

## ET5402-ER

### 10 Gbps 1550 nm Single-Mode 40 km SFP+ Transceiver



#### Key Features and Benefits

- Up to 11.1 Gbps data links
- Up to 40 km transmission on SMF
- Power dissipation < 1.5 W
- EML transmitter and PIN receiver
- Metal enclosure for lower EMI
- 2-wire interface with integrated digital diagnostic monitoring
- Hot-pluggable SFP+ footprint
- Specifications compliant with SFF 8472
- Compliant with SFP+ MSA with LC connector
- Single 3.3 V power supply
- Case operating temperature range: commercial: 0°C to +70°C/Industrial: -40°C to +85°C
- RoHS compliant and lead-free
- Compliant to SFP+ SFF-8431
- Compliant to 802.3ae 10GBASE-ER

#### Applications

- 10GBASE-ER/EW
- 10G Ethernet

#### Absolute Maximum Ratings

Parameter	Minimum	Type	Maximum	Unit
Storage Temperature	-40		85	°C
Relative Humidity	5		95	%
Power Supply Voltage	-0.3		4	V
Signal Input Voltage	Vcc-0.3		Vcc+0.3	V

#### Recommended Operating Conditions

Parameter	Minimum	Type	Maximum	Unit	Note
Case Operating Temperature	0		70	°C	Commercial
	-40		85	°C	Industrial
Power Supply Voltage	3.14	3.3	3.47	V	
Power Supply Current			450	mA	
Data Rate		10.3125		Gbps	
Transmission Distance			40	km	
Coupled Fiber					9/125um SMF

## Specifications

### Transmitter Optical Characteristics

Parameter	Minimum	Type	Maximum	Unit	Note
Output Opt. Power	-1		+3	dBm	
Extinction Ratio	6			dB	
Optical Wavelength	1530	1550	1565	nm	
SMSR	30			dB	
Spectral Width (-20dB)			1	nm	
Transmitter OFF Output Power			-30	dBm	
Transmitter and Dispersion Penalty			3.0	dB	
Output Eye Mask					

### Receiver Optical Characteristics

Parameter	Minimum	Type	Maximum	Unit	Note
Input Optical Wavelength	1270		1610	nm	
Receiver Sensitivity			-15.8	dBm	
Input Saturation Power (Overload)	0.5			dBm	
LOS Assert	-30			dBm	
LOS De-assert			-17	dBm	
LOS Detect Hysteresis	0.5			dB	

### Transmitter Electrical Characteristics

Parameter	Minimum	Type	Maximum	Unit	Note
Supply Voltage	3.14	3.3	3.46	V	
Supply Current			450	mA	
Input Differential Impedance		100		$\Omega$	1
Single Ended Data Input Swing	180		700	mV	
Transmit Disable Voltage	Vcc-1.3		Vcc	V	
Transmit Enable Voltage	Vee		Vee+0.8	V	2
Transmit Disable Assert Time			10	us	

## Specifications

### Receiver Electrical Characteristics

Parameter	Minimum	Type	Maximum	Unit	Note
Differential Data Output Swing	300		850	mV	3
Data Output Rise Time	28			ps	4
Data Output Fall Time	28			ps	4
LOS Fault	Vcc-1.3		VccHOST	V	5
LOS Normal	Vee		Vee+0.8	V	5
Power Supply Rejection	100			mVpp	6

#### Notes:

1. Connected directly to TX data input pins. AC coupled thereafter.
2. Or open circuit.
3. Into 100 ohms differential termination.
4. These are unfiltered 20-80% values
5. Loss Of Signal is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
6. Receiver sensitivity is compliant with power supply sinusoidal modulation of 20 Hz to 1.5 MHz up to specified value applied through the recommended power supply filtering network.

### For More Information

To find out more about Edgecore Networks Corporation products and solutions, visit [www.edge-core.com](http://www.edge-core.com).

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