ISOM8600 80V, 150mA Functionally Isolated Normally Open Opto-emulator Switch With Integrated FETs

1 Features

- Drop-in replacement and pin-to-pin upgrade to industry-standard photorelays
- Single-channel, diode-emulator input
- Single-pole, normally-open, symmetrical 80V output switch
- Primary-side current controlled switch, no additional isolated high voltage supply required for 80V switching
- Ultra-low off-state leakage at V_{OFF} = 70V
  - < 250nA at operating temperature of 25°C
  - < 1µA across operating temperature of –55°C to 125°C
- Fast Response time: 10µs (typical) at I_F = 5mA, V_{CC} = 20V, R_L = 200Ω, C_L = 50pF
- Ultra-low input trigger current of 800µA (at 25°C)
- Functional isolation : $500V_{RMS}$ Working voltage
- Supports Industrial Temperature Range: –55°C to 125°C
- Small SO-4 package

2 Applications

- Factory automation and control
- Building automation
- Appliances
- Test and Measurement

3 Description

The ISOM8600 is an 80V single-pole, normally-open switch with an opto-emulator input. The opto-emulator inputs control the back-to-back MOSFETs without any power supply required on the secondary side. The devices are pin-compatible and drop-in replaceable for many traditional optocouplers, allowing enhancement to industry-standard packages with no PCB redesign.

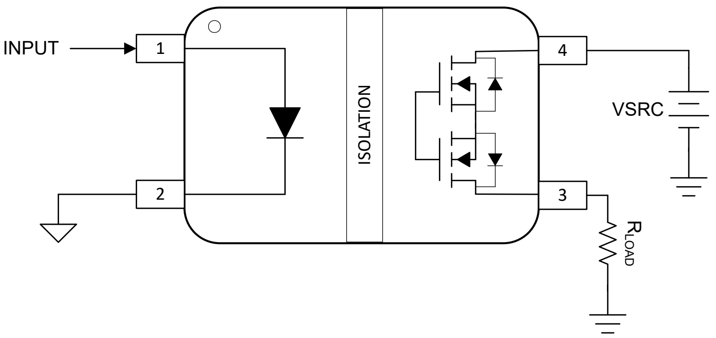
The ISOM8600 opto-emulator switch offers significant reliability and performance advantages compared to optocouplers, like wider temperature ranges and tight process controls resulting in small part-to-part variations. Since there is no aging effect to compensate for, the emulated diode-input stage consumes less power than optocouplers that have LED aging and require higher bias currents over the device lifetime. ISOM8600 switch output can be controlled by just 0.8mA current through anode/cathode pins over the lifetime of the device, enabling system power savings.

The ISOM8600 is offered in a small SO-4 package, supporting a $500V_{RMS}$ functional isolation. The high performance and reliability of the device enable the devices use in applications like Building automation, Factory automation, Semiconductor test, I/O modules in industrial controllers, factory automation applications, and more spaces.

Package Information

PART NUMBER	PACKAGE(1)	PACKAGE SIZE (2)	BODY SIZE (NOM)
ISOM8600	DFG (SO, 4)	7.0mm × 3.5mm	4.8mm × 3.5mm

(1) For more information, see Section 12.
(2) The package size (length × width) is a nominal value and includes pins, where applicable.



Simplified Application Example

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4 Pin Configuration and Functions

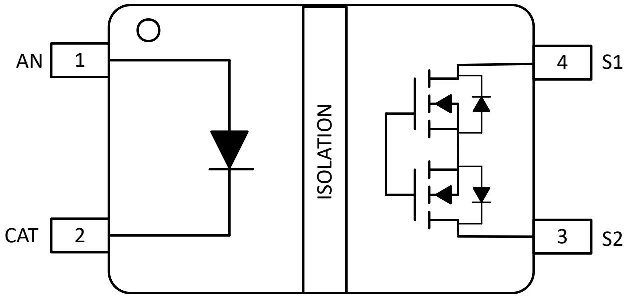


Figure 4-1. ISOM8600 DFG Package, 4-Pin SOIC (Top View)

Table 4-1. Pin Functions

PIN		TYPE[1]	Description
NAME	NO.		
AN	1	I	Anode connection of diode emulator
CAT	2	I	Cathode connection of diode emulator
S2	3	I/O	Switch input
S1	4	I/O	Switch input

(1) I = input, O = output

5 Specifications

5.1 Absolute Maximum Ratings

See[1] [2]

			MIN	MAX	UNIT
Input	$I_{F(max)}$	LED forward current		50	mA
	V_R	Input reverse voltage at I_R = 10µA		7	V
	P_I	Input power dissipation		100	mW
Output	V_{OFF}	Blocking voltage		80	V
	I_O	Output continuous load current		200	mA
	$\Delta I_O/^oC$	Output continuous load current		-1.1	mA/ºC
	I_{OP}	Output pulse current (1µs width)		600	mA
	P_O	Output power dissipation		150	mW
	P_T	Total power dissipation		200	mW
	T_{stg}	Storage temperature	-65	150	°C
	Transient Isolation Voltage	AC Voltage, t=60s		707	V_{RMS}
		DC Voltage, t=60s		1000	V_{DC}

(1) Operation outside the Absolute Maximum Ratings may cause permanent device damage. Absolute Maximum Ratings do not imply functional operation of the device at these or any other conditions beyond those listed under Recommended Operating Conditions. If used outside the Recommended Operating Conditions but within the Absolute Maximum Ratings, the device may not be fully functional, and this may affect device reliability, functionality, performance, and shorten the device lifetime.

(2) All specifications are at T_A = 25℃ unless otherwise noted

5.2 ESD Ratings

			VALUE	UNIT
$V_{(ESD)}$	Electrostatic discharge	Human body model (HBM), per ANSI/ESDA/JEDEC JS-001, all pins (1)	±2000	V
		Charged device model (CDM), ANSI/ESDA/JEDEC JS-002, all pins (2)	±1000	

(1) JEDEC document JEP155 states that 500V HBM allows safe manufacturing with a standard ESD control process.

(2) JEDEC document JEP157 states that 250V CDM allows safe manufacturing with a standard ESD control process.

5.3 Recommended Operating Conditions

Over operating free-air temperature range (unless otherwise noted)

		MIN	NOM	MAX	UNIT
T_A	Ambient temperature	-55		125	°C
T_J	Junction temperature	-55		150	
$I_{F(ON)}$	Input ON-state forward current	0.8		20	mA
I_O	Output continuous load current at I_F=3mA (1)			150	
V_{OFF}	Output Blocking Voltage			70	V
V_{IOWM}	Functional Isolation Working Voltage (AC Voltage, sine wave)			500	V_{RMS}
	Functional Isolation Working Voltage (DC Voltage)			707	V_{DC}

(1) For T_A=25°C, Current available to load must be derated by 1mA/°C for T_A > 25°C

5.4 Thermal Information

THERMAL METRIC[1]		ISOM8600	UNIT
		DFG	
		4 PINS	
$R_{\theta JA}$	Junction-to-ambient thermal resistance	206.3	°C/W
$R_{\theta JC(top)}$	Junction-to-case (top) thermal resistance	96.8	°C/W
$R_{\theta JB}$	Junction-to-board thermal resistance	130.4	°C/W
Ψ_{JT}	Junction-to-top characterization parameter	52.9	°C/W
Ψ_{JB}	Junction-to-board characterization parameter	127.5	°C/W

(1) For more information about traditional and new thermal metrics, see the *Semiconductor and IC Package Thermal Metrics* application note.

5.5 Power Ratings

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
P_D	Maximum power dissipation (both sides)	I_F = 20mA, T_J = 150°C, I_O = 150mA, T_A = 25°C			310	mW
P_{D1}	Maximum power dissipation (side-1)				36	mW
P_{D2}	Maximum power dissipation (side-2)				274	mW

5.6 Electrical Characteristics

All specifications are at T_A = 25 °C unless otherwise noted

PARAMETER		TEST CONDITIONS	T_A	MIN	TYP	MAX	UNIT
INPUT							
V_F	Input forward voltage	$I_F = I_{FT}$	25°C	0.9	1.1	1.3	V
			–55°C to 125°C	0.85	1.1	1.35	
		I_F = 5mA	25°C	1.1	1.3	1.5	
			–55°C to 125°C	1.1	1.3	1.55	
I_R	Input reverse current	V_R = 5V	–55°C to 125°C			10	µA
C_{IN}	Input capacitance	f = 1MHz, V_F = 0V	25°C		17	28	pF
I_{FT}	Input Trigger forward current; see Figure 7-3	I_o = 100mA (1), R_{ON} = 10Ω (2)	25°C		0.65	0.8	mA
			–55°C to 125°C		0.65	1.2	
$I_{FT,release}$	Release Trigger Current	I_{OFF} = 1µA at 70V	–55°C to 125°C	0.1			mA
$V_{F,\ release}$	Release Trigger Voltage	I_{OFF} = 1µA at 70V	–55°C to 125°C	0.7			V
$I_{F(ON)}$	Input on-state forward current	I_o = 100mA, R_{ON} < 10Ω	25°C	0.8		20	mA
		I_o = 100mA(1), R_{ON} < 15Ω	–55°C to 125°C	1.2		20	
OUTPUT							
V_{OFF}	Output Blocking voltage	I_F = 0mA	–55°C to 125°C			70	V
R_{ON}	Output on-state resistance; see Figure 7-3	$I_F = I_{FT}$, I_o = 20mA	25°C		6.5	9	Ω
			–55°C to 125°C		6.5	12	
	Output on-state resistance; see Figure 7-3 (1)	$I_F = I_{FT}$, I_o = 100mA	25°C		7	10	
			–55°C to 125°C		7	13	
		$I_F = I_{FT}$, I_o = 100mA, t<1s	25°C		7	10	
	Output on-state resistance; see Figure 7-3	I_F = 3mA, I_o = 20mA	25°C		5.5	7	
			–55°C to 125°C		5.5	12	
	Output on-state resistance; see Figure 7-3 (1)	I_F = 3mA, I_o = 100mA	25°C		6	7.5	
			–55°C to 125°C		6	12	
		I_F = 3mA, I_o = 100mA, t<1s	25°C		5	7	
C_{OFF}	Output off-state capacitance	I_F = 0mA, V_L = 60V, f = 1MHz	–55°C to 125°C		6.5	8	pF
I_{LEAK}	Output off-state leakage; see Figure 7-2	I_F = 0mA, V_{OFF} = 70V	25°C			250	nA
			–55°C to 125°C			1	µA
$R_{ON\ FLAT}$	On-state resistance flatness	I_F = 5mA	25°C		45	75	mΩ
			–55°C to 125°C		45	115	
$R_{ON\ DRIFT}$	On-state resistance drift across temperature	I_F = 3mA, I_o = 40mA	–55°C to 125°C		23	60	mΩ/°C
BW	–3dB Bandwidth; see Figure 7-4	I_F = 5mA, R_L = 50Ω	25°C	100			MHz
I_L	Insertion Loss (LED On); see Figure 7-4	I_F = 5mA, R_L = 50Ω, f = 1MHz	25°C		-0.45		dB
O_{ISO}	Off-state Isolation; see Figure 7-5	I_F = 0mA , R_L = 50Ω, f = 1MHz	25°C		-45		dB

(1) Current available to load must be derated by 1mA/°C for T_A > 75°C
(2) I_{FT} measured for R_{ON}=15Ω for T_A > 75°C

5.7 Switching Characteristics

All specifications are at T_A = 25 ℃ unless otherwise noted

PARAMETER		TEST CONDITIONS	T_A	MIN	TYP	MAX	UNIT
AC							
T_{ON}	Output turn-on time; see Figure 7-1	I_F = 5mA, VCC=20V, R_L = 200Ω, C_L=50pF	–55°C to 125°C			0.2	ms
T_{OFF}	Output turn-off time; see Figure 7-1	I_F = 5mA, VCC=20V, R_L = 200Ω, C_L=50pF	–55°C to 125°C			0.2	ms

6 Typical Characteristics

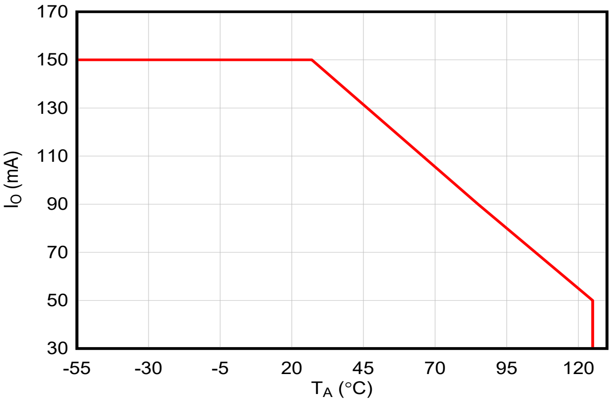


Figure 6-1. Typical Maximum Load Current vs Temperature

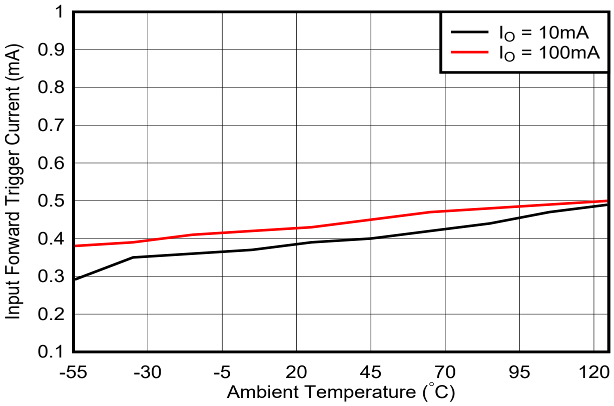
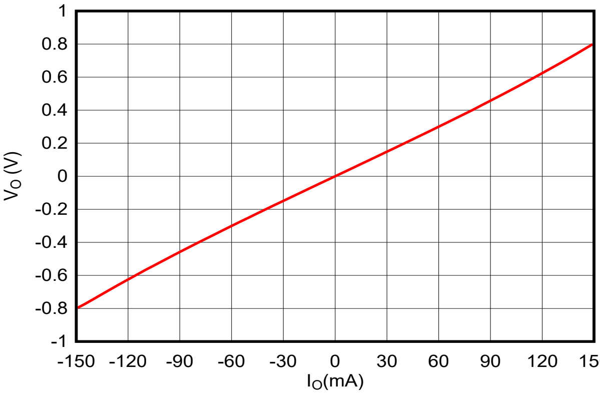


Figure 6-2. Input Forward Trigger Current vs Ambient Temperature



T_A = 25°C I_F = 5mA

Figure 6-3. Continuous Load Current vs On-State Voltage

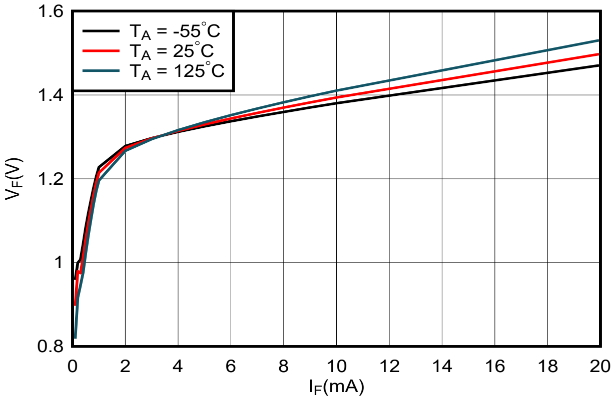


Figure 6-4. Forward Current vs LED Forward Voltage

6 Typical Characteristics (continued)

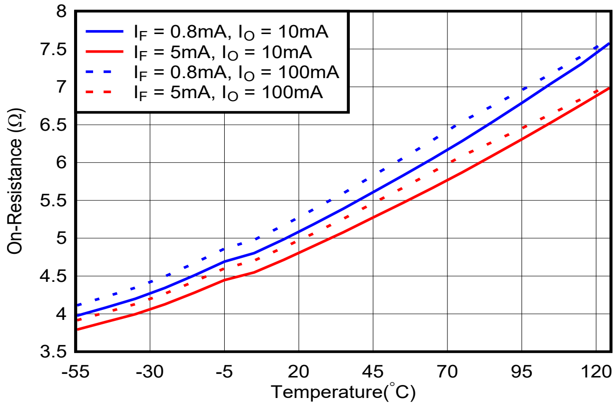
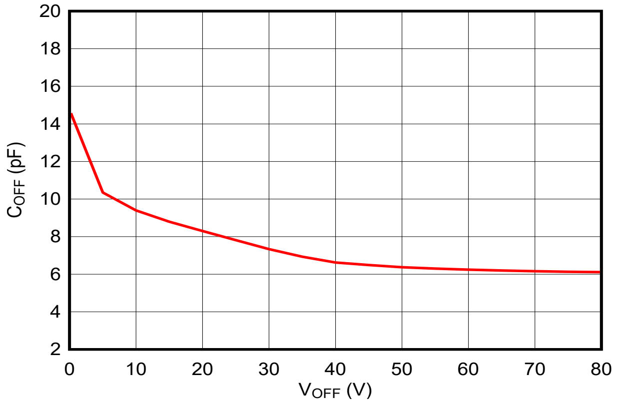
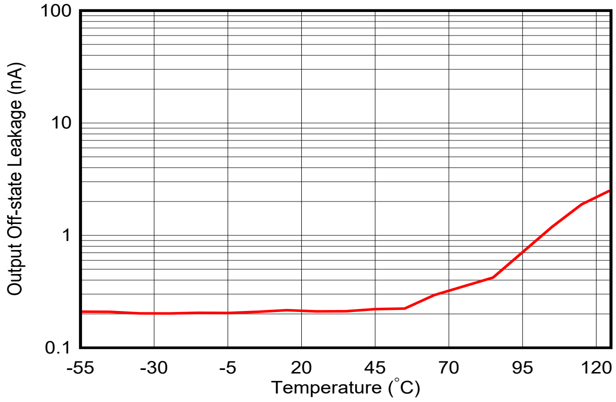


Figure 6-5. On-State Resistance vs Ambient Temperature



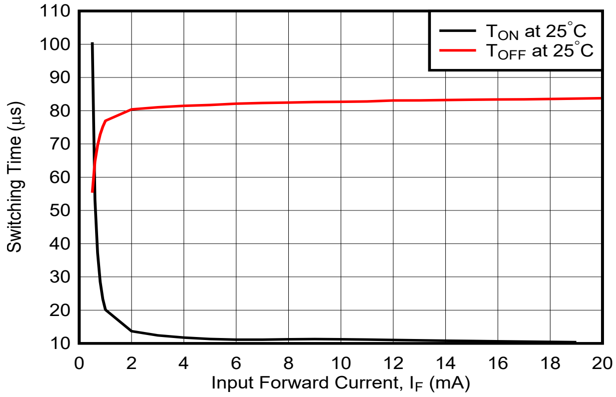
I_F = 0mA f = 1MHz

Figure 6-6. Output Capacitance vs Load Voltage



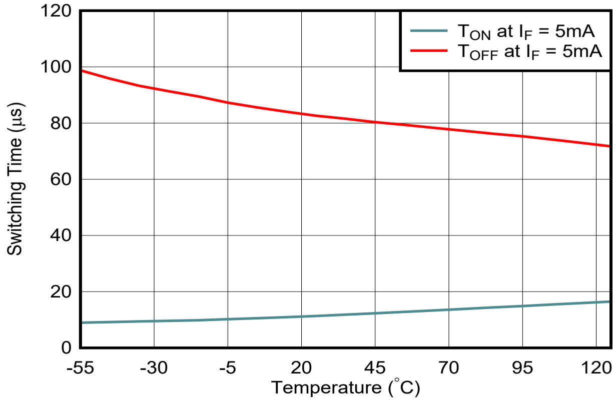
I_F = 0mA V_{OFF} = 70V

Figure 6-7. Off-State Leakage vs Ambient Temperature



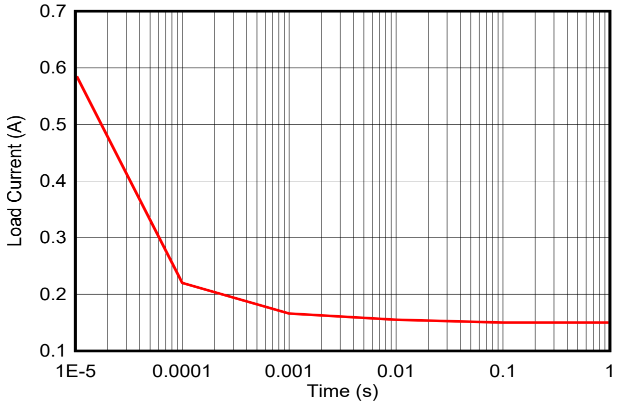
V_{CC} = 20V R_L = 200Ω, C_L = 50pF

Figure 6-8. Turn-On, Turn-Off Time vs Forward Current



V_{CC} = 20V R_L = 200Ω, C_L = 50pF

Figure 6-9. Turn-On, Turn-Off Time vs Ambient Temperature



T_A=25°C C_L = No load

Figure 6-10. Pulse Current Rating Curve at 25°C

7 Parameter Measurement Information

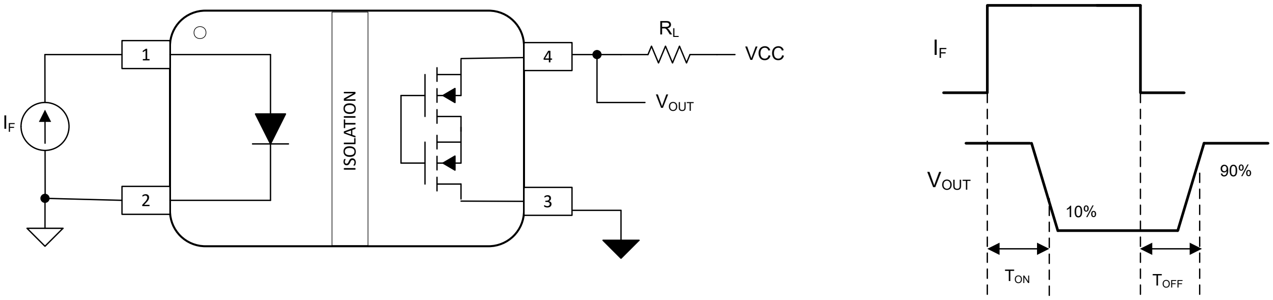


Figure 7-1. ISOM8600 Test Circuit for Turn-On and Turn-Off Time

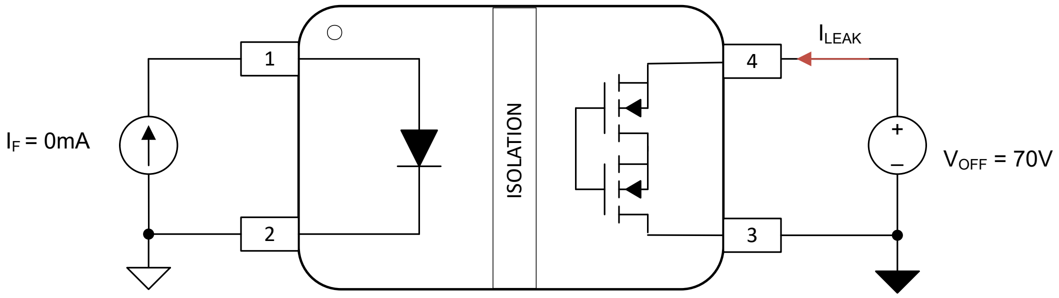


Figure 7-2. ISOM8600 Test Circuit Off-State Leakage

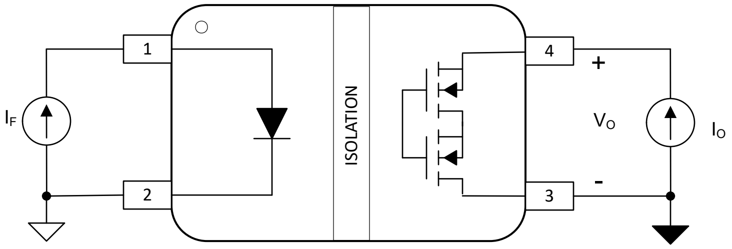


Figure 7-3. ISOM8600 Test Circuit for On-State Resistance

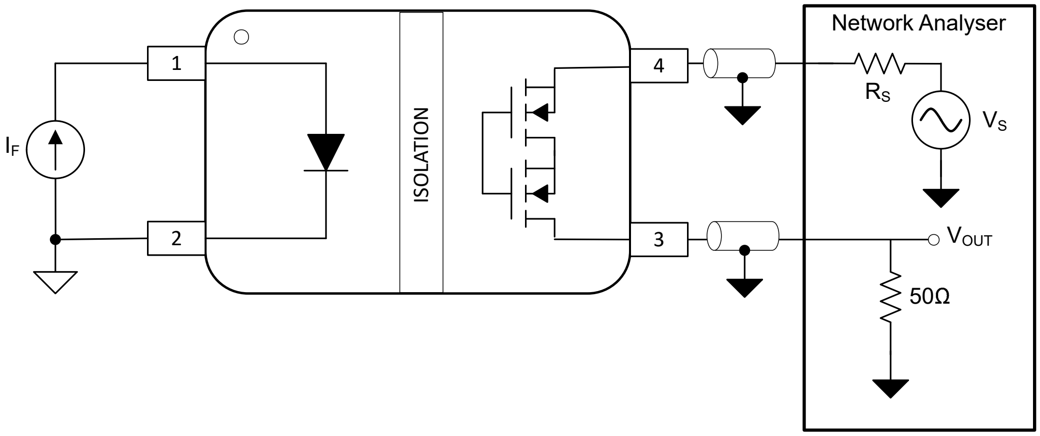


Figure 7-4. ISOM8600 Test Circuit for Insertion Loss

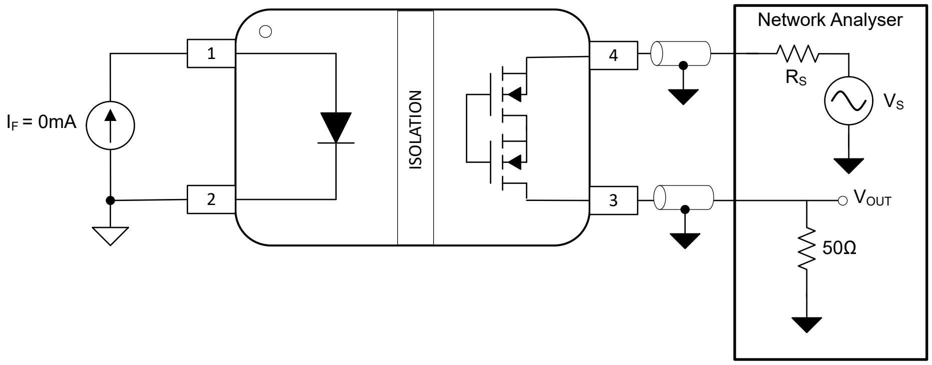


Figure 7-5. ISOM8600 Test Circuit for Off-State Isolation

8 Detailed Description

8.1 Overview

The ISOM8600 are functionally isolated opto-emulator switches that are pin-compatible, drop-in replacements to popular photo-relays. While standard optocouplers use an LED as the input stage, the ISOM8600 uses a current controlled emulated diode as the input stage. The input stage is isolated from the driver stage by TI's proprietary silicon dioxide-based (SiO_2) isolation barrier, which not only provides robust isolation, but also offers best-in-class performance.

The ISOM8600 isolates high voltage signals and offer performance, reliability, and flexibility advantages over traditional optocouplers which age over time. The devices are based on CMOS isolation technology for low-power and high-speed operation, therefore the devices are resistant to the wear-out effects found in optocouplers that degrade performance with increasing temperature, forward current, and device age.

The functional block diagram of the ISOM8600 is shown in *Functional Block Diagram*. The input signal is transmitted across the isolation barrier using an on-off keying (OOK) modulation scheme. The transmitter sends a high-frequency carrier across the barrier to represent switch-ON state and sends no signal to represent the switch-OFF state. The receiver demodulates the signal after advanced signal conditioning and controls the state of the output MOSFETs. These devices also incorporate advanced circuit techniques to maximize CMTI performance and minimize radiated emissions. Figure 8-2 shows conceptual detail of how the OOK scheme works.

8.2 Functional Block Diagram

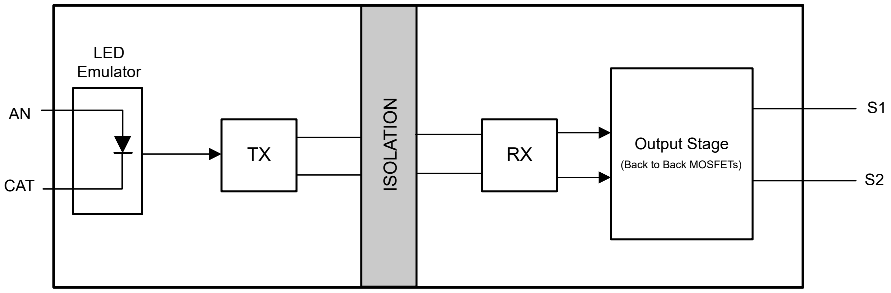


Figure 8-1. Conceptual Block Diagram of an Opto-Emulator

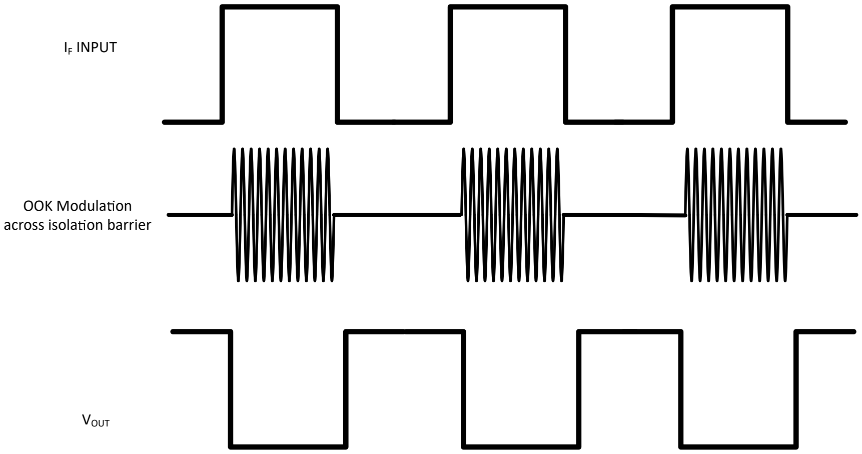


Figure 8-2. On-Off Keying (OOK) Based Modulation Scheme

8.3 Feature Description

The ISOM8600 is a current controlled isolated switch, and is a reliable pin-to-pin replacement of to existing Opto-MOS devices in DFG package. The isolated switch is normally open, which means the switch on secondary side is in OFF state when the primary LED emulator current is lower than the input trigger current level. In the OFF state, the back-to-back MOSFETs on the secondary side block up to 80V of difference between S1 and S2. Once the primary side LED emulator current goes above input trigger current, the switch on the secondary side turns ON. During the ON state, the secondary side back-to-back FETs can conduct currents up to 150mA. The robust SiO_2 dielectric isolation in the ISOM8600 provides a functionally isolated isolation barrier side 1 and side 2 for applications that do not safety certifications.

8.4 Device Functional Modes

Table 8-1 lists the functional modes for the ISOM86xx devices.

Table 8-1. Function Table

INPUT CURRENT I_F	OUTPUT SWITCH STATE	COMMENTS
$0 < I_F < I_{FT}$	OFF	Switch is in OFF state and presents an off state capacitance (C_{OFF}) across S1 and S2.
$I_{FT} \leq I_F$	ON	Switch is in ON state and presents an on resistance (R_{ON}) across S1 and S2

9 Application and Implementation

Note

Information in the following applications sections is not part of the TI component specification, and TI does not warrant its accuracy or completeness. TI's customers are responsible for determining suitability of components for their purposes, as well as validating and testing their design implementation to confirm system functionality.

9.1 Application Information

The ISOM8600 is a single-channel isolated switch with diode-emulator inputs which control an output stage with back-to-back MOSFETs. The devices use robust on-off keying modulation to transmit data across the isolation barrier. Since an isolation barrier separates the two sides of these devices, each side can be sourced independently with voltages and currents within recommended operating conditions. The ISOM8600 is designed to be implemented in a variety of applications like realizing switchable termination in communication lines like CAN and RS485, switching burden resistors in analog input modules and small footprint sink/source capable digital output module in AC Servo motor drives.

The opto-emulators do not conform to any specific interface standard and are intended for isolated switching operations. The ISOM8600 is typically placed between a data controller (that is, an MCU or FPGA), and a sensor or a line transceiver, regardless of the interface type or standard.

9.2 Typical Application

The ISOM8600 can be used in numerous industrial applications. For instance, ISOM8600 can be used in a digital output module in servo drive modules. Typically, these digital outputs for these modules support sink or source mode or both. The output modules are implemented for about 100mA source/sink current, and for blocking voltage up to 60V. Traditionally the digital output stages require just functional isolation. The digital output stages are implemented using discrete elements like opto-transistors for isolation, discrete transistor for increasing output source/sink current and also a bridge rectifier stage to enable source and sink capable outputs. The entire design is bulky and often requires additional power to compensate for lifetime operation. Biasing conditions with external components has to be carefully handled to provide reliable operation across use conditions. ISOM8600 is a smaller and easier alternate to the discrete implementation with the device allowing up to 150mA bidirectional source and sink capable output in ON state with up to 80V blocking voltage in OFF state. The ISOM8600 can be easily used as an 80V isolated switch when used within the *Recommended Operating Conditions*.

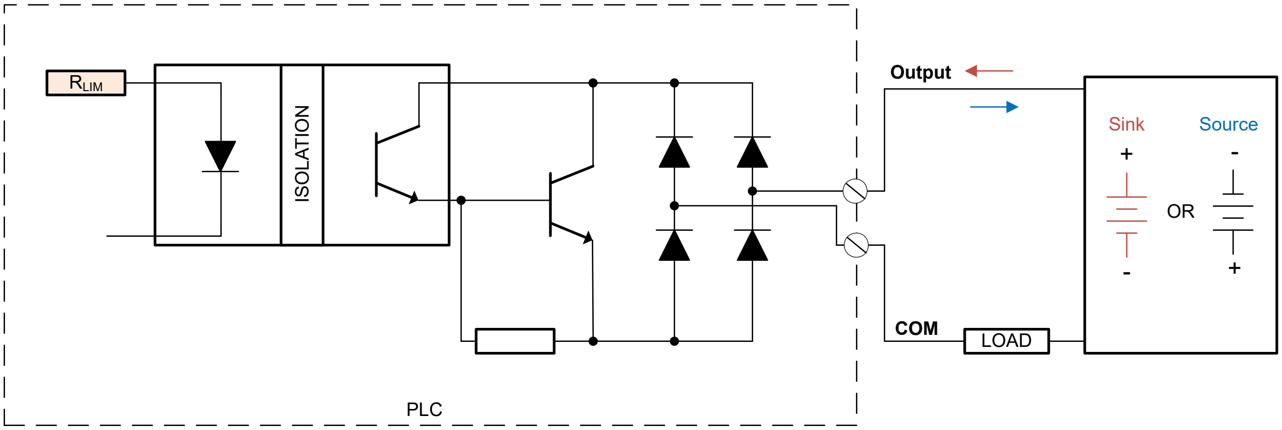


Figure 9-1. Typical Digital Output Stage With Discrete Implementation

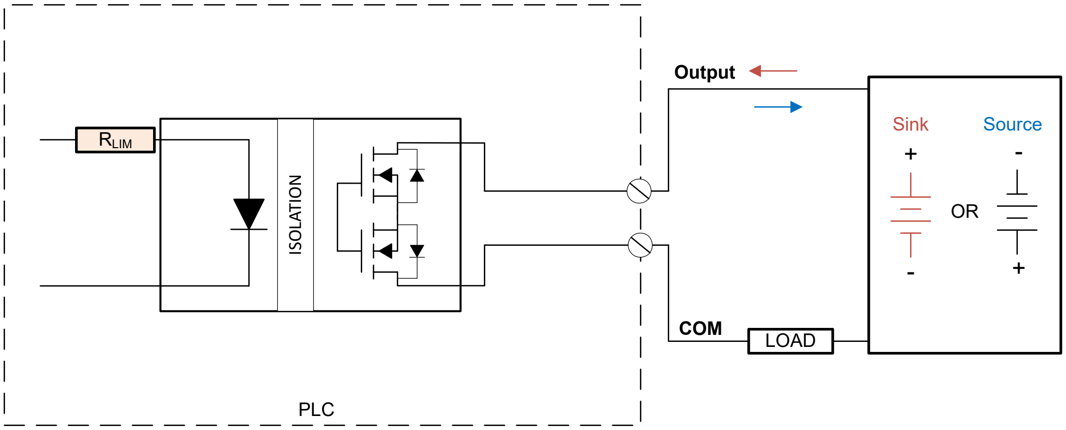


Figure 9-2. Recommended Digital Output Stage implementation With ISOM8600

9.2.1 Design Requirements

To design with the ISOM8600 device, use the parameters listed in Table 9-1.

Table 9-1. Design Parameters

PARAMETER	VALUE	EXAMPLE VALUE
Input forward current, I_F	0.8mA to 20mA	2mA

9.2.2 Detailed Design Procedure

This section presents the design procedure for using the ISOM8600 opto-emulators. External components must be selected to operate the ISOM8600 within the *Recommended Operating Conditions*. The following recommendations on components selection focus on the design of a typical isolated signal circuit with considerations for input current and data rate.

9.2.2.1 Sizing R_{IN}

The input side of the ISOM8600 is current-driven. Placing a series resistor, R_{IN}, in series with the input as shown in Figure 9-1 is recommended to limit the amount of current flowing into the AN pin.

R_{IN} can be sized to minimize current flow and power consumption through the ISOM8600 input-side. R_{IN} must be a value that limits the input forward current to be within the *Recommended Operating Conditions* for the ISOM8600. The equation to calculate R_{IN} for a given input voltage, V_{IN}, and desired input forward current, I_F, is shown in Equation 1 where V_F is the maximum specification for the ISOM8600 input forward voltage:

$$R_{IN} = \frac{V_{IN} - V_F\,[MAX]}{I_F} \tag{1}$$

For example, with a 24V input and 2mA desired I_F, R_{IN} can be calculated as:

$$R_{IN} = \frac{24V - 1.5V}{2mA} = 11.25k\Omega \tag{2}$$

9.2.3 Application Curve

The following typical switching curve shows data transmission using the ISOM8600.

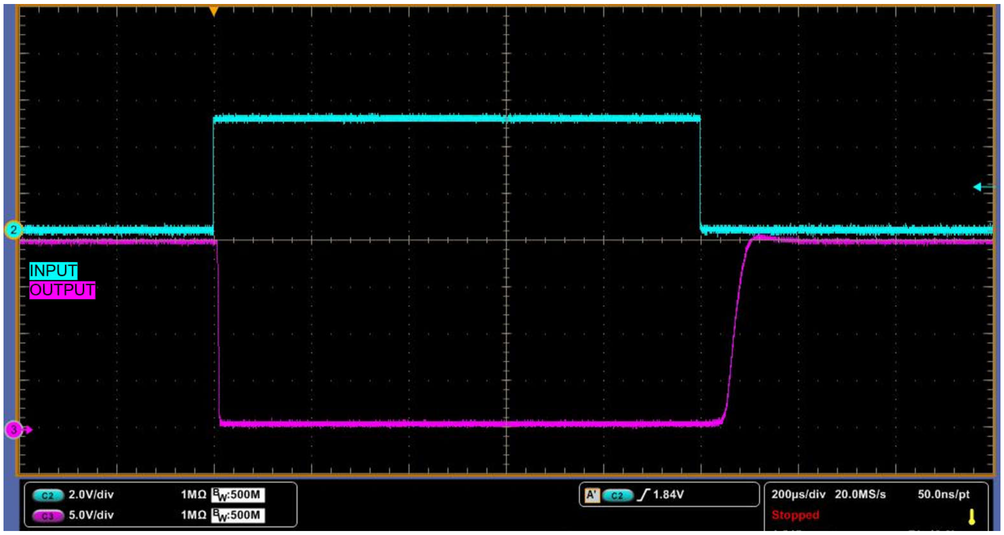


Figure 9-3. Typical Waveform at I_F = 5mA, V_{CC} = 20V, R_L = 200Ω and C_L = 50pF

9.3 Power Supply Recommendations

The ISOM8600 does not require a dedicated power supply to operate since there is no supply pin. Take care not to violate recommended operating I/O specifications for proper device functionality.

9.4 Layout

9.4.1 Layout Guidelines

- The device connections to ground must be tied to the PCB ground plane using a direct connection or two vias to help minimize inductance.
- The connections of capacitors and other components to the PCB ground plane must use a direct connection or two vias for minimum inductance.

9.4.2 Layout Example

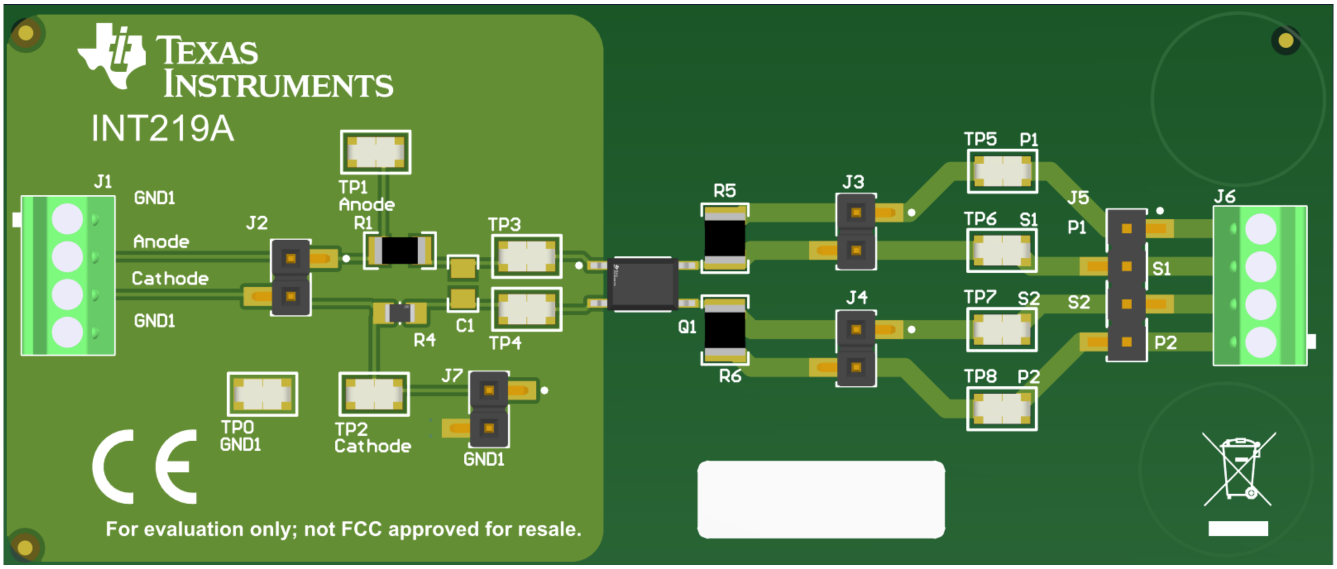


Figure 9-4. Layout Example of ISOM8600 With a 2-Layer Board

10 Device and Documentation Support

10.1 Documentation Support

10.1.1 Related Documentation

For related documentation see the following:

- Texas Instruments, *Isolation Glossary*, application note

10.2 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. Click on *Notifications* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

10.3 Support Resources

TI E2E™ support forums are an engineer's go-to source for fast, verified answers and design help — straight from the experts. Search existing answers or ask your own question to get the quick design help you need.

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10.4 Trademarks

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10.5 Electrostatic Discharge Caution

This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

10.6 Glossary

TI Glossary	This glossary lists and explains terms, acronyms, and definitions.

11 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

DATE	REVISION	NOTES
June 2024	*	Initial Release

12 Mechanical, Packaging, and Orderable Information

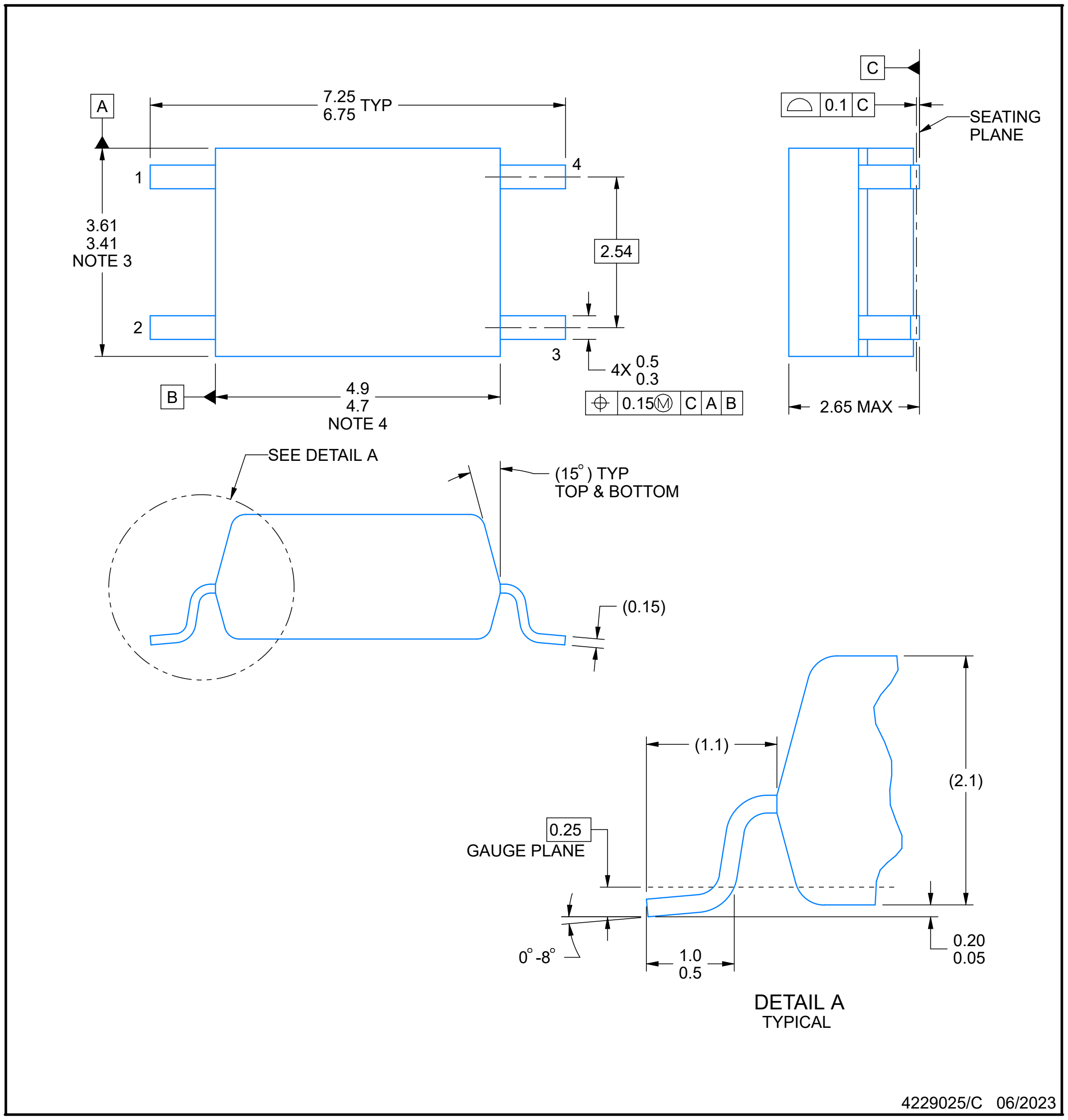
The following pages include mechanical packaging and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGE OUTLINE

DFG0004A-C01

SOIC - 2.65 mm max height

SMALL OUTLINE INTEGRATED CIRCUIT



NOTES:

1. All linear dimensions are in millimeters. Any dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0,15 mm per side.
4. This dimension does not include interlead flash.

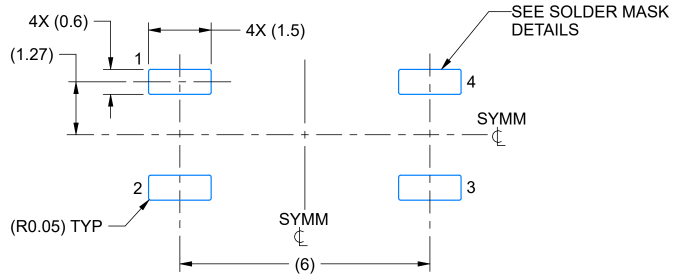
TEXAS INSTRUMENTS
www.ti.com

EXAMPLE BOARD LAYOUT

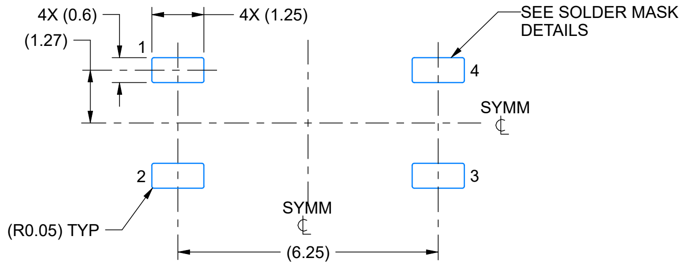
DFG0004A-C01

SOIC - 2.65 mm max height

SMALL OUTLINE INTEGRATED CIRCUIT

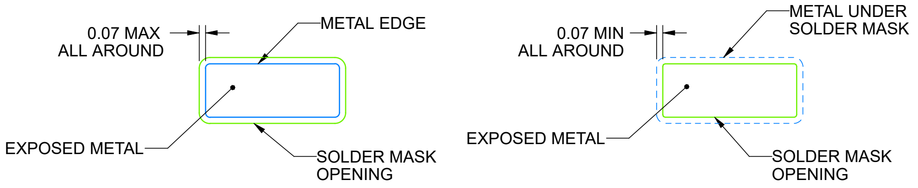


IPC-7351 NOMINAL
4.5 CLEARANCE/CREEPAGE



HV/ISOLATION OPTION
5.0 CLEARANCE/CREEPAGE

LAND PATTERN EXAMPLE
EXPOSED METAL SHOWN
SCALE: 7X



NON-SOLDER MASK
DEFINED
(PREFERRED)

SOLDER MASK
DEFINED

SOLDER MASK DETAILS

4229025/C 06/2023

NOTES: (continued)

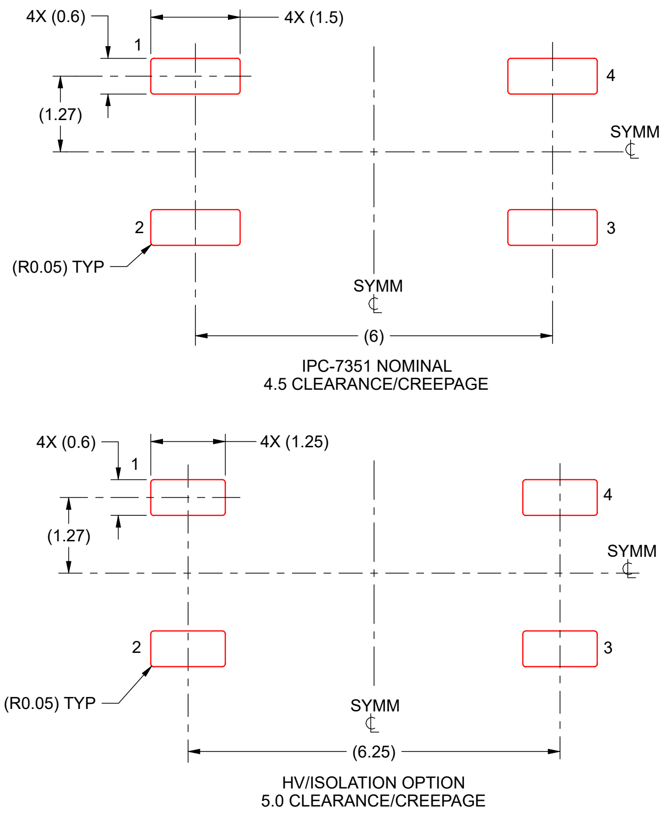
5. Publication IPC-7351 may have alternate designs.
6. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

EXAMPLE STENCIL DESIGN

DFG0004A-C01

SOIC - 2.65 mm max height

SMALL OUTLINE INTEGRATED CIRCUIT



IPC-7351 NOMINAL
4.5 CLEARANCE/CREEPAGE

HV/ISOLATION OPTION
5.0 CLEARANCE/CREEPAGE

SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE: 10X

4229025/C 06/2023

NOTES: (continued)

7. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
8. Board assembly site may have different recommendations for stencil design.

PACKAGE OPTION ADDENDUM

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package | Pins	Package qty | Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
ISOM8600DFGR	Active	Production	SOIC (DFG) | 4	2000 | LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	-55 to 125	8600
ISOM8600DFGR.A	Active	Production	SOIC (DFG) | 4	2000 | LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	-55 to 125	8600
ISOM8600DFGR.B	Active	Production	SOIC (DFG) | 4	2000 | LARGE T&R	-	Call TI	Call TI	-55 to 125	

(1) **Status:** For more details on status, see our product life cycle.

(2) **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

(3) **RoHS values:** Yes, No, RoHS Exempt. See the TI RoHS Statement for additional information and value definition.

(4) **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

(6) **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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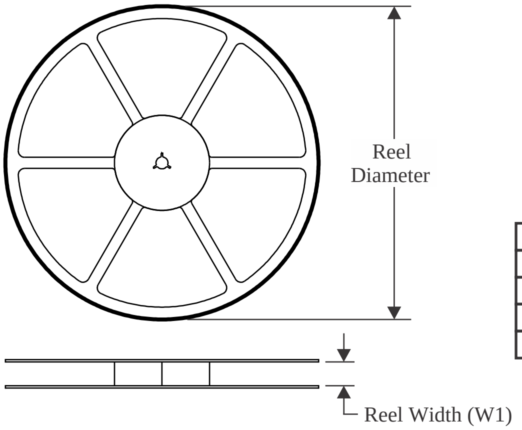
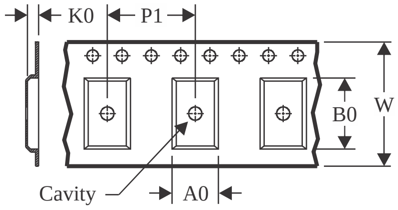
TAPE AND REEL INFORMATION

REEL DIMENSIONS

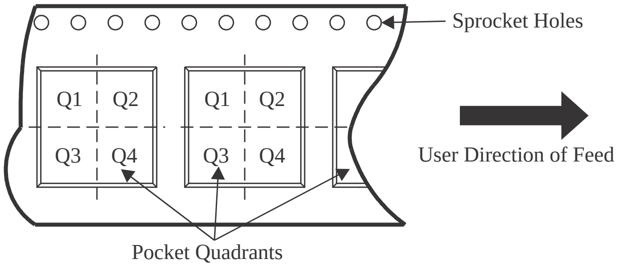


TAPE DIMENSIONS



A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

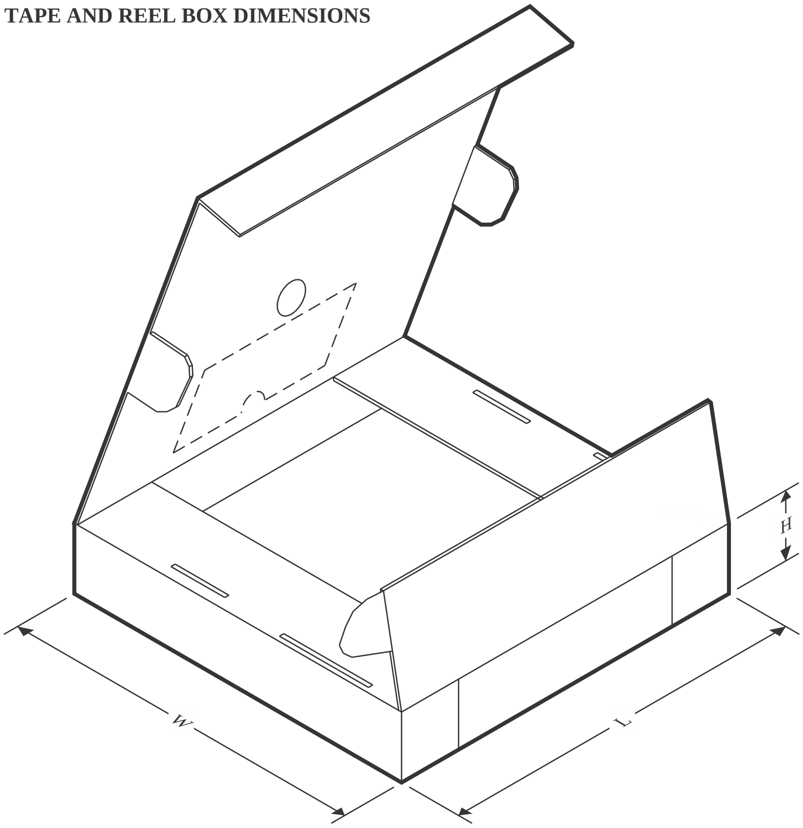
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
ISOM8600DFGR	SOIC	DFG	4	2000	330.0	12.4	8.0	3.8	2.7	12.0	12.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
ISOM8600DFGR	SOIC	DFG	4	2000	353.0	353.0	32.0

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