

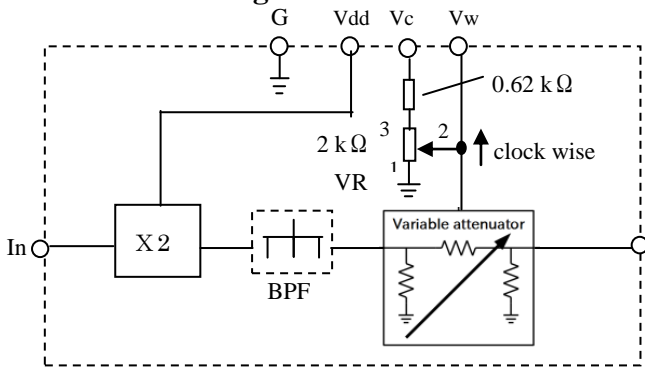
19-28 GHz out x2 freq. Multiplier with filter/ATT

ML25B

1. Application

x2 multiplication with filtering out fundamental frequency and output amplitude adjustment for full-rate clock (20 ~ 28 GHz) of 20 ~ 28 Gb/s optical transmission system, etc

2. Block diagram



3. Terminal description

| No | Name | Function | Note |
|----|------|---|---------------|
| 1 | In | Signal Input (Internal AC Coupled) | SMPM/P |
| 2 | Out | Signal Output (Internal AC Coupled) | SMPM/P |
| 3 | G | Ground | Pin header |
| 4 | Vdd | Supply Voltage for multiplier (5V) | Pin header |
| 5 | Vc | Supply voltage (-3.3 V) | Pin header |
| 6 | Vw | Wiper voltage of potentiometer (Apply this voltage at most clock wise VR with Vc left open) | Pin header |
| 7 | VR | Screw of variable resistor | Potentiometer |

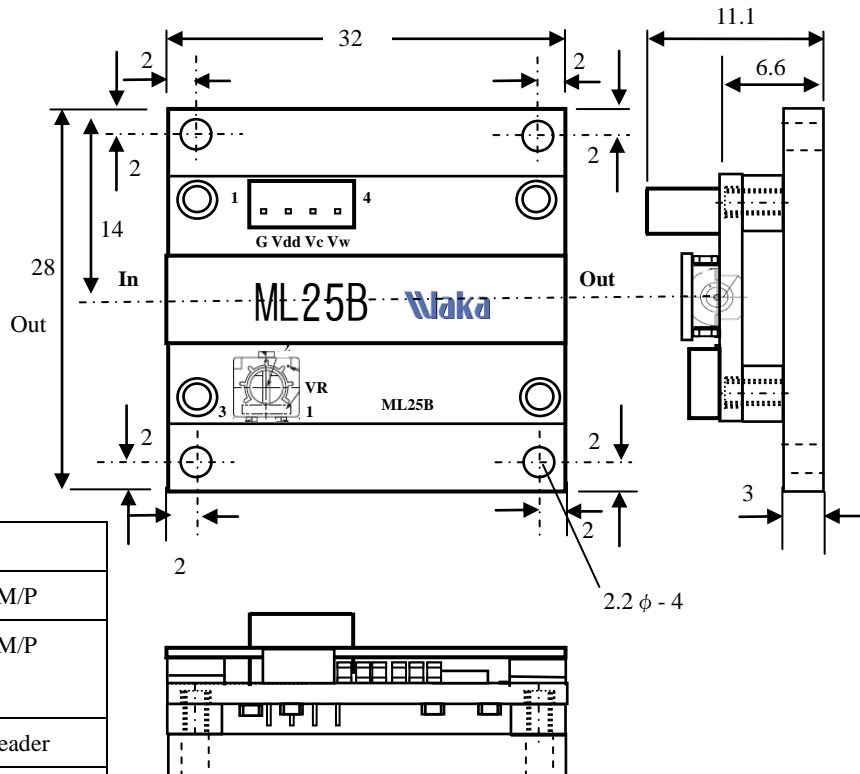


Fig. 1 Module structure

4. Absolute maximum ratings

| Terminal | Parameter | Symbol | Unit | Min | Max |
|----------|--|--------|------|------|------|
| Vdd | Supply voltage of multiplier | Vdd | V | | 6 |
| Vc | Supply voltage of variable attenuator | Vc | V | | -4 |
| Vw | Supply voltage of wiper voltage of potentiometer | Vw | V | | -4 |
| In | Signal Input | Pin | dBm | | +13 |
| | ESD tolerance (HBM) | Vesd | V | -TBD | +TBD |

| | | | | | |
|--|---------------------|-----|----------|-----|----|
| | Storage temperature | Tst | Degree C | -40 | 80 |
|--|---------------------|-----|----------|-----|----|

5. Characteristics (Ta=25 [°C])

| Related terminal | Parameter | Symbol | Unit | Specification | | | |
|------------------|--|--------------------|-------------------|---------------|------|------|--|
| | | | | Min | Typ | Max | |
| In | Input frequency | f_{in} | GHz | 9.5 | | 14 | |
| | Input power | P_{in} | dBm | + 2 | | +7 | |
| | Input return loss | $f_{out} < 25$ GHz | RL_{inL} | dB | | < 10 | |
| | | $f_{out} > 25$ GHz | RL_{inH} | dB | | < 5 | |
| Out | Output frequency | f_{out} | GHz | 19 | | 28 | |
| | Maximum output power | $f_{out} 19$ GHz | | dB | + 12 | | |
| | | $f_{out} 28$ GHz | | dB | + 11 | | |
| | Output power attenuation range, See Fig. 2 | | Attr _a | dB | | 30 | |
| | Output return loss | | RL_{out} | dB | | >8 | |
| | Fundamental wave rejection ratio | | Rej_{20} | dB | | >20 | |
| VR, Vw | Wiper voltage range (clockwise VR more negative) | Vw | V | -2.5 | | 0 | |
| Vdd | Supply voltage of multiplier | Vdd | V | 4.75 | 5 | 5.25 | |
| Vc | Supply voltage of variable attenuator | Vc | V | -3.5 | -3.3 | -3.1 | |
| Vdd | Supply Current of Vdd | I _{dd} | mA | | 160 | | |
| Vc | Supply current of Vc | I _c | mA | | 1.5 | | |
| Vdd,Vc | Power dissipation | P _{dis} | W | | 0.8 | | |

6. Precaution

This product uses ESD sensitive high-speed devices. Handle it with appropriate precaution described below.

- 1) Connect the ground (G) terminal of ML25B to the highest quality ground line in the room and connect this terminal to the ground terminal of test equipment as well.
- 2) Use ESD protection wrist strap which is connected to ML25B ground.
- 3) Avoid abnormal mechanical shock.

7. Attachment

- 1) 30 cm Jumper cable with pin header socket: 1