely Visible	108	Table 5-1	Telecom Market Modulators	52
Figure 7-25	An Unacceptable 250 Micron Recoat - Insufficient Coverage	108	Table 5-2	Table of III-V Materials Used in Optoelectronics	52
Figure 7-26	Key Endface Geometry	109	Table 5-3	Representative Fiber Manufacturers and Product	55
Figure 7-27	Example of Fiber Management	109	Table 5-4	General Multichip Material Properties	57
Figure 8-1	Insertion Loss Reference Setup	113	Table 5-5	Properties of Selected Ceramic Materials	59
Figure 8-2	Measuring Insertion Loss Through a Device or System	113	Table 5-6	Thermal Properties of Selected Materials	63
Figure 8-3	OTDR Display for a Continuous Fiber	114	Table 5-7	Wavelengths and Channel Capacities for Optical Power Amplifiers for Telecommunications	67
Figure 8-4	Measurement Configuration 1: OTDR Connected to the End of Fiber 1	114	Table 5-8	Mux/Demux Comparisons for High Performance DWDM Systems	73
Figure 8-5	0.1 dB Splice at 7 km	114	Table 5-9	Summary of Passive Surface Mount Component Standards	75
Figure 8-6	"Gainer" on the OTDR	116	Table 6-1	Polymer Waveguide Materials	79
Figure 8-7	Measurement Configuration 2: OTDR Connected to Fiber 2	116	Table 6-2	Properties of Adhesives	81
Figure 8-8	"0.5 dB Splice" at 3 km	116	Table 6-3	Typical Solder Systems	82
Figure 8-9	Using a Source and Meter to Measure Splice Loss	117	Table 6-4	Brazing Alloy Temperatures	83
Figure 9-1	Core Fiber Face After Cleaning	119	Table 6-5	Clad Laminate Maximum Operating Temperatures	85
Figure 9-2	Improper Cleaning of Core	119	Table 6-6	Laminate Construction	85
Figure 9-3	Cleaning Area Definition	120	Table 6-7	Laminate Properties	85
Figure 9-4	Transmitter, X-Ray of Normal Dust Cap Placement With Ferrule Pushed In	120	Table 6-8	Final Finish, Surface Plating Coating Requirements	86
Figure 9-5	Transmitter, X-Ray With Dust Cap Jammed On	121	Table 6-9	Gold Plating Uses	87
Figure 9-6	Dust Cap In Place	121	Table 6-10	Nickel-Iron	87
Figure 9-7	Dust Cap Fitting Over Ferrule	121	Table 6-11	Physical Properties	88
Tables			Table 7-1	Hierarchy and Levels of Assembly	89
Table 2-1	Optical Component Manufacturing Processes	12	Table 7-2	Some Examples of Bonding Wire Types and Electrical Resistance	93
Table 2-2	Automation Implementation Opportunities	16	Table 7-3	Key Attributes for Various Board Surface Finishes	97
Table 4-1	Physical Characteristics of Optoelectronic Packages	22	Table 9-1	Cleaning Area Descriptions	120
			Table 10-1	Optoelectronic Level to Standard Functionality Matrix	124

Optoelectronic Assembly and Packaging Technology

1 SCOPE

This document addresses the implementation of optical and optoelectronic packaging technologies.

The areas discussed include: technology choices, design considerations, material properties, component mounting and interconnecting structures, assembly processes, testing, application, rework, and reliability of completed optoelectronic products. Optoelectronic packaging technologies include active and passive components and discrete fiber cable, their characteristics, and the manner that these parts will become an integral part of the functioning module, board or subassembly.

1.1 Purpose This document is intended to provide general information on implementing optical and optoelectronic packaging technologies, for creating component mounting structures and assemblies that may be exclusively optically oriented or that are to perform a combination of optical and electronic functions.

1.2 Categorization Optoelectronic components are categorized by function (i.e., modulators, lasers, switches, detectors); optoelectronic assemblies are categorized by higher level functions (i.e., transmitters, receivers, amplifiers, transponders). See Figures 1-1 through 1-3.

There are four levels of optoelectronic packaging. These levels have been established to mirror previous packaging levels assigned to electronic equipment. They are intended to make a clear demarcation between manufacturing products intended for the optoelectronic market. The four levels are:

- **OPTO Level 0:** Uncased device (e.g., lenses. Isolator, laser diode, waveguide beam splitters, etc.)
- **OPTO Level 1:** Single device or multiple devices in a package (Multi-Device Subassembly (MDS) - a package integrating optical, optoelectronic components and IC components)
- **OPTO Level 2:** Modules and product boards (Transponder on a daughter card)
- **OPTO Level 3:** Mother board with product boards or cabling (Transponder mounted on a mother board)

It should be recognized that there are also levels of complexity included in each of the levels of optoelectronic packages. Level 0 complexity deals with unpackaged devices complexity primarily relating to the complexity or difficulty in the manufacturing process.

Levels 1 through 3 complexities relate to the assembly process(s) necessary to produce a quality optoelectronic

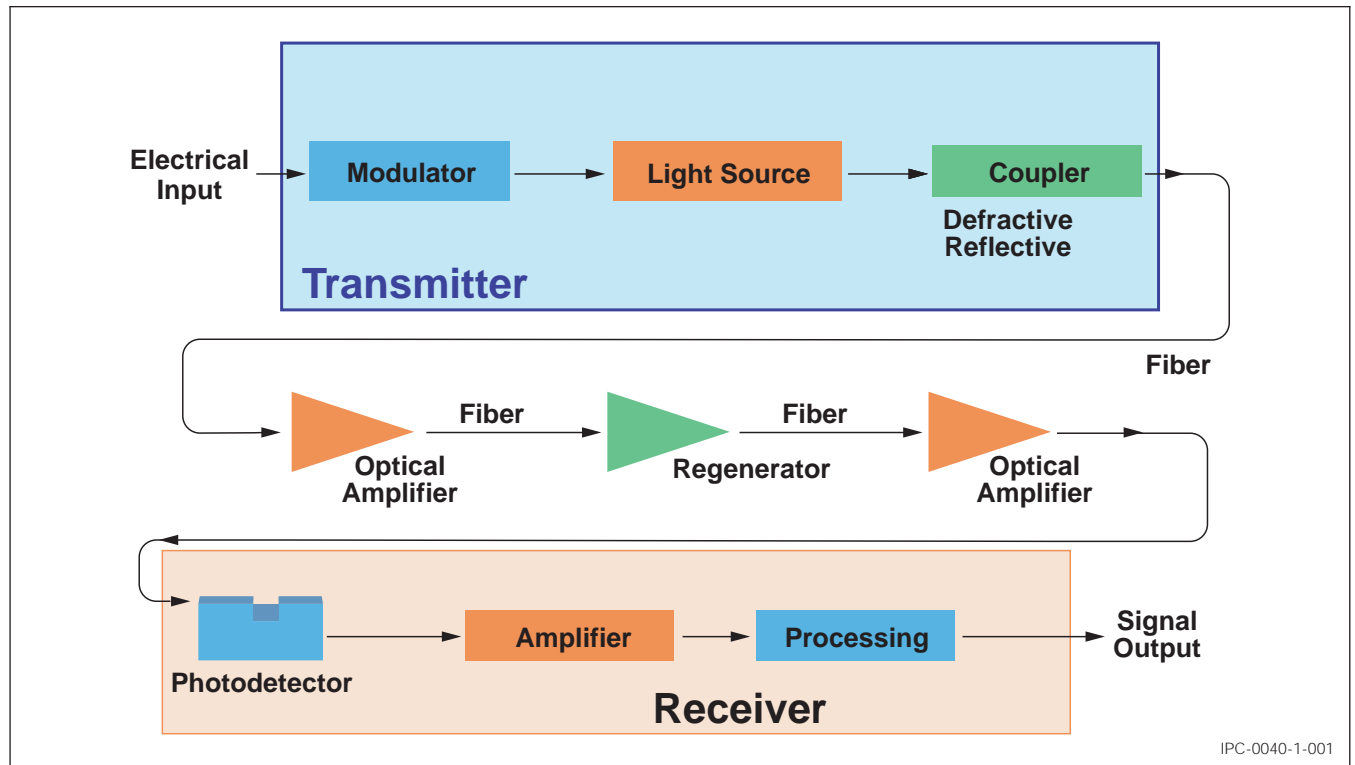


Figure 1-1 Optoelectronic Communication System Structure