

## SF-SM31020D-GP

Single-Mode 1310nm 1.25Gbps FC/GBE  
Duplex SFP Transceiver  
RoHS6 Compliant

### Features

- ◆ Operating Data Rate up to 1.25Gbps  
20km with 9/125  $\mu$ m SMF
- ◆ Single 3.3V Power Supply and TTL Logic Interface
- ◆ Hot-Pluggable SFP Footprint Duplex LC  
Connector Interface
- ◆ Class 1 FDA and IEC60825-1 Laser Safety  
Compliant
- ◆ Operating Temperature  
Standard: 0°C ~ +70°C  
Industrial: -40°C ~ +85°C
- ◆ Compliant with MSA SFP Specification
- ◆ Compliant with SFF-8472

### Applications

- ◆ Gigabit Ethernet Switches and  
Routers
- ◆ Fiber Channel Switch Infrastructure
- ◆ Other Optical Links

### Ordering information

Part No.	Description
SF-SM31020D-GP	SFP 1.25Gbps LX 1310nm LC DDM SMF 20km
SF-SM31020DI-GP	SFP 1.25Gbps LX 1310nm LC DDM SMF 20km, industrial version

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T <sub>s</sub>	-40	+85	°C
Supply Voltage	V <sub>cc</sub>	-0.5	3.6	V
Operating Relative Humidity		-	95	%

\*Exceeding any one of these values may destroy the device immediately.

### Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	
Operating Temperature	T <sub>c</sub>	SF-SM31020D-GP	0		+70	°C
		SF-SM31020DI-GP	-40		+85	
Power Supply Voltage	V <sub>cc</sub>	3.15	3.3	3.45	V	
Power Supply Current	I <sub>cc</sub>			300	mA	
Data Rate	GBE		1.25		Gbps	
	FC		1.063			

### Performance Specifications - Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
<b>Transmitter</b>						
LVPECL Inputs(Differential)	V <sub>in</sub>	400		2000	mVpp	AC coupled inputs*(Note6)
Input Impedance (Differential)	Z <sub>in</sub>	85	100	115	ohms	R <sub>in</sub> > 100 kohms @ DC
Tx_Dis	Disable	2		V <sub>cc</sub>	V	
	Enable	0		0.8		
Tx_FAULT	Fault	2		V <sub>cc</sub> +0.3	V	
	Normal	0		0.5		
<b>Receiver</b>						
LVPECL Outputs (Differential)	V <sub>out</sub>	400		2000	mVpp	AC coupled outputs*(Note6)
Output Impedance (Differential)	Z <sub>out</sub>	85	100	115	ohms	
Rx_LOS	LOS	2		V <sub>cc</sub> +0.3	V	
	Normal	0		0.8	V	
MOD_DEF ( 0:2 )	VoH	2.5			V	With Serial ID
	VoL	0		0.5	V	

**(1310nm FP and PIN, 20km)**

Parameter	Symbol	Min.	Typical	Max.	Unit
9µm Core Diameter SMF	L		20		km
Data Rate			1.063/1.25		Gbps
<b>Transmitter</b>					
Centre Wavelength	$\lambda_c$	1260	1310	1360	nm
Spectral Width (RMS)	$\Delta\lambda$			3	nm
Average Output Power*(Note4)	Pout	-8		-3	dBm
Extinction Ratio*(Note5)	ER	9			dB
Rise/Fall Time(20%~80%)	tr/tf			0.26	ns
Total Jitter	TJ			0.43	UI
Output Optical Eye*(Note5)	Compliant with IEEE 802.3ah-2004*(Note8)				
TX_Disable Assert Time	t_off			10	us
Pout@TX Disable Asserted	Pout			-45	dBm
<b>Receiver</b>					
Center Wavelength	$\lambda$	1260		1600	nm
Receiver Sensitivity*(Note7)	Pmin			-22	dBm
Receiver Overload	Pmax	-3			dBm
LOS De-Assert	LOSD			-23	dBm
LOS Assert	LOSA	-42			dBm
LOS Hysteresis*(note8)		0.5			dB

**Mechanical Specifications**

