

# DALLAS

## SEMICONDUCTOR

# DS2107S

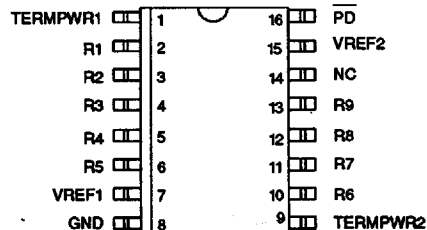
## SCSI Terminator

T-52-33-27

### FEATURES

- Fully compliant with SCSI and SCSI-2 standards
- Provides active termination for 9 signal lines
- Laser-trimmed 110 ohm termination resistors have 1% tolerance
- Low dropout voltage
- 16-pin plastic SOIC package
- Power-down mode isolates termination resistors from the bus

### PIN ASSIGNMENT



16-Pin SOIC (300 mil)  
See Mech. Drawing - Sect. 16, Pg. 6

### DESCRIPTION

The SCSI-2 standard recommends the use of active terminations at both ends of every cable segment in a SCSI system with single-ended drivers and receivers. The DS2107S SCSI Terminator, which is fully compliant with the standard, enables the designer to gain the benefits of active termination: greater immunity to volt-

age drops on the TERMPWR (TERMination PoWeR) line, enhanced high-level noise immunity, intrinsic TERMPWR decoupling, and very low quiescent current consumption. The DS2107S integrates a regulator and nine precise switched 110 ohm termination resistors into a monolithic IC.

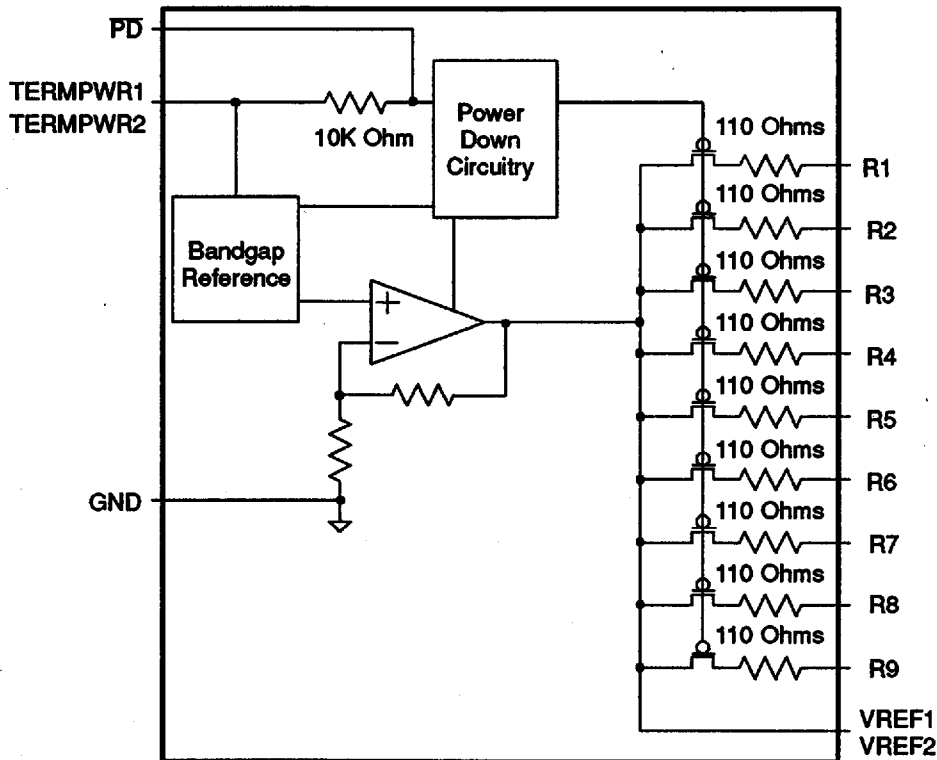
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**FUNCTIONAL DESCRIPTION**

The DS2107S consists of a bandgap reference, buffer amplifier, and nine termination resistors (Figure 1). The bandgap reference circuit produces a precise 2.55V level which is fed to a buffer amplifier. The buffer produces a 2.85V level and is capable of sourcing 24 mA into each of the termination resistors when the signal line is low (active). When the driver for a given signal line turns off, the terminator will pull the signal line to 2.85V (quiescent state). When all lines settle in the quiescent state, the regulator will sink about 10 mA. When the DS2107S is put into power-down mode by bringing  $\overline{\text{PD}}$  low, the power-down circuitry will turn off the transistors on each signal line. This will isolate the DS2107S from the signal lines and effectively remove it from the circuit. The power-down pin ( $\overline{\text{PD}}$ ) has an inter-

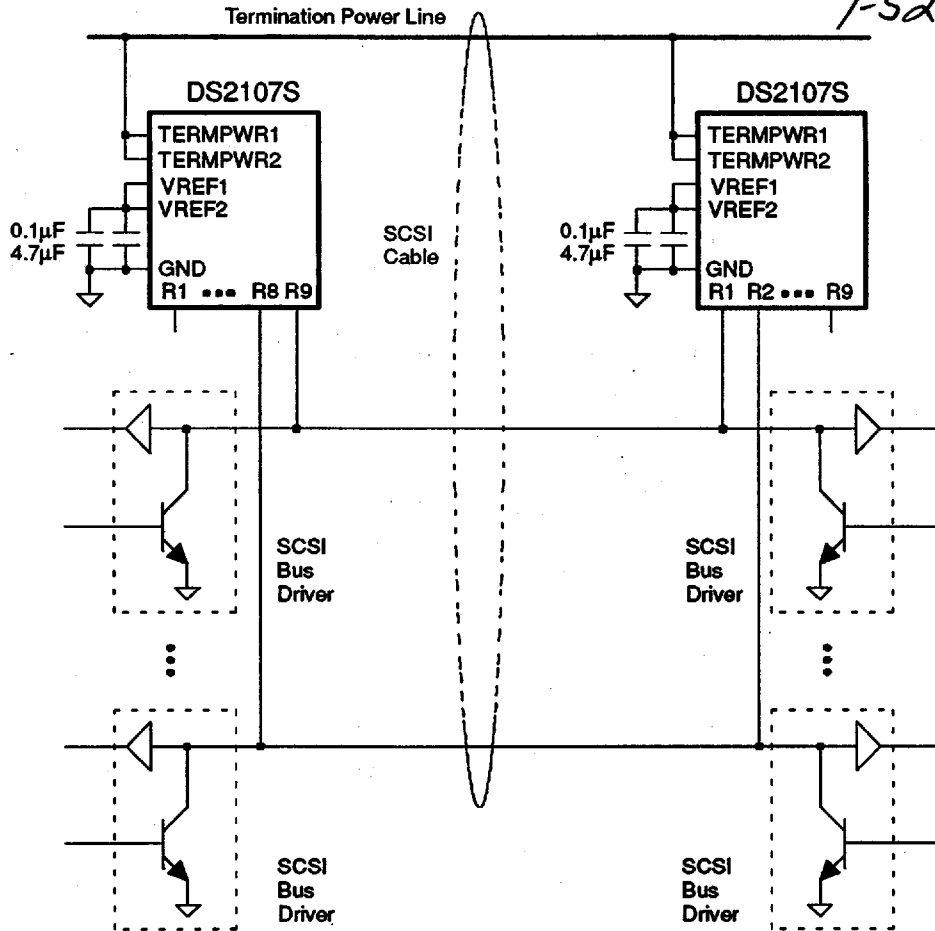
nal 10K ohm pull-up resistor. To place the DS2107S into an active state, the  $\overline{\text{PD}}$  pin should be left open circuited.

To ensure proper operation, both the TERMPWR1 and TERMPWR2 pins must be connected to the SCSI bus TERMPWR line and both the VREF1 and VREF2 pins must be tied together externally. Each DS2107S requires parallel 0.1  $\mu\text{F}$  and 4.7  $\mu\text{F}$  capacitors connected between the VREF pins and ground. Figure 2 details a typical SCSI bus configuration. In an 8-bit wide SCSI bus arrangement ("A" Cable), two DS2107S's would be needed at each end of the SCSI cable in order to terminate the 18 active signal lines. In a 16-bit wide SCSI bus arrangement ("P" Cable), three DS2107S's would be needed at each end of the SCSI cable in order to terminate the 27 active signal lines.

**DS2107S BLOCK DIAGRAM Figure 1**

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TYPICAL SCSI BUS CONFIGURATION Figure 2

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PIN DESCRIPTION Table 1

PIN	SYMBOL	DESCRIPTION
1	TERMPWR1	Termination Power 1. Should be connected to the SCSI TERMPWR line. See Figure 2.
2	R1	Signal Termination 1. 110 ohm termination.
3	R2	Signal Termination 2. 110 ohm termination.
4	R3	Signal Termination 3. 110 ohm termination.
5	R4	Signal Termination 4. 110 ohm termination.
6	R5	Signal Termination 5. 110 ohm termination.
7	VREF1	Reference Voltage 1. Must be externally connected to the VREF2 pin. Must be decoupled with a 4.7 $\mu$ F and a 0.1 $\mu$ F as shown in Figure 2.
8	GND	Ground. Signal ground; 0.0V.
9	TERMPWR2	Termination Power 2. Should be connected to the SCSI TERMPWR line. See Figure 2.
10	R6	Signal Termination 6. 110 ohm termination.
11	R7	Signal Termination 7. 110 ohm termination.
12	R8	Signal Termination 8. 110 ohm termination.
13	R9	Signal Termination 9. 110 ohm termination.
14	NC	No Connect. Do not connect any signal to this pin.
15	VREF2	Reference Voltage 2. Must be externally connected to the VREF1 pin. Must be decoupled with a 4.7 $\mu$ F and a 0.1 $\mu$ F as shown in Figure 2.
16	PD	Power Down. When tied low, the DS2107S enters a power-down mode. Contains an internal 10K pull-up. Strap low to deactivate the DS2107S, leave open circuited to activate the DS2107S.

**ABSOLUTE MAXIMUM RATINGS\***

Voltage on Any Pin Relative to Ground

-1.0V to +7.0V

Operating Temperature

0°C to +70°C

Storage Temperature

-55°C to 125°C

Soldering Temperature

260°C for 10 seconds

\* This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

**RECOMMENDED OPERATING CONDITIONS**

(0°C to 70°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
TERMPWR Voltage	V <sub>TP</sub>	4.00		5.25	V	
PD Active	V <sub>PDA</sub>	-0.3		0.8	V	
PD Inactive	V <sub>PDI</sub>	2.0		V <sub>TP</sub> +0.3	V	

**DC CHARACTERISTICS**

(0°C to 70°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
TERMPWR Current	I <sub>TP</sub>			245	mA	1,3
	I <sub>TP</sub>			15	mA	1,4
Power Down Current	I <sub>PD</sub>			750	μA	1,2,5
Termination Resistance	R <sub>TERM</sub>	108	110	112	ohms	1,2

**REGULATOR CHARACTERISTICS**

(0°C to 70°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTES
Output Voltage	V <sub>REF</sub>	2.79	2.85	2.91	V	1,2
Drop Out Voltage	V <sub>DROP</sub>		0.8	1.0	V	1,3
Line Regulation	L <sub>REG</sub>		0.1	0.25	%	1,4
Load Regulation	L <sub>REG</sub>		1	2	%	1,2

**NOTES**

1. 4.00V < TERMPWR < 5.25V.
2. 0.0V < signal lines < 3.0V.
3. All signal lines = 0.0V.
4. All signal lines open.
5. PD = 0.0V.