

Sine On

AN ANALOG AND MIXED-SIGNAL PRODUCT CATALOG

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SCSI Bus Products



Free!
New data books

See back cover for details.

2Q 2000

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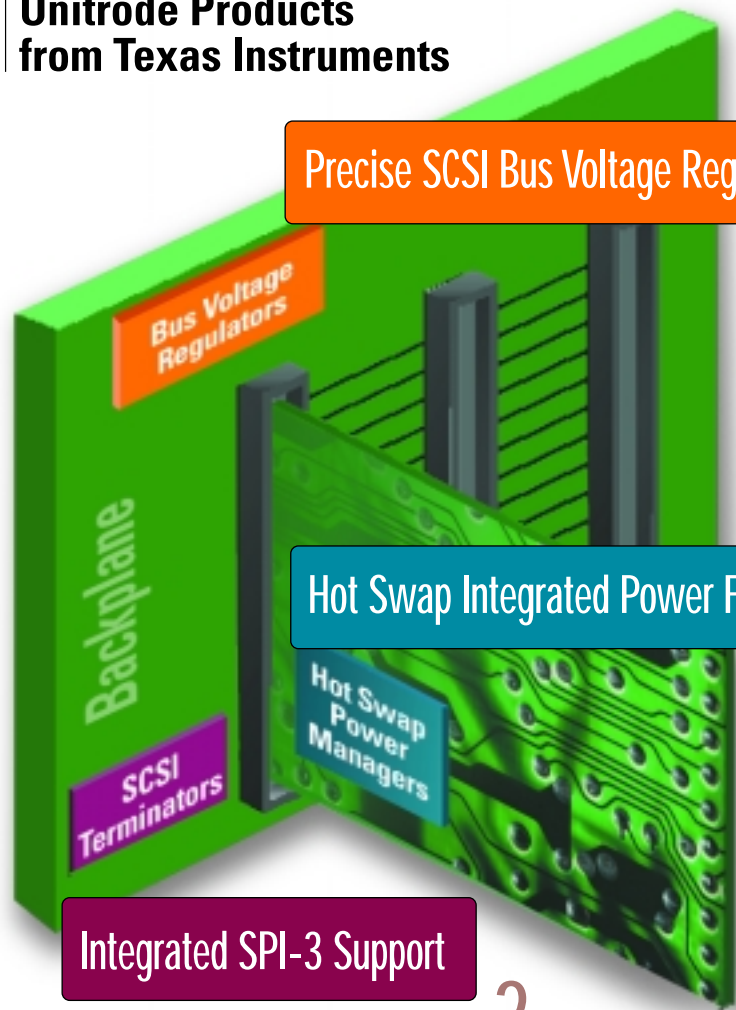
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INCLUDES:



Unitrode Products from Texas Instruments



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ALSO INCLUDES:

Resources, selection guides and much more!

Read *Sine On* online at www.ti.com/sc/sineon

Interface, SCSI Bus Terminators

Nine-line multimode integrated SPI-3 support

UCC5672/73



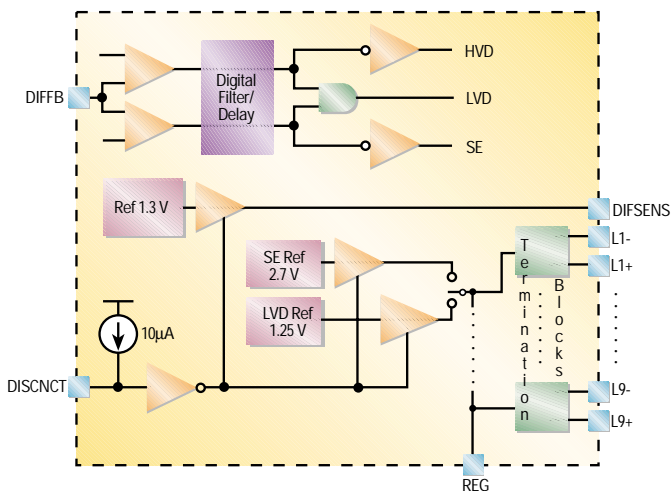
Get datasheets, samples and app reports at:
www.ti.com/sc/docs/products/analog/device.html
 Replace *device* in URL with [ucc5672](#) or [ucc5673](#)

- Nine-line, single-ended (SE) or low-voltage-differential (LVD)-SCSI terminator
- Built-in SPI-3 mode change filter/delay
- Automatic selection of SE or LVD termination
- Operation from 2.7 V to 5.25 V
- Channel capacitance of 3 pF
- Differential failsafe bias
- Supports active negation
- Reverse disconnect polarity (UCC5673)
- Applications include servers, workstations, redundant array of inexpensive disk (RAID) systems, SCSI host adapter boards
- Packaging: available in 28-pin TSSOP and 36-pin QSOP
- Pricing starts at \$3.70 each in quantities of 1,000

Supports the following standards

SCSI-1	Ultra SCSI	Fast 20	SPI
SCSI-2	Ultra2 SCSI	Fast 40	SPI-2
Fast SCSI	Ultra 3/Ultra 160	Fast 80	SPI-3

UCC5672 block diagram



Interface, SCSI Bus Terminators

Nine-line, LVD-only, integrated SPI-3 support

UCC5680/81



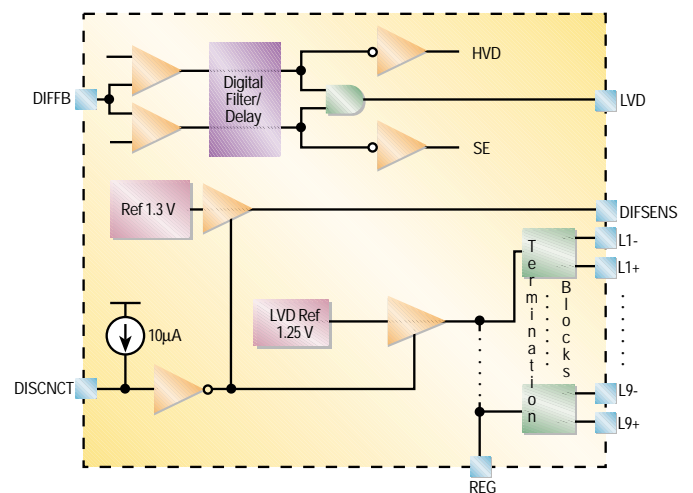
Get datasheets, samples and app reports at:
www.ti.com/sc/docs/products/analog/device.html
 Replace *device* in URL with [ucc5680](#) or [ucc5681](#)

- Nine-line, low-voltage-differential (LVD)-only, SCSI terminator
- Built-in SPI-3 mode change filter/delay
- Operation from 2.7 V to 5.25 V
- Channel capacitance of 3 pF
- LVD status line (28-pin version)
- Differential failsafe bias
- Reverse disconnect polarity (UCC5681)
- Applications include servers, workstations, redundant array of inexpensive disk (RAID) boxes, SCSI host adapter boards
- Packaging: available in 24- and 28-pin TSSOP
- Pricing starts at \$3.20 in quantities of 1,000

Supports the following standards

Ultra2 SCSI	Fast 40	SPI-2
Ultra 3/Ultra 160	Fast 80	SPI-3

UCC5680 block diagram



For technical support and ordering literature, see page 15.

Interface, SCSI Bus Terminators

Multimode terminator for 15 lines

UCC5638/9



Get datasheets, samples, evaluation modules and app reports at:

www.ti.com/sc/docs/products/analog/device.html

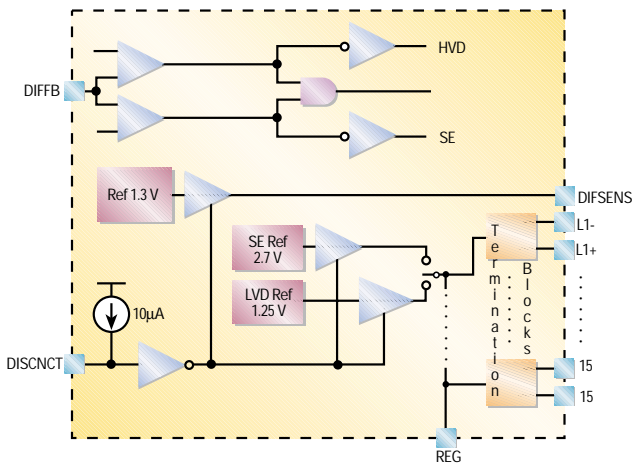
Replace *device* in URL with [ucc5638](#) or [ucc5639](#)

- Automatic selection of single-ended (SE) or low-voltage-differential (LVD) termination
- Operation from 2.7 V to 5.25 V
- Channel capacitance of 3 pF
- Differential failsafe bias
- Supports active negation
- Reverse disconnect polarity (UCC5639)
- Applications include servers, workstations, redundant array of inexpensive disk (RAID) systems, SCSI host adapter boards
- Packaging: available in 48-pin LQFP thermal for low junction temperature and better MTBF
- Pricing start at \$4.60 each in quantities of 1,000

Supports the following standards

SCSI-1	Ultra SCSI	Fast 20	SPI
SCSI-2	Ultra2 SCSI	Fast 40	SPI-2
Fast SCSI	Ultra 3/Ultra 160	Fast 80	SPI-3

UCC5638/9 block diagram



Interface, SCSI Bus Terminators

Multimode terminator for 14 lines with status outputs

UCC5628/9



Get datasheets and samples at:

www.ti.com/sc/docs/products/analog/device.html

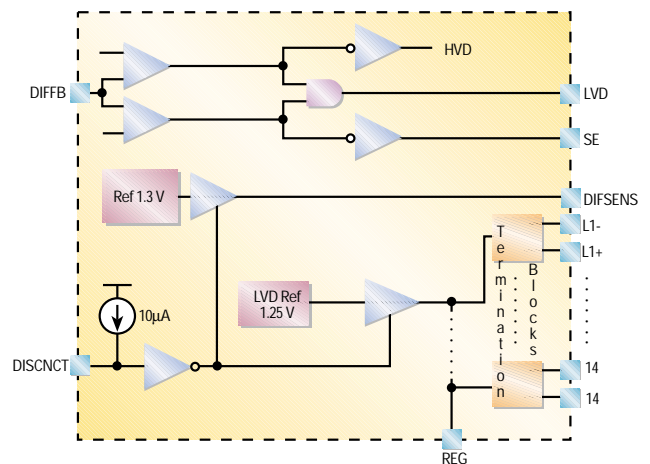
Replace *device* in URL with [ucc5628](#) or [ucc5629](#)

- Automatic selection of single-ended (SE) or low-voltage-differential (LVD) termination
- Bus status outputs for SE and LVD modes
- Operation from 2.7 V to 5.25 V
- Channel capacitance of 3 pF
- Differential failsafe bias
- Supports active negation
- Reverse disconnect polarity (UCC5629)
- Applications include servers, workstations, redundant array of inexpensive disk (RAID) systems, SCSI host adapter boards
- Packaging: available in 48-pin LQFP for low junction temperature and better MTBF
- Pricing starts at \$5.81 each in quantities of 1,000

Supports the following standards

SCSI-1	Ultra SCSI	Fast 20	SPI
SCSI-2	Ultra2 SCSI	Fast 40	SPI-2
Fast SCSI	Ultra 3/Ultra 160	Fast 80	SPI-3

UCC5628/9 block diagram



Read *Sine On* online at www.ti.com/sc/sineon

Interface, SCSI Bus Terminators

Nine-line multimode terminator

UCC5630A/31A



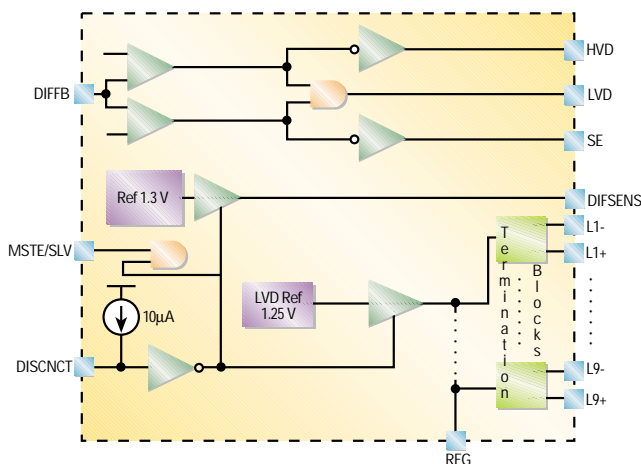
Get datasheets, samples and app reports at:
www.ti.com/sc/docs/products/analog/device.html
Replace *device* in URL with **ucc5630a** or **ucc5631a**

- Automatic selection of single-ended (SE) or low-voltage-differential (LVD) termination
- Operation from 2.7 V to 5.25 V
- Channel capacitance of 3 pF
- Bus mode status outputs
- Differential failsafe bias
- Supports active negation
- Reverse disconnect polarity (UCC5631A)
- Applications include servers, workstations, redundant array of inexpensive disk (RAID) systems, SCSI host adapter boards
- Packaging: available in 36-pin QSOP and 48-pin FQP
- Pricing starts at \$3.36 each in quantities of 1,000

Supports the following standards

SCSI-1	Ultra SCSI	Fast 20	SPI
SCSI-2	Ultra2 SCSI	Fast 40	SPI-2
Fast SCSI	Ultra 3/Ultra 160	Fast 80	SPI-3

UCC5630A/31A block diagram



Interface, SCSI Bus Terminators

Nine-line, LVD-only terminator

UCC5640/1



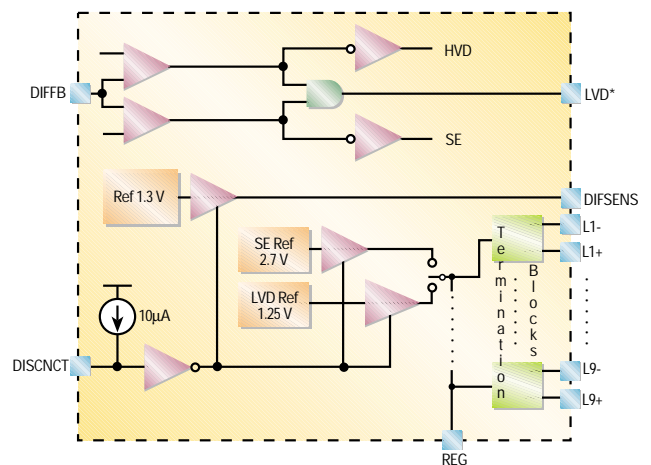
Get datasheets, samples, evaluation modules and app reports at:
www.ti.com/sc/docs/products/analog/device.html
Replace *device* in URL with **ucc5640** or **ucc5641**

- Operation from 2.7 V to 5.25 V
- Channel capacitance of 3 pF
- Low-voltage-differential (LVD) status line (28-pin version)
- Differential failsafe bias
- Reverse disconnect polarity (UCC5641)
- Applications include servers, workstations, redundant array of inexpensive disk (RAID) systems, SCSI host adapter boards
- Packaging: available in 24- and 28-pin TSSOP
- Pricing starts at \$4.28 each in quantities of 1,000

Supports the following standards

Ultra2 SCSI	Fast 40	SPI-2
Ultra 3/Ultra 160	Fast 80	SPI-3

UCC5640/1 block diagram



* 28-pin version only.

For technical support and ordering literature, see page 15.

Interface, SCSI Bus Terminators

Nine-line multimode terminator for cables and plugs

UCC5510



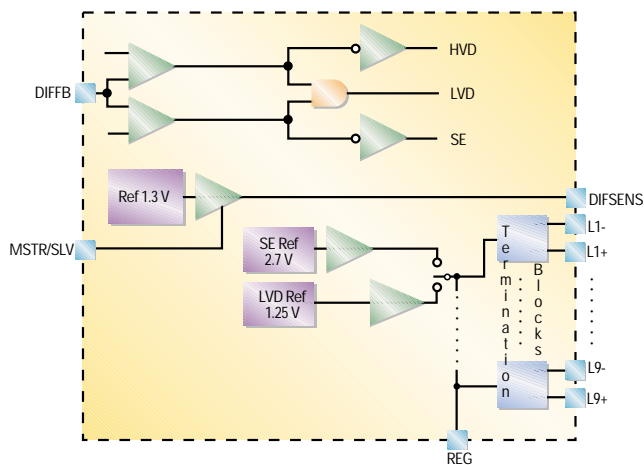
Get datasheets, samples and app reports at:
www.ti.com/sc/docs/products/analog/ucc5510.html

- Automatic selection of single-ended (SE) or low-voltage-differential (LVD) termination
- Operation from 3 V to 5.25 V
- Channel capacitance of 3 pF
- Differential failsafe bias
- Supports active negation
- Applications include servers, workstations, redundant array of inexpensive disk (RAID) systems, SCSI host adapter boards
- Packaging: available in 36-pin QSOP
- Pricing starts at \$2.94 each in quantities of 1,000

Supports the following standards

SCSI-1	Ultra SCSI	Fast 20	SPI
SCSI-2	Ultra2 SCSI	Fast 40	SPI-2
Fast SCSI	Ultra 3/Ultra 160	Fast 80	SPI-3

UCC5510 block diagram



Integrated Bus Voltage Regulators

Single-ended and low-voltage-differential SCSI bias regulator

UC560



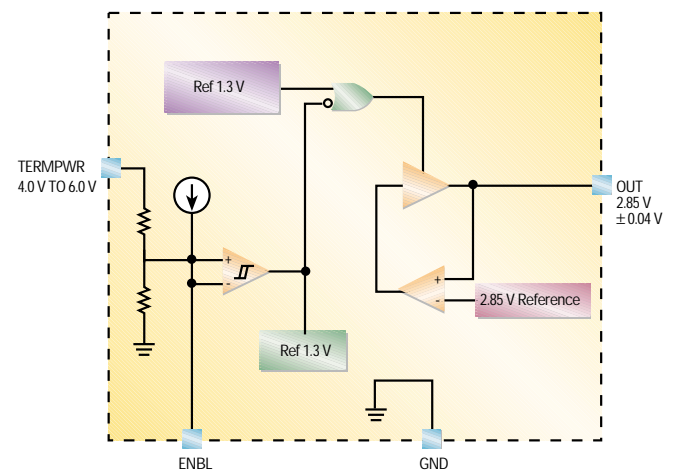
Get datasheets, samples and app reports at:
www.ti.com/sc/docs/products/analog/uc560.html

- Regulated output voltage of 2.85 V with 1.4% tolerance
- Provides current for active termination of up to 27 SCSI bus lines
- Sourcing current for termination of -750 mA
- Sinking current for active negation drivers of +300 mA
- Dropout voltage regulator of 0.9 V at 750 mA and 2.75 V output
- Supply current of 100 μ A in disconnect mode
- Current limit and thermal shutdown protection
- Applications include SCSI backplanes in servers, workstations and redundant array of inexpensive disk (RAID) boxes, SCSI cable connectors and plugs
- Packaging: low thermal resistance surface mount in 8-pin power SOIC, 5-pin TO-220, 5-pin TO-263
- Pricing starts at \$1.65 each in quantities of 1,000

Supports the following standards

SCSI-1	Ultra SCSI
SCSI-2	Fast 20
Fast SCSI	SPI

UC560 block diagram



Read *Sine On* online at: www.ti.com/sc/sineon

Integrated Bus Voltage Regulators

Single-ended and low-voltage-differential SCSI bias regulator

UCC561



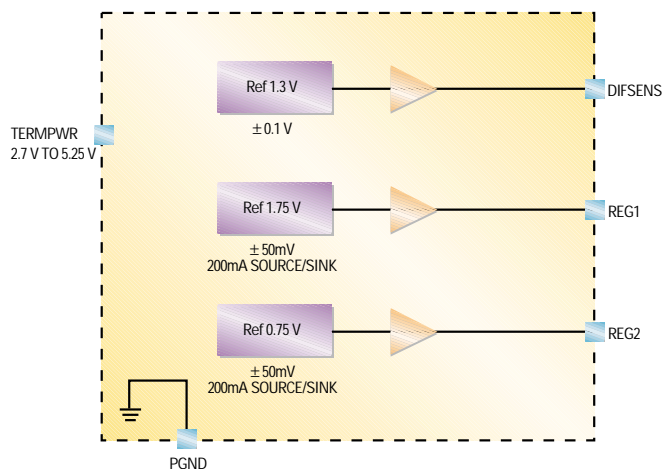
Get datasheets, samples and app reports at:
www.ti.com/sc/docs/products/analog/ucc561.html

- Regulated outputs of 1.75 V and 0.75 V \pm 50 mV
- Source or sink 200 mA each
- Supports active low-voltage-differential (LVD) SCSI termination of up to 27 lines
- DIFFSENS driver regulated 1.3 V to \pm 0.1 V
- Operation from 2.7 V to 5.25 V
- Applications include SCSI backplanes in servers, workstations and redundant array of inexpensive disk (RAID) boxes, SCSI cable connectors and plugs
- Packaging: available in 16-pin SOIC and 5-pin TO-263
- Pricing starts at \$2.03 each in quantities of 1,000

Supports the following standards

Ultra2 SCSI	Fast 40	SPI-2
Ultra 3/Ultra 160	Fast 80	SPI-3

UCC561 block diagram



LVD SCSI

Nine-channel, dual-mode transceiver

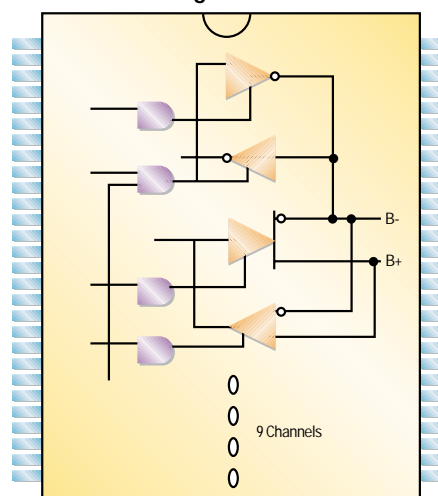
SN75LVDM976/77



Get datasheets, samples and app reports at:
www.ti.com/sc/docs/products/analog/device.html
 Replace *device* in URL with *sn75lvdm976* or *sn75lvdm977*

- Nine transceivers for transmitting or receiving the signals to or from a SCSI data bus
- Supports single-ended (SE) and low-voltage-differential (LVD) SCSI
- Accepts CMOS input levels (LVDM976) and TTL input levels (LVDM977)
- Incorporates CDE0 to detect status of DIFFSENS line SE, LVD or high-voltage-differential (HVD)
- Single-ended receivers include noise pulse reflection circuitry
- Low disabled supply current saves on power, 7 mA (max)
- Power-up/down glitch protection
- Bus will go into high-impedance when V_{CC} is less than 1.5 V for hot-plugging applications
- Pin-compatible with the SN75976A, HVD transceiver
- Packaging codes/options:
 - SN75LVDM976DGG/R
 - SN75LVDM976DL/R
 - SN75LVDM977DGG/R
 - SN75LVDM977DL/R
- Pricing starts at \$6.76 each in quantities of 1,000

SN75LVDM976/77 block diagram



For technical support and ordering literature, see page 15.

Hot Swap Managers

Dual Hot Swap power manager/ independent circuit breaker

TPS2300/1



Get datasheets, samples,

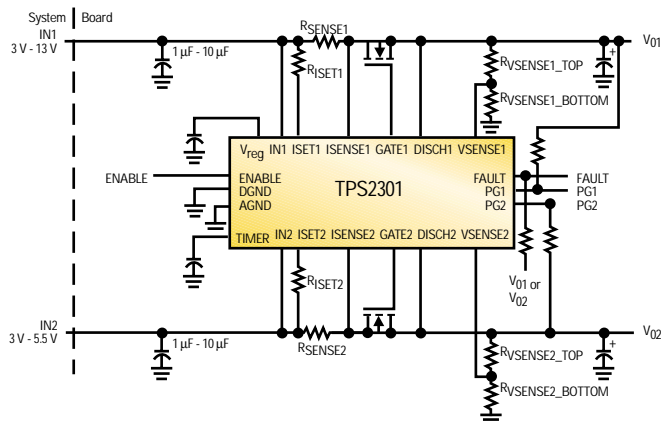
evaluation modules and app reports at:

www.ti.com/sc/docs/products/analog/device.html

Replace *device* in URL with [tps2300](#) or [tps2301](#)

- Dual-channel, high-side MOSFET drivers
- Dual-channel V_{in} voltage ranges are V_{in1} : 3 V to 13 V and V_{in2} : 3 V to 5.5 V
- Inrush current limiting with dv/dt control
- Circuit breaker control with programmable current limit and transient timer
- Power Good reporting with transient filter
- CMOS- and TTL-compatible enable input
- Low 5- μ A standby supply current
- Ambient temperature range of -40° C to 85° C
- Electrostatic discharge protection
- Applications include Hot Swap/plug/dock power management, Hot Plug PCI, Device Bay, RAID
- Packaging: available in 20-pin TSSOP
- Pricing starts at \$3.50 in quantities of 1,000

TPS2300/1 block diagram



Hot Swap Managers

Programmable Hot Swap power manager

UCC3912/5



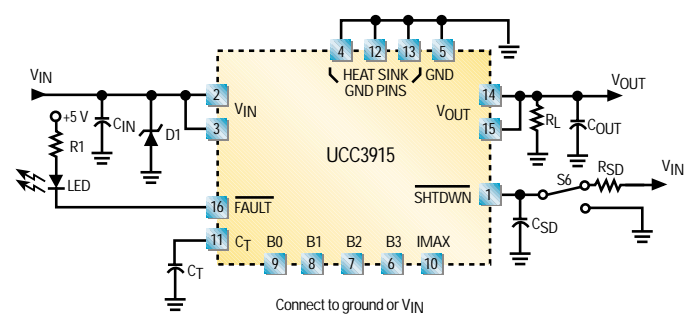
Get datasheets, samples, and app reports at:

www.ti.com/sc/docs/products/analog/device.html

Replace *device* in URL with [ucc3912](#) or [ucc3915](#)

- Operation at 3 V to 8 V (UCC3912); 7 V to 15 V (UCC3915)
- Digital programmable current limit from 0 to 3 A
- Integrated 0.15- Ω power MOSFET
- Electronic circuit breaker function
- I_{cc} when disabled — 1 μ A (UCC3912); 100 μ A (UCC3915)
- Programmable on time
- Programmable start delay
- Duty cycle — fixed 3% (UCC3912); 2% (UCC3915)
- Uni-directional switch
- Thermal shutdown
- Fault output indicator
- Maximum output current can be set to 1 A above the programmed fault level or to a full 4 A
- Applications include Hot Swap/plug/dock power management, SCSI, fans and single supply applications
- Packaging: power SOIC and TSSOP with low thermal resistance
- Pricing starts at \$3.37 each in quantities of 1,000

UCC3912/5 block diagram



Read *Sine On* online at: www.ti.com/sc/sineon

Hot Swap Managers

Negative-voltage and latchable negative-floating Hot Swap power manager

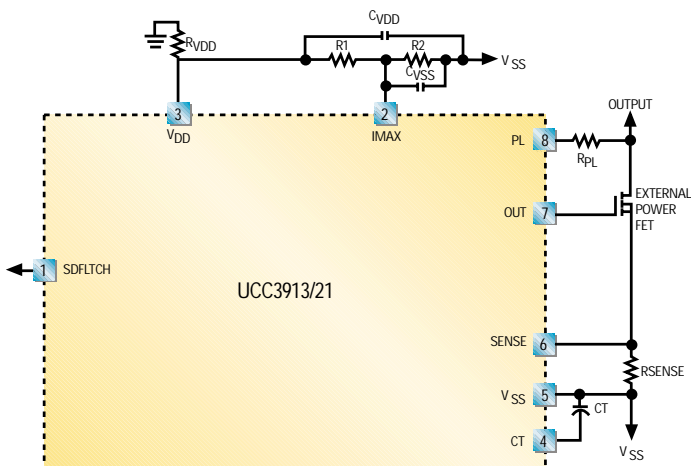
UCC3913/21



Get datasheets, samples and app reports at:
www.ti.com/sc/docs/products/analog/device.html
 Replace *device* in URL with [ucc3913](#) or [ucc3921](#)

- Meets -48 V Telecom application needs
- Precision fault threshold
- Programmable features:
 - Average power limiting
 - Linear current control
 - Overcurrent limit
 - Fault timer
- Fault output indication signal
- Shutdown control
- Undervoltage lockout (UVLO)
- 250 μ s glitch filter on the SDFLTCH (shut down, fault and latch) pin (UCC3921)
- Applications include Telecom Hot Swap/plug/dock power management
- Electronic circuit breaker
- Packaging: available in 8-pin SOIC, PDIP and CDIP
- Pricing start at \$1.37 each in quantities of 1,000

UCC3913/21 block diagram



Application Reports

To access any of the following application notes, type the URL www.ti.com/sc/docs/psheets/abstract/apps/litnumber.htm and replace *litnumber* with the number in the parenthesis beside the title.

IC part no.	Application report
	Interface Circuits for SCSI (slla035)
UCC3912	Integrated Electronic Circuit Breaker IC for Hot Swap (slua131)

Evaluation Modules (EVMs)

The following evaluation modules (EVMs) are available for SCSI Bus and Hot Swap products. To order any of the EVM kits listed, please call our toll free order desk number, 1-800-477-8924, ext. 5800 in North America. To order in other regions, please contact the TI Product Information Center for your region (see listings on page 15) or contact your local TI distributor; see www.ti.com/sc/docs/distmenu.htm for distributor listings.

Each EVM kit contains an evaluation board and a user document. For a full listing of analog EVMs, visit www.ti.com/sc/docs/tools/analog/index.html

Evaluation Module	Description	Price
DM5638	Multimode SCSI 15-line terminator	\$50
DM5640	Low-voltage differential SCSI 9-line terminator	\$50
TPS2301EVM-153	Dual Hot Swap manager with interface card	\$50

Power Management *Sine On* catalogs

To order the latest Power Management *Sine On* catalog, return the attached reply card.

For online versions, visit www.ti.com/sc/sineon

- Battery Management (1Q00)
- DSP Power Management (2Q00)
- Low Dropout Regulators (2Q00)
- Low-Power DC/DC Converters (2Q00)
- Power Distribution (3Q99)
- Power Supply Control (2Q00)
- Supervisory Circuits (3Q99)

For technical support and ordering literature, see page 15.

Bus Performance Comparison

Common Computer I/O Interfaces					
	Names	Max. Speed (MBytes/sec.)	Number of Devices	Max. Total Length of Cable	Uses
SCSI-1	SCSI-1	5	8	6M ^{SE}	Hard disk, removable media, tape drives, CDROMs, CD-R, CD-RW, scanners, and high end publishing printers
	SCSI-2	10	8	6 M ^{SE} 25 M ^{HVD}	Hard disk, removable media, tape drives, CDROMs, CD-R, CD-RW, scanners, RAID* and high end publishing printers
SCSI-3 SPI	Fast SCSI	10	8	6 M ^{SE}	Hard disk, removable media, tape drives, RAID*
	Wide Fast SCSI	20	16	25 M ^{HVD}	
SCSI-3 Fast-20	Ultra SCSI - (Fast-20)	20	8	2 Devices (P-P) 20 M ^{SE}	Hard disk, removable media, tape drives, RAID*
	Wide Ultra SCSI - (Fast-20)	40	16	<4 Devices 3 M ^{SE} >4 Devices 1.5 M ^{SE} 25 M ^{HVD}	
SCSI-SPI-2	Ultra2 SCSI - (Fast-40)	40	8	2 Devices (P-P) 25 M ^{LVD}	Hard disk, removable media, tape drives, RAID*
	Wide Ultra2 SCSI - (Fast-40)	80	16	16 Devices 12 M ^{LVD}	
SCSI-SPI-3	Ultra3 or Ultra 160 SCSI - (Fast-80)	160	16	2 Devices (P-P) 25 M ^{LVD}	Hard disk, RAID*
	(Wide only) Ultra160/m			16 Devices 12 M ^{LVD}	
SCSI- SPI-3	Ultra320 SCSI - (Fast-160) (Wide only)	320	16		Hard disk, RAID*
SCSI- SPI-5	Ultra640 SCSI - (Fast-320) (Wide only)	640	16		Hard disk, RAID*
Fibre Channel	Fibre Channel (PH1 and PH2)	100 PH1 200 PH2	127	30 M per segment Copper 10Km fiber	Good box to box connection, but latency issues for device connections. point to point or star coupling

*RAID - redundant array of inexpensive disks

Read *Sine On* online at: www.ti.com/sc/sineon

Selection Guide for SCSI Bus Terminators

Active Bus Terminators								
Standards Supported	UCC5510	UC5603	UC5604	UC5605	UC5612	UC5613	UCC5606	UCC5614
SCSI	2	2	2	2	2	2	2	2
Fast SCSI	2	2	2	2	2	2	2	2
Fast Wide SCSI	3	3	3	3	3	3	3	3
Ultra SCSI	2				2	2	2	2
Wide Ultra SCSI	3				3	3	3	3
Ultra 2 SCSI	2							
Wide Ultra 2 SCSI	3							
Ultra 3 SCSI (wide only)								
Specifications								
Channels	9	9	9	9	9	9	9	9
Type SE, LVD, or LVD/SE	LVD/SE	SE	SE	SE	SE	SE	SE	SE
TERMPWR voltage range	3 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25
Disconnect high or low	n/a	H	H	L	H	H	L	H
Channel capacitance	3	6	9	4	4	3	1.8	1.8
Resistor tolerance	500 (em)	50	1200	50	50	50	500 (em)	500 (em)
Typical sink current	100	400	40	200	200	400	400	400
Current tolerance	4%	3%	7%	5%	5%	4%	4%	4%
Termination impedance:								
SE	110	110	110	110	110	110	110 & 2500	110 & 2500
SE tolerance	7%	3%	7%	5%	5%	5%	7%	7%
LVD	105							
LVD tolerance	5%							
Common mode	125							
Supports active negation	Y	Y	N	Y	Y	Y	Y	Y
SPI-3 mode switch. delay	N	N	N	N	N	N	N	N

Notes:

Narrow Ultra spec3 was declared obsolete by the SCSI committee

(em) = emulated resistor

For technical support and ordering literature, see page 15.

Selection Guide for SCSI Bus Terminators

Active Bus Terminators									
Standards Supported	UCC5630	UCC5630A	UCC5631A	UCC5640	UCC5641	UCC5672	UCC5673	UCC5680	UCC5681
SCSI	2	2	2			2	2		
Fast SCSI	2	2	2			2	2		
Fast Wide SCSI	3	3	3			3	3		
Ultra SCSI	2	2	2			2	2		
Wide Ultra SCSI	3	3	3			3	3		
Ultra 2 SCSI	2	2	2	2	2	2	2	2	2
Wide Ultra 2 SCSI	3	3	3	3	3	3	3	3	3
Ultra 3 SCSI (wide only)	3	3	3	3	3	3	3	3	3
Specifications									
Channels	9	9	9	9	9	9	9	9	9
Type SE, LVD, or LVD/SE	LVD/SE	LVD/SE	LVD/SE	LVD	LVD	LVD/SE	LVD/SE	LVD	LVD
TERMPWR voltage range	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25
Disconnect high or low	H	H	L	H	L	H	L	H	L
Channel capacitance	4	4	4	3	3	3	3	3	3
Resistor tolerance	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)
Typical sink current	100	100	100			100	100		
Current tolerance	4%	4%	4%			4%	4%		
Termination impedance:									
SE	110	110	110			110	110		
SE tolerance	7%	7%	7%			7%	7%		
LVD	105	105	105	105	105	105	105	105	105
LVD tolerance	5%	5%	5%	5%	5%	5%	5%	5%	5%
Common mode	150	150	150	150	150	150	150	150	150
Supports active negation	Y	Y	Y			Y	Y		
SPI-3 mode switch. delay	N	N	N	N	N	Y	Y	Y	Y

Notes:

Narrow Ultra spec3 was declared obsolete by the SCSI committee

(em) = emulated resistor

Read *Sine On* online at www.ti.com/sc/sineon

Selection Guide for SCSI Bus Terminators

Active Bus Terminators									
Standards Supported	UCC5628	UCC5629	UCC5638	UCC5639	UCC5601	UC5602	UC5607	UC5608	UC5609
SCSI	2	2	2	2	1	1	1	1	1
Fast SCSI	2	2	2	2	1	1	1	1	1
Fast Wide SCSI	2	2	2	2	1+	1+	1+	1+	1+
Ultra SCSI	2	2	2	2					
Wide Ultra SCSI	2	2	2	2					
Ultra 2 SCSI	2	2	2	2					
Wide Ultra 2 SCSI	2	2	2	2					
Ultra 3 SCSI (wide only)	2	2	2	2					
Specifications									
Channels	14	14	15	15	18	18	18	18	18
Type SE, LVD, or LVD/SE	LVD/SE	LVD/SE	LVD/SE	LVD/SE	SE	SE	SE	SE	SE
TERMPWR voltage range	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25	2.7 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25
Disconnect high or low	H	L	H	L	H	H	2L	H	L
Channel capacitance	4	4	4	4	10	11	8	6	6
Resistor tolerance	500 (em)	500 (em)	500 (em)	500 (em)	50	1200	1200	50	50
Typical sink current	100	100	100	100	20	20	200	300	300
Current tolerance	4%	4%	4%	4%	5%	7%	7%	5%	5%
Termination impedance:									
SE	110	110	110	110	110	110	110	110	110
SE tolerance	4%	4%	4%	4%	5%	7%	7%	5%	5%
LVD	105	105	105	105					
LVD tolerance	5%	5%	5%	5%					
Common mode	150	150	150	150					
Supports active negation	Y	Y	Y	Y	N	N	Y	Y	Y
SPI-3 mode switch delay	N	N	N	N	N	N	N	N	N

Notes:

Narrow Ultra spec3 was declared obsolete by the SCSI committee

(em) = emulated resistor

For technical support and ordering literature, see page 15.

Selection Guide for SCSI Bus Terminators

Active Bus Terminators								
Standards Supported	UCC5610	UCC5611	UCC5617	UCC5618	UCC5619	UCC5620	UCC5621	UCC5622
SCSI	1	1	1	1				
Fast SCSI	1	1	1	1				
Fast Wide SCSI	1+	1+	1+	1+	1	1	1	1
Ultra SCSI	1	1	1	1				
Wide Ultra SCSI	1+	1+	1+	1+	1	1	1	1
Ultra 2 SCSI								
Wide Ultra 2 SCSI								
Ultra 3 SCSI (wide only)								
Specifications								
Channels	18	18	18	18	27	27	27	27
Type SE, LVD, or LVD/SE*	SE	SE	SE	SE	SE	SE	SE	SE
TERMPWR voltage range	2.7 - 5.25	2.7 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25	4 - 5.25
Disconnect high or low	H	L	L	H	L	H	2L	2H
Channel capacitance	3	3	2.5	2.5	3	3	3	3
Resistor tolerance	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)	500 (em)
Typical sink current	400	40	200	200	300	300	300	300
Current tolerance	4%	4%	3%	3%	3%	3%	3%	3%
Termination impedance:								
SE	110 & 2500	110 & 2500	110	110	110	110	110	110
SE tolerance	7%	7	5%	5	5%	5%	5%	5%
LVD								
LVD tolerance								
Common mode								
Supports active negation	Y	Y	Y	Y	N	N	Y	Y
SPI-3 mode switch delay	N	N	N	N	N	N	N	N

Notes: Narrow Ultra spec3 was declared obsolete by the SCSI committee
(em) = emulated resistor

Selection Guide for SCSI Transceivers

SCSI Transceivers							
Device	Attributes* (HVD, SE, LVD)	Drivers per package	Receivers per package	Driver tpd (max) (ns)	Receiver tpd (max) (ns)	Supply Voltage (V)	I _{CC} (max) (mA)
SN75976A	HVD	9	9	13.5	16.5	5	60
SN75LBC970A	HVD, CC	9	9	26.6	26.6	5	94
SN75LBC971A	HVD, CC	9	9	25.3	25.3	5	66

* HVD = High-Voltage-Differential SCSI

SE = Single-ended SCSI

LVD = Low-Voltage-Differential SCSI

CC = Converter Chipset SCSI

Read *Sine On* online at: www.ti.com/sc/sineon

Selection Guide for Hot Swap Managers

Hot Swap Managers										
	Attributes	VIN Range (typ) (V)	Current Range	Integrated Power FET	rDS (on) (mOhm)	Supply Current (typ) (mA)	Programmable Fault Threshold	Programmable Time Delay	Latched Fault Mode	Average Power Limiting
UCC3921	Negative-floating	-10.5 and more negative	Externally limited	No		1	Yes	Yes	Yes	Yes
UCC3919	Single external FET	3 to 8	Externally limited	No		1	Yes	Yes	Yes	Yes
UCC3918	Single low Rds on integrated FET	3 to 6	0A to 4A	Yes	75	1	Yes	Yes	No	Yes
UCC3917	Positive floating	12 and more positive	Externally limited	No		5	Yes	Yes	Yes	Yes
UCC3916	Single low current integrated FET	4 to 6	-1.8A to -1.5A	Yes	220	1	No	Yes	No	No
UCC39161	Single low current integrated FET	4 to 6	-1.0A to -0.7A	Yes	220	1	No	Yes	No	No
UCC3915	Single high voltage integrated FET	7 to 15	0A to 3A	Yes	150	1	Yes	Yes	No	No
UCC39151	Single high voltage integrated FET	7 to 15	0A to 3A	Yes	150	1	Yes	Yes	No	No
UCC3913	Negative-floating	-10.5 and more negative	Externally limited	No		1	Yes	Yes	Yes	Yes
UCC3912	Single integrated FET	3 to 8	0A to 3A	Yes	150	1	Yes	Yes	No	No
UCC2921	Negative-floating	-10.5 and more negative	Externally limited	No		1	Yes	Yes	Yes	Yes
UCC2919	Single external FET	3 to 8	Externally limited	No		1	Yes	Yes	Yes	Yes
UCC2917	Positive floating	12 and more positive	Externally limited	No		5	Yes	Yes	Yes	Yes
UCC2915	Single high voltage integrated FET	7 to 15	0A to 3A	Yes	150	1	Yes	Yes	No	No
UCC2913	Negative-floating	-10.5 and more negative	Externally limited	No		1	Yes	Yes	Yes	Yes
UCC1921	Negative-floating	-10.5 and more negative	Externally limited	No		1	Yes	Yes	Yes	Yes
UCC1919	Single external FET	3 to 8	Externally limited	No		1	Yes	Yes	Yes	Yes
UCC1917	Positive floating	12 and more positive	Externally limited	No		5	Yes	Yes	Yes	Yes
UCC1913	Negative-floating	-10.5 and more negative	Externally limited	No		1	Yes	Yes	Yes	Yes
UC3914	Single high voltage external FET	5 to 35	Externally limited	No		8	Yes	Yes	Yes	Yes
UC2914	Single high voltage external FET	5 to 35	Externally limited	No		8	Yes	Yes	Yes	Yes
UC1914	Single high voltage external FET	5 to 35	Externally limited	No		8	Yes	Yes	Yes	Yes
TPS2331	Single integrated FET	3 to 13	Externally limited	No		1	Yes	Yes	No	No
TPS2330	Single integrated FET	3 to 13	Externally limited	No		1	Yes	Yes	No	No
TPS2321	Dual external FET	Ch1: 3 to 13 Ch 2: 3 to 5.5	Externally limited	No		1	Yes	Yes	No	No
TPS2320	Dual external FET	Ch1: 3 to 13 Ch 2: 3 to 5.5	Externally limited	No		1	Yes	Yes	No	No
TPS2311	Dual external FET	Ch1: 3 to 13 Ch 2: 3 to 5.5	Externally limited	No		1	Yes	Yes	No	No
TPS2310	Dual external FET	Ch1: 3 to 13 Ch 2: 3 to 5.5	Externally limited	No		1	Yes	Yes	No	No
TPS2301	Dual external FET	Ch1: 3 to 13 Ch 2: 3 to 5.5	Externally limited	No		1	Yes	Yes	No	No
TPS2300	Dual external FET	Ch1: 3 to 13 Ch 2: 3 to 5.5	Externally limited	No		1	Yes	Yes	No	No

For technical support and ordering literature, see page 15.

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Phone
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