

AN8612NSB

SCSI active terminator IC

■ Overview

The AN8612NSB is a terminator IC conformed to standard interface specification (SCSI-I/II) for personal computers, workstations and various types of information equipment. So far configured with a fixed resistor and a regulator, it has recently been integrated onto a single chip with built-in standby function.

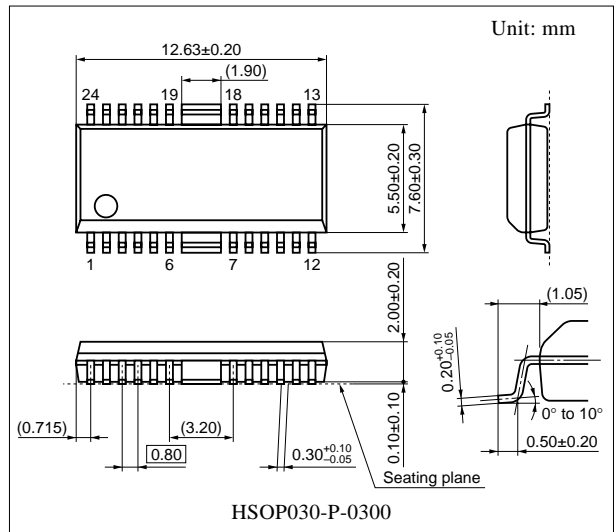
It is easy to satisfy 25 pF of the maximum pin capacitance in SCSI-II specification due to its small output pin capacitance. It can support 10 Mbyte/s of SCSI-II and 20 Mbyte/s of FAST-20.

■ Features

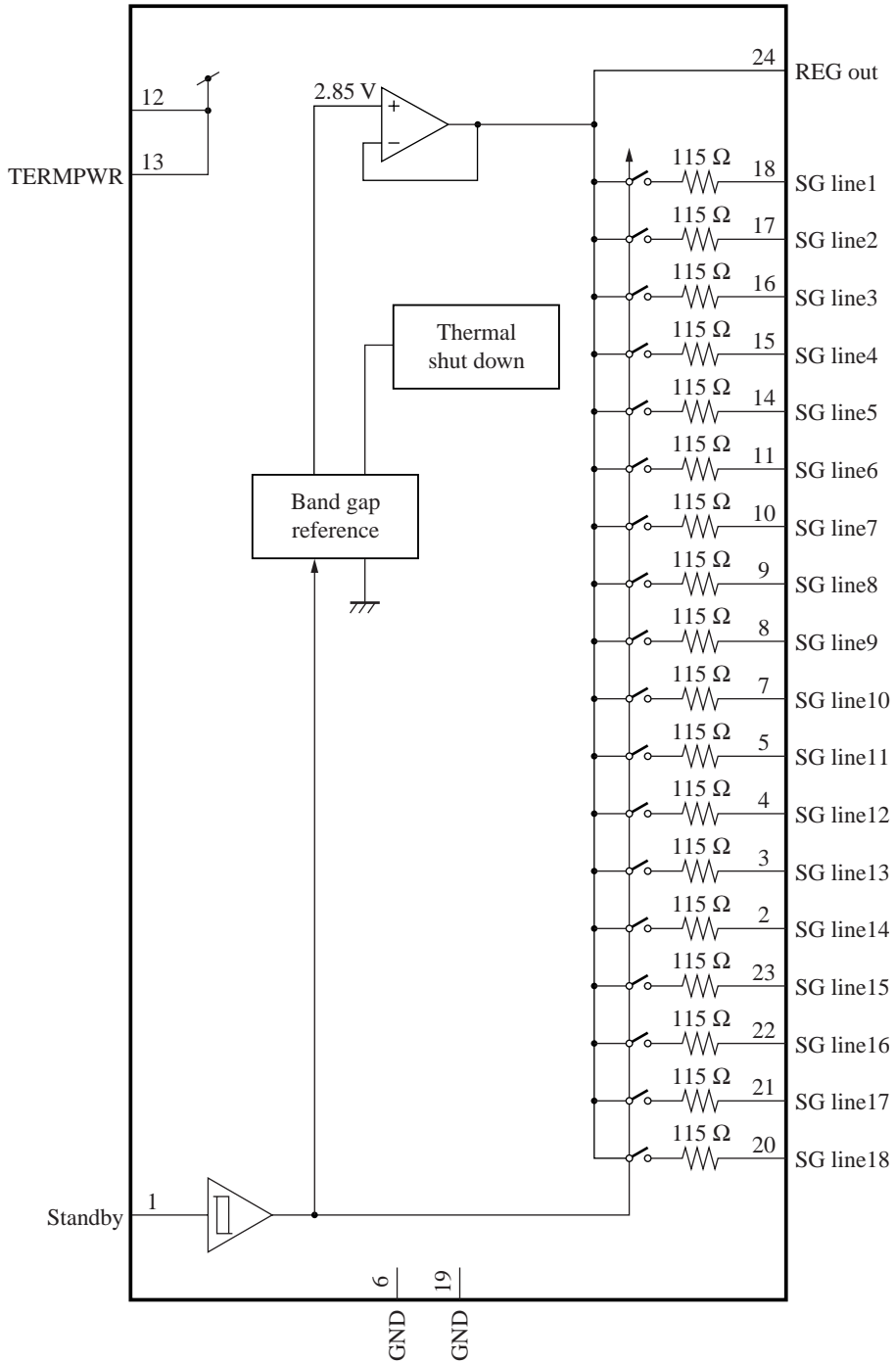
- Active termination for 18-signal line
- Low power consumption due to its standby function (100 μ A at standby).
- Small output pin capacitance: 3.8 pF (typ.)
- High precision regulator: 2.85 V \pm 60 mV

■ Applications

- SCSI interface board of PC
- SCSI-compatible equipment such as CD-ROM, MO, PD, MD drive and printer



■ Block Diagram



■ Pin Descriptions

| Pin No. | Description | Pin No. | Description |
|---------|------------------------------|---------|------------------------------|
| 1 | Standby *1 | 13 | V _{CC} (TERMPWR) *3 |
| 2 | SG line14 | 14 | SG line5 |
| 3 | SG line13 | 15 | SG line4 |
| 4 | SG line12 | 16 | SG line3 |
| 5 | SG line11 | 17 | SG line2 |
| 6 | GND *2 | 18 | SG line1 |
| Fin | GND *2 | Fin | GND *2 |
| 7 | SG line10 | 19 | GND *2 |
| 8 | SG line9 | 20 | SG line18 |
| 9 | SG line8 | 21 | SG line17 |
| 10 | SG line7 | 22 | SG line16 |
| 11 | SG line6 | 23 | SG line15 |
| 12 | V _{CC} (TERMPWR) *3 | 24 | REG out |

Note) *1: A standby pin input voltage becomes an active mode at $V_I < V_{TH}$ and a standby mode at $V_I > V_{TH+}$.

Likewise, a standby mode when standby pin is open.

*2: Both ground pins of the pin 6 and pin 19 should be placed on the same pattern, and the pattern should be wide on the PCB.

(We recommend that whole surface of one layer of a multi-layer PCB be GND.)

*3: Connect the V_{CC} to SCSI termination resistor power supply (TERMPWR).

■ Absolute Maximum Ratings

| Parameter | Symbol | Rating | Unit |
|----------------------------------|------------------|-------------|------|
| Supply voltage | V _{CC} | 6.0 | V |
| Supply current | I _{CC} | 550 | mA |
| Power dissipation *2 | P _D | 412 | mW |
| Operating ambient temperature *1 | T _{opr} | -20 to +75 | °C |
| Storage temperature *1 | T _{stg} | -55 to +150 | °C |

Note) *1: Except for the power dissipation, operating ambient temperature and storage temperature, all ratings are for T_a = 25°C.

*2: T_a = 75°C. For the independent IC without a heat sink.

Refer to "■ Application Notes".

■ Recommended Operating Range

| Parameter | Symbol | Range | Unit |
|----------------|-----------------|------------|------|
| Supply voltage | V _{CC} | 4.0 to 5.5 | V |

■ Electrical Characteristics at $V_{CC} = 5.0\text{ V}$, $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|-------------|--|------|------|------|---------------|
| Supply current 1 | I_{CC1} | Standby = low, all SG line = open | — | 44 | 54 | mA |
| Supply current 2 | I_{CC2} | Standby = low, All SG line = 0.2 V | — | 458 | 530 | mA |
| Supply current 3 | I_{CC3} | Standby = open | — | 100 | 200 | μA |
| Standby pin low-level input current | I_{STBYL} | $V_{CC} = 5.5\text{ V}$, $V_I = 0\text{ V}$ | -150 | -50 | — | μA |
| Standby pin high-level input current | I_{STBYH} | $V_{CC} = 5.5\text{ V}$, $V_I = 5.5\text{ V}$ | — | — | 1 | μA |
| Standby pin positive direction threshold voltage | V_{TH+} | | 1.3 | 1.5 | 1.7 | V |
| Standby pin negative direction threshold voltage | V_{TH-} | | 1.1 | 1.3 | 1.5 | V |
| Maximum output current SG line1 to SG line18 | I_{SG} | $V_{SG} = 0.2\text{ V}$ | 19.8 | 23.0 | 26.2 | mA |
| Output leak current 1 SG line1 to SG line18 | I_{LK1} | $V_{CC} = 5.5\text{ V}$ Standby = open, $V_{SG} = 0\text{ V}$ | -1 | — | — | μA |
| Output leak current 2 SG line1 to SG line18 | I_{LK2} | $V_{CC} = 5.5\text{ V}$, $V_{SG} = 2.85\text{ V}$ Standby = open | -1 | — | 1 | μA |
| REG output voltage 1 | V_{REG1} | $V_{CC} = 4.0\text{ V}$ to 5.5 V , all SG line = open | 2.79 | 2.85 | 2.91 | V |
| REG output voltage 2 | V_{REG2} | $V_{CC} = 3.2\text{ V}$, all SG line = open | 2.00 | — | — | V |
| Termination resistance value SG line1 to SG line18 | R_{SG} | $I_{SG} = 5\text{ mA}$ to 15 mA | 107 | 115 | 123 | Ω |
| High-level output voltage SG line1 to SG line18 | V_{SGH} | $V_{CC} = 4.0\text{ V}$ to 5.5 V , all SG line = open | 2.78 | 2.85 | 2.92 | V |

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|------------------------------|-----------|------------|-----|-----|-----|------------------|
| Standby pin hysteresis width | V_{HYS} | | — | 200 | — | mV |
| Output pin capacitance | C_{SG} | | — | 3.8 | 4.5 | pF |
| Thermal shutdown temperature | T_{TSD} | | — | 170 | — | $^\circ\text{C}$ |

■ Terminal Equivalent Circuits

| Pin No. | Symbol | Equivalent circuit |
|---------|---------|--------------------|
| 1 | Standby | |

■ Terminal Equivalent Circuits (continued)

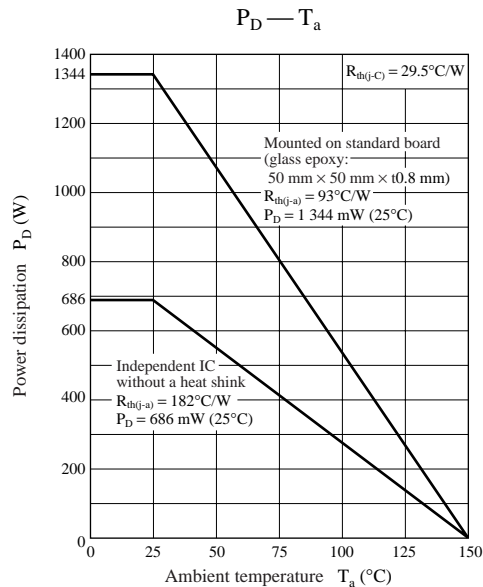
| Pin No. | Symbol | Equivalent circuit |
|----------------------------|--|--------------------|
| 2 3 4 5 | Pin 2: SG line14 Pin 3: SG line13 Pin 4: SG line12 Pin 5: SG line11 | |
| 6 | GND | — |
| Fin | GND | — |
| 7 8 9 10 11 | Pin 7: SG line10 Pin 8: SG line9 Pin 9: SG line8 Pin 10: SG line7 Pin 11: SG line6 | |
| 12 13 | Pin 12: V _{CC} (TERMPWR) Pin 13: V _{CC} (TERMPWR) | |
| 14 15 16 17 18 | Pin 14: SG line5 Pin 15: SG line4 Pin 16: SG line3 Pin 17: SG line2 Pin 18: SG line1 | |

■ Terminal Equivalent Circuits (continued)

| Pin No. | Symbol | Equivalent circuit |
|----------------------|--|--------------------|
| Fin | GND | — |
| 19 | GND | — |
| 20 21 22 23 | Pin 20: SG line18 Pin 21: SG line17 Pin 22: SG line16 Pin 23: SG line15 | |
| 24 | REG out | |

■ Application Notes

- $P_D - T_a$ curves of HSOP030-P-0300



■ Application Circuit Example

