



Parameter	Ratings	Units
Blocking Voltage	60	$V_P$
Load Current	2.2	$A_{rms} / A_{DC}$
On-Resistance (max)	0.15	$\Omega$

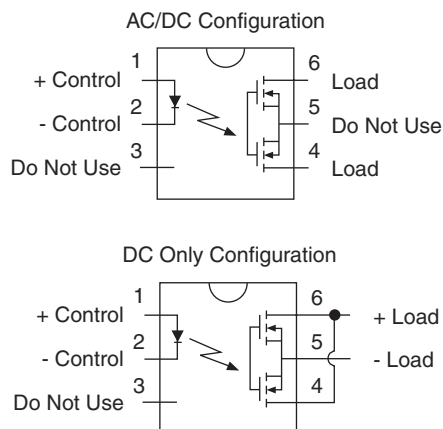
### Features

- 3750V<sub>rms</sub> Input/Output Isolation
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Small 6-Pin Package
- Machine Insertable, Wave Solderable
- Surface Mount and Tape & Reel Versions Available

### Applications

- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

### Pin Configuration



### Description

The LCA715 is a 60V single-pole, normally open (1-Form-A) Solid State Relay. It uses optically coupled MOSFET technology to provide 3750V<sub>rms</sub> of input to output isolation, and features an ultra-low on-resistance for high-current operation.

Its optically coupled outputs, which use the patented OptoMOS architecture, are controlled by a highly efficient GaAlAs infrared LED.

Offering the superior reliability associated with semiconductor devices, the LCA715 can be used to replace mechanical relays. Because it has no moving parts, it can offer faster, bounce-free switching in a more compact surface mount or thru-hole package.

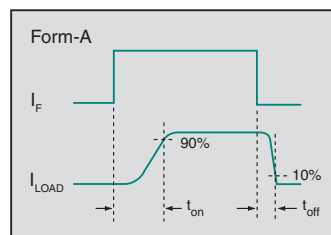
### Approvals

- UL Recognized Component: File E76270
- CSA Certified Component: Certificate 1172007
- EN/IEC 60950:
  - TUV Certificate B 09 07 49410 004

### Ordering Information

Part #	Description
LCA715	6 Pin DIP (50/Tube)
LCA715S	6 Pin Surface Mount (50/Tube)
LCA715STR	6 Pin Surface Mount (1000/Reel)

### Switching Characteristics of Normally Open Devices



### Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	60	V <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation	70	mW
Total Power Dissipation <sup>1</sup>	800	mW
ESD, Human Body Model	8	kV
Isolation Voltage, Input to Output	3750	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate linearly 6.67 mW / °C

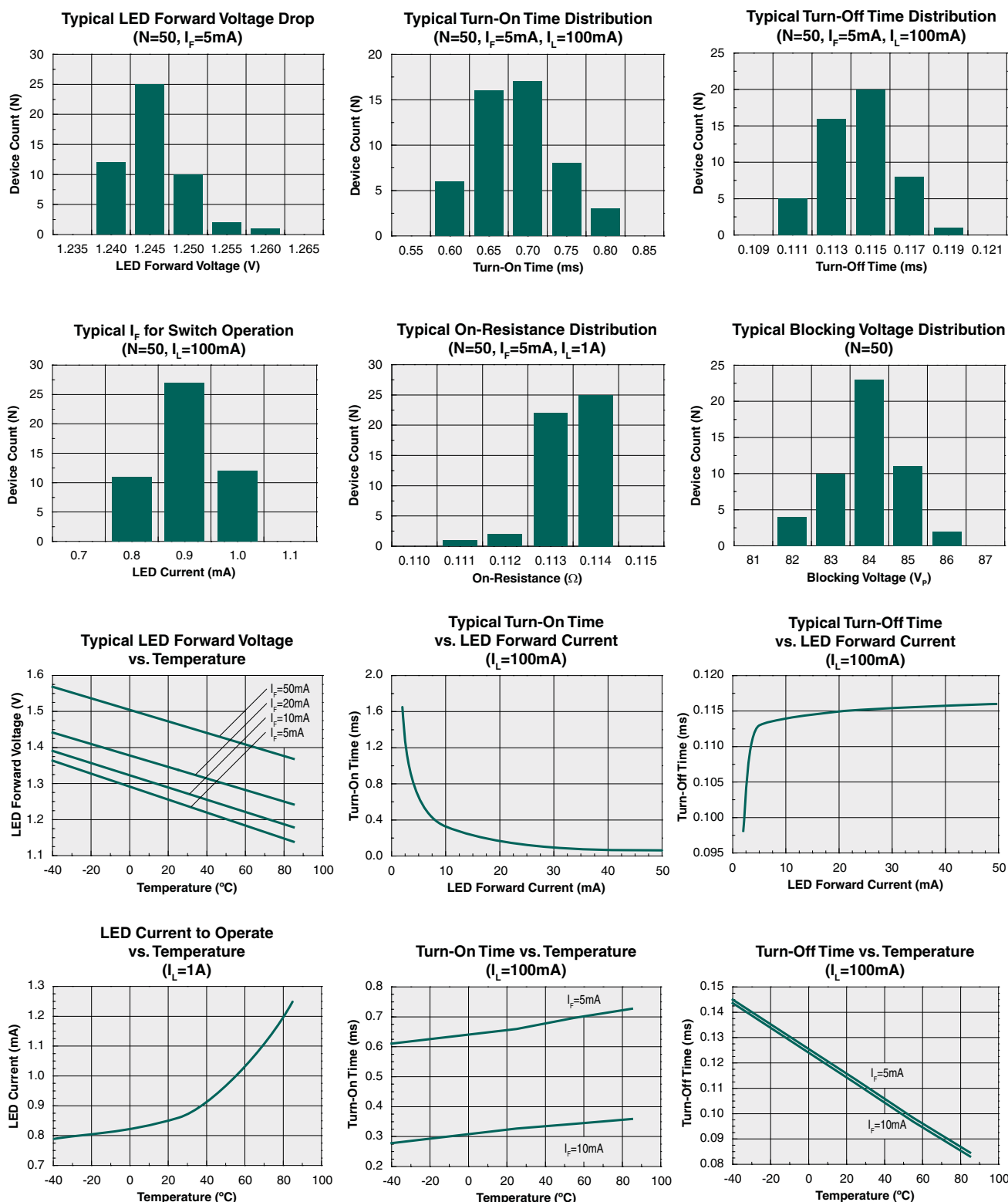
*Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.*

### Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current	Continuous, Free Air	I <sub>L</sub>	-	-	2.2	A <sub>rms</sub> / A <sub>DC</sub>
Continuous, AC/DC Configuration			-	-	4	A <sub>DC</sub>
Continuous, DC Configuration		t <sub>≤</sub> 10ms	I <sub>LPK</sub>	-	-	±10
Peak						
On-Resistance <sup>1</sup>	I <sub>F</sub> =5mA, I <sub>L</sub> =1A	R <sub>ON</sub>	-	0.12	0.15	Ω
AC/DC Configuration			-	0.038	0.05	
DC Configuration						
Off-State Leakage Current	I <sub>F</sub> =0mA, V <sub>L</sub> =60V <sub>P</sub>	I <sub>LEAK</sub>	-	-	1	μA
Switching Speeds	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	t <sub>on</sub>	-	0.7	2.5	ms
Turn-On			-	0.115	0.25	ms
Turn-Off		t <sub>off</sub>				
Output Capacitance	I <sub>F</sub> =0mA, f=1MHz	C <sub>OUT</sub>	-	110	200	pF
	V <sub>L</sub> =10V		-	60	-	
	V <sub>L</sub> =50V		-			
Input Characteristics						
Input Control Current to Activate	I <sub>L</sub> =1A	I <sub>F</sub>	-	0.9	5	mA
Input Control Current to Deactivate	-	I <sub>F</sub>	0.4	-	-	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μA
Common Characteristics						
Input to Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF

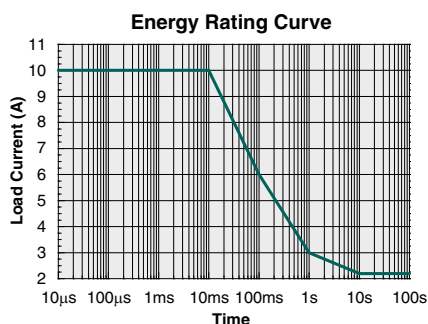
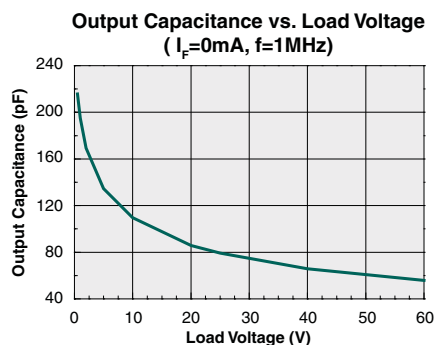
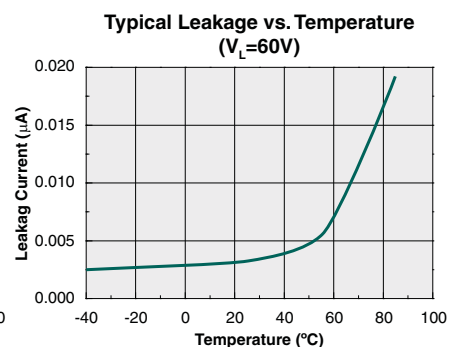
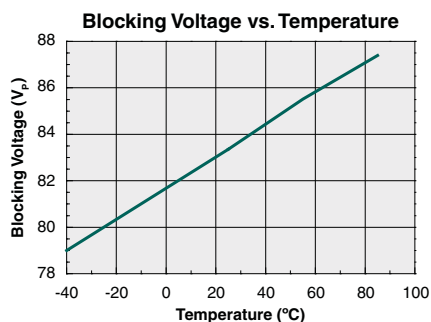
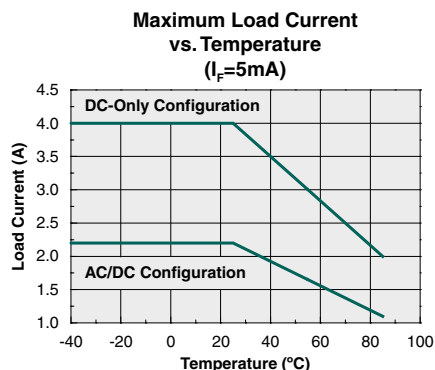
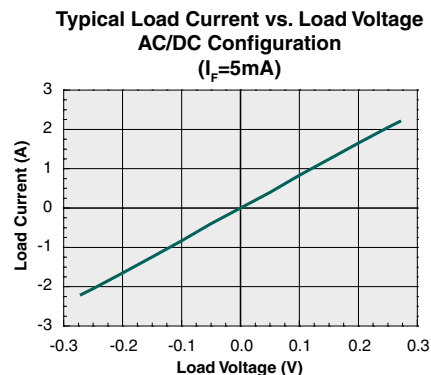
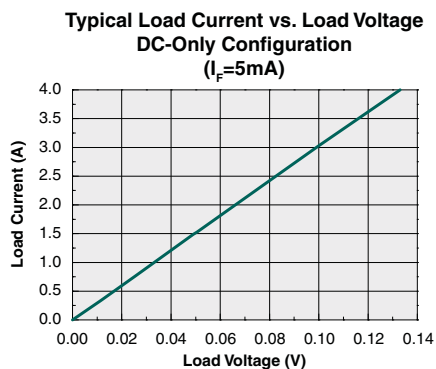
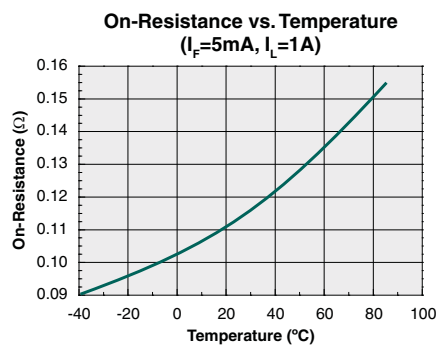
<sup>1</sup> Measurement taken within 1 second of on-time.

# PERFORMANCE DATA @25°C (Unless Otherwise Noted)\*



\*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.

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## Manufacturing Information

### Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. 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
LCA715 / LCA715S	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
LCA715 / LCA715S	250°C for 30 seconds

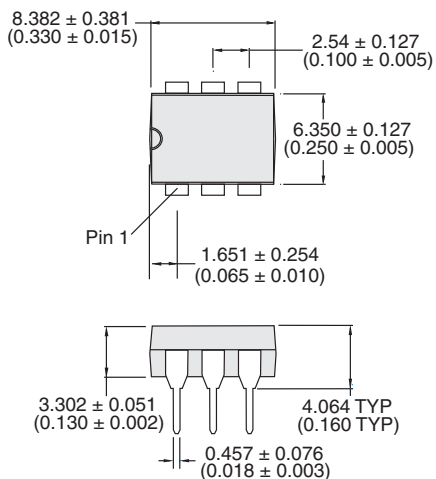
### Board Wash

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.

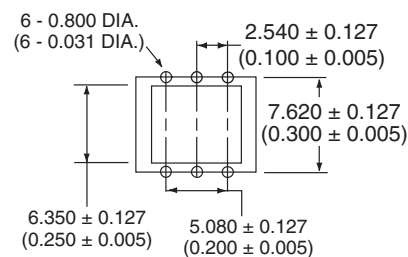


## MECHANICAL DIMENSIONS

### LCA715

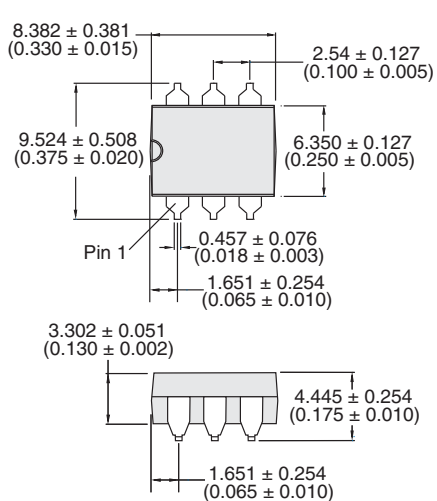


### PCB Hole Pattern

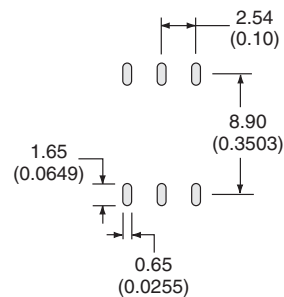


Dimensions  
mm  
(inches)

### LCA715S

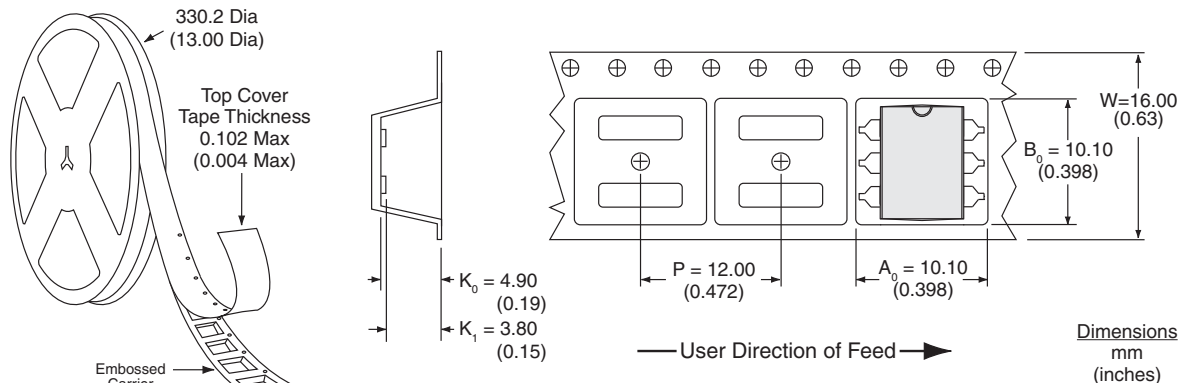


### PCB Land Pattern



Dimensions  
mm  
(inches)

## LCA715STR Tape & Reel



### NOTES:

1. All dimensions carry tolerances of EIA Standard 481-2
2. The 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](http://www.ixysic.com)**

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