MX8771

16-Channel, 60V Driver
Push-Pull Output, I2C Interface

Features:

- 16 Push-Pull Outputs Rated at 60V, 15mA
- 6V to 60V Driver Supply Range
- 1.65V to 5.5V Logic Supply Range
- I2C Interface
- Synchronous update across multiple packages
- Outputs can be paralleled
- 28 Lead QFN Package

Applications:

- White Goods
- ATE
- Industrial Equipment

General Description

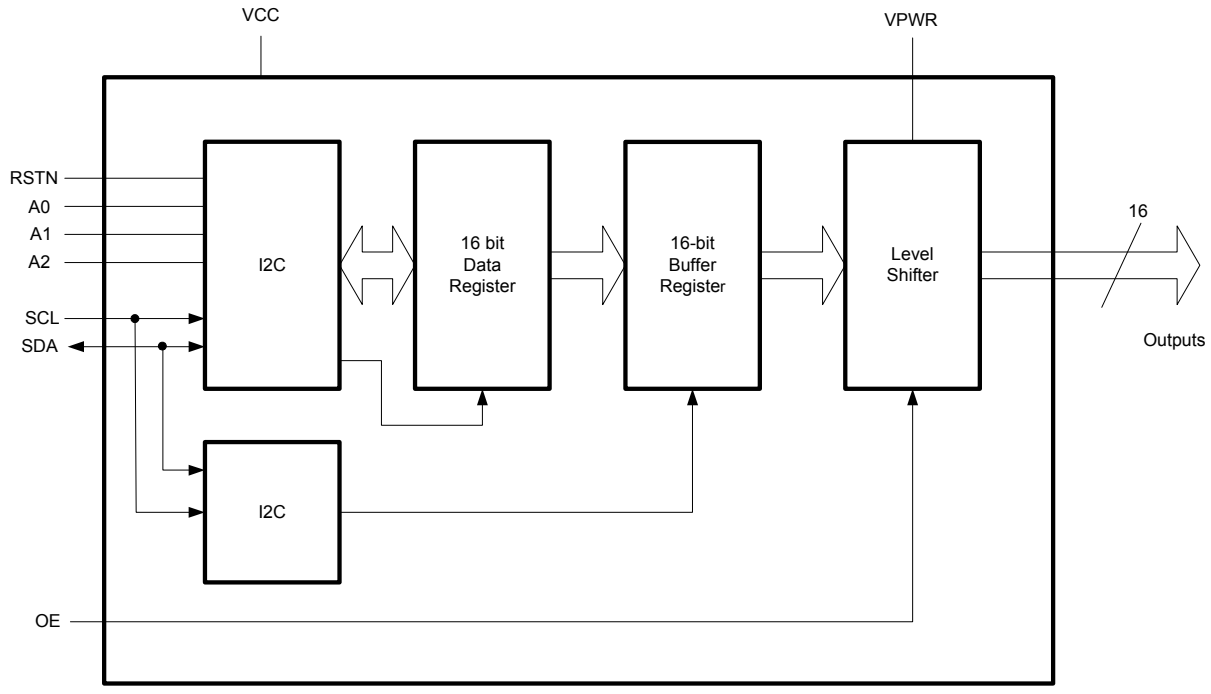
The MX8771 is a 16 channel high voltage switch with I2C serial input control. The MX8771 connects directly to a microprocessor through a standard I2C interface. The push-pull output configuration can drive up to 60 volts at 15mA. Outputs can be paralleled for increased drive current up to a device total of 240mA sink or source.

The MX8771 is designed to operate over a temperature range of -40°C to +85°C, and is available in a QFN-28 Package.

Ordering Information

Part No.	Description	Qty
MX8771R	QFN-28	73
MX8771RTR	QFN-28 Tape & Reel	2500

Functional Block Diagram



Absolute Maximum Ratings (Voltages with respect to GND=0V)

Parameter	Symbol	Min	Max	Unit
VPWR Supply Voltage	VPWR		62	V
Logic Supply Voltage	VCC		6	V
Input Pin Voltage	V_{IN}		6	V
Continuous Output Current	I_{OUT}(O_{UT}0-15)		20	mA
Storage Temperature	T_{STG}	-55	150	C^o
Operating Ambient Temp	T_A	-40	85	C^o
Operating Junction Temp	T_J		150	C^o
Thermal Resistance (Junction to Ambient)	$R_{\theta JA}$	110 Typical		C^o/W

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and affect its reliability.

ESD Warning

ESD (electrostatic discharge) sensitive device. Although the MX8771 features proprietary ESD protection circuitry, permanent damage may be sustained if subjected to high energy electrostatic discharges. Proper ESD precautions are recommended to avoid performance degradation or loss of functionality.

DC Electrical Characteristics

VCC=5.0V, VPWR=42V, T_A=25°C, unless otherwise specified.

Parameter	Condition	Min	Typ	Max	Unit
Logic Supply Voltage		1.65		5.5	V
Quiescent Logic Supply Current	Inputs = 0 or VCC			1	µA
VPWR Voltage		6		60	V
VPWR Current	Total of all outputs			240	mA
GND Current	Total of all outputs			240	mA
Quiescent VPWR Current	VPWR = 42V, No load		350		uA
High Level Input Voltage	SDA, SCL, OE	0.7VCC			V
Low Level Input Voltage				0.3VCC	V
Input Leakage Current				1	µA
Input hysteresis voltage		0.1VCC			V
Output Low voltage, 3 mA sink	SDA, VCC > 2			0.4	V
	VCC < 2			0.2VCC	
Out0-15 Current	Any one output, sink or source			15	mA
Out0-15 ON Resistance	VPWR = 42V		45		Ω
Out0-15 Tri-State Leakage	OE = Logic Low			1	µA

Notes: To avoid unwanted output during VPWR application and system initialization, either reset the device (RSTN logic low) or maintain OE logic low until the registers are initialized by I2C control.

Thermal Resistance is measured in still air with the device soldered to a 6 square inch board without a ground plane. Applications may require derating of the specified maximum currents to avoid exceeding the maximum operation junction temperature.

AC Electrical Characteristics

VCC=5.0V, VPWR=42V, T_A=25°C, unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OUTx Rise Time		From 10% to 90%, C(OUTx) = 200pF		170		nS
OUTx Fall Time		From 10% to 90%, C(OUTx) = 200pF		140		nS
OE Rising to OUTx Rising		To 90%		1100		nS
OE Rising to OUTx Falling		To 90%		600		nS
OE Falling to OUTx High Z		To 10%, OUTx High		900		nS
		To 10%, OUTx Low		900		nS

Pin Description

Pin No.	Pin Name	Description
2	GND	Ground
3	GND	Ground
4	VPWR	High Voltage Supply
5	VPWR	High Voltage Supply
6	VCC	Logic Supply
7	OUT15	byte 2 bit 7 Output
8	OUT14	byte 2 bit 6 Output
9	OUT13	byte 2 bit 5 Output
10	OUT12	byte 2 bit 4 Output
11	OUT11	byte 2 bit 3 Output
12	OUT10	byte 2 bit 2 Output
13	OUT9	byte 2 bit 1 Output
14	OUT8	byte 2 bit 0 Output
15	A0	I2C device address
16	A1	I2C device address
17	A2	I2C device address
18	SDA	I2C Serial Data
19	SCL	I2C Serial Clock
20	OE	Output Enable
21	RSTN	Reset, active low
22	OUT0	byte 1 bit 0 Output
23	OUT1	byte 1 bit 1 Output
24	OUT2	byte 1 bit 2 Output
25	OUT3	byte 1 bit 3 Output
26	OUT4	byte 1 bit 4 Output
27	OUT5	byte 1 bit 5 Output
28	OUT6	byte 1 bit 6 Output
1	OUT7	byte 1 bit 7 Output

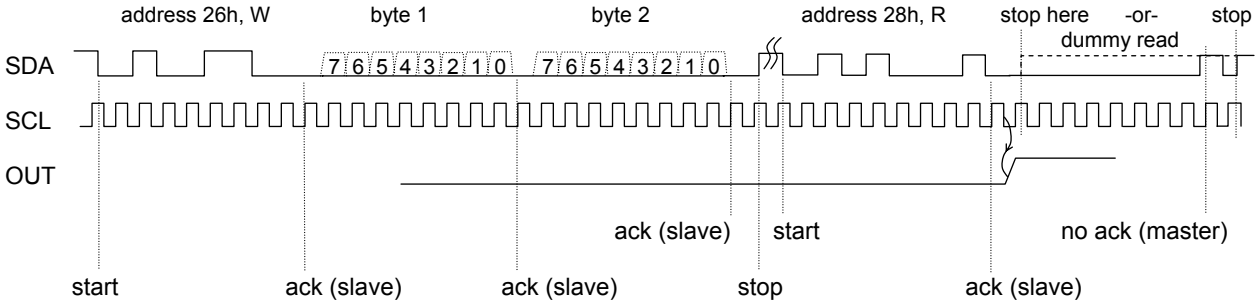
The MX8771 responds to two different slave addresses. The first address can be set from 20h to 27h by connecting pins A2, A1, A0 according to the table below and is used to write and read from the 16-bit data register. The second address is fixed at 28h and facilitates the simultaneous update of outputs from multiple bytes and multiple MX8771's. The contents of the data register are transferred to the buffer register when the i2c master issues a read command to address 28h. The data byte that is read from 28h is a dummy byte whose value is undefined. Optionally the master can terminate the read command after issuing the address and the read bit without actually reading a byte.

A2	A1	A0	i2c slave address
0	0	0	20 (hex)
0	0	1	21
0	1	0	22
0	1	1	23
1	0	0	24
1	0	1	25
1	1	0	26
1	1	1	27

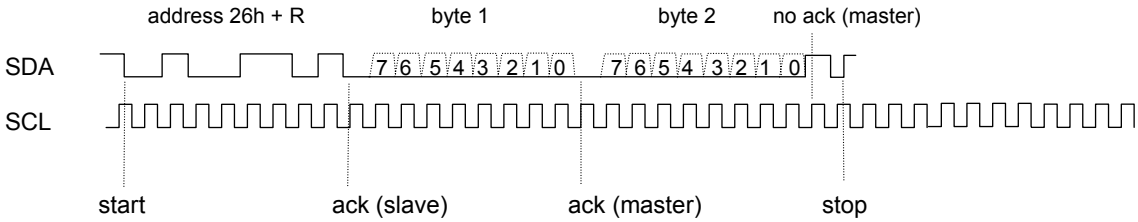
RSTN	OE	All Outputs
0	0	Hi-Z
1	0	Hi-Z
0	1	GND
1	1	i2c control

For the following timing examples, pin A2 = high, A1 = high, A0 = low

Write two bytes to the MX8771 data register and then update the MX8771 buffer register:

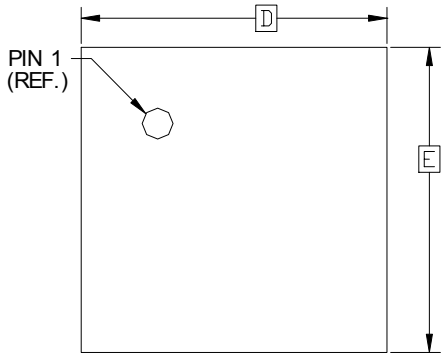


Read two bytes from the MX8771 data register:

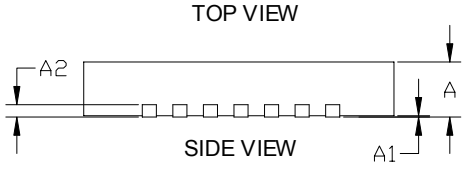


28 LEAD 5MM X 5MM X 0.90MM QFN

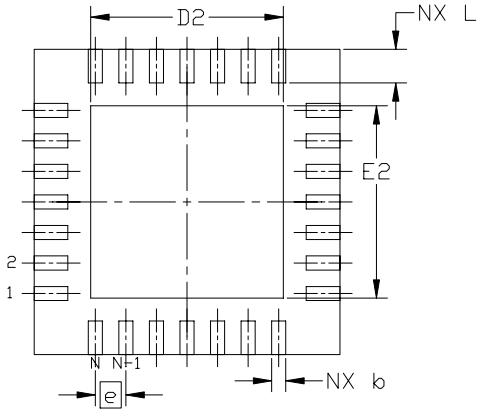
DIMENSIONS				
DIM.	INCH		MM.	
	MIN.	MAX.	MIN.	MAX.
A	.031	.039	.80	1.0
A1	0	.002	0	.05
A2	.008 REF.		,200 REF.	
b	.007	.012	.18	.30
D	.197 BSC		5.00 BSC	
D2	.118	.128	3.00	3.25
E	.197 BSC		5.00 BSC	
E2	.118	.128	3.00	3.25
e	.0197 BSC		.500 BSC	
L	.0177	.0256	.45	.65
N	28		28	



TOP VIEW



SIDE VIEW



BOTTOM VIEW

3. MOLDED PACKAGE SHALL CONFORM TO JEDEC STANDARD CONFIGURATION MO-220 VARIATION VHHD-1.
2. DIMENSIONS AND TOLERANCING CONFORM TO ASME Y14.5M-1994.
1. COPLANARITY APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.

NOTES: (UNLESS OTHERWISE SPECIFIED)

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Specification: MX8771
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