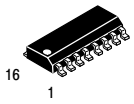
MC10SX1189

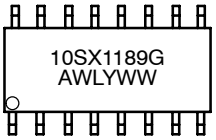
Fibre Channel Coaxial Cable Driver and Loop Resiliency Circuit

ON Semiconductor®

http://onsemi.com

FIBRE CHANNEL COAXIAL CABLE DRIVER AND LOOP RESILIENCY CIRCUIT





SOIC
CASE 751B

10SX1189 = Specific Device Code
A = Assembly Location
WL = Wafer Lot
Y = Year
WW = Work Week
G = Pb−Free Package

Description

The MC10SX1189 is a differential receiver, differential transmitter specifically designed to drive coaxial cables. It incorporates the output cable drive capability of the MC10EL89 Coaxial Cable Driver with additional circuitry to multiplex the output cable drive source between the cable receiver or the local transmitter inputs. The multiplexer control circuitry is TTL compatible for ease of operation.

The MC10SX1189 is useful as a bypass element for Fibre Channel-Arbitrated Loop (FC-AL) or Serial Storage Architecture (SSA) applications, to create loop style interconnects with fault tolerant, active switches at each device node. This device is particularly useful for back panel applications where small size is desirable.

The EL89 style drive circuitry produces swings twice as large as a standard PECL output. When driving a coaxial cable, proper termination is required at both ends of the line to minimize reflections. The 1.6 V output swings allow for proper termination at both ends of the cable, while maintaining the required swing at the receiving end of the cable. Because of the larger output swings, the QT, $\overline{QT}$ outputs are terminated into the thevenin equivalent of 50 Ω to V_{CC} − 3.0 V instead of 50 Ω to V_{CC} − 2.0 V.

Features

- 425 ps Propagation Delay
- 1.6 V Output Swing on the Cable Driving Output
- Operation Range: V_{CC} = 4.5 V to 5.5 V
- 75 kΩ Internal Input Pull Down Resistors
- >1000 V ESD Protection
- Transistor Count = 102
- Pb−Free Packages are Available*

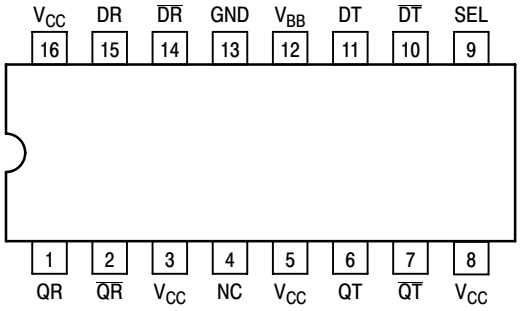


Figure 1. Pinout: 16-Lead SOIC (Top View)

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

TRUTH TABLE

SEL	Function
L	DR → QT
H	DT → QT

PIN NAMES

Pins	Function
DR/$\overline{DR}$	Differential Input from Receive Cable
QR/$\overline{QR}$	Buffered Differential Output from Receive Cable
DT/$\overline{DT}$	Differential Input to Transmit Cable
QT/$\overline{QT}$	Buffered Differential Output to Transmit Cable
SEL	Multiplexer Control Signal (TTL)
V_{CC}	Positive Power Supply
GND	Ground
V_{BB}	Reference Voltage Output

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

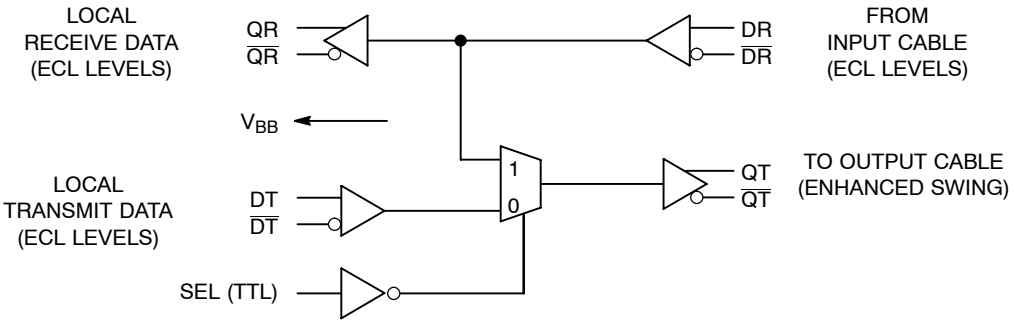


Figure 2. LOGIC DIAGRAM

Table 1. ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Power Supply Voltage (Referenced to GND)	0 to +7.0	Vdc
V_{IN}	Input Voltage (Referenced to GND)	0 to +6.0	Vdc
I_{OUT}	Output Current Continuous Surge	50 100	mA
T_A	Operating Temperature Range	−40 to +85	°C
T_{STG}	Storage Temperature Range	−50 to +150	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

Table 2. DC CHARACTERISTICS (V_{CC} = 5.0 V, V_{EE} = 0 V)

Symbol	Characteristic	-40°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OH}	Output Voltage High (QR,$\overline{QR}$) V_{CC} =5.0 V, GND = 0 V (Notes 1, 2)	3.92	4.05	4.22	3.97	4.11	4.27	4.00	4.16	4.30	V
V_{OL}	Output Voltage Low (QR,$\overline{QR}$) V_{CC} =5.0 V, GND = 0 V (Notes 1, 2)	3.05	3.23	3.35	3.07	3.24	3.37	3.10	3.25	3.41	V
V_{OH}	Output Voltage High (QT,$\overline{QT}$) V_{CC} =5.0 V, GND = 0 V (Notes 1, 3)	3.83	3.95	4.10	3.88	4.02	4.15	3.90	4.09	4.17	V
V_{OL}	Output Voltage Low (QT,$\overline{QT}$) V_{CC} =5.0 V, GND = 0 V (Notes 1, 3)	1.90	2.33	2.50	1.85	2.26	2.45	1.85	2.23	2.45	V
I_{CC}	Quiescent Supply Current (Note 4)	20	25	42	23	27	47	25	28	47	mA
V_{IH}	Input Voltage High (DR,$\overline{DR}$ & DT,$\overline{DT}$) V_{CC} = 5.0 V, GND = 0 V (Note 1)	3.77		4.11	3.87		4.19	3.94		4.28	V
V_{IL}	Input Voltage Low (DR,$\overline{DR}$ & DT,$\overline{DT}$) V_{CC} = 5.0 V, GND = 0 V (Note 1)	3.05		3.50	3.05		3.52	3.05		3.56	V
V_{IH}	Input Voltage High SEL	2.0			2.0			2.0			V
V_{IL}	Input Voltage Low SEL			0.8			0.8			0.8	V
V_{BB}	Output Reference Voltage V_{CC} = 5.0 V, GND = 0 V (Note 1)	3.57	3.63	3.70	3.65	3.70	3.75	3.69	3.75	3.81	V
I_{IH}	Input HIGH Current			150			150			150	μA
I_{IL}	Input LOW Current	0.5			0.5			0.5			μA

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

1. Values will track 1:1 with the V_{CC} supply. V_{EE} can vary +0.5 V to −0.5 V.
2. Outputs loaded with 50 Ω to V_{CC} − 2.0 V.
3. Outputs loaded with 50 Ω to V_{CC} − 3.0 V.
4. Outputs open circuited.

Table 3. AC CHARACTERISTICS (V_{CC} = 4.5 V to 5.5 V) (Note 5)

Symbol	Characteristic		−40°C			0 to 85°C			Unit	Condition
			Min	Typ	Max	Min	Typ	Max		
t_{PLH}, t_{PHL}	Propagation Delay to Output	DR → QR (Diff)	175	300	450	225	325	500	ps	Note 6
		(SE)	150	300	500	175	325	550		Note 7
		DR → QT (Diff)	250	425	650	300	450	650		
		(SE)	225	425	700	250	450	700		
		DT → QT (Diff)	225	400	650	275	425	650		
		(SE)	200	400	725	225	425	725		
	Propagation Delay	SEL → QT,$\overline{QT}$	450	600	850	500	650	800		1.5V to 50% Pt
t_r, t_f	Rise Time Fall Time	QR,$\overline{QR}$	100 100	275 275	400 400	125 125	275 275	400 400	ps	20% to 80% 80% to 20%
t_r, t_f	Rise Time Fall Time	QT,$\overline{QT}$	150 150	300 300	550 550	150 150	300 300	550 550	ps	20% to 80% 80% to 20%
t_{skew}	Within Device Skew			15			15		ps	Note 8
V_{PP}	Minimum Input Swing		200		1000	200		1000	mV	Note 9
V_{CMR}	Common Mode Range		3.00		4.35	3.00		4.35	V	Note 10

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

5. V_{EE} can vary +0.5 V to −0.5 V.
6. The differential propagation delay is defined as the delay from the crossing points of the differential input signals to the crossing point of the differential output signals.
7. The single-ended propagation delay is defined as the delay from the 50% point of the input signal to the 50% point of the output signal.
8. Duty cycle skew is the difference between t_{PLH} and t_{PHL} propagation delay through a device.
9. Minimum input swing for which AC parameters are guaranteed.
10. The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between $V_{PP\ Min}$ and 1.0 V.

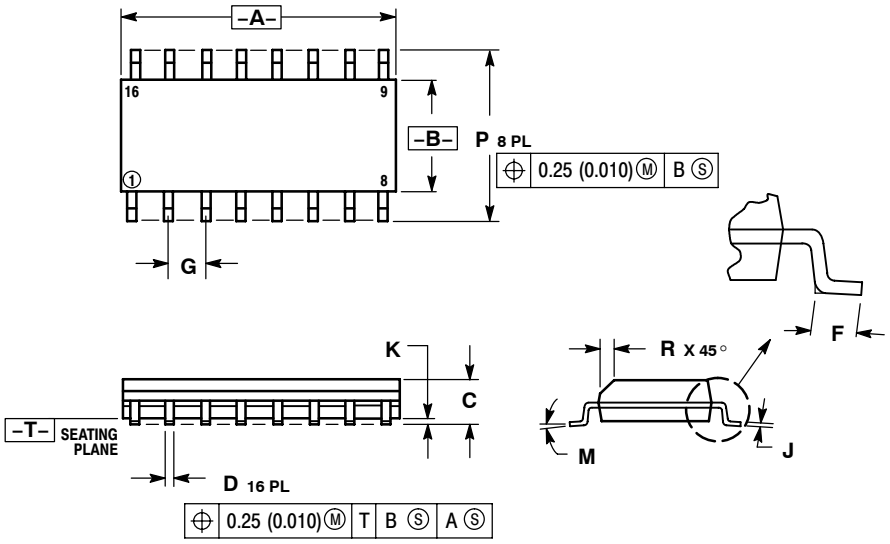
ORDERING INFORMATION

Device	Package	Shipping†
MC10SX1189D	SOIC−16	45 Units / Rail
MC10SX1189DG	SOIC−16 (Pb−Free)	45 Units / Rail
MC10SX1189DR2	SOIC−16	2500 / Tape & Reel
MC10SX1189DR2G	SOIC−16 (Pb−Free)	2500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

PACKAGE DIMENSIONS

SOIC
CASE 751B–05
ISSUE J



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	9.80	10.00	0.386	0.393
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082–1312 USA
Phone: 480–829–7710 or 800–344–3860 Toll Free USA/Canada
Fax: 480–829–7709 or 800–344–3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800–282–9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2–9–1 Kamimeguro, Meguro–ku, Tokyo, Japan 153–0051
Phone: 81–3–5773–3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.

MC10SX1189/D

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9