REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	8/27/14	

DESCRIPTION:

PMI MODEL NUMBER PTRAN-100M18G-SFB-3UVPX-MAH IS A TRANSCEIVER COVERING THE FREQUENCY RANGE OF 100 MHz TO 18 GHz. THE TRANSCEIVER FITS INTO A 3U OPEN VPX FORM FACTOR UTILIZING THE HIGH SPEED VITA 67 RF CONNECTOR. THIS UNIT UP-CONVERTS A 100 MHz TO 4 GHz TRANSMIT SIGNAL TO THE 2 TO 18 GHz RANGE. IT ALSO DOWN-CONVERTS A 100 MHz TO 18 GHz RECEIVED SIGNAL TO THE 100 MHz TO 4 GHz INTERMEDIATE FREQUENCY RANGE FOR ANALOG TO DIGITAL CONVERSION. A RECEIVE FILTER BANK INCORPORATES A 2-WAY ABSORBTIVE SWITCH TO SELECT AN INPUT, ALONG WITH TWO 6-WAY SWITCHES ALLOWING ONE OF SIX FILTER PATHS TO BE CHOSEN. A FILTER BANK IS USED ALSO ON THE TRANSMIT PATH, WITH TWO 6-WAY SWITCHES ALLOWING ONE OF SIX FILTER PATHS TO BE CHOSEN.

SPECIFICATIONS:

- INPUTS: J1, J5, J7, J8
- J1 INPUT: ..... INPUT FROM BACKPLANE
  - FREQUENCY: ..... 100 MHz TO 18.0 GHz
  - POWER LEVEL: ..... -80 dBm TO -10 dBm
- J5 INPUT: ..... IF INPUT FROM BACKPLANE
  - FREQUENCY: ..... 100 MHz TO 4 GHz
  - POWER LEVEL: ..... 0 dBm TYPICAL
- J7 INPUT: ..... LO1 FROM BACKPLANE
  - FREQUENCY: ..... 4 GHz TO 20 GHz
  - POWER LEVEL: ..... +15 dBm TYPICAL
- J8 INPUT: ..... LO2 FROM BACKPLANE
  - FREQUENCY: ..... 4 GHz TO 20 GHz
  - POWER LEVEL: ..... +15 dBm TYPICAL

- OUTPUTS: J4, J10
- J4 OUTPUT: ..... IF OUTPUT TO BACKPLANE
  - FREQUENCY: ..... 100 MHz TO 4 GHz
  - POWER LEVEL: ..... 0 dBm TYPICAL FOR LIMITED OUTPUT SDLVA CHANNELS
- J10 OUTPUT: ..... OUTPUT TO BACKPLANE
  - FREQUENCY: ..... 100 MHz TO 18.0 GHz
  - POWER LEVEL: ..... 0 dBm TO +10 dBm TYPICAL USING VARIABLE ATTENUATOR

SDLVA 1

- V0 (VIDEO COMPARATOR SIGNAL AMPLITUDE): ..... LVDS
- VIDEO COMPARATOR DELAY: ..... 50ns TYP.
- VIDEO COMPARATOR THRESHOLD LEVEL: ..... -64dBm ±3.0 dB MAX.
- V1 (LOG VIDEO SIGNAL AMPLITUDE): ..... 1 VOLT MAX.
- LOG SLOPE: ..... 10mV/dB INTO A 50-OHM LOAD (±1mV) MAX.
- LOG RANGE: ..... -65 TO +5 dBm MIN.
- LOG LINEARITY: ..... ±1.50dB (-40°C TO +85°C) MAX.
- PULSE RANGE: ..... 100ns TO CW
- RISE TIME: ..... 35ns TYP.
- SETTLING TIME TO ±1dB: ..... 50ns TYP.
- RECOVERY TIME: ..... 200ns MAX. (150ns TYP.)
- SPST ISOLATION: ..... 70 dB TYP.
- SPST SWITCH SPEED: ..... 20ns TYP.

SDLVA 2

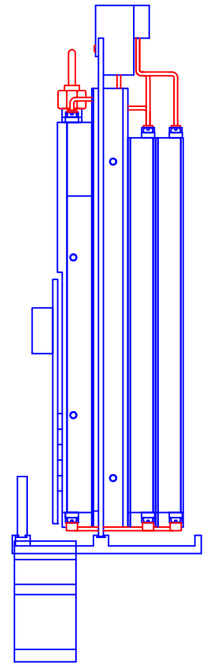
- V0 (VIDEO COMPARATOR SIGNAL AMPLITUDE): ..... LVDS
- VIDEO COMPARATOR DELAY: ..... 50ns TYP.
- VIDEO COMPARATOR THRESHOLD LEVEL: ..... -64dBm ±3.0 dB MAX.
- V1 (LOG VIDEO SIGNAL AMPLITUDE): ..... 1 VOLT MAX.
- LOG SLOPE: ..... 10mV/dB INTO A 50-OHM LOAD (±1mV) MAX.
- LOG RANGE: ..... -65 TO +5 dBm MIN.
- LOG LINEARITY: ..... ±1.75dB (-40°C TO +85°C) MAX.
- PULSE RANGE: ..... 100ns TO 250 us
- RISE TIME: ..... 35ns MAX.
- SETTLING TIME TO ±1dB: ..... 50ns TYP.
- RECOVERY TIME: ..... 200ns MAX. (150ns TYP.)
- CW IMMUNITY RANGE: ..... TSS TO -45 dBm (1dB DEGRADATION)
- PULSE CONSIDERED "CW": ..... 1 ms TYP.
- REJECTION TIME: ..... 1 ms TYP.
- DROOP: ..... 1dB MAX.
- SPST ISOLATION: ..... 70 dB TYP.
- SPST SWITCH SPEED: ..... 20ns TYP.

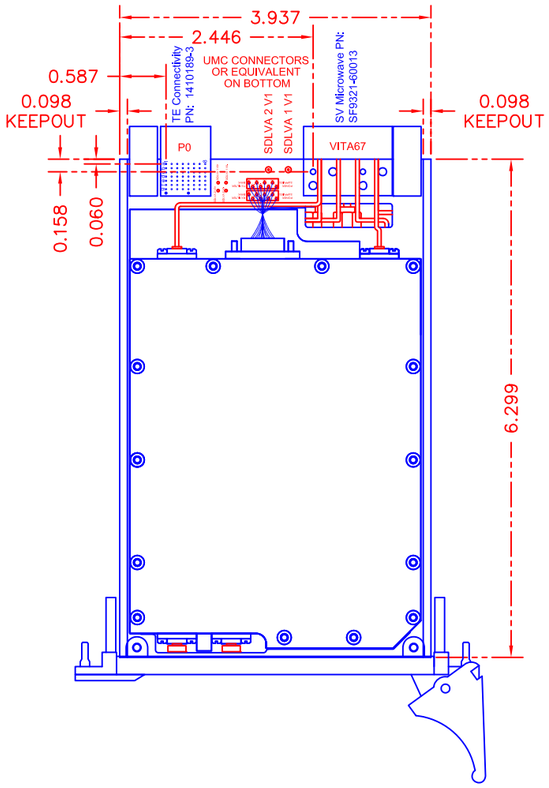
- CONTROL LOGIC: ..... LVDS
- LVDS 1: ..... SW5 CONTROL - HIGH FREQUENCY OR BASEBAND RECEIVE CHANNEL SELECT
  - 0 ..... BASEBAND CHANNEL (100 MHz TO 3 GHz)
  - 1 ..... HIGH FREQUENCY CHANNEL (3 GHz TO 18 GHz)
- LVDS 2: ..... SW7 CONTROL - LINEAR OR LIMITED SDLVA 2 OUTPUT CHANNEL SELECT
  - 0 ..... LIMITED OUTPUT CHANNEL
  - 1 ..... LINEAR OUTPUT CHANNEL
- LVDS 3: ..... SW12 CONTROL - LINEAR OR LIMITED SDLVA 1 OUTPUT CHANNEL SELECT
  - 0 ..... LIMITED OUTPUT CHANNEL
  - 1 ..... LINEAR OUTPUT CHANNEL
- LVDS 4: ..... 5 BIT ATTENUATION CONTROL (1 dB STEPS)
  - 00000 ..... 0 dB ATTENUATION
  - 11111 ..... 31 dB ATTENUATION
- LVDS 5: ..... SW11 CONTROL - TRANSMIT PATH OUTPUT SELECT, RECEIVE FILTER BANK INPUT SELECT
  - 0 ..... OUTPUT TO TX FILTER BANK, RX-BACKPLANE/INPUT (J1)
  - 1 ..... OUTPUT TO RX FILTER BANK, RX - TRANSCEIVER INPUT
- LVDS 6: ..... RECEIVE FILTER BANK CHANNEL SELECTION
  - 000 ..... CHANNEL 1
  - 001 ..... CHANNEL 2
  - 010 ..... CHANNEL 3
  - 011 ..... CHANNEL 4
  - 100 ..... CHANNEL 5
  - 101 ..... THRU CHANNEL
  - 110 ..... NOT DEFINED
  - 111 ..... NOT DEFINED
- LVDS 7: ..... SW9 AND SW10 CONTROL - BASEBAND OR UP-CONVERTED TRANSMIT CHANNEL SELECT
  - 0 ..... BASEBAND CHANNEL (100 MHz TO 4 GHz)
  - 1 ..... HIGH FREQUENCY CHANNEL (2 GHz TO 18 GHz)
- LVDS 8: ..... TRANSMIT FILTER BANK CHANNEL SELECTION
  - 000 ..... CHANNEL 1
  - 001 ..... CHANNEL 2
  - 010 ..... CHANNEL 3
  - 011 ..... CHANNEL 4
  - 100 ..... CHANNEL 5
  - 101 ..... THRU CHANNEL
  - 110 ..... NOT DEFINED
  - 111 ..... NOT DEFINED
- LVDS X: ..... LO SELECT
  - 00 ..... M1-LO1 M2-LO1
  - 01 ..... M1-LO1 M2-LO2
  - 10 ..... M1-LO2 M2-LO1
  - 11 ..... M1-LO2 M2-LO2

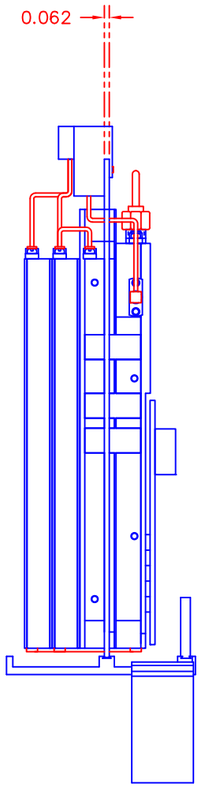
TRANSMIT AND RECEIVE FILTER BANK CHANNELS:

- ISOLATION: ..... J1, J6 100 dB
- SWITCHING SPEED: ..... 100 ns TYP
- THRU CHANNEL PASSBAND: ..... 100 MHz TO 18 GHz
- CHANNEL 1 CENTER FREQUENCY: ..... 3400 MHz
  - 3 dB BANDWIDTH: ..... 2000 MHz
  - REJECTION: ..... -40 dBc TYP, -30 dBc MIN 100 MHz - 2 GHz
    -40 dBc TYP, -30 dBc MIN 4.8 GHz - 18 GHz
- CHANNEL 2 CENTER FREQUENCY: ..... 5400 MHz
  - 3 dB BANDWIDTH: ..... 2000 MHz
  - REJECTION: ..... -40 dBc TYP, -30 dBc MIN 100 MHz - 4 GHz
    -40 dBc TYP, -30 dBc MIN 6.8 GHz - 18 GHz
- CHANNEL 3 CENTER FREQUENCY: ..... 7400 MHz
  - 3 dB BANDWIDTH: ..... 2000 MHz
  - REJECTION: ..... -40 dBc TYP, -30 dBc MIN 100 MHz - 6 GHz
    -40 dBc TYP, -30 dBc MIN 8.8 GHz - 18 GHz
- CHANNEL 4 CENTER FREQUENCY: ..... 9400 MHz
  - 3 dB BANDWIDTH: ..... 2000 MHz
  - REJECTION: ..... -40 dBc TYP, -30 dBc MIN 100 MHz - 8 GHz
    -40 dBc TYP, -30 dBc MIN 10.8 GHz - 18 GHz
- CHANNEL 5 CENTER FREQUENCY: ..... 11400 MHz
  - 3 dB BANDWIDTH: ..... 2000 MHz
  - REJECTION: ..... -40 dBc TYP, -30 dBc MIN 100 MHz - 10 GHz
    -40 dBc TYP, -30 dBc MIN 12.8 GHz - 18 GHz

- POWER SUPPLY: ..... PROVIDED BY OPEN VPX BACKPLANE THROUGH P0 CONNECTOR RATED FOR THE BELOW VOLTAGES
  - +12V: ..... 2 A
  - +5V: ..... 1.5 A
  - +3.3V: ..... 0.5 A
  - -12V: ..... 1 A
- SIZE: ..... 6.299" x 3.937" x 2.388" (3U OPEN VPX CARD TO TAKE UP 12 HP)
- RF CONNECTORS: ..... VITA 67, 8 POSITION
- DIGITAL CONTROL: ..... LVDS THROUGH MEZZANINE CONNECTOR
- FINISH: ..... GRAY EPOXY POLIMIDE COATING IAW MIL-C-22750, TYPE I OVER EPOXY POLIMIDE PRIMER IAW MIL-P-23377, TYPE I, CLASS 1 OR 3.







NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

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TOLERANCES:
X.XX ±0.020
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ISO 9001 CERTIFIED

APPROVALS	DATE
DRAWN DPD	8/27/14
CHECKED	
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TITLE: PRODUCT FEATURE
PTRAN-100M18G-SFB-3UVPX-MAH

SIZE	FSCM NO.	DWG NO.	REV.
B	05XQ0	27022156	A1

SCALE N:S SHEET 1 OF 4

MECHANICAL OUTLINE:

REVISIONS				
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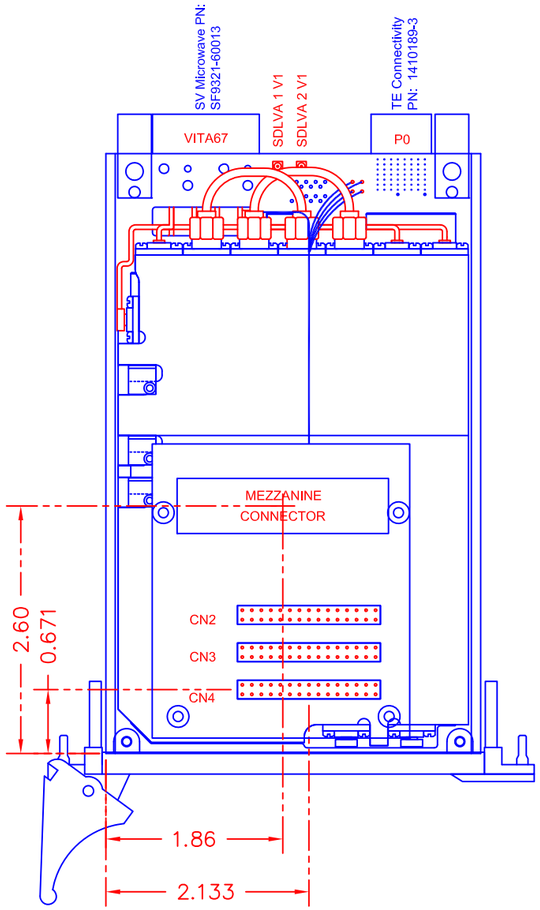

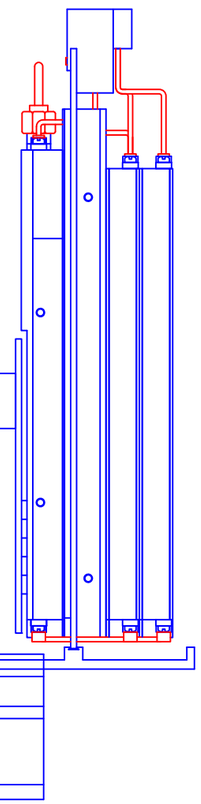

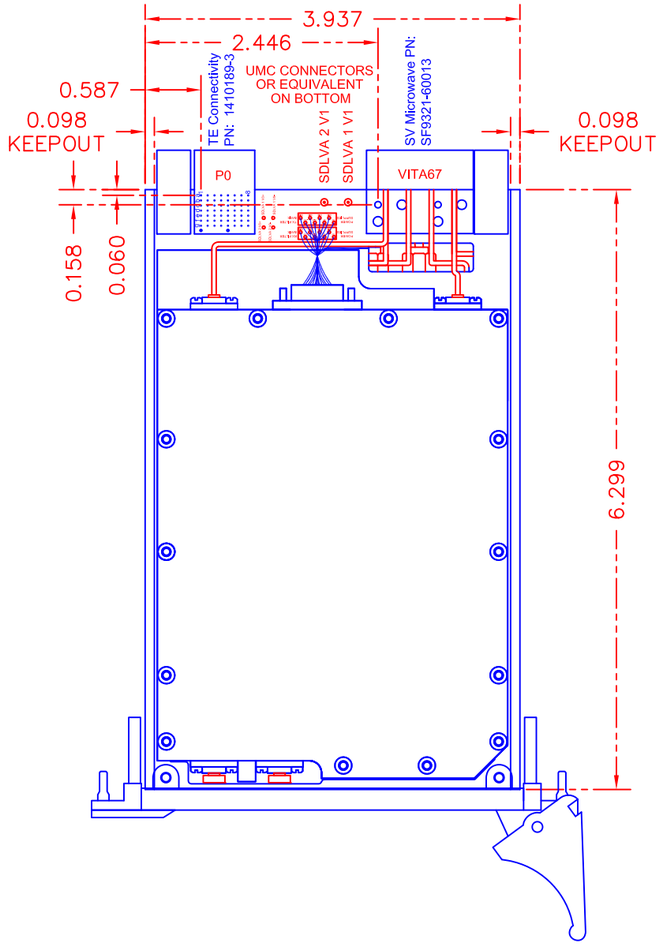

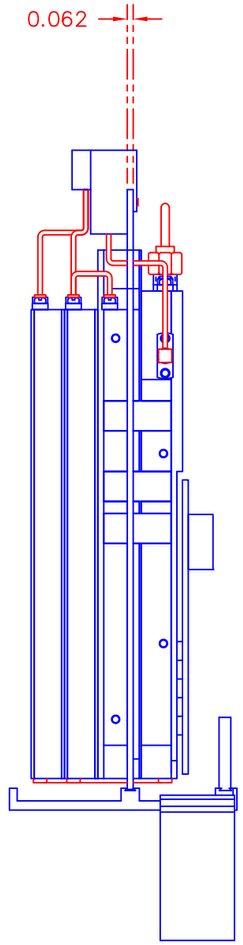

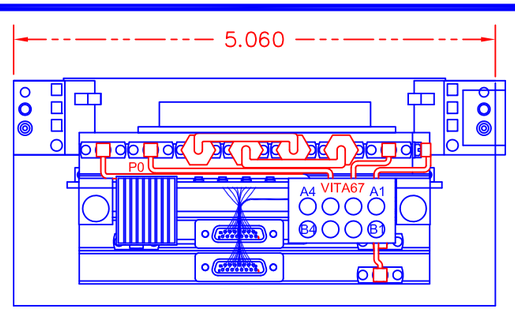

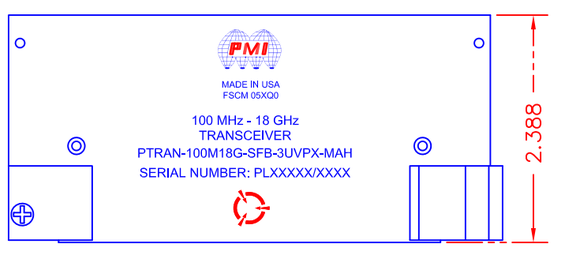

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SCALE N:S SHEET 2 OF 4

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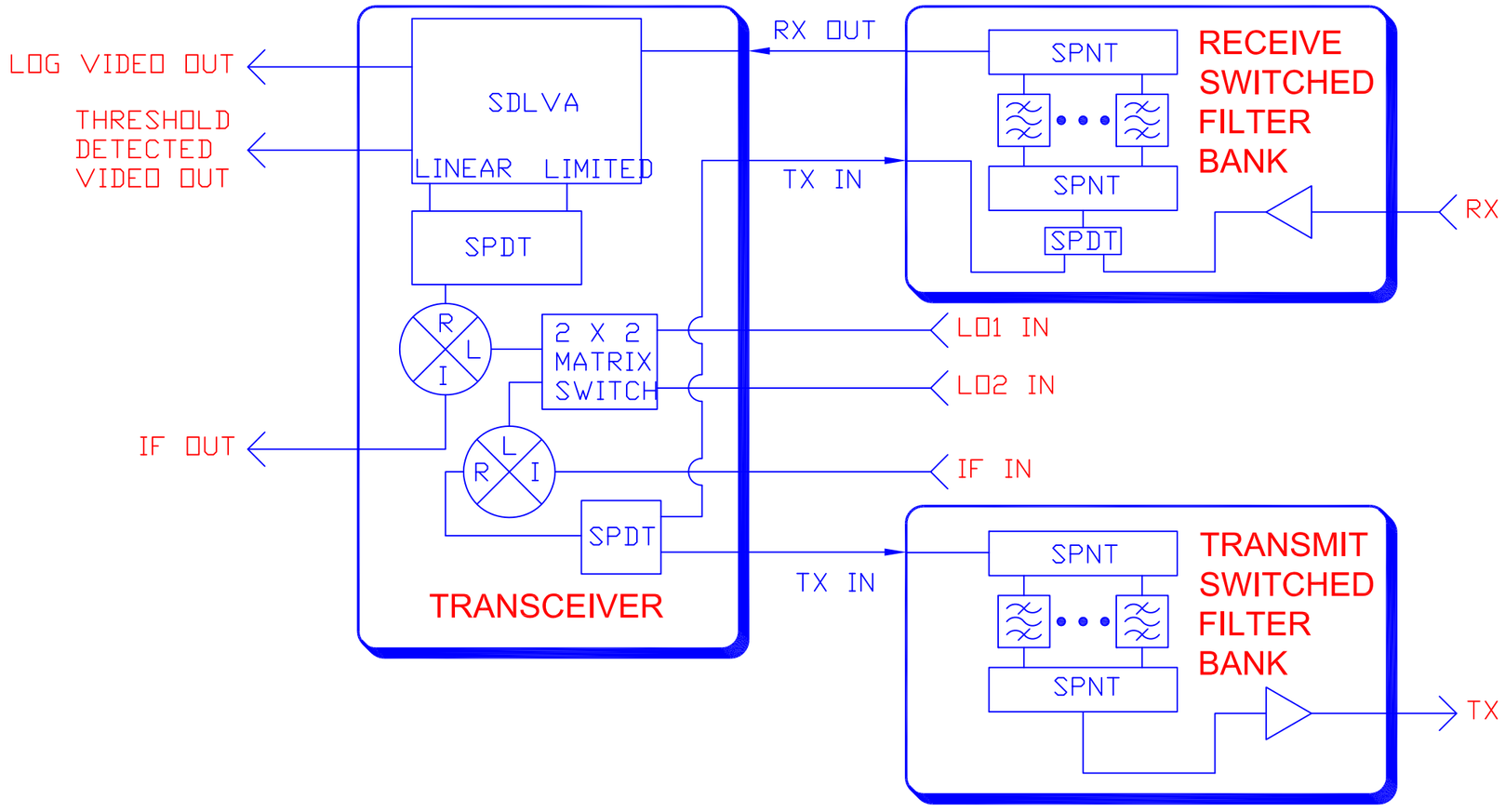

SIMPLIFIED BLOCK DIAGRAM:

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INTERCONNECT TABLE:

FMC PIN	CN 2				FMC PIN
–	GND	1	2	GND	–
H5	N/C	3	4	N/C	H4
H8	LVDS1–	5	6	LVDS1+	H7
H11	LVDS2–	7	8	LVDS2+	H10
H14	LVDS3–	9	10	LVDS3+	H13
H17	(LSB) LVDS4A–	11	12	(LSB) LVDS4A–	H16
H20	LVDS4B–	13	14	LVDS4B+	H19
H23	LVDS4C–	15	16	LVDS4C+	H22
H26	LVDS4D–	17	18	LVDS4D+	H25
H29	LVDS4E–	19	20	LVDS4E+	H28
H32	SDLVA 1 VO–	21	22	SDLVA 1 VO+	H31
H35	SDLVA 2 VO–	23	24	SDLVA 2 VO+	H34
H38	N/C	25	26	N/C	H37
–	GND	27	28	GND	–
–	N/C	29	30	N/C	–

FMC PIN	CN 3				FMC PIN
–	GND	1	2	GND	–
G3	N/C	3	4	N/C	G2
G7	LVDS5–	5	6	LVDS5+	G6
G10	LVDS7–	7	8	LVDS7+	G9
G13	(LSB) LVDSX1–	9	10	(LSB) LVDSX1+	G12
G16	LVDSX2–	11	12	LVDSX2+	G15
G19	N/C	13	14	N/C	G18
G22	(LSB) LVDS6A–	15	16	(LSB) LVDS6A+	G21
G25	LVDS6B–	17	18	LVDS6B+	G24
G28	LVDS6C–	19	20	LVDS6C+	G27
G31	(LSB) LVDS8A–	21	22	(LSB) LVDS8A+	G30
G34	LVDS8B–	23	24	LVDS8B+	G33
G37	LVDS8C–	25	26	LVDS8C+	G36
–	GND	27	28	GND	–
–	N/C	29	30	N/C	–

FMC PIN	CN 4				FMC PIN
–	GND	1	2	GND	–
D9	N/C	3	4	N/C	D8
D12	N/C	5	6	N/C	D11
C11	N/C	7	8	N/C	C10
D15	N/C	9	10	N/C	D14
C15	N/C	11	12	N/C	C14
D18	N/C	13	14	N/C	D17
C19	N/C	15	16	N/C	C18
D21	N/C	17	18	N/C	D20
C23	N/C	19	20	N/C	C22
D24	N/C	21	22	N/C	D23
D27	N/C	23	24	N/C	D26
C27	N/C	25	26	N/C	C26
–	GND	27	28	GND	–
–	N/C	29	30	N/C	–

P0 Pin	Function
a1	Vs2 (+3.3 V)
a2	Vs2 (+3.3 V)
a3	Vs3 (+5 V)
a4	NC (NVMRO)
a5	NC (SM1)
a6	NC (GA0)
a7	NC (TRST)
a8	GND (GND)

P0 Pin	Function
b1	Vs2 (+3.3 V)
b2	Vs2 (+3.3 V)
b3	Vs3 (+5 V)
b4	NC (SYSRESET)
b5	NC (SM0)
b6	NC (GA1)
b7	NC (TMS)
b8	NC (RES_BUS+)

P0 Pin	Function
c1	Vs2 (+3.3 V)
c2	Vs2 (+3.3 V)
c3	Vs3 (+5 V)
c4	GND (GND)
c5	GND (GND)
c6	GND (GND)
c7	GND (GND)
c8	NC (RES_BUS-)

P0 Pin	Function
d1	NC (No Pad)
d2	NC (No Pad)
d3	NC (No Pad)
d4	-12V (-12V Aux)
d5	NC (3.3V_AUX)
d6	NC (+12V_AUX)
d7	NC (TDI)
d8	GND (GND)

P0 Pin	Function
e1	Vs1 (+12 V)
e2	Vs1 (+12 V)
e3	Vs3 (+5 V)
e4	GND (GND)
e5	GND (GND)
e6	GND (GND)
e7	NC (TDO)
e8	NC (REF_CLK+)

P0 Pin	Function
f1	Vs1 (+12 V)
f2	Vs1 (+12 V)
f3	Vs3 (+5 V)
f4	NC (SM3)
f5	NC (GA4)
f6	NC (GA2)
f7	GND (GND)
f8	NC (REF_CLK-)

P0 Pin	Function
g1	Vs1 (+12 V)
g2	Vs1 (+12 V)
g3	Vs3 (+5 V)
g4	NC (SM2)
g5	NC (GAP)
g6	NC (GA3)
g7	NC (TCK)
g8	GND (GND)

VITA 67 Pin	Function
A1	J4 (IF OUT)
A2	J7 (LO1)
A3	J8 (LO2)
A4	J5 (IF IN)
B1	J10 (TX OUT)
B2	NC
B3	NC
B4	J1 (RX IN)

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