IXYS
INTEGRATED CIRCUITS DIVISION



FDA217
Dual MOSFET Driver

Parameter	Rating	Units
Open Circuit Voltage	12	V
Short Circuit Current	4.5	µA
Input Control Current	5	mA

Features
- Dual Independent, Floating Outputs for Parallel, Series, or Isolated Configuration
- Replacement of Discrete Components
- 5mA Control Current
- No EMI/RFI Generation
- Solid State Reliability
- High Input to Output Isolation: 3750V_{rms}
- Machine Insertable, Wave Solderable
- Surface Mount and Tape & Reel Version Available

Applications
- MOSFET Driver
- Programmable Control
- Process Control
- Instrumentation
- Telecommunications
- Solid State Relays
- Isolated Switching
- Floating Power Supplies

Description
The FDA217 is a dual photovoltaic MOSFET driver. Each independent driver consists of an LED that is optically coupled to a photodiode array.

The driver output is controlled by means of the highly effective GaAlAs infrared LED at the input. When the input current is applied to the LED, the light emitted activates the photodiode array, and generates the voltage at the output.

The photodiode array is capable of generating a floating power source with voltage and current sufficient to drive high-power MOSFET transistors. Each photodiode array contains an integrated turn-off circuit that discharges the external MOSFET gate when LED current is removed. This eliminates the need to use external components to facilitate the discharge. The optically coupled technology provides 3750V_{rms} of input to output isolation.

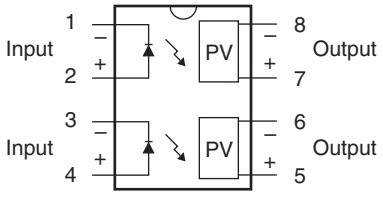
The FDA217 is well suited for use in discrete solid state relay designs and in other isolated switching applications.

Approvals
- UL 1577 Pending
- EN/IEC 60950 Certified Component: TUV Certificate: B 09 07 49410 004

Ordering Information

Part #	Description
FDA217	8-Lead DIP (50/tube)
FDA217S	8-Lead Surface Mount (50/tube)
FDA217STR	8-Lead Surface Mount (1000/reel)

Pin Configuration



Absolute Maximum Ratings @ 25ºC

Parameter	Ratings	Units
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation [1]	140	mW
Total Power Dissipation [2]	500	mW
ESD Rating, Human Body Model	8	kV
Isolation Voltage, Input to Output	3750	V_{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate linearly 1.33 mW / ºC

[2] Derate linearly 6.67 mW / ºC

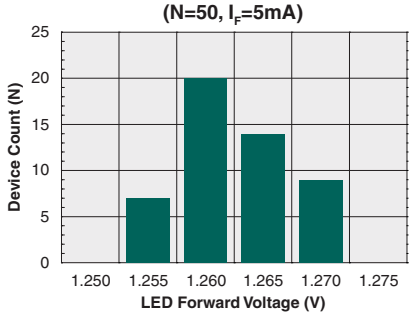
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

Electrical Characteristics @ 25ºC

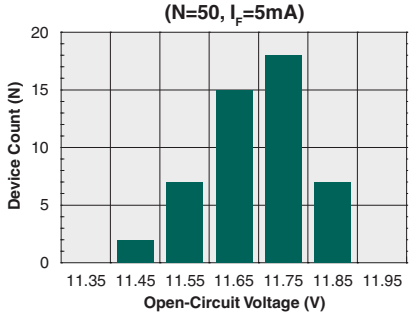
Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Open Circuit Voltage	I_F=5mA	V_{OC}	10.5	11.75	15.3	V
Short Circuit Current	I_F=5mA	I_{SC}	2.5	4.5	-	µA
	I_F=10mA		5	9		
	I_F=15mA		7.5	13.5		
	I_F=20mA		10	18.5		
	I_F=30mA		15	27		
Switching Speeds						
Turn-On	I_F=5mA, V_{LOAD}=5V, C_{LOAD}=200pF	t_{on}	-	-	2	ms
Turn-Off		t_{off}	-	-	0.5	
Offstate Resistance	V_L=1V	R	100	770	3300	Ω
Input Characteristics						
LED Current to Activate	I_{SC}=2.5µA	I_F	-	3.8	5	mA
Input Voltage Drop	I_F=5mA	V_F	0.9	1.26	1.4	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Common Characteristics						
Capacitance, Input to Output	-	-	-	3	-	pF

Performance Data (@ 25°C Unless Otherwise Noted) *

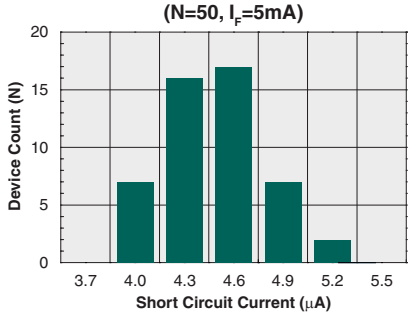
Typical LED Forward Voltage
(N=50, I_F=5mA)



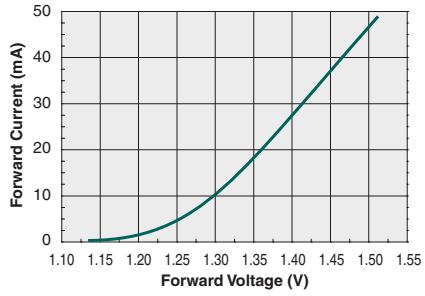
Typical Open-Circuit Voltage
(N=50, I_F=5mA)



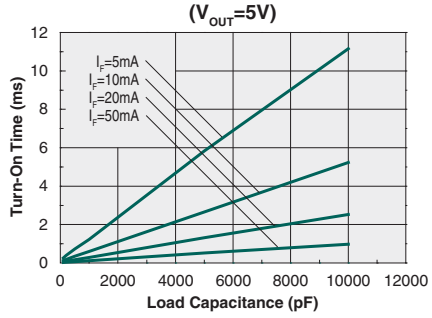
Typical Short-Circuit Current
(N=50, I_F=5mA)



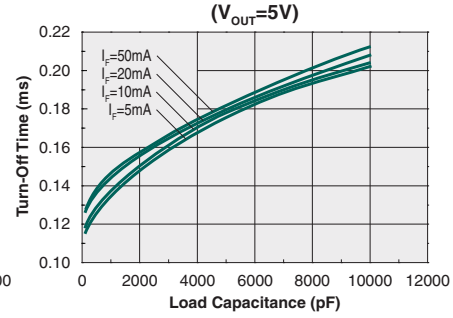
LED Forward Voltage
vs. Forward Current



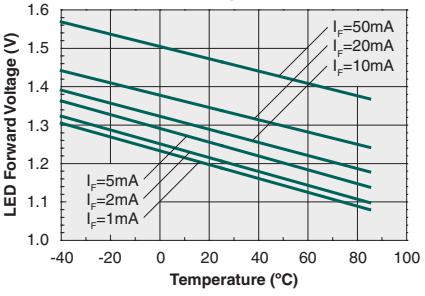
Turn-On Time vs. Load Capacitance
(V_{OUT}=5V)



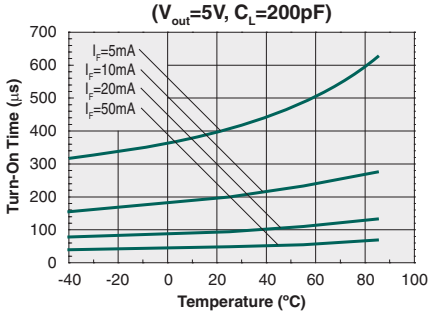
Turn-Off Time vs. Load Capacitance
(V_{OUT}=5V)



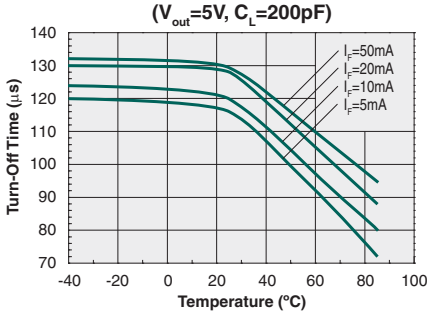
LED Forward Voltage
vs. Temperature



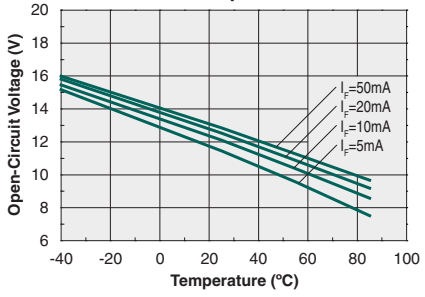
Turn-On Time vs. Temperature
(V_{out}=5V, C_L=200pF)



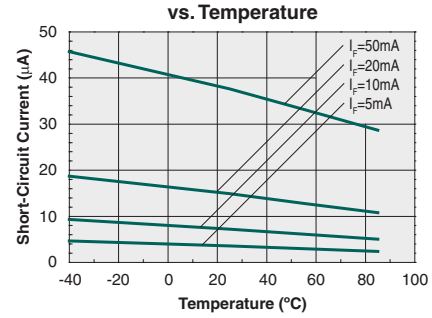
Turn-Off Time vs. Temperature
(V_{out}=5V, C_L=200pF)



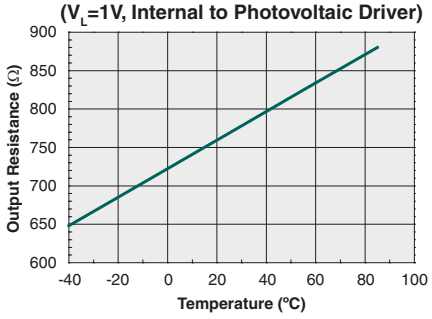
Open-Circuit Voltage
vs. Temperature



Short-Circuit Current
vs. Temperature



Offstate Output Resistance
vs. Temperature
(V_L=1V, Internal to Photovoltaic Driver)



*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

Manufacturing Information

Moisture Sensitivity

All plastic encapsulated semiconductor packages are susceptible to moisture ingression. IXYS Integrated Circuits Division classified all of its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL) rating** as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Rating
FDA217 / FDA217S	MSL 1

ESD Sensitivity

This product is **ESD Sensitive**, and should be handled according to the industry standard **JESD-625**.

Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

Device	Maximum Temperature x Time
FDA217 / FDA217S	250°C for 30 seconds

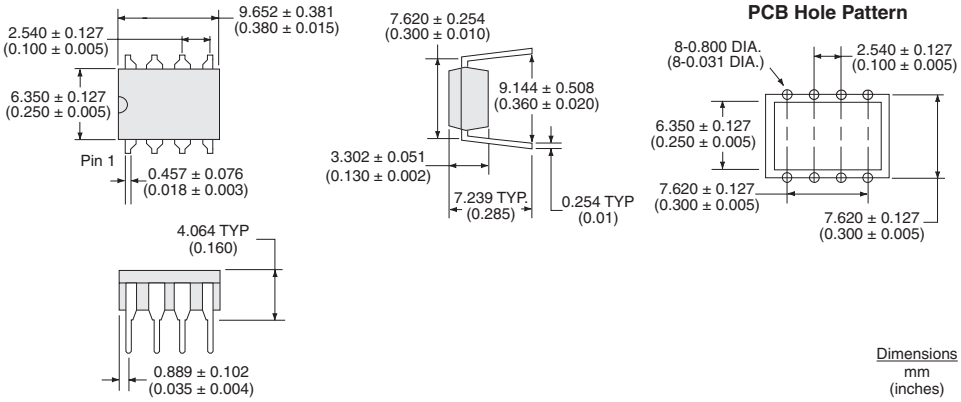
Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

Pb RoHS 2002/95/EC e3

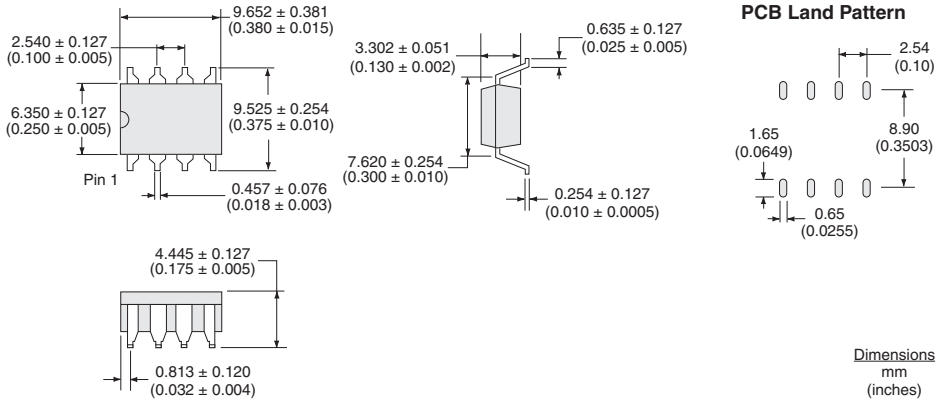
Mechanical Dimensions

FDA217



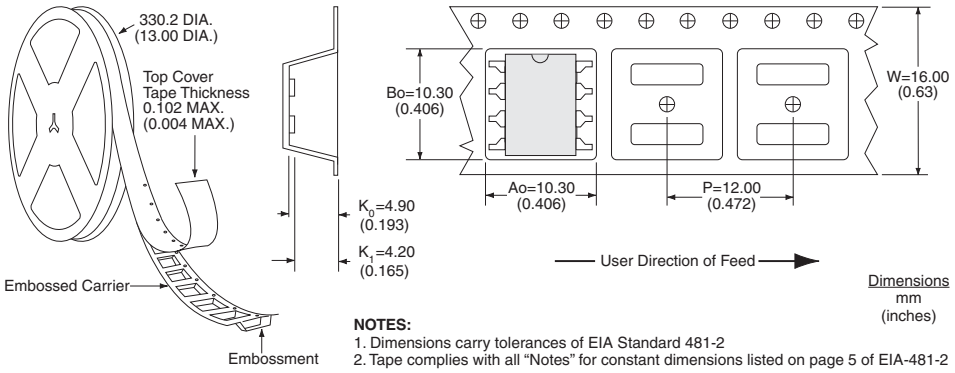
Dimensions
mm
(inches)

FDA217S



Dimensions
mm
(inches)

FDA217S Tape & Reel



Dimensions
mm
(inches)

NOTES:
1. Dimensions carry tolerances of EIA Standard 481-2
2. Tape complies with all "Notes" for constant dimensions listed on page 5 of EIA-481-2

For additional information please visit our website at: www.ixysic.com

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Specification: DS-FDA217-R01
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