

## Multi-mode SCSI Terminator

### FEATURES

- Meets SCSI-1, SCSI-2, Ultra3 and Ultra320 Standards.
- Auto-selectable Multimode single-ended or Low Voltage Differential termination.
- Current limit and thermal shutdown protection.
- Ground driver integrated for single-ended operation
- Compatible with active-negation drivers.

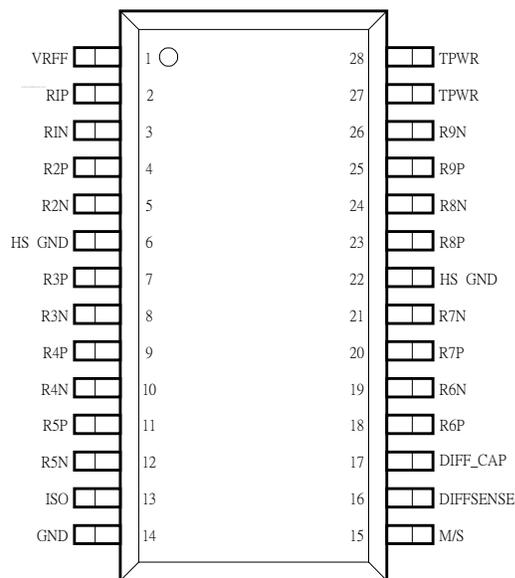
### DESCRIPTION

The SS7519 multimode SCSI terminator is both a single-ended and a low voltage differential terminator that meets the specifications of SCSI Parallel Interface (SPI-4).

The SS7519 also provides backward compatibility to the SCSI-1, SCSI-2 and Single-Ended specifications. The Multimode terminator contains all the functions required to terminate and auto detect for SCSI devices without hardware fluctuation. Auto-Selectable is achieved by using voltage detection on the DIFFSENSE signal. The SS7519 senses the DIFFSENSE line while sourcing the DIFFSENSE signal with LVD levels. The DIFFSENSE line being grounded indicates that one or more SE devices are attached on the bus. The SS7519 switches to the termination mode that is appropriate for the bus based on the value of the DIFFSENSE input voltage.

For the Single-Ended termination, the active terminator will pull  $R_{xN}$  to 2.85V and  $R_{xP}$  to a hard ground. The SS7519 can sink 22mA per line as required by the SCSI specification. The

Single-Ended resistor will maintain  $110\Omega \pm 5\%$ . For LVD termination, the SS7519 integrates two current sources with nine accuracy resistor strings. This architecture yields a  $105\Omega \pm 5\%$  differential and  $226\Omega \pm 10\%$  common mode impedance. A fail-safe bias of 110mV is sustained when no drivers are connected to the SCSI bus. If the SS7519 detects a HVD SCSI device on the bus, all the signals will be set to a high impedance state.



SS7519 - TSSOP28

**PIN DESCRIPTION**

PIN	SYMBOL	DESCRIPTION
27,28	<b>TPWR</b>	4.0V to 5.75V power input pin. Connect to SCSI bus power line. A 4.7 $\mu$ F capacitor and a 0.1 $\mu$ F high frequency capacitor are recommended between TPWR and ground.
1	<b>VREF</b>	Reference Voltage. Must be decoupled with a 4.7 $\mu$ F capacitor to ground as shown in Figure 1.
6,22 14	<b>HS GND GND</b>	Heat Sink Ground. These should be connected to large area PC board ground trace in order to increase the power dissipation capability.
2,4,7,9,11,18 20,23,25	<b>RxP</b>	Termination lines. These lines switch to hard ground in SE mode and are the positive lines for LVD mode. All lines are in high impedance when HVD is detected.
3,5,8,10,12 19,21,24,26	<b>RxN</b>	Termination lines. These lines switch to the active lines in SE mode and are the negative lines for LVD mode. All lines are in high impedance when HVD is detected.
13	<b>ISO</b>	Isolate pin. This pin used to shut down the terminator if the terminator is not connected at the end of the bus. Connecting the pin to ground will activate the terminator in normal operation. The terminator will be disabled when the pin is in high state. An internal pull-down resistor assures that the SS7519 will operate as normal if the ISO pin is left floating.
15	<b>M/S</b>	Mode select pin. When pull high, master mode will enable the DIFFSEN drive SCSI bus. The DIFFSENSE driver is off when this pin is connected to ground.
16	<b>DIFFSENSE</b>	Mode Sense pin. This signal will drive 1.3V to the SCSI bus during the Master mode in order to detect which type of device is connected to the SCSI bus. On power up, the SS7519 will try to deliver LVD level to the DIFFSENSE line. If only LVD SCSI devices are on the bus, the DIFFSENSE signal will be successfully driven to 1.3V and the terminator will configure the system for LVD operation. If any SE device is on the bus, it will present a grounding level to the DIFFSENSE line. This will cause the SS7519 to configure into SE operation. The SS7519 will go into shutdown mode if DIFFSENSE detects a high voltage level.
17	<b>DIF_CAP</b>	DIFFSENSE CAPACITOR. This pin should be connected to a 0.1 $\mu$ F capacitor to ground and 20K $\Omega$ resistor to SCSI bus DIFFSENSE line for DIFFSEN filter.

**RECOMMENDED OPERATING CONDITIONS**

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS
Tpwr Voltage	V <sub>term</sub>	4.0		5.75	V
Operating Temperature	T <sub>op</sub>	0		70	°C
Lead Temperature (Soldering 10 seconds)	T <sub>sod</sub>		300		°C

**DC CHARACTERISTICS:**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
TPWR Current	Itpwr		35		mA
Input Leakage Current High	Iih	0			uA
Input Leakage Current Low	Iil			1.0	uA
Output Current High Vout = 2.4 V	Ioh	0			mA
Output Current Low Vout = 0.4V	Iol	4.0			mA
DIFFSEN Output Voltage	Vov	1.2		1.4	V
DIFFSEN Source Current	Isc		5	15	mA
DIFFSEN Sink Current	Isi	20		200	uA
DIFFSEN SE Voltage Range	Vse	-0.3		0.5	V
DIFFSEN LVD Voltage Range	Vlvd	0.7		1.9	V
DIFFSEN HVD Voltage Range	Vhvd	2.4		Vtpwr+0.3	V

**Single Ended Characteristics**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
SE Termination Resistance	Rse	104.5	110	115.5	$\Omega$
SE Voltage Reference	Vref	2.70		3.00	V
SE Output Current	Ioc			25.4	mA

**LVD Characteristics**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Differential Mode Termination Resistance	Rd	100		110	$\Omega$
Common Mode Termination Resistance	Rc	110	226	300	$\Omega$
Differential Mode Bias All lines open	Vdb	100		125	mV
Common Mode Bias	Vcb	1.125		1.375	V

**REGULATOR Characteristics**
**(0°C to 70°C)**

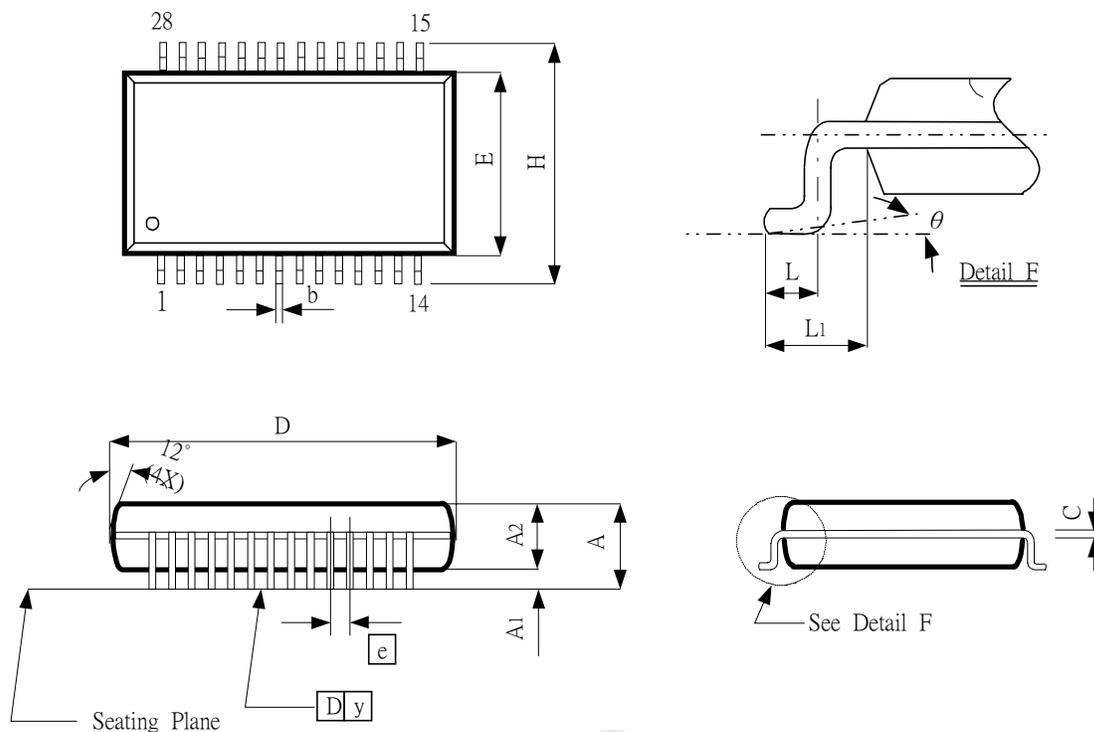
PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Source Current	Isour		200	230 Vout=0.2v	mA
Sink Current	Isink	100	200		mA

**NOTE:** Unless otherwise specified, these specifications apply over the operating ambient temperature range from 0°C to 70°C.



# Package Dimensions

## TSSOP-28



## TSSOP-28

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	—	—	1.20	—	—	0.047
A1	0.05	—	0.15	0.002	—	0.006
A2	0.80	1.00	1.05	0.031	0.039	0.041
b	0.19	—	0.30	0.007	—	0.012
C	0.09	—	0.20	0.004	—	0.008
D	9.60	9.70	9.80	0.378	0.382	0.385
H	—	6.40	—	—	0.252	—
E	4.30	4.40	4.50	0.169	0.173	0.177
e	—	0.65	—	—	0.026	—
L	0.45	0.60	0.75	0.018	0.024	0.030
L1	—	1.00	—	—	0.039	—
y	—	—	0.076	—	—	0.003
theta	0°	—	8°	0°	—	8°

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