

## LWO-QSFP-LR4-HPE

### 40 Gbit QSFP+ LR4, 10km, DFP, LC-Duplex, SM, Enterprise Version, HP Aruba

#### Absolute Maximum Ratings

It has to be noted that the operation in excess of any individual absolute maximum ratings might cause permanent damage to this module.

Parameter	Symbol	Min	Typ	Max	Unit
Maximum Supply Voltage	$V_{CC}$	-0.5		3.6	V
Storage Temperature	$T_s$	-40		85	°C
Case Operating Temperature	$T_{OP}$	0		70	°C
Relative Humidity	RH	0		85	%
Damage Threshold, per Lane	$TH_d$	3.4			dbm

#### Recommended Operating Conditions and Power Supply Requirements

Parameter	Symbol	Min	Typical	Max	Units
Operating Case Temperature	$T_{OP}$	0		70	degC
Power Supply Voltage	$V_{CC}$	3.135	3.3	3.465	V
Data Rate, each Lane			10.3125	11.2	Gb/s
Control Input Voltage High		2		$V_{CC}$	V
Control Input Voltage Low		0		0.8	V
Link Distance with G.652	D			10	km

#### Electrical Characteristics

The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min.	Typical	Max.	Units	Notes
Supply Voltage	$V_{CC}$	3.1		3.47	V	
Supply Current	$I_{CC}$			1080	mA	

#### Transceiver (per Lane)

Single Ended input voltage tolerance	$V_{inT}$	-0.3		4	V	
Differential Data Input Swing	$V_{in, pp}$	150		1000	mVpp	
AC common mode input voltage tolerance (RMS)		Per IEEE P802.3ba, Section 86A.4.1.1			dB	
J2 Jitter Tolerance	$J_{t2}$	0.17			UI	
J9 Jitter Tolerance	$J_{t9}$	0.29			UI	
Data Dependent Pulse Width Shrinkage	DDPWS	0.07			UI	
Eye mask coordinates {X1, X2, Y1, Y2}			0.11, 0.31 95, 350		UI mV	

#### Receiver (per Lane)

Single Ended output voltage		-0.3		4	V	
Differential Data output Swing	$V_{out, pp}$	300		850	mVpp	
AC common mode output voltage (RMS)				7.5	mV	
Termination mismatch at 1MHx				5	%	
Differential output return loss		Per IEEE P802.3ba, Section 86A.4.2.1			dB	
Common mode output return loss		Per IEEE P802.3ba, Section 86A.4.2.2			dB	
Output transition time, 20% to 80%		28			ps	
J2 Jitter output	$J_{o2}$			0.42	UI	
J9 Jitter output	$J_{o9}$			0.65	UI	
Eye mask coordinates{X1, X2, Y1, Y2}			0.29, 0.5 150, 425		UI mV	