

1. General description

The PTN36242L is a dual port SuperSpeed USB 3.0 redriver IC that enhances signal quality by performing receive equalization on the deteriorated input signal followed by transmit de-emphasis maximizing system link performance. With its superior differential signal conditioning and enhancement capability, the device delivers significant flexibility and performance scaling for various systems with different PCB trace and cable channel conditions and still benefit from optimum power consumption.

The PTN36242L is a dual port device that supports data signaling rate of 5 Gbit/s through each channel. PTN36242L has four channels (two ports): one port has two channels. Port 1 has A1 and B1 channels and Port 2 has A2 and B2 channels. The data flow of one channel is facing the USB host and another channel is facing the USB peripheral or device. Each channel consists of a high-speed Transmit (Tx) differential lane and a high-speed Receive (Rx) differential lane.

The PTN36242L has built-in advanced power management capability that enables significant power saving under various different USB 3.0 Low-power modes (U2/U3). It detects LFPS signaling and link electrical conditions and can dynamically activate/de-activate internal circuitry and logic. The device performs these actions without host software intervention and conserves power.

The PTN36242L is powered from a 3.3 V supply and it is available in HVQFN32 3 mm × 6 mm × 0.85 mm package with 0.4 mm pitch.

2. Features and benefits

- Supports USB 3.0 specification (SuperSpeed only)
- Support of two ports (Port 1 has A1 and B1 channels; Port 2 has A2 and B2 channels)
- Each channel supports a receive equalizer and a transmit de-emphasis function
- Selectable receive equalization on each channel to recover from InterSymbol Interference (ISI) and high-frequency losses, with the ability to choose equalization gain settings per channel
- Selectable transmit de-emphasis and output swing on each channel delivers pre-compensation suited to channel conditions
- Integrated termination resistors provide impedance matching on both transmit and receive paths
- Automatic receiver termination indication and detection
- Low active power: 743 mW/225 mA (typical) for both ports with $V_{OS} = 1000$ mV; equalization = 6 dB; de-emphasis = -3.5 dB and $V_{DD} = 3.3$ V
- Power-saving states:
 - ◆ 60 mW/20 mA (typical) when in U2/U3 states
 - ◆ 26 mW/8 mA (typical) when no connection detected
 - ◆ 0.5 mW/150 μ A (typical) when in deep power-saving state



- Excellent differential and common-mode return loss performance:
 - ◆ 14 dB differential and 15 dB common-mode return loss from 10 MHz to 1250 MHz
- Hot plug capable
- Power supply: 3.3 V ± 10 %
- HVQFN32 3 mm × 6 mm × 0.85 mm package with 0.4 mm pitch, exposed center pad for thermal relief and electrical ground
- ESD: 8 kV HBM, 1 kV CDM for high speed pins
- Operating temperature range: 0 °C to 85 °C

3. Applications

- Notebook/netbook/net top platforms
- Docking stations
- Desktop and AIO platforms
- Server and storage platforms
- USB 3.0 peripherals such as consumer/storage devices, printers, or USB 3.0 capable hubs/repeaters

Table 1. Ordering information

Type number	Topside mark	Package		Version
		Name	Description	
PTN36242LBS	<td>	HVQFN32	plastic thermal enhanced very thin quad flat package; no leads; 32 terminals; body 3 × 6 × 0.85 mm ^[1]	SOT1185-1

[1] Maximum package height is 1 mm.

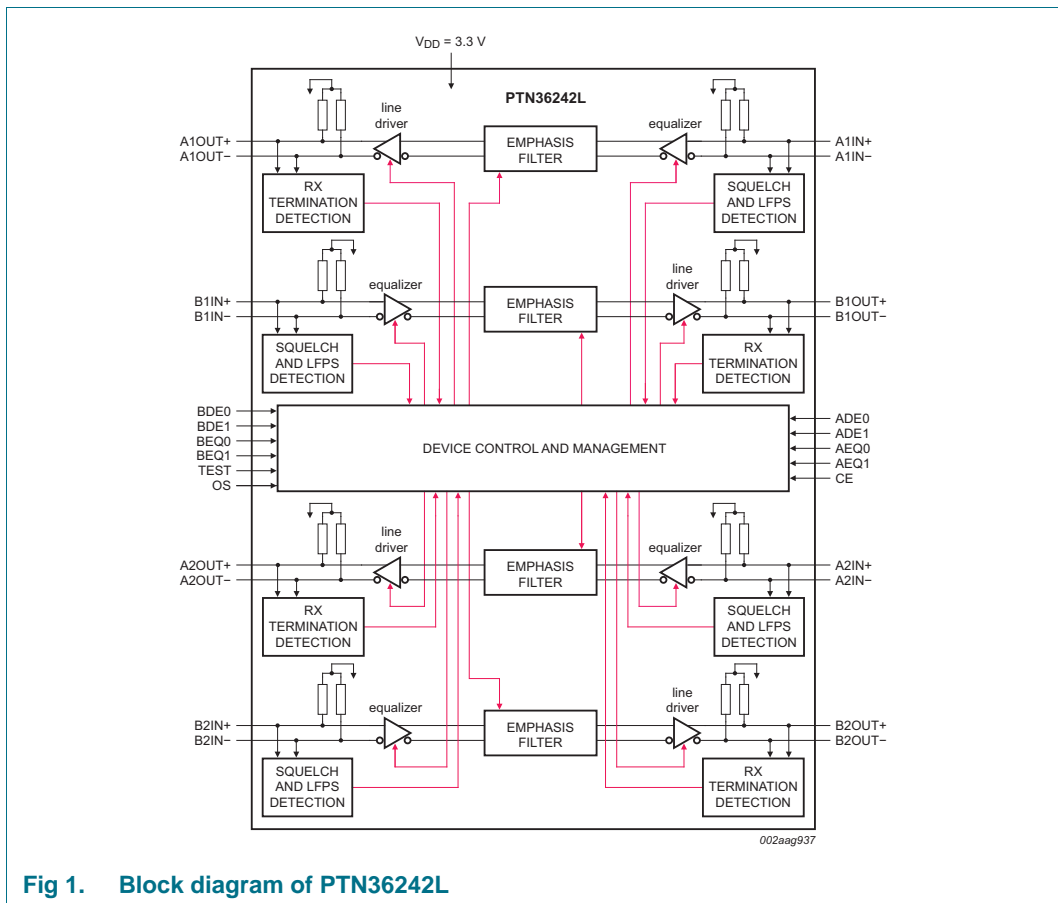


Fig 1. Block diagram of PTN36242L

HVQFN32: plastic thermal enhanced very thin quad flat package; no leads;
32 terminals; 3 x 6 x 0.85 mm

SOT1185-1

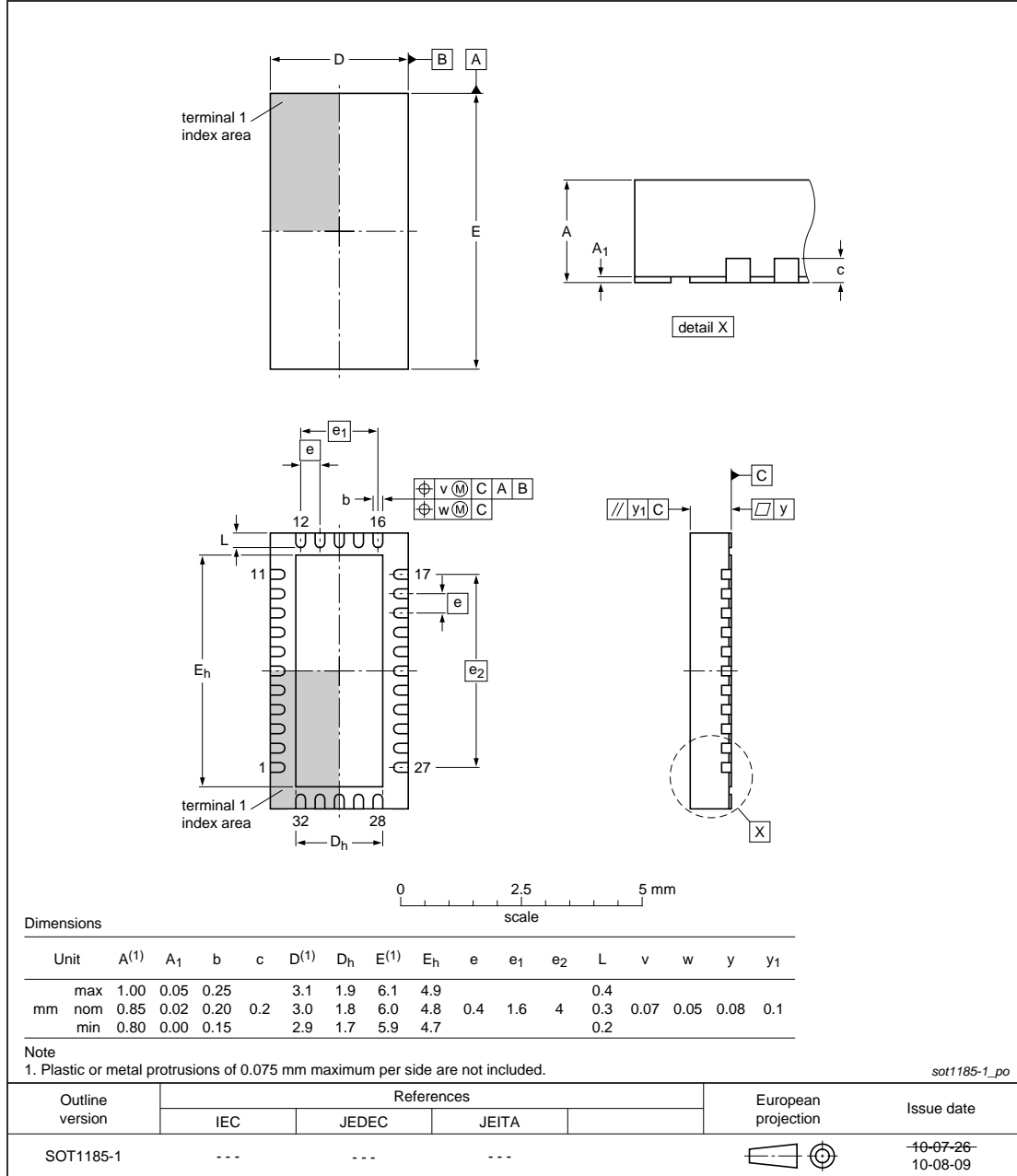


Fig 2. Package outline SOT1185-1 (HVQFN)

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For more information, please visit: <http://www.nxp.com>

For sales office addresses, please send an email to: salesaddresses@nxp.com

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