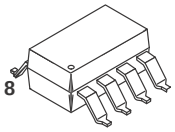
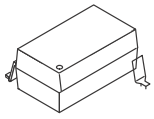
Ga e D eO ◕ ◔ e ,
H g N el ,
1.0 A O C e

FOD3150

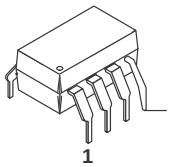
www.onsemi.com



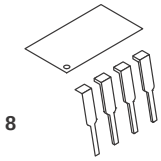
PDIP8 GW
CASE 709AD



PDIP8 GW
CASE 709AC



PDIP8 6.6x3.81, 2.54P
CASE 646BW



PDIP8 9.655x6.6, 2.54P
CASE 646CQ

Description

The FOD3150 is a 1.0 A Output Current Gate Drive Optocoupler, capable of driving most 800 V / 20 A IGBT / MOSFET. It is ideally suited for fast switching driving of power IGBT and MOSFETs used in motor control inverter applications, and high performance power system.

It utilizes ON Semiconductor patented coplanar packaging technology, Optoplanar®, and optimized IC design to achieve high noise immunity, characterized by high common mode rejection.

It consists of a gallium aluminum arsenide (AlGaAs) light emitting diode optically coupled to an integrated circuit with a high−speed driver for push−pull MOSFET output stage.

Features

- High Noise Immunity characterized by 20 kV/μs minimum Common Mode Rejection
- Use of P−channel MOSFETs at Output Stage Enables Output Voltage Swing close to the Supply Rail
- Wide Supply Voltage Range from 15 V to 30 V
- Fast Switching Speed
  - 500 ns maximum Propagation Delay
  - 300 ns maximum Pulse Width Distortion
- Under Voltage LockOut (UVLO) with Hysteresis
- Extended Industrial Temperate Range, −40°C to 100°C Temperature Range
- Safety and Regulatory Approvals
  - UL1577, 5000 V_{RMS} for 1 minute
  - DIN EN/IEC60747−5−5
- >8.0 mm Clearance and Creepage Distance (Option ‘T’)
- This is a Pb−Free Device

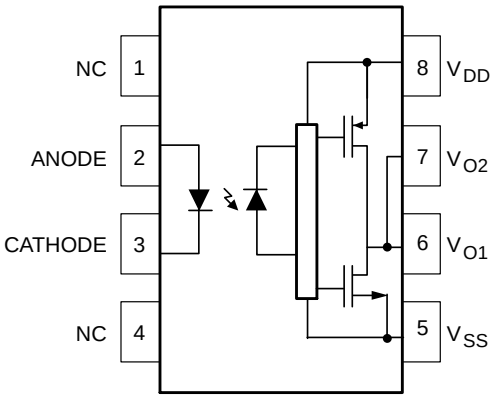
Applications

- Industrial Inverter
- Uninterruptible Power Supply
- Induction Heating
- Isolated IGBT/Power MOSFET Gate Drive

Related Resources

- FOD3120, 2.5 A Output Current, Gate Drive Optocoupler Datasheet
- www.onsemi.com/products/opto/

FUNCTIONAL BLOCK DIAGRAM



Note: A 0.1 μF bypass capacitor must be connected between pins 5 and 8.

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 12 of this data sheet.

Table 4. ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified.)

Symbol	Parameter	Value	Units
T_{STG}	Storage Temperature	−55 to +125	°C
T_{OPR}	Operating Temperature	−40 to +100	°C
T_J	Junction Temperature	−40 to +125	°C
T_{SOL}	Lead Wave Solder Temperature (refer to page 12 for reflow solder profile)	260 for 10 sec	°C
$I_{F(AVG)}$			

Table 7. ELECTRICAL CHARACTERISTICS (continued)
Apply over all recommended conditions, typical value is measured at V_{DD} = 30 V, V_{SS} = Ground, T_A = 25°C unless otherwise specified.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
C_{IN}	Input Capacitance	f = 1 MHz, V_F = 0 V		60		pF
I_{OH}	High Level Output Current (7)	$V_O = V_{DD} - 0.75$ V	0.2			A
		$V_O = V_{DD} - 4$ V	1.0			
I_{OL}	Low Level Output Current (7)	$V_O = V_{DD} + 0.75$ V	0.2			A
		$V_O = V_{DD} + 4$ V	1.0			
V_{OH}	High Level Output Voltage	I_F = 10 mA, I_O = −1 A	$V_{DD} - 6$ V	$V_{DD} - 4$ V		V
		I_F = 10 mA, I_O = −100 mA	$V_{DD} - 0.5$ V	$V_{DD} - 0.1$ V		
V_{OL}	Low Level Output Voltage	I_F = 0 mA, I_O = 1 A		$V_{SS} + 4$ V	$V_{SS} + 6$ V	V
		I_F = 0 mA, I_O = 100 mA		$V_{SS} + 0.1$ V	$V_{SS} + 0.5$ V	
I_{DDH}	High Level Supply Current	V_O = Open, I_F = 7 to 16 mA		2.8	5	mA
I_{DDL}	Low Level Supply Current	V_O = Open, V_F = 0 to 0.8 V		2.8	5	mA
I_{FLH}	Threshold Input Current Low to High	I_O = 0 mA, V_O > 5 V		2.3	5.0	mA
V_{FHL}						

TEST CIRCUIT

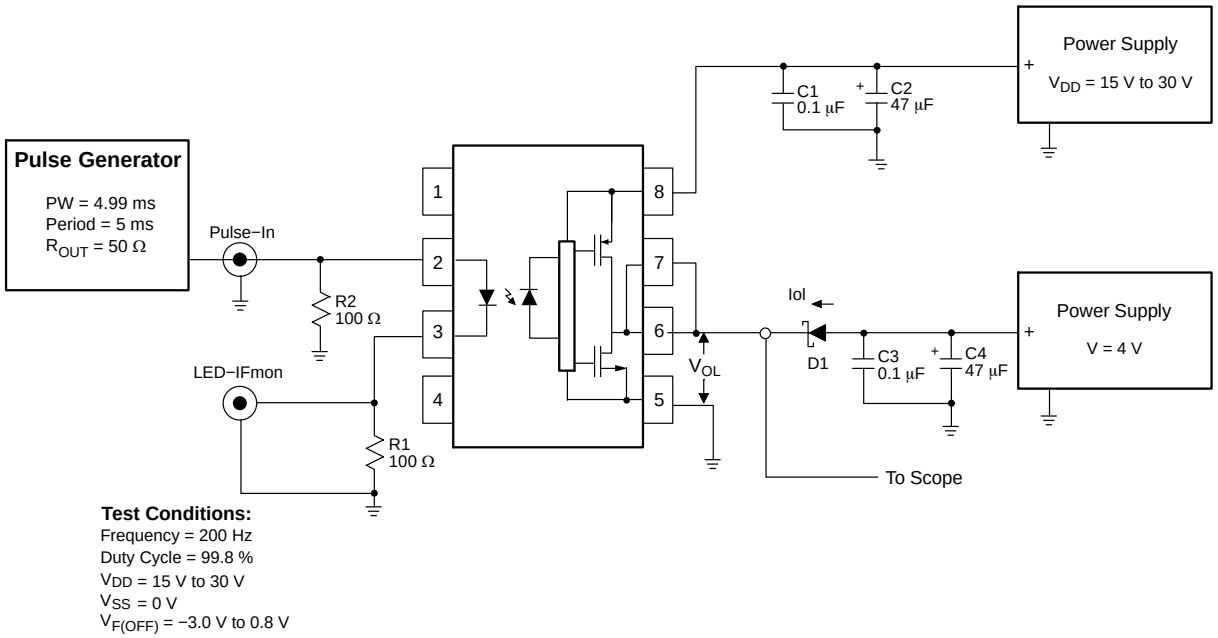


Figure 16. I_{OL} Test Circuit

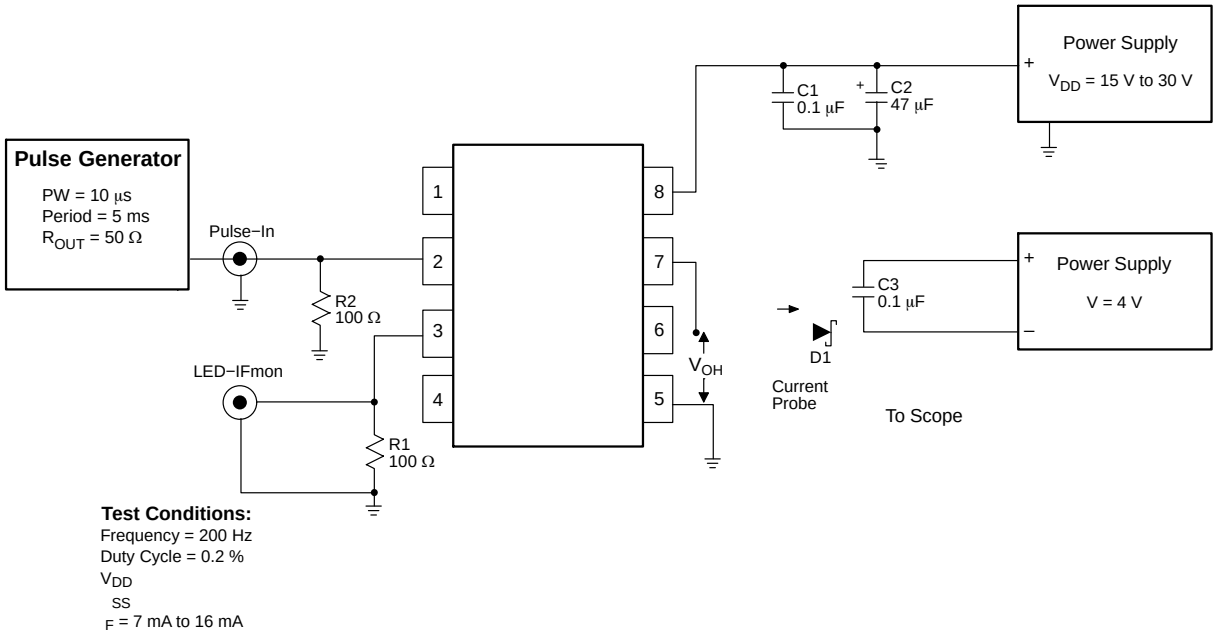


Figure 17. I_{OH} Test Circuit

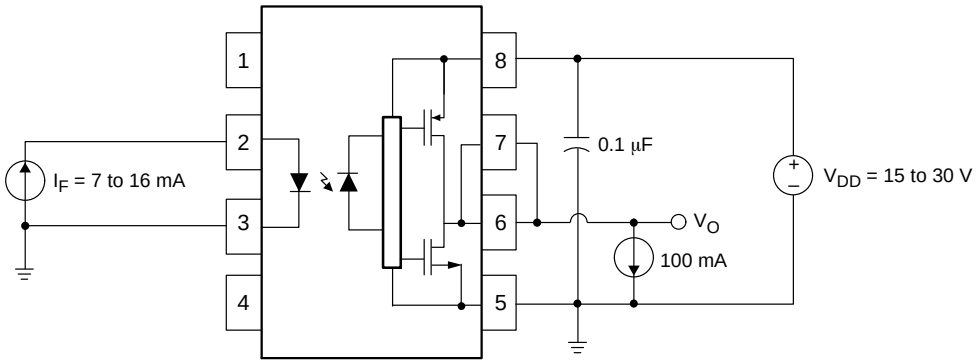


Figure 18. V_{OH} Test Circuit

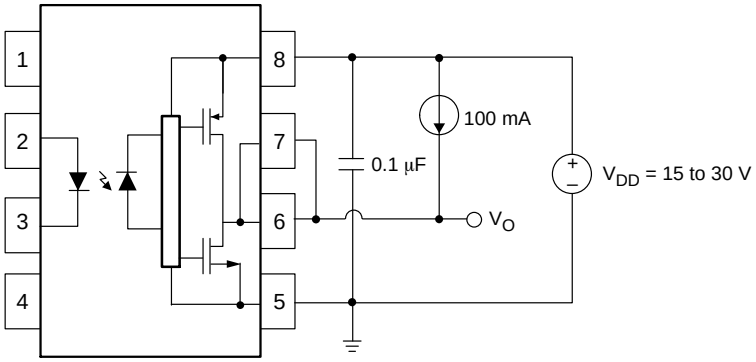


Figure 19. V_{OL} Test Circuit

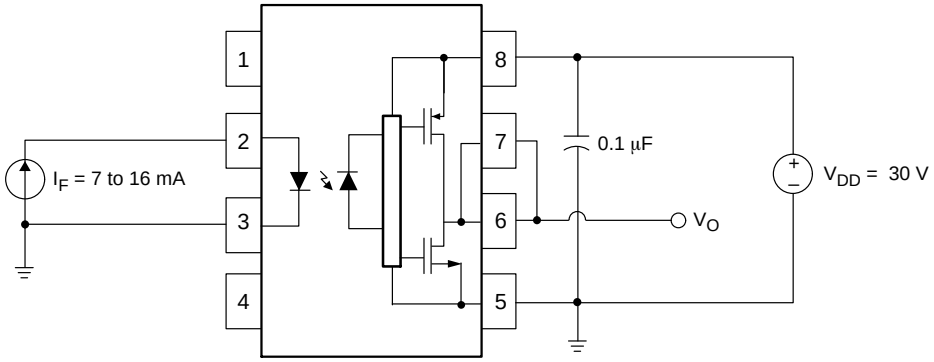


Figure 20. I_{DDH} Test Circuit

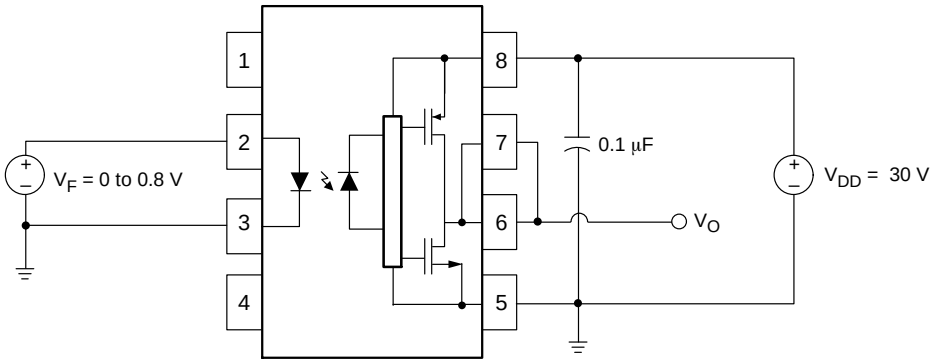


Figure 21. I_{DDL} Test Circuit

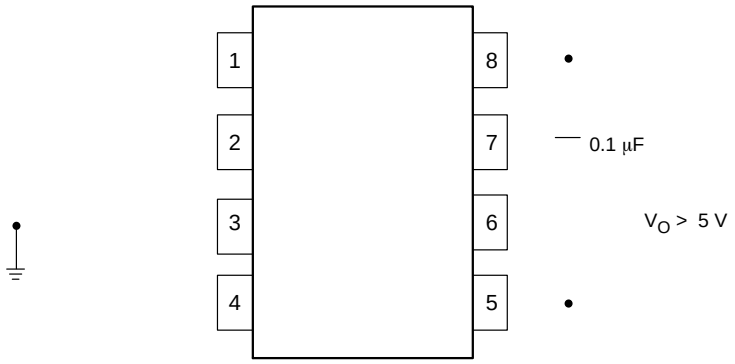
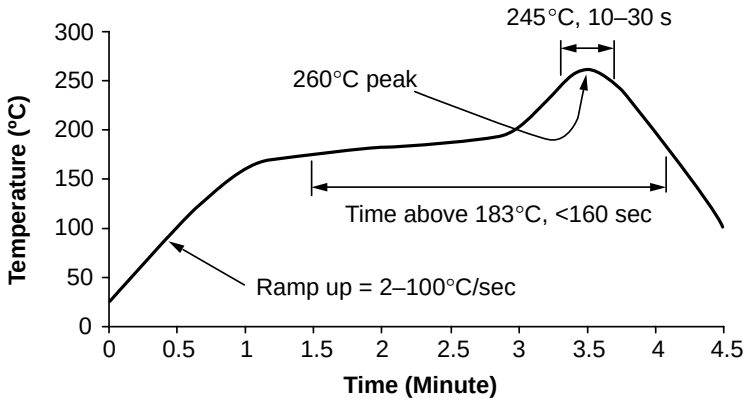


Figure 22. I_{FLH} Test Circuit

FOD3150

REFLOW PROFILE



Notes:
- Peak reflow temperature: 260°C (package surface temperature)
- Time of temperature higher than 183°C for 160 seconds or less
- One time soldering reflow is recommended

Figure 27. Reflow Profile

ORDERING INFORMATION

Part Number	Package	Shipping†
FOD3150	DIP 8−Pin	50 / Tube
FOD3150S	SMT 8−Pin (Lead Bend)	50 / Tube
FOD3150SD	SMT 8−Pin (Lead Bend)	1,000 / Tape & Reel
FOD3150V	DIP 8−Pin, IEC60747−5−5 option	50 / Tube
FOD3150SV	SMT 8−Pin (Lead Bend), IEC60747−5−5 option	50 / Tube
FOD3150SDV	SMT 8−Pin (Lead Bend), IEC60747−5−5 option	1,000 / Tape & Reel
FOD3150TV	DIP 8−Pin, 0.4” Lead Spacing, IEC60747−5−5 option	50 / Tube
FOD3150TSV	SMT 8−Pin, 0.4” Lead Spacing, IEC60747−5−5 option	50 / Tube
FOD3150TSR2V	SMT 8−Pin, 0.4” Lead Spacing, IEC60747−5−5 option	700 / 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

MARKING INFORMATION

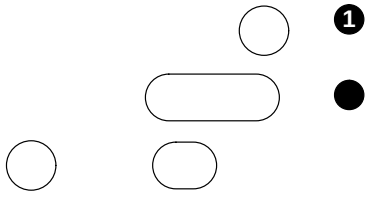


Figure 28. Device Marking

CARRIER TAPE SPECIFICATIONS

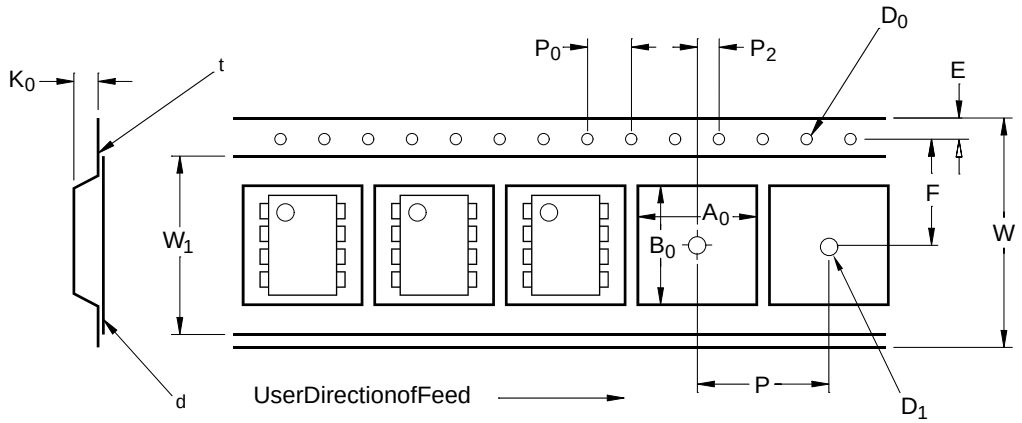


Figure 29. Carrier Tape Specifications

Symbol	Description	Dimension in mm
W	Tape Width	16.0 ± 0.3
t	Tape Thickness	0.30 ± 0.05
P_0	Sprocket Hole Pitch	

PDIP8 9.655x6.6, 2.54P
CASE 646CQ
ISSUE O

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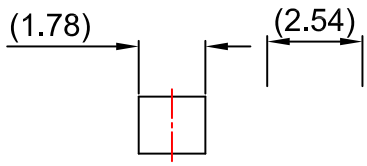
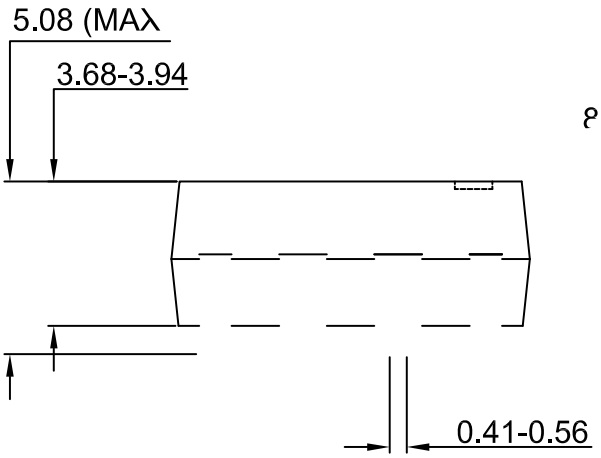
PDIP8 GW
CASE 709AC
ISSUE O

DATE 31 JUL 2016



35-6.86



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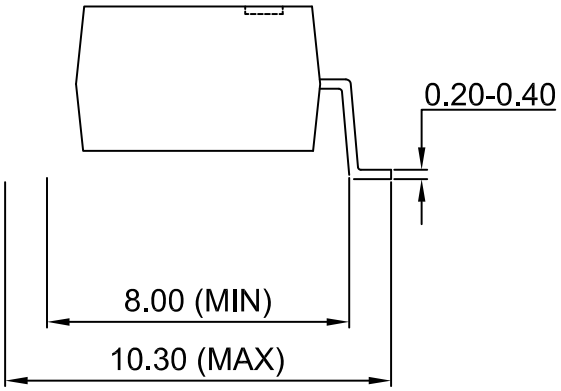

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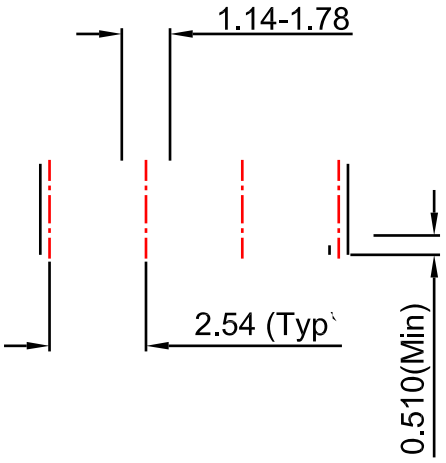

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