



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

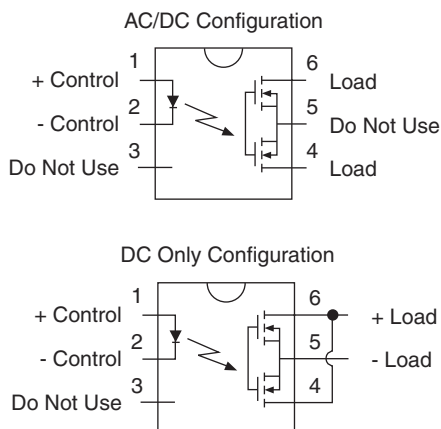
Features

- 3750V_{rms} 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_{rms} 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.

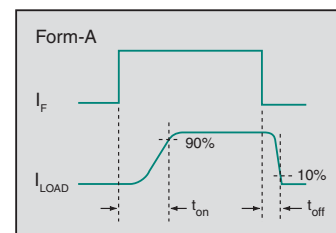
Approvals

- 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 _p
Reverse Input Voltage	5	V
Input Control Current Peak (10ms)	50	mA
	1	A
Input Power Dissipation	70	mW
Total Power Dissipation ¹	800	mW
ESD, 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

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.

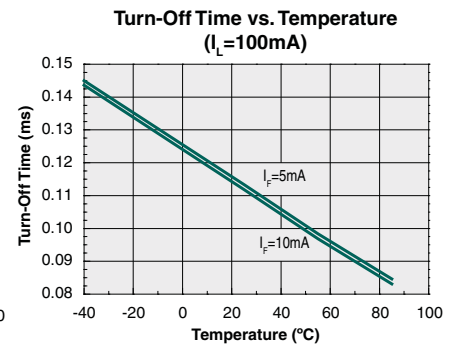
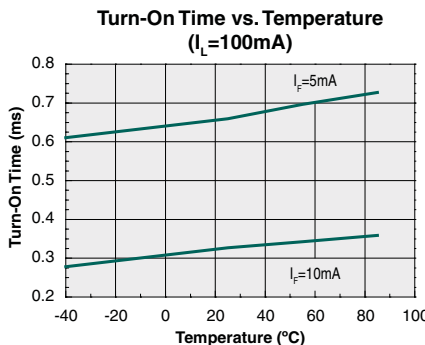
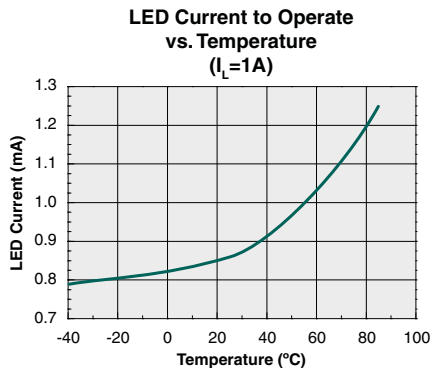
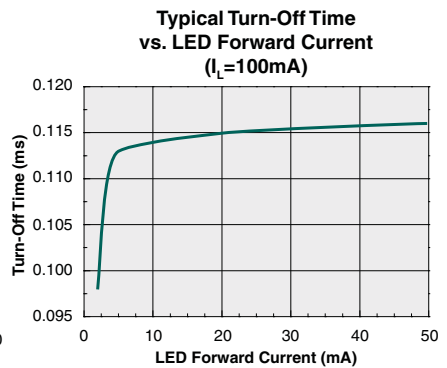
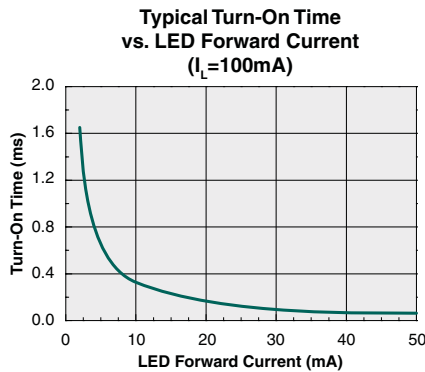
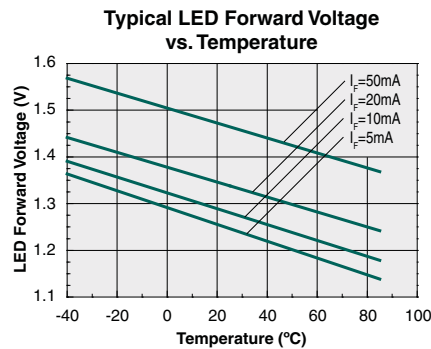
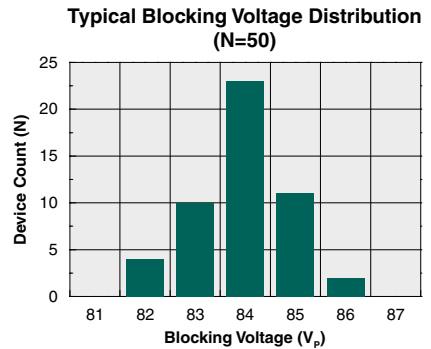
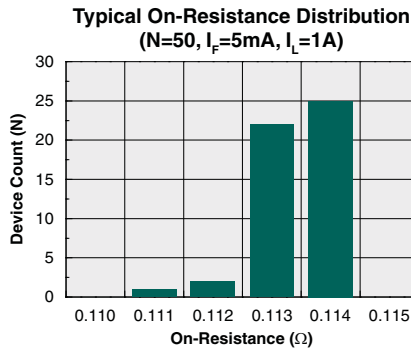
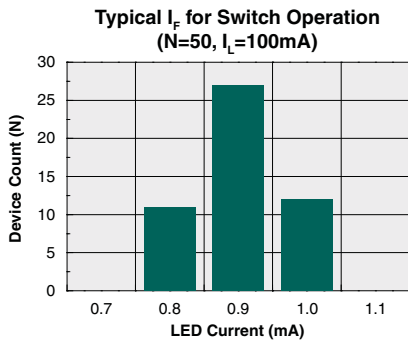
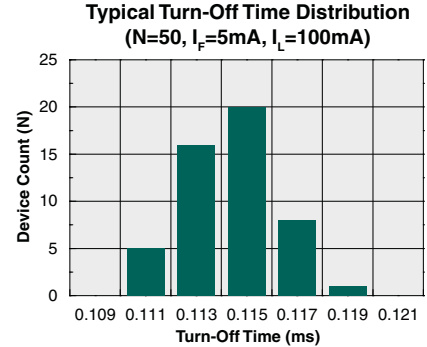
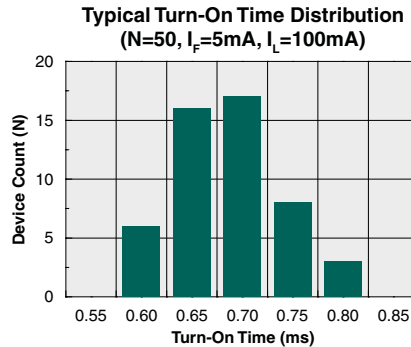
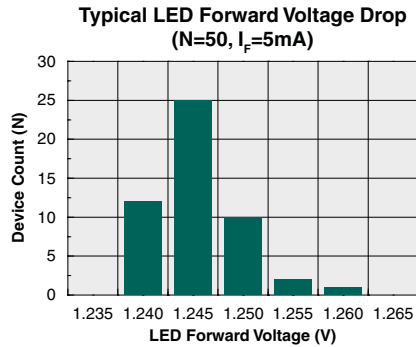
¹ Derate linearly 6.67 mW / °C

Electrical Characteristics @ 25°C

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

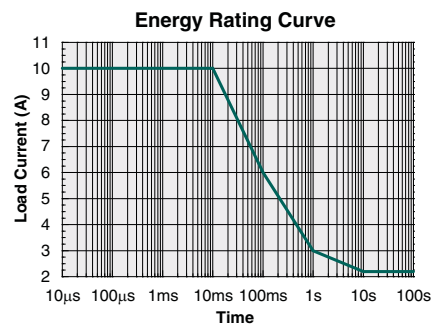
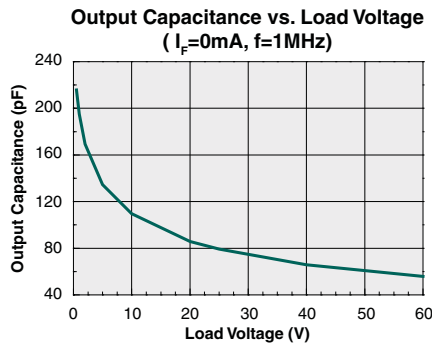
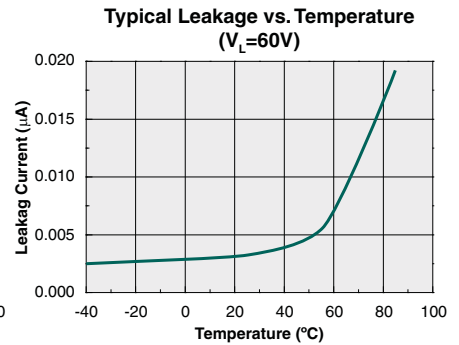
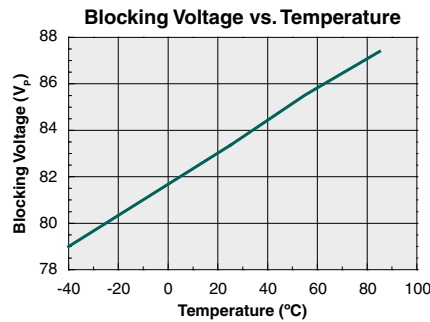
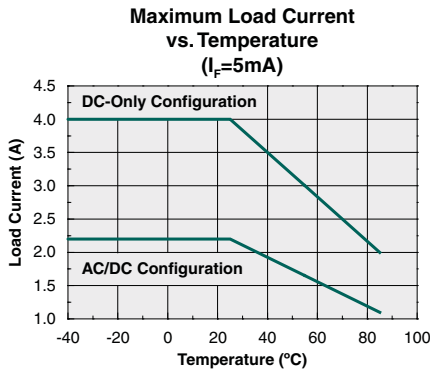
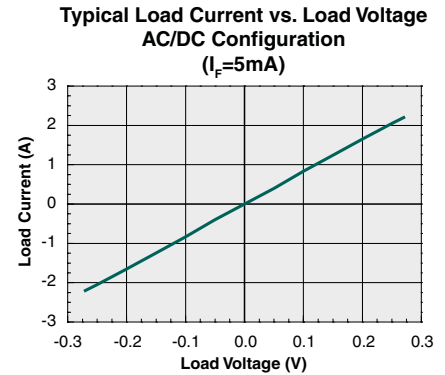
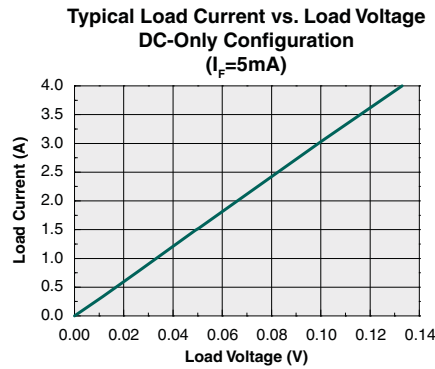
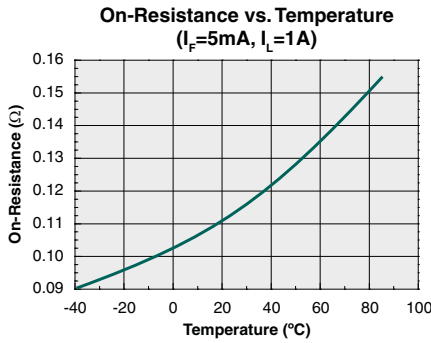
¹ Measurement taken within 1 second of on-time.

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.

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



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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

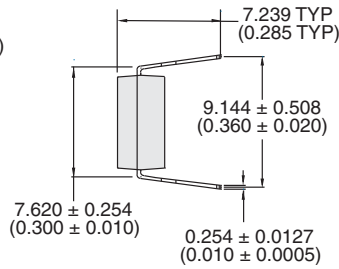
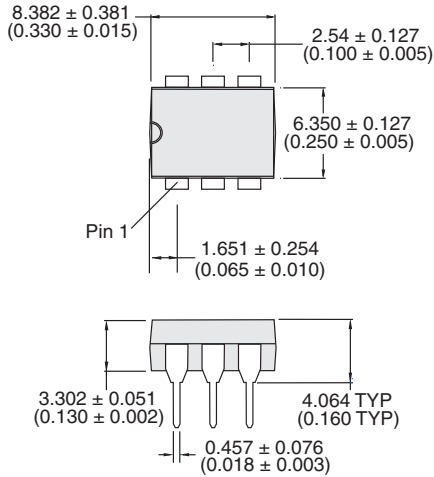
Board Wash

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.

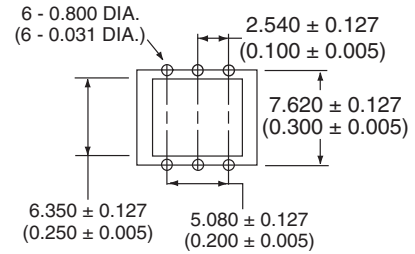


MECHANICAL DIMENSIONS

LCA715

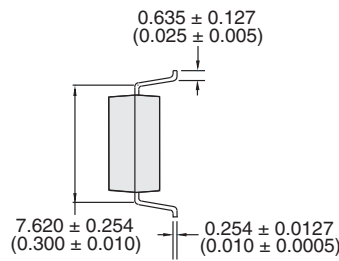
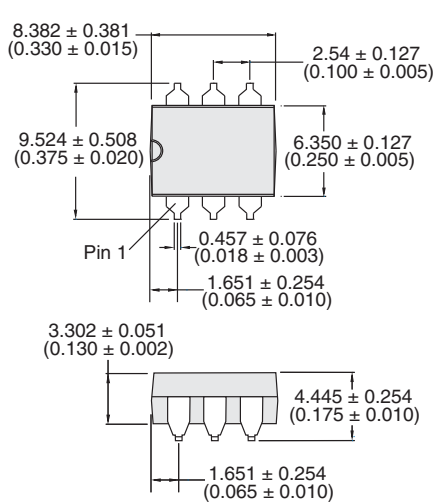


PCB Hole Pattern

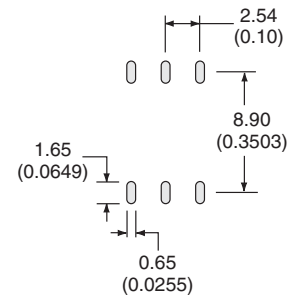


Dimensions
mm
(inches)

LCA715S

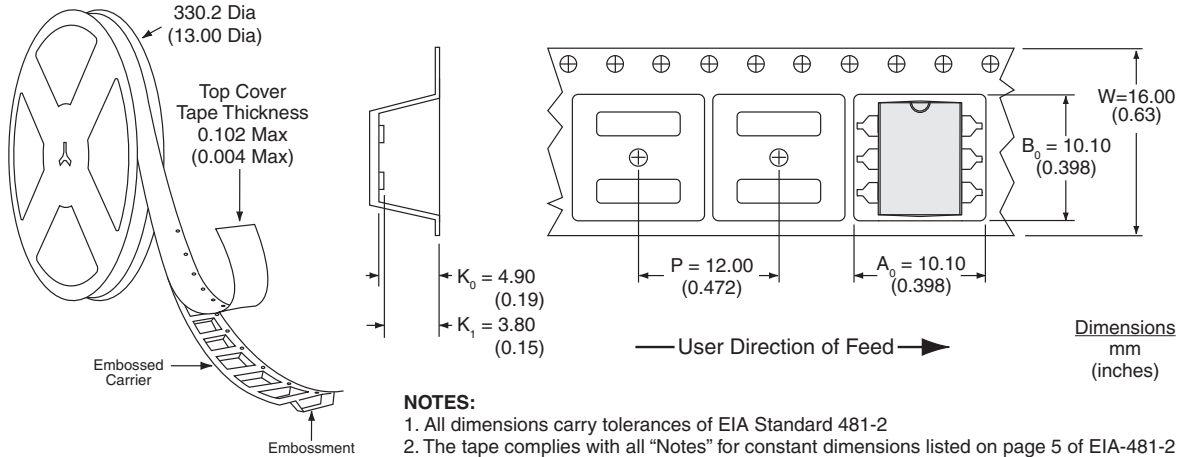


PCB Land Pattern



Dimensions
mm
(inches)

LCA715STR Tape & Reel



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