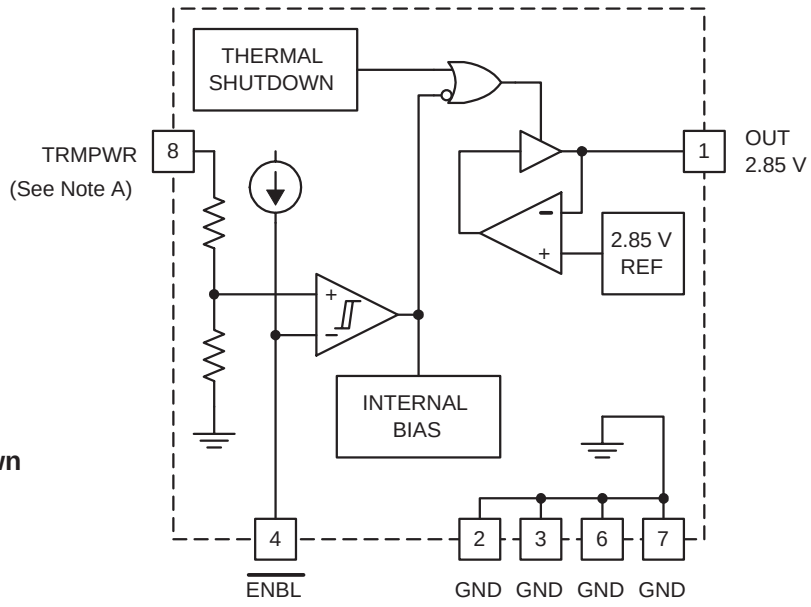
UC560
27–LINE SCSI SOURCE/SINK REGULATOR

SLUS213B − APRIL 1998 − REVISED FEBRUARY 2001

- **SPI-2 and SPI-3 Compliant**
- **2.85-V Regulated Output Voltage with 1.4% Tolerance**
- **Provides Current for up to 27 Lines of Active Termination for SCSI Buses**
- **−750-mA Sourcing Current for Termination**
- **300-mA Sinking Current for Active Negation Drivers**
- **0.9-V Dropout Voltage Regulator at 750 mA and 2.75 V Output**
- **100-μA Supply Current in Disconnect Mode**
- **Current Limit and Thermal Shutdown Protection**
- **Low Thermal Resistance Surface Mount Package**

simplified block diagram



Note A: 4.0 V TO 6.0 V (4.75 V NOMIMAL)

description

The UC560 provides current for up to 27 lines of active termination for a SCSI (small computers systems interface) parallel bus. The SCSI standard requires active termination at both ends of the cable. The UC560 is based on the UC5603 and UC5613 SCSI active terminators. It uses the voltage regulator and internal logic circuits of those parts, but has no termination circuits. The UC560 provides greater source current-drive capability compared to the UC5603 and UC5613.

The UC560 sink current maintains regulation with all active-negation drivers negated. It provides a disconnect feature which disables the regulator to greatly reduce standby power. Internal circuit trimming is utilized for a 1.4% tolerance output voltage. Other features include thermal shutdown and current limit for short circuit conditions.

The UC560 is available in low-thermal-resistance version of the industry standard 8-pin power SOIC.

AVAILABLE OPTIONS

T_A	PACKAGED DEVICES
	SOIC (DP)†
0°C to 70°C	UC560DP

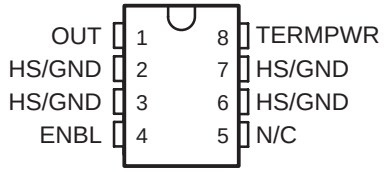
† The DP package is available taped and reeled. Add TR suffix to device type (e.g. UC560DPTR) to order quantities of 3000 devices per reel.

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DP PACKAGE
(TOP VIEW)



NOTE 1: For DP package, pins 2, 3, 6 and 7 are heat sinking pins. Pin 2 is the connect point for electrical ground.
NOTE 2: For all packages, N/C is no connection.

absolute maximum ratings over operating free-air temperature (unless otherwise noted)† ‡

Input voltage,
TERMPWR . . . . . 7 V
$\overline{\text{ENBL}}$ . . . . . −0.3 V to TERMPWR + 0.3 V
Regulator Output Current . . . . . 1.4 A
Power Dissipation . . . . . 2.5 W
Storage Temperature . . . . . −65°C to 150°C
Junction Temperature . . . . . −55°C to 150°C
Lead Temperature (Soldering, 10 seconds) . . . . . 300°C

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
‡ Currents are positive into and negative out of the specified terminal. Consult Packaging Section of Interface Products Data Book *(TI Literature Number SLUD002)* for thermal limitations and considerations of packages.

recommended operating conditions

	MIN	MAX	UNIT
Input voltage, TERMPWR	4.0	6.0	V
Operating virtual junction temperature, T_J ¶	0	70	°C

¶ It is not recommended that the device operate under conditions beyond those specified in this table for extended periods of time.

electrical characteristics over recommended operating free-air temperature range, T_A = 0°C to 70°C, TERMPWR = 4.75 V, $\overline{ENBL}$ = 0 V, C_{OUT} = 4.7 µF, $C_{TERMPWR}$ = 4.7 µF, $T_A = T_J$, unless otherwise specified.

PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNITS
Supply Current Section						
TERMPWR supply current	No load			18	25	mA
	I_{OUT} = –700 mA			710	750	mA
Power down mode	$\overline{ENBL}$ = 2.0 V			100	140	µA
Regulator Section						
Regulator output voltage	25°C, No load		2.81	2.85	2.89	V
Load regulation	I_{OUT} = 300 mA to –750 mA	See Note 1		25	30	mV
Line regulation	TERMPWR = 4.0 V to 6.0 V See Note 1	No load,		10	20	mV
Dropout voltage	I_{OUT} = –750 mA	VOUT = 2.75 V		0.9	1.2	V
Short circuit current	V_{OUT} = 0.0 V			–1.3	–0.85	A
Sinking current	V_{OUT} = 3.5 V			500	600	mA
	$\overline{ENBL}$ = 2.0 V	VOUT = 3.0 V		1	2	mA
Thermal shutdown	See Note 2			170		°C
Thermal shutdown hysteresis	See Note 2			10		°C
Shutdown Section						
$\overline{ENBL}$ threshold			1.1	1.4	1.7	V
Threshold hysteresis				100		mV
$\overline{ENBL}$ output current			–15	–10		µA

NOTES: 1. Tested at a constant junction temperature by low duty cycle pulse testing.
2. Ensured by design. Not production tested.

pin descriptions

$\overline{ENBL}$: (Enable pin) The $\overline{ENBL}$ function is active low, and the pin sources 10 µA (typical) when at ground and TERMPWR is between 4 V and 6 V. The part goes into disable mode if $\overline{ENBL}$ is above 1.4 V (typical) , and returns to enable mode when $\overline{ENBL}$ drops below 1.3 V typical. The part also greatly reduces TERMPWR current when disabled (100 µA typical).

GND: Ground pin.

OUT: (2.85-V regulated output voltage pin) The part is internally current limited for both sinking and sourcing current to prevent damage. When the part is in disabled mode ($\overline{ENBL}$ 1.4 V typical), the output goes to 0 V with no external supply source on OUT. The IC current sinks if there is an external supply voltage applied to OUT when in disabled mode. For best perfomance, a 4.7-µF low-ESR capacitor is recommended.

TERMPWR: (Supply voltage pin) The pin should be decoupled with at least a 2.2-µF low-ESR output capacitor. For best perfomance, a 4.7-µF low-ESR capacitor is recommended. Lead lengths should be kept at a minimum.

APPLICATION INFORMATION

TYPICAL SCSI BUS CONFIGURATION

(18 TERMINATION LINES)

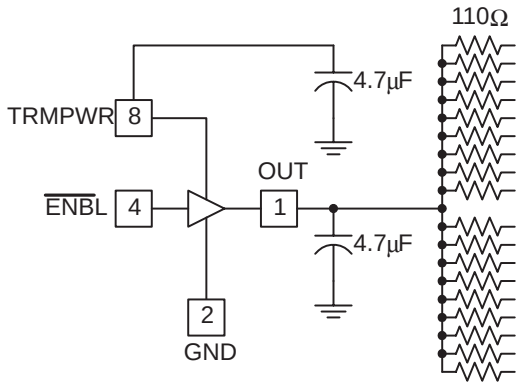


Figure 1

UDG−00075

TYPICAL WIDE SCSI BUS CONFIGURATION

(27 TERMINATION LINES)

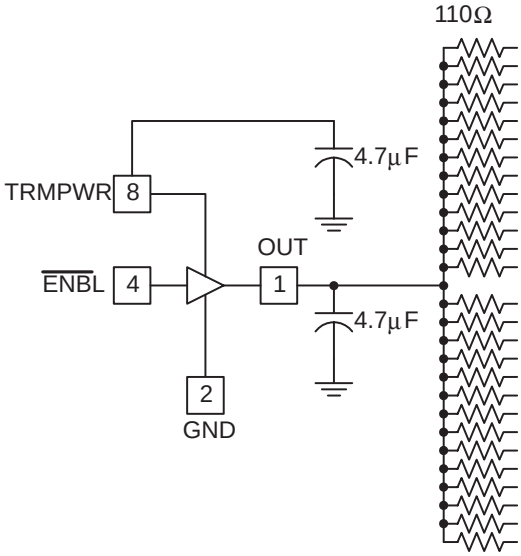


Figure 2

UDG−00076

TYPICAL CHARACTERISTICS

OUTPUT VOLTAGE vs TEMPERATURE

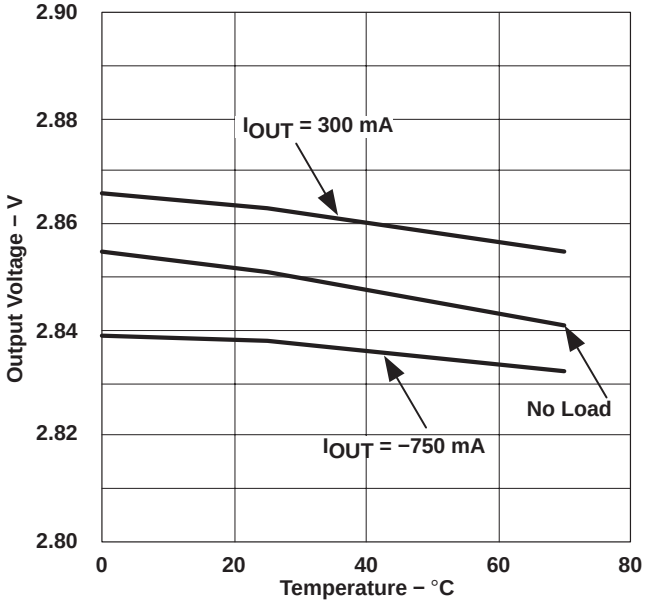


Figure 3

DROPOUT VOLTAGE vs TEMPERATURE

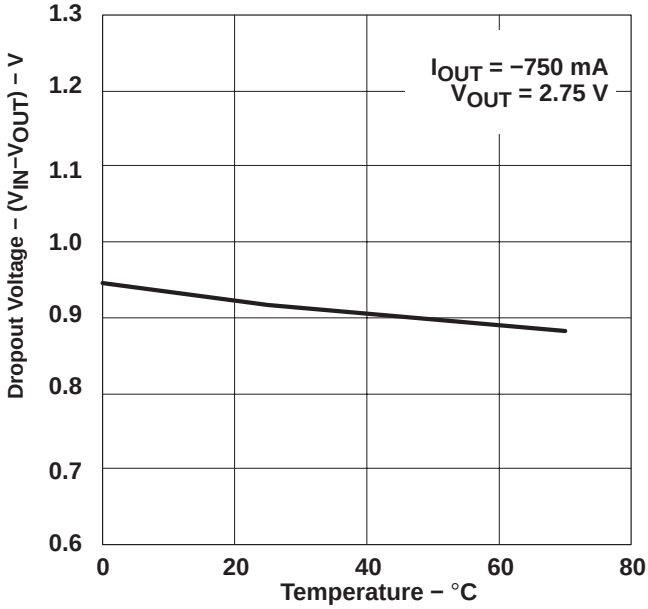


Figure 4

LOAD REGULATION vs TEMPERATURE

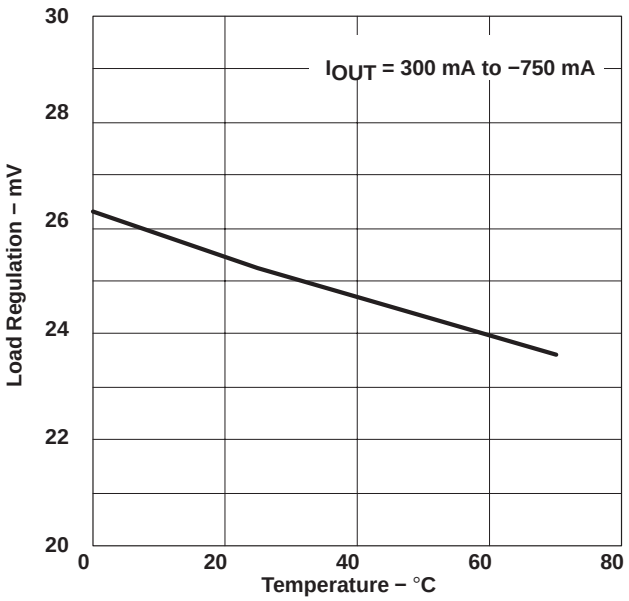


Figure 5

LINE REGULATION vs TEMPERATURE

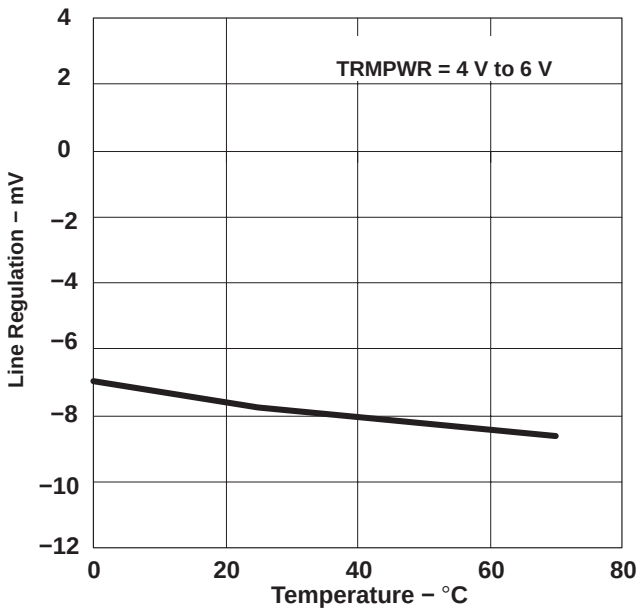


Figure 6

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