



LBA710 Dual Single-Pole OptoMOS® Relay Normally Open & Normally Closed

| Parameter | Rating | Units |
|------------------------|--------|------------------------------------|
| Blocking Voltage | 60 | V |
| Load Current | 1 | A _{rms} / A _{DC} |
| On-Resistance (max) | 0.6 | Ω |
| LED Current to Operate | 2 | mA |

Features

- Low On-Resistance (0.6Ω)
- · Low Control Current (2mA)
- 3750V_{rms} Input/Output Isolation
- 100% Solid State
- Low Drive Power Requirements (TTL/CMOS Compatible)
- · Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- · Machine Insertable, Wave Solderable
- Surface Mount Versions
- Small 8-Pin Package
- · Tape & Reel available

Applications

- Telecommunications
- Instrumentation
 - Multiplexers
 - Data Acquisition
 - · Electronic Switching
 - I/O Subsystems
- · Utility Meters (gas, oil, electric and water)
- Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- · Industrial Controls

Description

LBA710 is a 60V, 1A, 0.6Ω dual Solid State Relay integrating independent single-pole normally open (1-Form-A) and single-pole normally closed (1-Form-B) relays into a single package. It features a superior combination of low on-resistance and 1A load current handling capability.

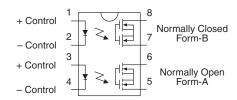
Approvals

- UL Recognized Component: File E76270
- CSA Certified Component: Certificate 1175739
- EN/IEC 60950-1 Certified Component: TUV Certificate B 09 07 49410 004

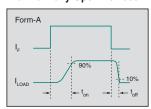
Ordering Information

| Part # | Description | |
|-----------|---------------------------------|--|
| LBA710 | 8-Pin DIP (50/Tube) | |
| LBA710S | 8-Pin Surface Mount (50/Tube) | |
| LBA710STR | 8-Pin Surface Mount (1000/Reel) | |

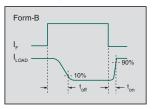
Pin Configuration



Switching Characteristics of Normally Open Devices



Switching Characteristics of Normally Closed Devices











Absolute Maximum Ratings @ 25°C

| Parameter | Ratings | Units |
|--------------------------------------|-------------|------------------|
| Blocking Voltage | 60 | V _P |
| Reverse Input Voltage | 5 | V |
| Input Control Current | 50 | mA |
| Peak (10ms) | 1 | Α |
| Input Power Dissipation ¹ | 150 | mW |
| Total Power Dissipation ² | 800 | mW |
| Isolation Voltage, Input to Output | 3750 | V _{rms} |
| ESD Rating, Human Body Model | 8 | kV |
| Operational Temperature | -40 to +85 | °C |
| Storage Temperature | -40 to +125 | °C |

¹ Derate linearly 1.33 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

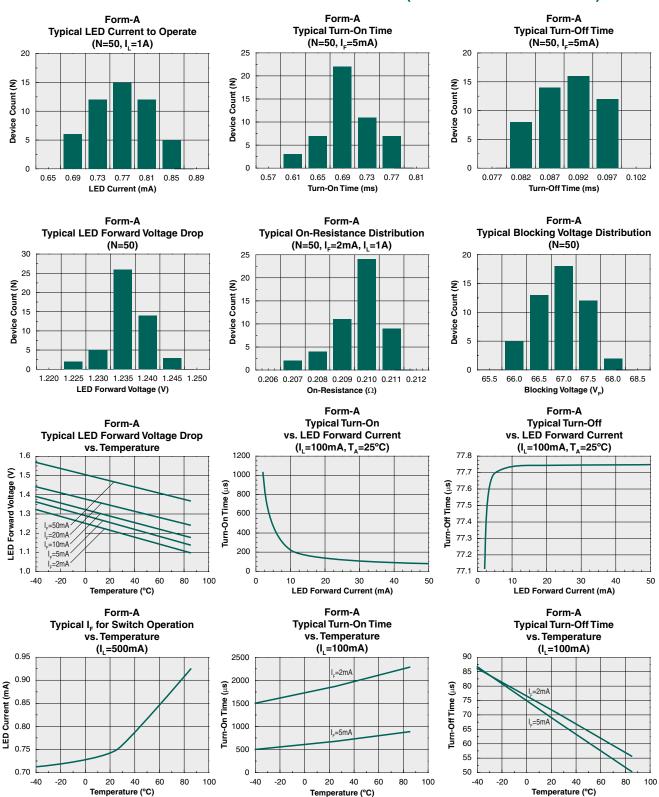
| Parameter | Conditions | Symbol | Min | Тур | Max | Units |
|--|--|-------------------|-----|------|-----|------------------------------------|
| Output Characteristics: Form-A (Normally Open) | | | | | | |
| Load Current | | | | | | |
| Continuous | I _F =2mA | IL | - | - | 1 | A _{rms} / A _{DC} |
| Peak | I _F =2mA, t ≤ 10ms | I _{LPK} | - | - | ±5 | A _P |
| On-Resistance | I _F =2mA, I _L =1A | R _{ON} | - | 0.21 | 0.6 | Ω |
| Switching Speeds | | | | | | |
| Turn-On | $I_{\rm F}=5$ mA, $V_{\rm I}=10$ V | t _{on} | - | 0.7 | 5 | ms |
| Turn-Off | I _F =SIIIA, V _L =10V | t _{off} | - | 0.09 | 5 | 1115 |
| Off-State Leakage Current | I _F =0mA, V _L =60V | I _{LEAK} | - | - | 1 | μΑ |
| Output Capacitance | I_F =0mA, V_L =50V, f=1MHz | C _{OUT} | • | 44 | - | pF |
| Output Characteristics: Form-B (Normally Closed) | | | | | | |
| Load Current | | | | | | |
| Continuous | I _F =0mA | IL | - | - | 1 | A _{rms} / A _{DC} |
| Peak | I _F =0mA, t ≤ 10ms | I _{LPK} | - | - | ±5 | A _P |
| On-Resistance | I _F =0mA, I _L =1A | R _{ON} | - | 0.39 | 0.6 | Ω |
| Switching Speeds | | | | | | |
| Turn-On | $I_{\rm F}=5$ mA, $V_{\rm I}=10$ V | t _{on} | - | 0.63 | 5 | ms |
| Turn-Off | I _F =SIIIA, V _L =10V | t _{off} | - | 1.5 | 5 | 1115 |
| Off-State Leakage Current | I _F =2mA, V _L =60V | I _{LEAK} | - | - | 1 | μΑ |
| Output Capacitance | I _F =2mA, V _L =50V, f=1MHz | C _{OUT} | - | 125 | - | pF |
| Input Characteristics: Form-A and | Form-B | | | | | |
| Input Control Current to Activate | I _L =1A | I _F | - | - | 2 | mA |
| Input Control Current to Deactivate | | I _F | 0.1 | - | - | 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 | μΑ |
| Common Characteristics: Form-A | and Form-B | | | | | |
| Capacitance, Input to Output | - | C _{I/O} | - | 3 | - | pF |

^{*}NOTE: If both poles operate simultaneously, then load current must be derated so as not to exceed the package total power dissipation value.

Derate linearly 6.67 mW / °C



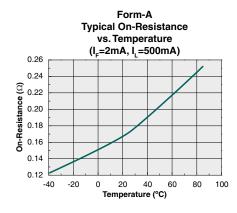
Form-A RELAY PERFORMANCE DATA @25°C (Unless Otherwise Noted)*

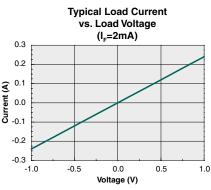


^{*}The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

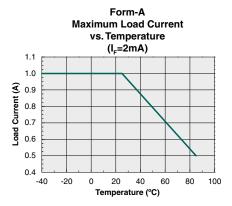


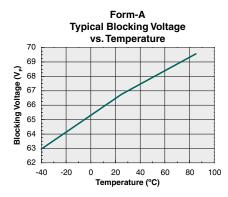
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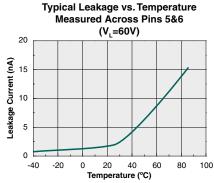


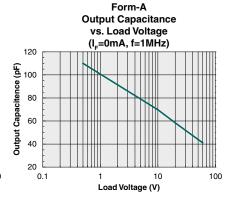


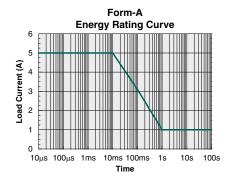
Form-A







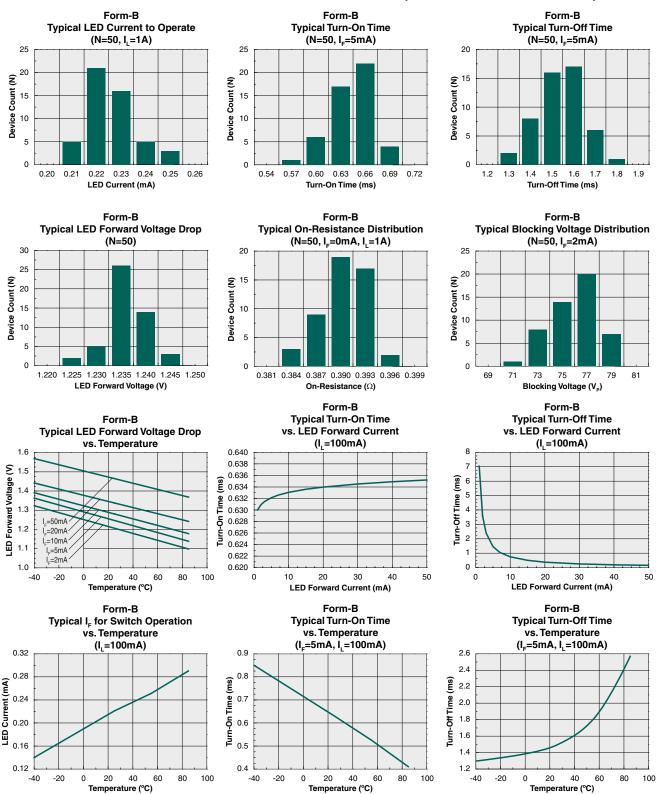




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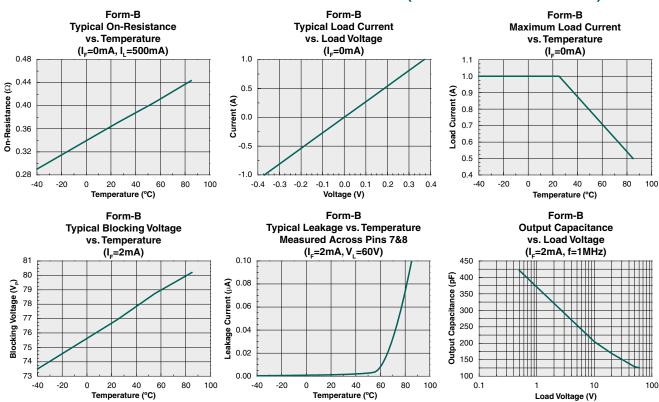
Form-B RELAY PERFORMANCE DATA @25°C (Unless Otherwise Noted)*

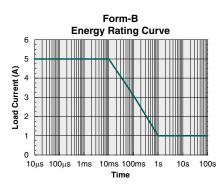


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Form-B RELAY PERFORMANCE DATA @25°C (Unless Otherwise Noted)*





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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 |
|------------------|---|
| LBA710 / LBA710S | 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 | |
|------------------|----------------------------|--|
| LBA710 / LBA710S | 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.



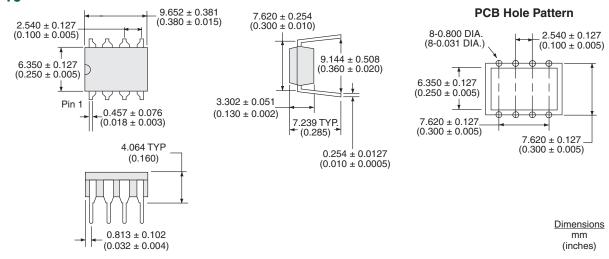




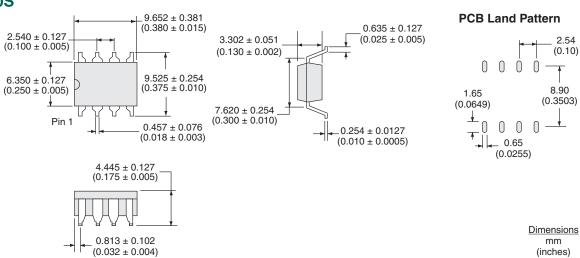


Mechanical Dimensions

LBA710

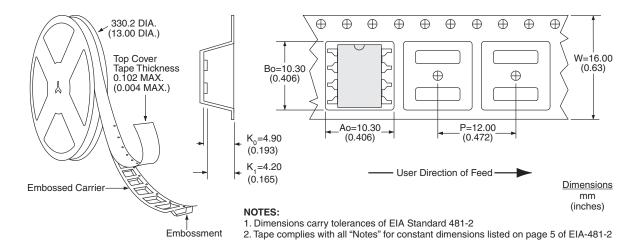


LBA710S





LBA710STR Tape & Reel



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