100G-CWDM4 QSFP28 Transceiver

Compliance with the 100GBASE-CWDM4 (CLR4) of the Ethernet
1310nm CWDM for up to 2km reach

Preliminary

Description

APAC QSFP28 transceiver modules are designed for use in 100 Gigabit Ethernet links on up to 2 km of single mode fiber. They are compliant with the QSFP28 MSA, CWDM4 MSA and portions of IEEE P802.3bm. Digital diagnostics functions are available via the I2C interface, as specified by the QSFP28 MSA.

Features

- Hot-pluggable QSFP28 form factor
- Power dissipation < 3.5W
- Single 3.3V power supply
- Loss budget of 5 dB on up to 2km of SMF [with KR4 FEC]
- RoHS-6 Compliant (lead-free)
- Case temperature range of 0°C to +70°C
- 4x25 Gb/s CWDM transmitter
- 4x25G retimed electrical interface
- Duplex LC receptacles
- I2C management interface

Application

- Ethernet Switch
- Data Center Backbone

Ordering information

PART NUMBER	DISTANCE	TEMPERATURE	NOTE
LS3C-L3S-TC-N-AA	2 km	0°C to 70 °C	4x25Gbps CWDM

TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

Absolute Maximum Ratings

Not necessarily applied together. Exceeding these values may cause permanent damage. Functional operation under these conditions is not implied.

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	T_S	-20	85	°C	
Power Supply Voltage	Vcc	–0.5	3.6	V	
Relative Humidity	RH	5	85	%	

Recommend Operating Condition

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Case Temperature	Tc	0		70	°C	
Power Supply Voltage	Vcc	3.14	3.3	3.46	V	
Power Dissipation				3.5	W	

TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

Transmitter Optical Characteristics

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Operating Data Rate	*DR*		25.78125		Gbps	
Total Average Launch Power	*Pt*			8.5	dBm	
Average Launch Power, per Lane		-6.5		2.5	dBm	
Extinction Ratio	*ER*	3.5			dB	
Optical Modulation Amplitude, per lane	*Poma*	-4		2.5	dBm	
Transmitter Dispersion Penalty, each Lane	*TDP*			3	dB	
Lane Center Wavelength	*L0*	1264.5		1277.5	nm	
	L1	1284.5		1297.5	nm	
	L2	1304.5		1317.5	nm	
	L3	1324.5		1337.5	nm	
Side Mode Suppression	*SMSR*	-30			dB	
Transmitter Reflectance	*RT*			-12	dB	
Disable Output Power	*Po_off*			-30	dBm	
Output Eye Mask Definition {X1, X2, X3,Y1, Y2, Y3}		{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}				

Receiver Optical characteristics

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Receive Saturation (OMA), per lane	Rmax	2.5			dBm	
Damage Threshold, per lane		3.5			dBm	
Average receive power, each lane		-11.5		2.5	dBm	
Unstressed Receiver Sensitivity (OMA), per lane	Rxsens			-10	dBm	
Stressed Receiver Sensitivity (OMA), per lane	SRS			-7.3	dBm	
Receiver reflectance	RR			-26.0	dB	
Conditions of stressed receiver sensitivity test:						
SRS eye mask definition {X1, X2, X3, Y1, Y2, Y3}		{0.39, 0.5, 0.5, 0.39, 0.39, 0.4}				
LOS De-Assert	LOSD			-12	dBm	
LOS Assert	LOSA	-24			dBm	
LOS Hysteresis			1.5		dB	

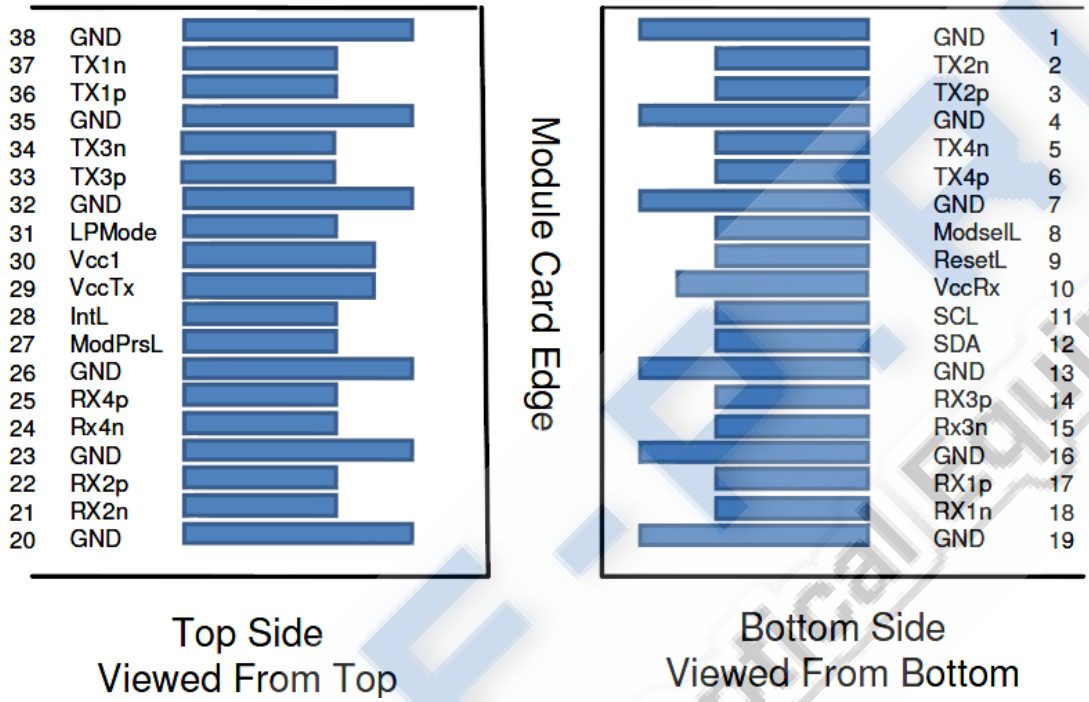
TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

Electrical Characteristics

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate, per lane			25.78125		Gbps	
LP Mode/Reset/ModselL	VIL	-0.3		0.8	V	
LP Mode/Reset/ModselL	VIH	2		Vcc+0.3	V	
ModPrsL/IntL	VOL	0		0.4	V	
ModPrsL/IntL	VOH	Vcc-0.5		Vcc+0.3	V	

TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

Pad assignment and Description



PIN	LOGIC	SYMBOL	DESCRIPTION	PLUG SEQUENCE	NOTE
1		GND	Ground	1	Note 1
2	CML-I	Tx2n	Transmitter Inverted Data Input	3	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	3	
4		GND	Ground	1	Note 1
5	CML-I	Tx4n	Transmitter Inverted Data Input	3	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	3	
7		GND	Ground	1	Note 1
8	LVTTL-I	ModSelL	Module Select	3	
9	LVTTL-I	ResetL	Module Reset	3	
10		Vcc Rx	+3.3V Power Supply Receiver	2	Note 2
11	LVCMOS-I/O	SCL	2-wire serial interface clock	3	
12	LVCMOS-I/O	SDA	2-wire serial interface data	3	
13		GND	Ground	1	Note 2
14	CML-O	Rx3p	Receiver Non- Inverted Data Output	3	
15	CML-O	Rx3n	Receiver Inverted Data Output	3	
16		GND	Ground	1	Note 1
17	CML-O	Rx1p	Receiver Non- Inverted Data Output	3	
18	CML-O	Rx1n	Receiver Inverted Data Output	3	
19		GND	Ground	1	Note 1

TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

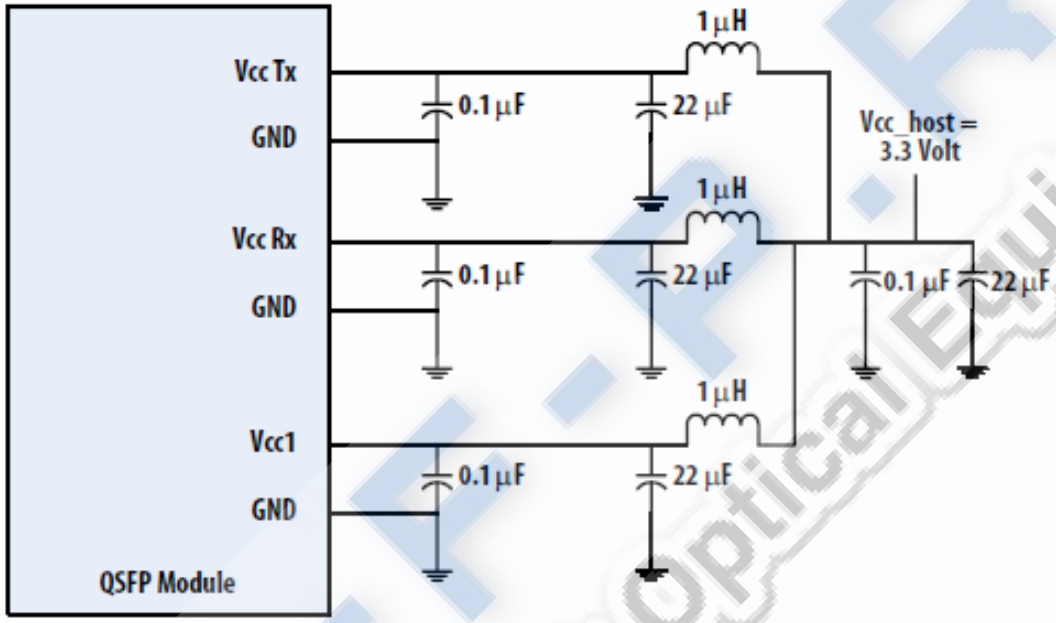
PIN	LOGIC	SYMBOL	DESCRIPTION	PLUG SEQUENCE	NOTE
20		GND	Ground	1	Note 1
21	CML-O	Rx2n	Receiver Inverted Data Output	3	
22	CML-O	Rx2P	Receiver Non- Inverted Data Output	3	
23		GND	Ground	1	Note 1
24	CML-O	Rx4n	Receiver Inverted Data Output	3	
25	CML-O	Rx4p	Receiver Non- Inverted Data Output	3	
26		GND	Ground	1	Note 1
27	LVTTL-O	ModPrsL	Module Present	3	
28	LVTTL-O	IntL	Interrupt	3	
29	LVCMOS-I/O	Vcc Tx	+3.3V Power Supply transmitter	2	Note 2
30		Vcc1	+3.3V Power Supply	2	Note 2
31	LVTTL-I	LPMode	Low Power Mode	3	
32		GND	Ground	1	Note 1
33	CML-I	Tx3p	Transmitter Non- Inverted Data Input	3	
34	CML-I	Tx3n	Transmitter Inverted Data Input	3	
35		GND	Ground	1	Note 1
36	CML-I	Tx1p	Transmitter Non- Inverted Data Input	3	
37	CML-I	Tx1n	Transmitter Inverted Data Input	3	
38		GND	Ground	1	Note 1

Note 1: GND is the symbol for signal and supply (power) common for the QSFP module. All are common within the QSFP+ module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

Note 2: Vcc Rx, Vcc1 and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in Table. Recommended host board power supply filtering is shown in Host board power supply circuit. Vcc Rx Vcc1 and Vcc Tx may be internally connected within the QSFP module in any combination. The connector pins are each rated for a maximum current of 500 mA.

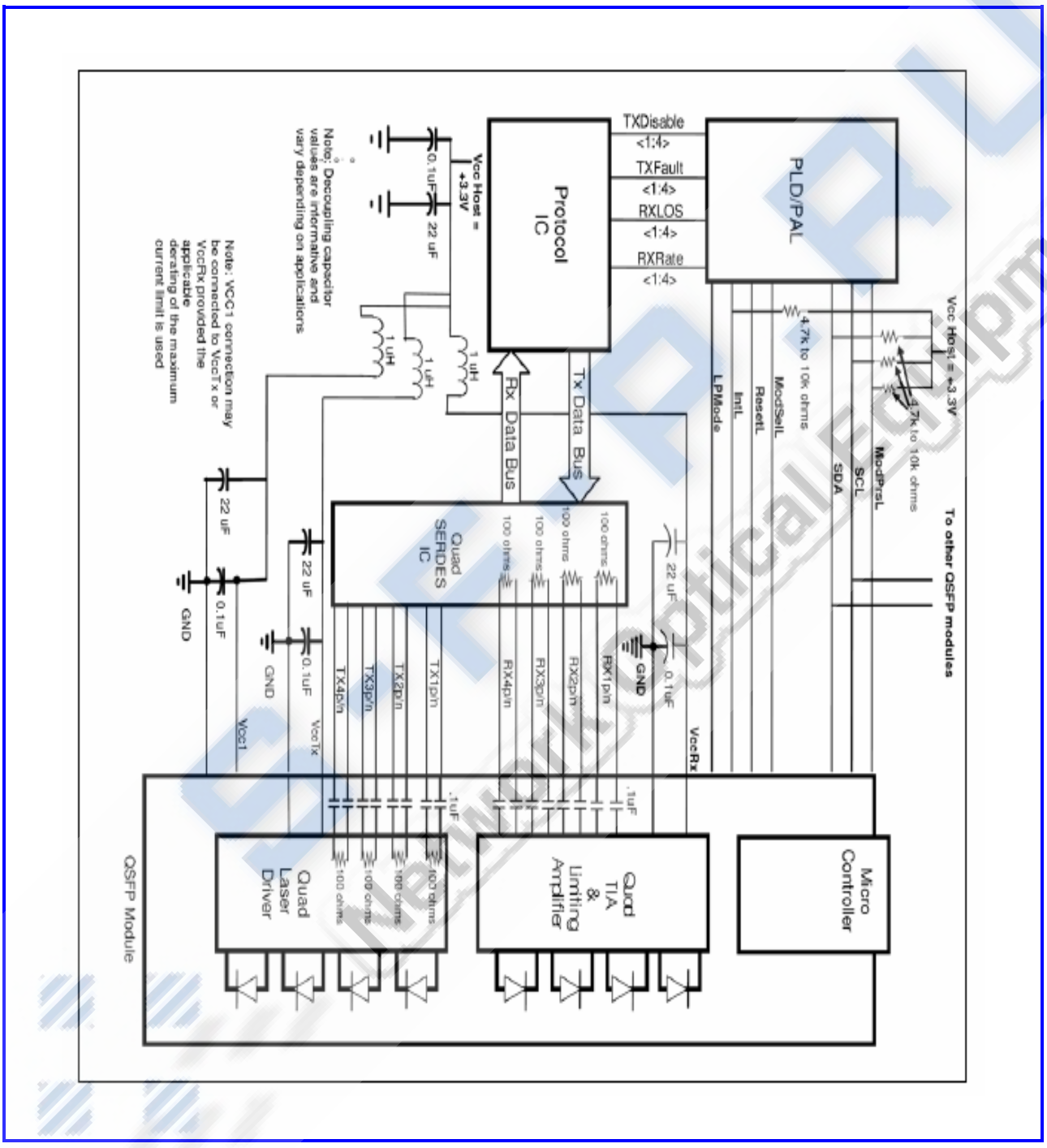
TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

Host board power supply circuit



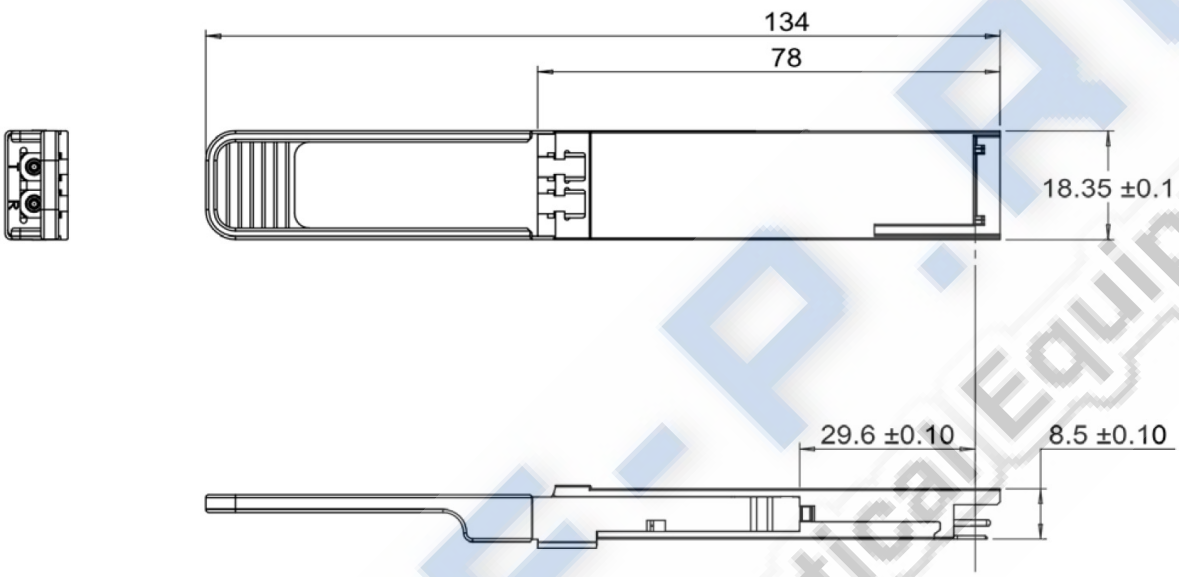
TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

Recommended Interface circuit



TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

Dimensions

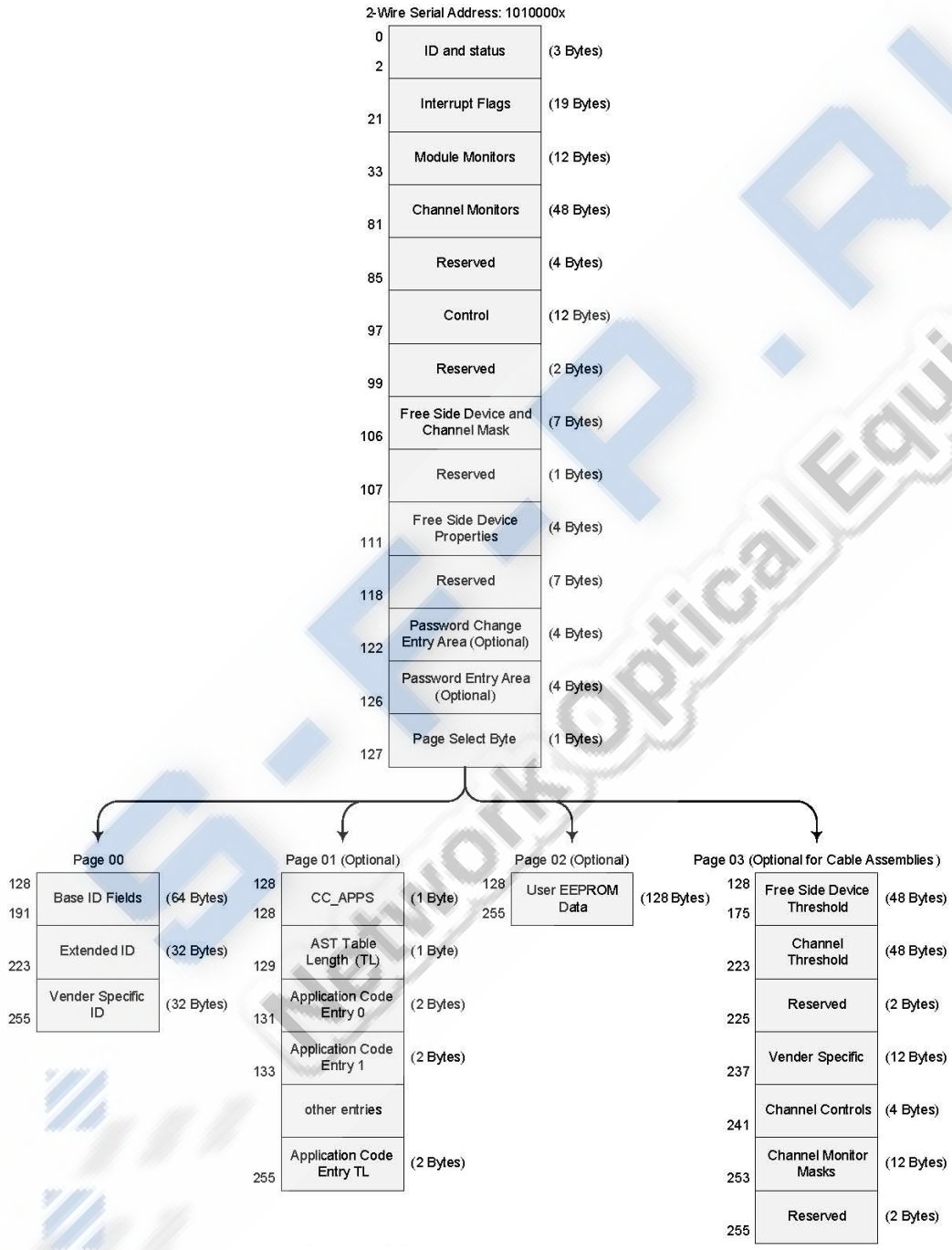


Unit: mm

All Dimensions are ±0.20mm Unless Otherwise Specified

TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw

Memory Map



TEL: +886-3-5986799
FAX: +886-3-5986655
Website: www.apacoe.com.tw