

## 1019-2900-AO

Optelian® 1019-2900 Compatible TAA 100GBase-SR10 CFP Transceiver (MMF, 850nm, 150m, MPO, DOM)

### Features

- CFP MSA 1.4 Compliance
- MPO Connector
- Commercial Temperature 0 to 70 Celsius
- Multi-mode Fiber
- Hot Pluggable
- Excellent ESD Protection
- Metal with Lower EMI
- RoHS Compliant and Lead Free



### Applications

- 100GBase Ethernet
- Access and Enterprise

### Product Description

This Optelian® 1019-2900 compatible CFP transceiver provides 100GBase-SR10 throughput up to 150m over multi-mode fiber (MMF) using a wavelength of 850nm via an MPO connector. It is guaranteed to be 100% compatible with the equivalent Optelian® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."



### Absolute Maximum Ratings

| Parameter                 | Symbol | Min. | Max.    | Unit |
|---------------------------|--------|------|---------|------|
| Storage Temperature       | TST    | -20  | +85     | °C   |
| Supply Voltage            | VCC    | -0.3 | 3.6     | V    |
| Input Voltage             | VIN    | -0.3 | VCC+0.3 | V    |
| Humidity (non-condensing) | Rh     | 5    | 95      | %    |

### Recommended Operating Conditions

| Parameter                  | Symbol | Min. | Typ. | Max. | Unit |
|----------------------------|--------|------|------|------|------|
| Operating Case Temperature | TOP    | 0    |      | +70  | °C   |
| Power Supply Voltage       | VCC    | 3.13 | 3.3  | 3.47 | V    |
| Power Supply Current       | ICC    |      |      | 300  | mA   |
| Surge Current              | ISurge |      |      | +30  | mA   |
| Data Rate Per Lane         | fd     |      |      | 11.2 | Gbps |

### Electrical Characteristics

| Parameter                             | Symbol           | Min.    | Typ. | Max. | Unit  |
|---------------------------------------|------------------|---------|------|------|-------|
| Differential Input Impedance          | Zin              | 90      | 100  | 110  | ohm   |
| Differential Output impedance         | Zout             | 90      | 100  | 110  | ohm   |
| Differential Input Voltage Amplitude  | $\Delta V_{in}$  | 120     |      | 820  | mVp-p |
| Differential Output Voltage Amplitude | $\Delta V_{out}$ | 300     |      | 820  | mVp-p |
| Input Logic Level High                | VIH              | 2.0     |      | VCC  | V     |
| Input Logic Level Low                 | VIL              | 0       |      | 0.8  | V     |
| Output Logic Level High               | VOH              | VCC-0.5 |      | VCC  | V     |
| Output Logic Level Low                | VOL              | 0       |      | 0.4  | V     |

## Optical Characteristics

| Parameter                                    | Symbol                                         | Min. | Typ. | Max. | Unit |
|----------------------------------------------|------------------------------------------------|------|------|------|------|
| Data Rate                                    |                                                |      |      | 11.2 | Gbps |
| Transmitter                                  |                                                |      |      |      |      |
| Center Wavelength                            | $\lambda_c$                                    | 840  | 850  | 860  | nm   |
| RMS Spectral Width                           | $\lambda$                                      |      | 0.5  | 0.65 | nm   |
| Average Optical Power (per channel)          | Pout                                           | -8   | -25  | +1   | dBm  |
| Average Optical Power (per channel) Disabled | Poff                                           |      |      | -30  | dBm  |
| Optical Return Loss Tolerance                |                                                |      |      | 12   | dB   |
| Extinction Ratio                             | ER                                             | 3    |      |      | dB   |
| Transmitter eye mask                         | Compliant to IEEE802.3a eye mask specification |      |      |      |      |
| Receiver                                     |                                                |      |      |      |      |
| Center Wavelength                            | $\lambda_c$                                    | 840  | 850  | 860  | nm   |
| RMS Spectral Width                           | $\lambda$                                      |      | 0.5  | 0.65 | nm   |
| Optical Return Loss                          | RI                                             | 12   |      |      | dB   |
| Optical Power Sensitivity (per channel)      | Pin min                                        |      | -12  | -9.9 | dBm  |
| Optical Power Saturation (per channel)       | Pin max                                        | +1   |      |      | dBm  |
| Stressed Receiver Sensitivity                | Ps                                             |      |      | -5.4 | dBm  |

## Pin Descriptions

### Part A: Bottom Row Pin Function Definition

| Pin | Symbol     | Type            | I/O | Description                                                                                                                                                    |
|-----|------------|-----------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | 3.3V_GND   | GND             |     | 3.3V Module Supply Voltage Return Ground, Can be separate or tied together with Signal Ground                                                                  |
| 2   | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 3   | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 4   | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 5   | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 6   | 3.3V       | VCC             |     | 3.3V Module Supply                                                                                                                                             |
| 7   | 3.3V       | VCC             |     |                                                                                                                                                                |
| 8   | 3.3V       | VCC             |     |                                                                                                                                                                |
| 9   | 3.3V       | VCC             |     |                                                                                                                                                                |
| 10  | 3.3V       | VCC             |     |                                                                                                                                                                |
| 11  | 3.3V       | VCC             |     |                                                                                                                                                                |
| 12  | 3.3V       | VCC             |     |                                                                                                                                                                |
| 13  | 3.3V       | VCC             |     |                                                                                                                                                                |
| 14  | 3.3V       | VCC             |     |                                                                                                                                                                |
| 15  | 3.3V       | VCC             |     |                                                                                                                                                                |
| 16  | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 17  | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 18  | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 19  | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 20  | 3.3V_GND   | GND             |     |                                                                                                                                                                |
| 21  | NC         |                 | I/O | Do not use                                                                                                                                                     |
| 22  | NC         |                 | I/O | Do not use                                                                                                                                                     |
| 23  | GND        | GND             |     |                                                                                                                                                                |
| 24  | (TX_MCLKn) | CML             | O   | Do not use                                                                                                                                                     |
| 25  | (TX_MCLKp) | CML             | O   | Do not use                                                                                                                                                     |
| 26  | GND        | GND             |     |                                                                                                                                                                |
| 27  | NC         |                 | I/O | Do not use                                                                                                                                                     |
| 28  | NC         |                 | I/O | Do not use                                                                                                                                                     |
| 29  | NC         |                 | I/O | Do not use                                                                                                                                                     |
| 30  | PRG_CTL1   | LVC MOS<br>w/PU | I   | Programmable Control 1 set via MDIO, MSA default: TRXIC_RSTn-TX & RX IC reset. "0"=reset, "1" or NC = enabled or not used                                      |
| 31  | PRG_CTL2   | LVC MOS<br>w/PU | I   | Programmable Control 2 set via MDIO, MSA default: Hardware power Interlock LSB, "00" = <8W, "01" = <16W, "10" < 24W, "11" or NC = >24W or not used             |
| 32  | PRG_CTL3   |                 |     | Programmable Control 3 set via MDIO, MSA default: Hardware power Interlock MSB, "00" = <8W, "01" = <16W, "10" < 24W, "11" or NC = >24W or not used             |
| 33  | PRG_ALRM1  | LVC MOS         | O   | Programmable Alarm 1 set via MDIO, Reflex default: HIPWR_ON, Module power on indicator. "1" = Module high power up completed, "0" = Module not high powered up |
| 34  | PRG_ALRM2  | LVC MOS         | O   | Programmable Alarm 2 set via MDIO, Reflex default: MOD_READY, module initialization complete, "1" = complete, "0" = not complete                               |

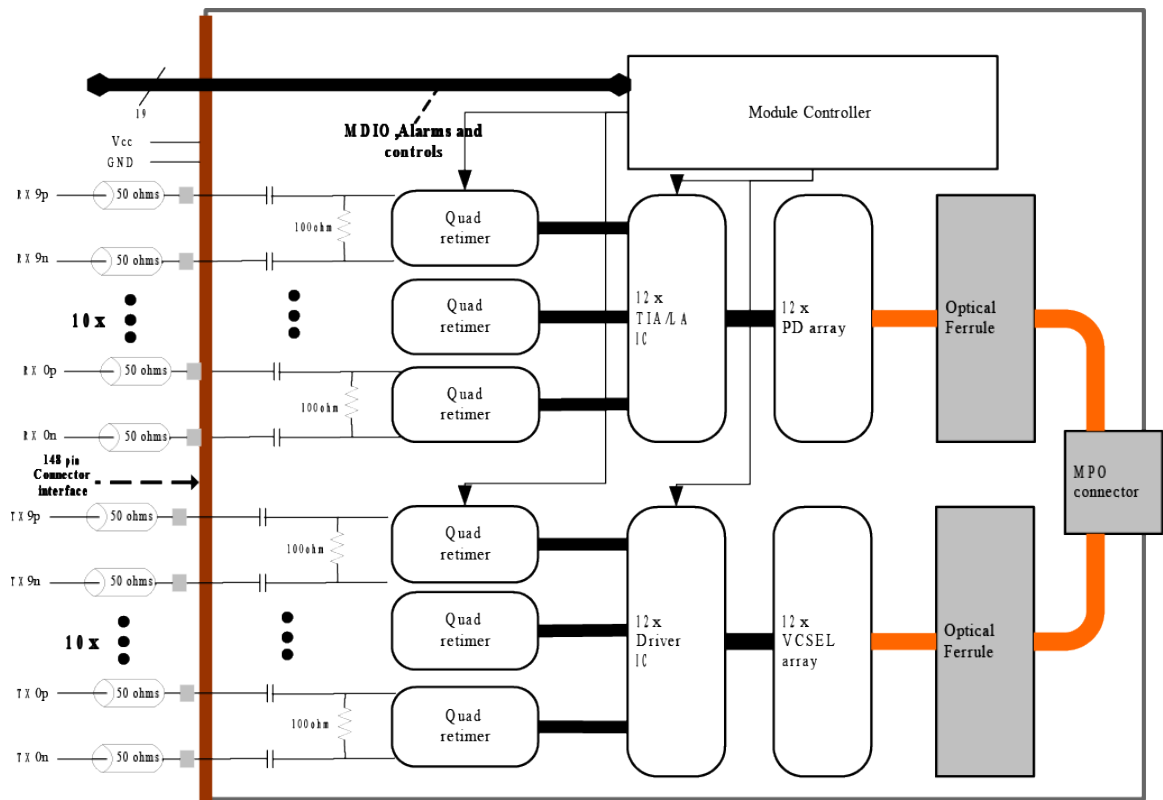
|    |           |              |     |                                                                                                                  |
|----|-----------|--------------|-----|------------------------------------------------------------------------------------------------------------------|
| 35 | PRG_ALRM3 | LVC MOS      | O   | Programmable Alarm 3 set via MDIO, Reflex default: MOD_FAULT, module fault detected, "1" = fault, "0" = no fault |
| 36 | TX_DIS    | LVC MOS w/PU | I   | Transmitter Disable for all channels, "1" or NC = transmitter disabled, "0" = transmitter enabled                |
| 37 | MOD_LOPW  | LVC MOS w/PU | I   | Module low power mode. "1" or NC = module in low power (safe) mode, "0" = power-on enabled                       |
| 38 | MOD_ABS   | GND          | O   | Module Absent. "1" or NC = Module absent, "0" = module present. Pull-up resistor on Host                         |
| 39 | MOD_RSTn  | LVC MOS w/PD | I   | Module Reset. "0" = reset the module, "1" or NC = module enabled, Pull Down resistor in module                   |
| 40 | RX_LOS    | LVC MOS      | O   | Receiver loss of optical signal on any channel, "1" = loss of signal, "0" = normal condition                     |
| 41 | GLB_ALRMn | LVC MOS      | O   | Global Alarm. "0" = alarm condition in any MDIO alarm register, "1" = no alarm                                   |
| 42 | PRTADR4   | 1.2V CMOS    | I   | MDIO port address bit 4                                                                                          |
| 43 | PRTADR3   | 1.2V CMOS    | I   | MDIO port address bit 3                                                                                          |
| 44 | PRTADR2   | 1.2V CMOS    | I   | MDIO port address bit 2                                                                                          |
| 45 | PRTADR1   | 1.2V CMOS    | I   | MDIO port address bit 1                                                                                          |
| 46 | PRTADR0   | 1.2V CMOS    | I   | MDIO port address bit 0                                                                                          |
| 47 | MDIO      | 1.2V CMOS    | I/O | Management Data I/O bi-directional data (electrical specs as per 802.3ae)                                        |
| 48 | MDO       | 1.2V CMOS    | I   | Management data clock (electrical specs as per 802.3ae)                                                          |
| 49 | GND       | GND          |     |                                                                                                                  |
| 50 | NC        |              | I/O | Do not use                                                                                                       |
| 51 | NC        |              | I/O | Do not use                                                                                                       |
| 52 | GND       | GND          |     |                                                                                                                  |
| 53 | NC        |              | I/O | Do not use                                                                                                       |
| 54 | NC        |              | I/O | Do not use                                                                                                       |
| 55 | 3.3V_GND  | GND          |     | 3.3V Module Supply Voltage Return Ground, can be separate or tied together with Signal Ground                    |
| 56 | 3.3V_GND  | GND          |     |                                                                                                                  |
| 57 | 3.3V_GND  | GND          |     |                                                                                                                  |
| 58 | 3.3V_GND  | GND          |     |                                                                                                                  |
| 59 | 3.3V_GND  | GND          |     |                                                                                                                  |
| 60 | 3.3V      | VCC          |     | 3.3V Module Supply                                                                                               |
| 61 | 3.3V      | VCC          |     |                                                                                                                  |
| 62 | 3.3V      | VCC          |     |                                                                                                                  |
| 63 | 3.3V      | VCC          |     |                                                                                                                  |
| 64 | 3.3V      | VCC          |     |                                                                                                                  |
| 65 | 3.3V      | VCC          |     |                                                                                                                  |
| 66 | 3.3V      | VCC          |     |                                                                                                                  |
| 67 | 3.3V      | VCC          |     |                                                                                                                  |
| 68 | 3.3V      | VCC          |     |                                                                                                                  |
| 69 | 3.3V      | VCC          |     |                                                                                                                  |
| 70 | 3.3V_GND  | GND          |     |                                                                                                                  |
| 71 | 3.3V_GND  | GND          |     |                                                                                                                  |
| 72 | 3.3V_GND  | GND          |     |                                                                                                                  |

|           |          |     |  |  |
|-----------|----------|-----|--|--|
| <b>73</b> | 3.3V_GND | GND |  |  |
| <b>74</b> | 3.3V_GND | GND |  |  |

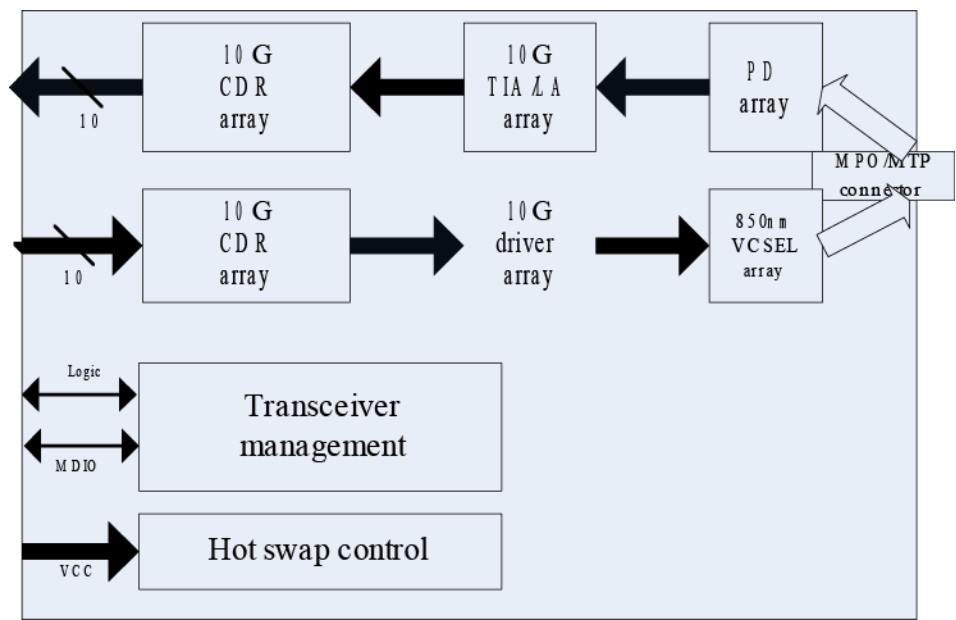
Part B: Top Row Pin Function Definition

| Pin        | Symbol   | Pin        | Symbol | Pin        | Symbol | Pin        | Symbol   | Pin        | Symbol   |
|------------|----------|------------|--------|------------|--------|------------|----------|------------|----------|
| <b>148</b> | GND      | <b>136</b> | GND    | <b>124</b> | GND    | <b>112</b> | GND      | <b>100</b> | RX7p     |
| <b>147</b> | Not used | <b>135</b> | TX7n   | <b>123</b> | TX3n   | <b>111</b> | GND      | <b>99</b>  | GND      |
| <b>146</b> | Not used | <b>134</b> | TX7p   | <b>122</b> | TX3p   | <b>110</b> | Not used | <b>98</b>  | RX6n     |
| <b>145</b> | GND      | <b>133</b> | GND    | <b>121</b> | GND    | <b>109</b> | Not used | <b>97</b>  | RX6p     |
| <b>144</b> | Not used | <b>132</b> | TX6n   | <b>120</b> | TX2n   | <b>108</b> | GND      | <b>96</b>  | GND      |
| <b>143</b> | Not used | <b>131</b> | TX6p   | <b>119</b> | TX2p   | <b>107</b> | RX9n     | <b>95</b>  | RX5n     |
| <b>142</b> | GND      | <b>130</b> | GND    | <b>118</b> | GND    | <b>106</b> | RX9p     | <b>94</b>  | RX5p     |
| <b>141</b> | TX9n     | <b>129</b> | TX5n   | <b>117</b> | TX1n   | <b>105</b> | GND      | <b>93</b>  | GND      |
| <b>140</b> | TX9p     | <b>128</b> | TX5p   | <b>116</b> | TX1p   | <b>104</b> | RX8n     | <b>92</b>  | RX4n     |
| <b>139</b> | GND      | <b>127</b> | GND    | <b>115</b> | GND    | <b>103</b> | RX8p     | <b>91</b>  | RX4p     |
| <b>138</b> | TX8n     | <b>126</b> | TX4n   | <b>114</b> | TX0n   | <b>102</b> | GND      | <b>90</b>  | GND      |
| <b>137</b> | TX8p     | <b>125</b> | TX4p   | <b>113</b> | TX0p   | <b>101</b> | RX7n     | <b>89</b>  | RX3n     |
| <b>88</b>  | RX3p     | <b>85</b>  | RX2p   | <b>82</b>  | RX1p   | <b>79</b>  | RX0p     | <b>76</b>  | Not used |
| <b>87</b>  | GND      | <b>84</b>  | GND    | <b>81</b>  | GND    | <b>78</b>  | GND      | <b>75</b>  | GND      |
| <b>86</b>  | RX2n     | <b>83</b>  | RX1n   | <b>80</b>  | RX0n   | <b>77</b>  | Not used |            |          |

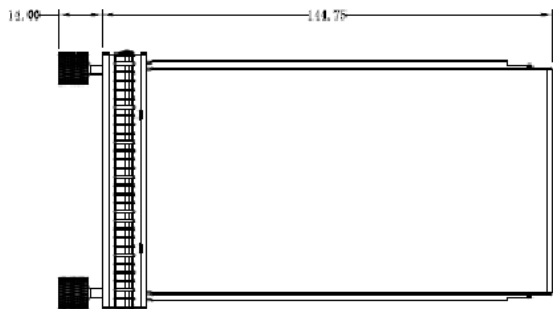
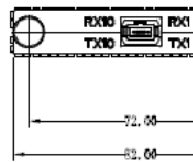
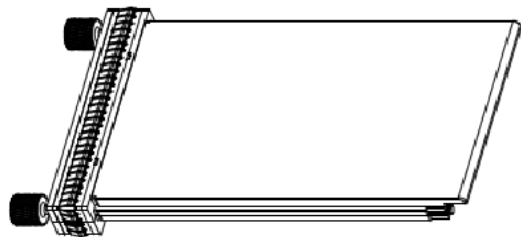
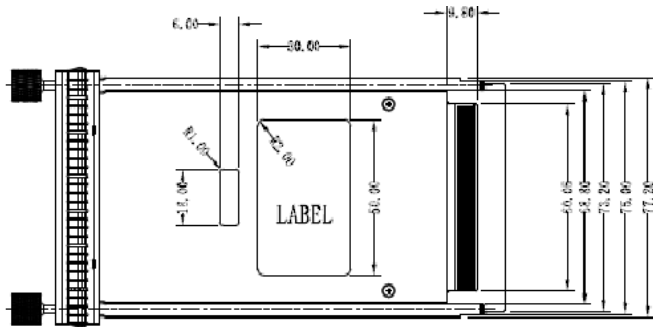
CFP Module Functional Block Diagram



Module Block Diagram



Mechanical Specifications





## About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is ingrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.



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