HT0740

High-Voltage Isolated MOSFET Driver

Features

- ±400V Input to Output Isolation
- Low Input Logic Current, 500 µA (Maximum)
- No External Voltage Supply Required
- Floating Isolated Output Drivers
- 5V Logic Compatible

Applications

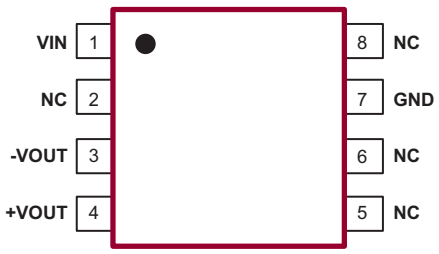
- Telecommunications
- Modems
- Solid State Relays
- High-side Switches
- High-end Audio Switches
- Avionics
- Automatic Test Equipment

General Description

The HT0740 is a single-channel high-voltage low input current isolated driver that uses the HVCMOS® technology. It is designed to drive discrete MOSFETs configured as high-side switches up to 400V. The HT0740 generates an independent DC-isolated voltage across $+V_{OUT}$ and $-V_{OUT}$ when the logic input is at a logic high. The HT0740 does not require any external power supplies. The internal supply voltage is provided by the logic input when it is in high state.

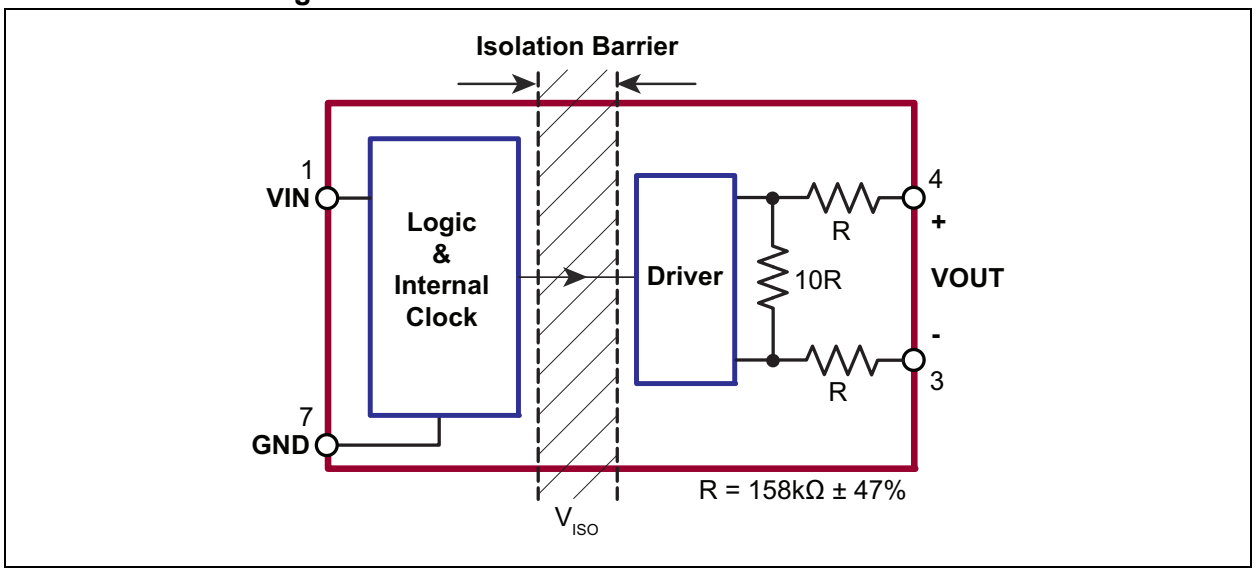
Package Type

8-lead SOIC
(Top view)



See Table 2-1 for pin information.

Functional Block Diagram



1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings†

Input to Output Isolation Voltage, V_{ISO} ..... ±400V
Logic Input Voltage, V_{IN} .....–0.5V to +7V
Operating Ambient Temperature, T_A .....–40°C to +85°C
Storage Temperature, T_S .....–55°C to +150°C

† Notice: Stresses above those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only, and functional operation of the device at those or any other conditions above those indicated in the operational sections of this specification is not intended. Exposure to maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Logic Input High Voltage	V_{IH}	3.15	—	5.5	V	
Logic Input Low Voltage	V_{IL}	0	—	0.5	V	
Operating Ambient Temperature	T_A	–40	—	+85	°C	

DC ELECTRICAL CHARACTERISTICS

Electrical Specifications: T_A = 25°C unless otherwise indicated.

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Logic High Input Current	I_H	—	—	500	µA	V_{IN} = 5V
Logic Low Input Current (Quiescent)	I_L	—	—	10	µA	V_{IN} = 0.5V
Output Voltage Across Output Terminals	V_{OUT}	4.5	—	—	V	V_{IN} = 3.15V, no load
		8.5	—	—	V	V_{IN} = 4.5V, no load
Input Voltage for Zero Output	V_{IN}	—	—	0.8	V	No load
Input to Output Isolation Voltage	V_{ISO}	±400	—	—	V	

AC ELECTRICAL CHARACTERISTICS

Electrical Specifications: T_A = 25°C unless otherwise indicated.

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
Turn-on Delay Time	$t_{d(ON)}$	—	—	50	µs	See **Figure 3-1** and **Figure 3-2**. C_L = 600 pF, T_A = 25 °C
Rise Time	t_r	—	—	650	µs	
Turn-off Delay Time	$t_{d(OFF)}$	—	—	150	µs	
Fall Time	t_f	—	—	3	ms	

TEMPERATURE SPECIFICATIONS

Parameter	Sym.	Min.	Typ.	Max.	Unit	Conditions
TEMPERATURE RANGE						
Operating Ambient Temperature	T_A	–40	—	+85	°C	
Storage Temperature	T_S	–55	—	+150	°C	
PACKAGE THERMAL RESISTANCE						
8-lead SOIC	θ_{JA}	—	101	—	°C/W	

2.0 PIN DESCRIPTION

The details on the pins of HT0740 are listed on Table 2-1. Refer to **Package Type** for the location of pins.

TABLE 2-1: PIN FUNCTION TABLE

Pin Number	Pin Name	Description
1	VIN	Logic input
2	NC	No connect
3	–VOUT	Negative output
4	+VOUT	Positive output
5	NC	No connect
6	NC	No connect
7	GND	Ground
8	NC	No connect

3.0 FUNCTIONAL DESCRIPTION

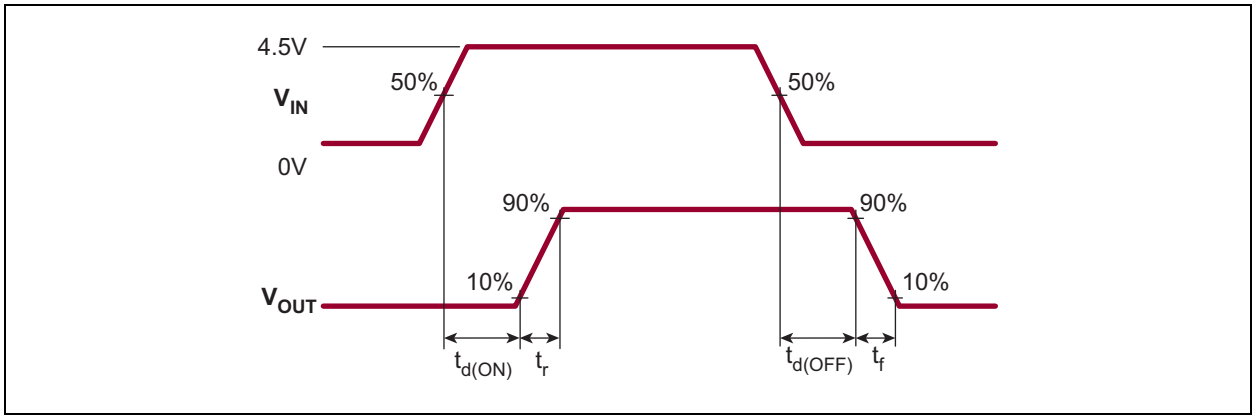


FIGURE 3-1: *Timing Waveforms.*

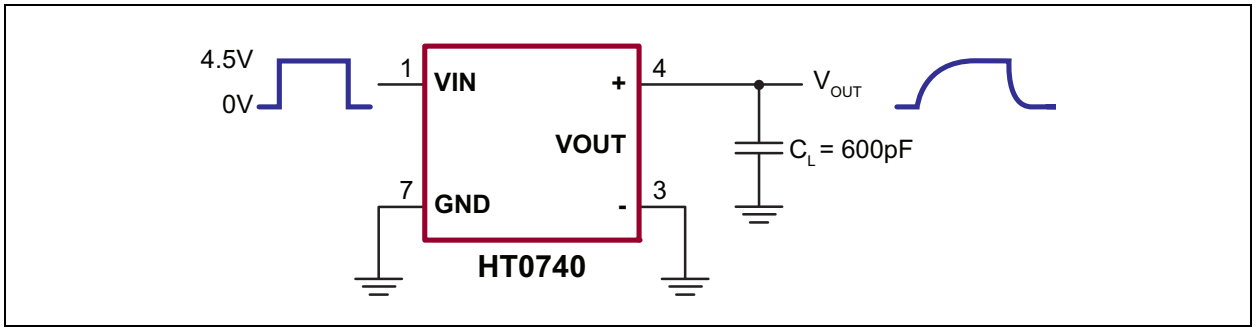
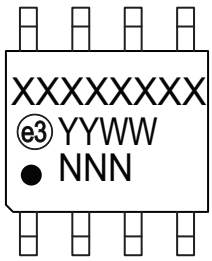


FIGURE 3-2: *Test Circuit.*

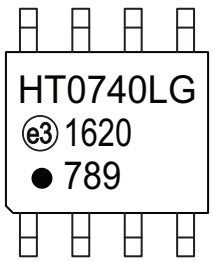
4.0 PACKAGING INFORMATION

4.1 Package Marking Information

8-lead SOIC



Example

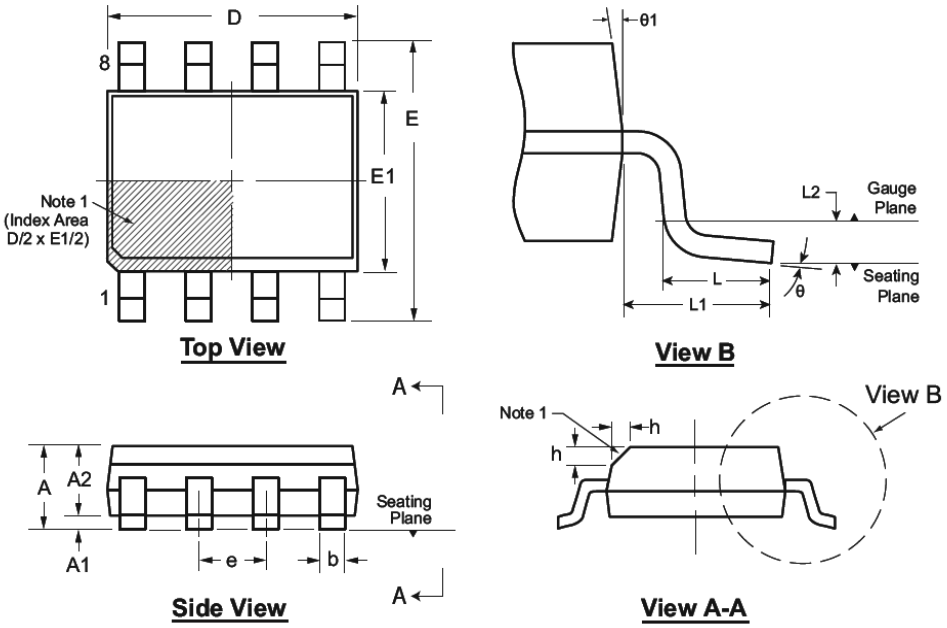


Legend:	XX...X	Product Code or Customer-specific information
	Y	Year code (last digit of calendar year)
	YY	Year code (last 2 digits of calendar year)
	WW	Week code (week of January 1 is week ‘01’)
	NNN	Alphanumeric traceability code
	(e3)	Pb-free JEDEC® designator for Matte Tin (Sn)
	*	This package is Pb-free. The Pb-free JEDEC designator ((e3)) can be found on the outer packaging for this package.

Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for product code or customer-specific information. Package may or not include the corporate logo.

8-Lead SOIC (Narrow Body) Package Outline (LG/TG)

4.90x3.90mm body, 1.75mm height (max), 1.27mm pitch



Note: For the most current package drawings, see the Microchip Packaging Specification at www.microchip.com/packaging.

Note:

1. *This chamfer feature is optional. A Pin 1 identifier must be located in the index area indicated. The Pin 1 identifier can be: a molded mark/identifier; an embedded metal marker; or a printed indicator.*

Symbol		A	A1	A2	b	D	E	E1	e	h	L	L1	L2	θ	θ1
Dimension (mm)	MIN	1.35*	0.10	1.25	0.31	4.80*	5.80*	3.80*	1.27 BSC	0.25	0.40	1.04 REF	0.25 BSC	0°	5°
	NOM	-	-	-	-	4.90	6.00	3.90		-	-			-	-
	MAX	1.75	0.25	1.65*	0.51	5.00*	6.20*	4.00*		0.50	1.27			8°	15°

JEDEC Registration MS-012, Variation AA, Issue E, Sept. 2005.

** This dimension is not specified in the JEDEC drawing.*

Drawings are not to scale.

APPENDIX A: REVISION HISTORY

Revision A (October 2016)

- Converted Supertex Doc# DSFP-HT0740 to Microchip DS20005628A
- Changed the packaging quantity of the 8-lead SOIC LG from 2500/Reel to 3300/Reel
- Made minor text changes throughout the document

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, contact your local Microchip representative or sales office.

PART NO.	XX	-	X	-	X
Device	Package Options		Environmental		Media Type

Device:	HT0740	=	High-Voltage Isolated MOSFET Driver
Package:	LG	=	8-lead SOIC
Environmental:	G	=	Lead (Pb)-free/RoHS-compliant Package
Media Type:	(blank)	=	3300/Reel for an LG Package

Example:

a) HT0740LG-G: High-Voltage Isolated MOSFET Driver, 8-lead SOIC Package, 3300/Reel

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