

1.1 General Description

OPN7007 is a high performance, high efficiency, low cost, smart VCSEL laser diode driver IC optimized for Time of Flight (ToF) camera application. It is embedded with configurable current limit function to output specific peak current for illumination. A 12-bit ADC is also integrated for eye protection and temperature sensing. The chip supports I2C configuration.

1.2 Features

- CMOS/LVDS input interface
- Up to 12V VCSEL supply voltage
- Up to 10A output current with configurable current limit
- OC/OT fault alert
- 12-bit ADC @ 1M/s sample rate
 - ✓ VCSEL diffuser-broken detection (PD/ITO) for eye protection
 - ✓ Internal and external temperature sensing
- Smart correction for precise timing control
- 3.3V~5V IO
- I2C control

1.3 Applications

ToF camera illumination
LIDAR illumination

1.4 Packages

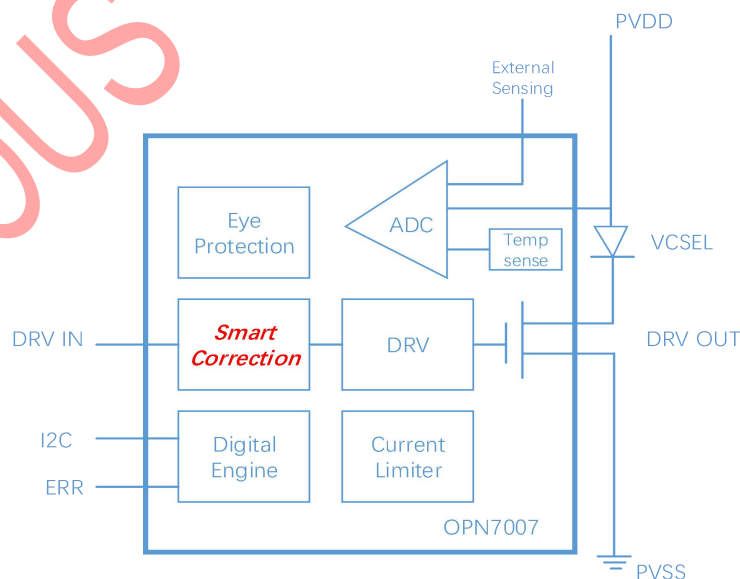
OPN7007Q

- 32-pin QFN
- 4mm × 4mm

OPN7007C

- 28-ball WLCSP (0.4mm pitch)
- 2.84mm × 1.91mm

2. Block Diagram



3. IO Definition

3.1 IO Map

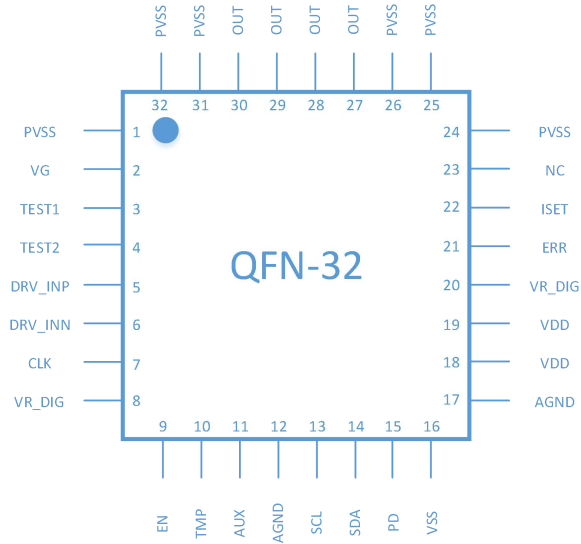


Figure 3-1. QFN IO Map

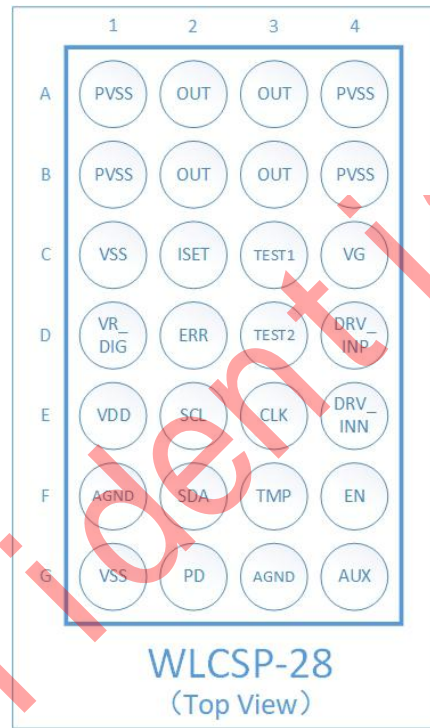


Figure 3-2. WLCSP IO Map

3.2 IO Description

QFN pin	WLCSP ball	Name	Description	Direction
1, 24, 25, 26, 31, 32	A1, A4, B1, B4	PVSS	Power Ground	Ground
2	C4	VG	Vg output	AIO
3	C3	TEST1	Internal TEST	Floating
4	D3	TEST2	Internal TEST	Floating
5	D4	DRV_INP	Driver input P	DI
6	E4	DRV_INN	Driver input N	DI
7	E3	CLK	Reference Clock	DI
8, 20	D1	VR_DIG	Digital LDO output	AO
9	F4	EN	Driver enable	DI
10	F3	TMP	External temperature sensing	AI
11	G4	AUX	AUX ADC input	AI
12, 17	F1, G3	AGND	Analog Ground	Ground
13	E2	SCL	I2C CLK	DI
14	F2	SDA	I2C Data	DIO
15	G2	PD	Photo diode input	AI
16	C1, G1	VSS	Ground	Ground
18, 19	E1	VDD	Supply Voltage	Power
21	D2	ERR	ERROR output/ADDR select	DIO
22	C2	ISSET	Current limit setting	AI
23	N/A	NC	Not Connected	Floating
27, 28, 29, 30	A2, A3, B2, B3	OUT	Driver output	AO

3.3 Package Dimensions

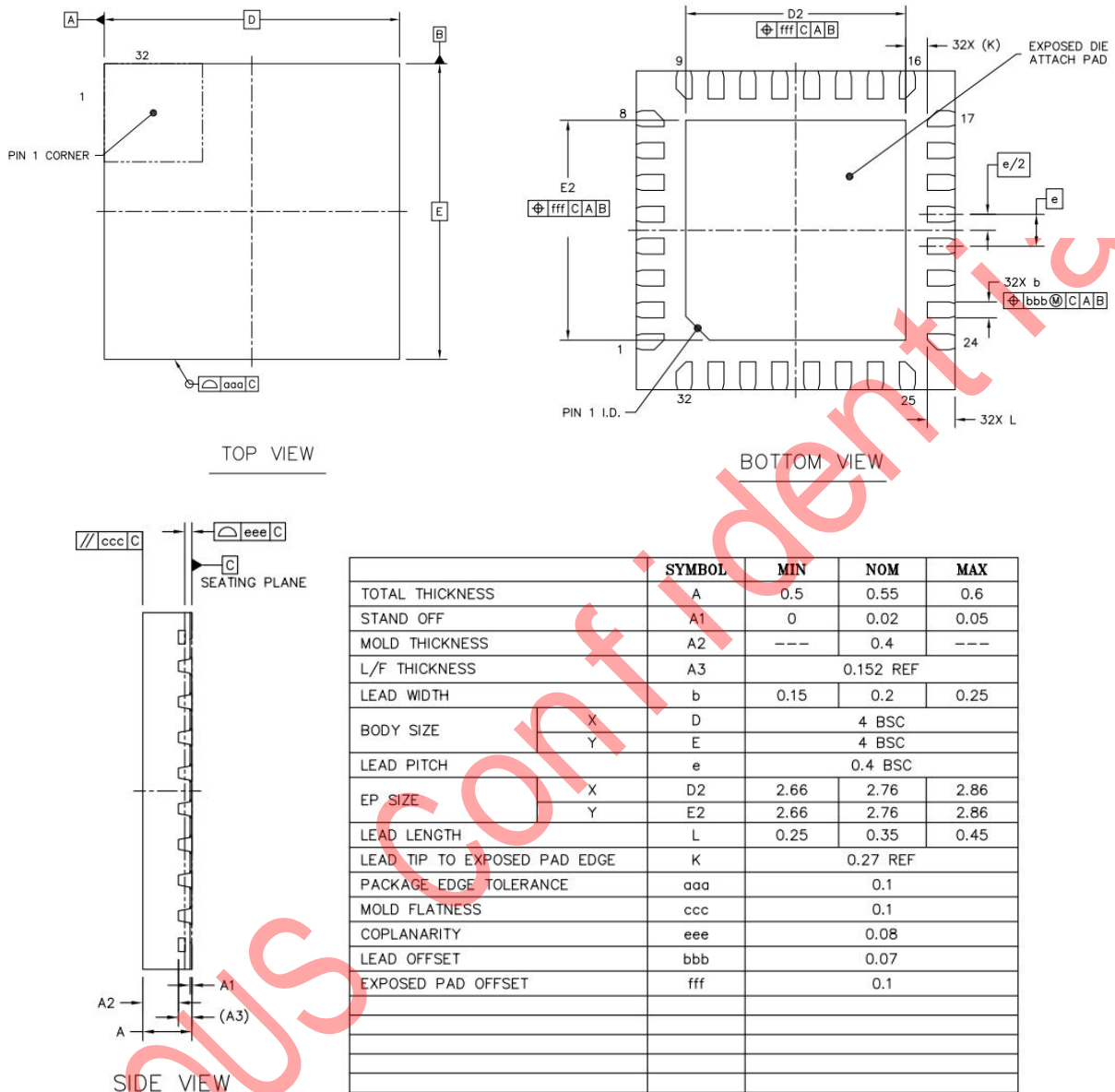


Figure 3-1. QFN package dimensions

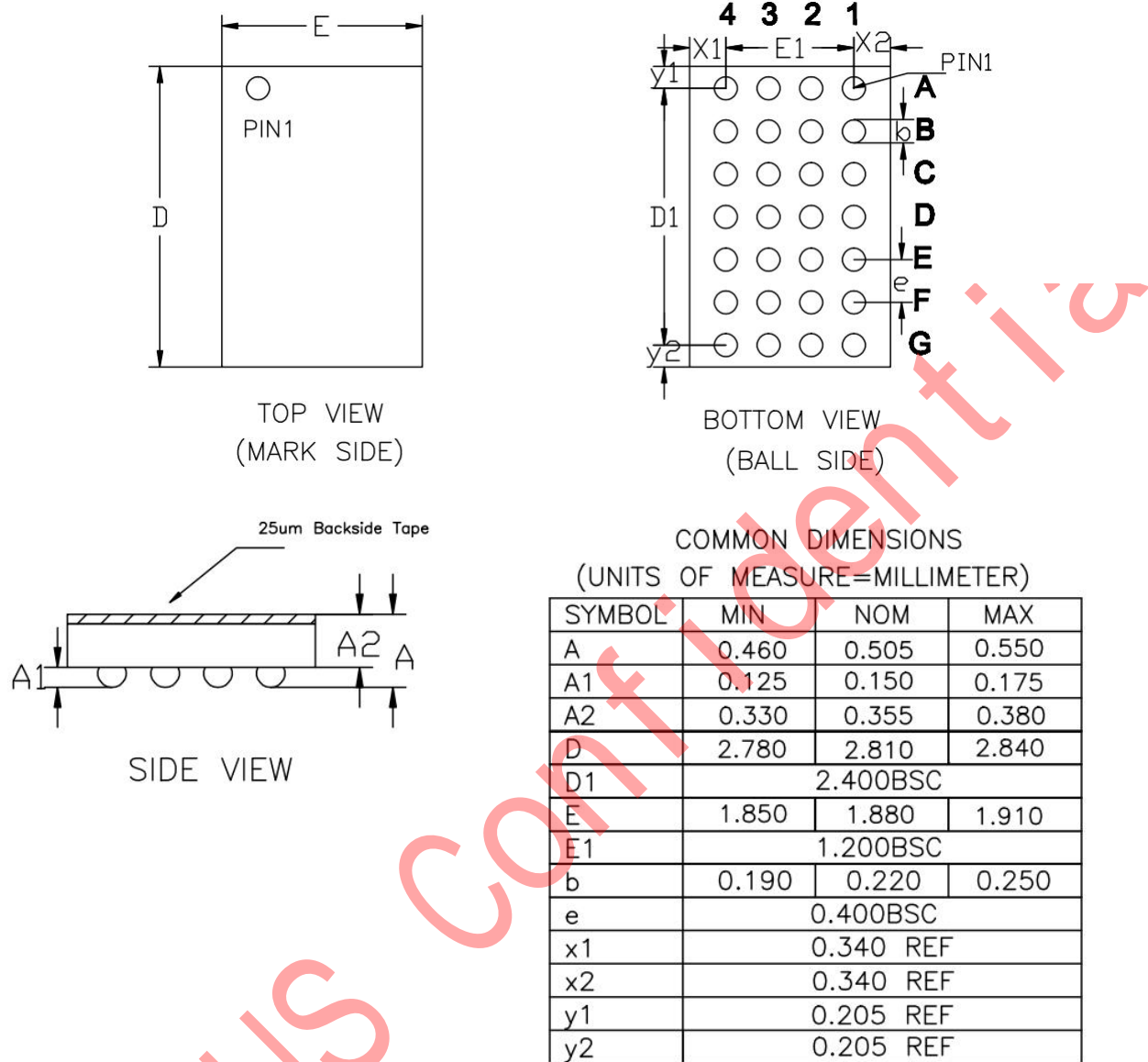


Figure 3-2. WLCSP package dimensions