LH1532FP/FPTR

Dual 1 Form A
Solid State Relay

FEATURES

- **Two Independent Relays in a Single Package**
- **Package—FLAT PAK**
- **I/O Isolation, 3000 V_{RMS}**
- **Solid-state Relay (Equivalent to AQW210S)**
  - **Typical R_{ON} 20 Ω**
  - **Load Voltage 350 V**
  - **Load Current 120 mA**
  - **Current Limit Protection**
  - **High Surge Capability**
  - **Linear, AC/DC Operation**
  - **Clean Bounce Free Switching**
  - **Low Power Consumption**
  - **High Reliability Monolithic Receptor**

AGENCY APPROVALS

- **UL – File No. E52744**

APPLICATIONS

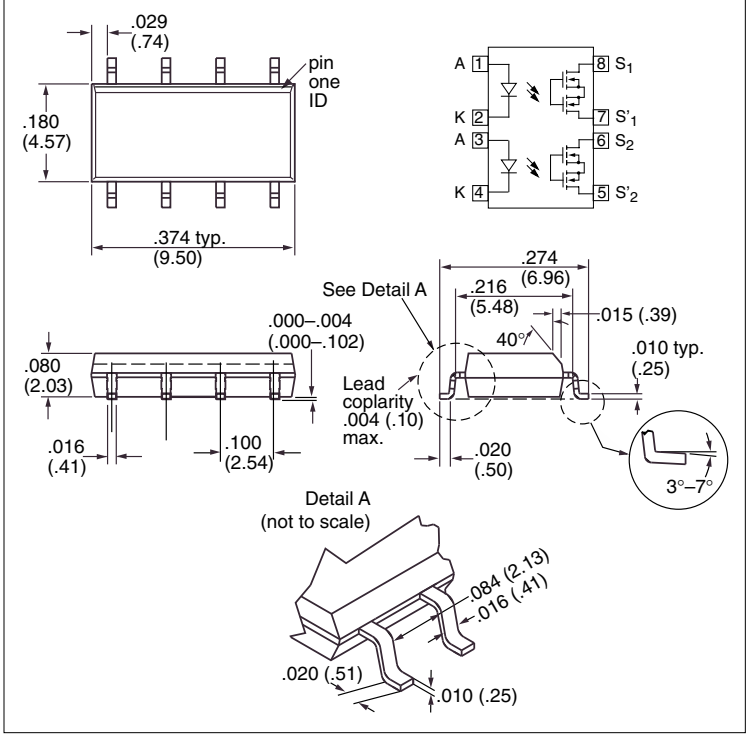
- **General Telecom Switching**
  - **On/off Hook Control**
  - **Ring Relay**
  - **Ground Start**
- **Industrial Controls**
  - **Triac Predriver**
  - **Output Modules**
- **Peripherals**
  - **Transducer Driver**
- **Instrumentation**
  - **Automatic Tuning/Balancing**
  - **Flying Capacitor**
  - **Analog Multiplexing**
- **See Application Note 56**

DESCRIPTION

The LH1532FP is a Dual 1 Form A (SPST) which can replace electromechanical relays in many applications. They are constructed using a GaAlAs LED for activation control and an integrated monolithic die for the switch output. The die is comprised of a photodiode array, switch control circuity and MOSFET switches. The SSR features low ON-resistance, high breakdown voltage and current-limit circuitry that protects the relay from telephone line induced lightning surges.

The LH1532FP comes in an 8 pin, 0.080 inch thick plastic Flat Pack: surface mount leads with100 mil spacing.

Dimensions in Inches (mm)



Part Identification

Part Number	Description
LH1532FP	8-pin SMD, Tubes
LH1532FPTR	8-pin SMD, Tape and Reel

Absolute Maximum Ratings, T_A=25°C

Stresses in excess of the absolute Maximum Ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute Maximum Ratings for extended periods of time can adversely affect reliability.

Package

Ambient Temperature Range .....–40 to +85°C
Storage Temperature Range .....–40 to +125°C
Soldering Temperature (t=10 s max.).....260°C
Isolation Test Voltage (t=1.0 s) ..... 3000 V_{RMS}
Isolation Resistance
V_{IO}=500 V, T_A=25°C .....≥1012 Ω
V_{IO}=500 V, T_A=100°C .....≥1011 Ω
Total Power Dissipation .....600 mW

SSR

LED Continuous Forward Current ..... 50 mA
LED Reverse Voltage (I_R≤10 μA).....6.0 V
DC or Peak AC Load Voltage (I_L≤50 μA) .....350 V
Continous DC Load Current ..... 120 mA

Electrical Characteristics, T_A=25°C

Minimum and maximum values are testing requirements. Typical values are characteristics of the device and are the result of engineering evaluations. Typical values are for information only and are not part of the testing requirements.

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
SSR						
LED Forward Current for Switch Turn-on	I_{Fon}	—	1.2	3.0	mA	I_L=100 mA, t=10 ms
LED Forward Current for Switch Turn-off	I_{Foff}	0.2	—	—	mA	V_L=±300 V
LED Forward Voltage	V_F	1.0	1.22	1.5	V	I_F=10 mA
ON-Resistance	R_{ON}	—	20	25	Ω	I_F=5 mA, I_L=±50 mA
OFF-Resistance	R_{OFF}	—	5000	—	GΩ	I_F=0 mA, V_L=±100 V
Current Limit	I_{limit}	170	210	250	mA	I_F=5.0 mA, t=5.0 ms
Output Off-state Leakage Current	—	—	0.6	200	nA	I_F=0 mA, V_L=±100 V,
	—	—	—	1.0	μA	I_F=0 mA, V_L=±350 V
Output Capacitance	—	—	55	—	pF	I_F=0 mA, V_L=1.0 V
Pole-to-pole Capacitance (S1 to S2)	—	—	0.5	—	pF	I_F=5.0 mA
Turn-on Time	t_{on}	—	1.1	2.5	ms	I_F=5.0 mA, I_L=50 mA
Turn-off Time	t_{off}	—	0.06	2.5	ms	I_F=5.0 mA, I_L=50 mA
Switch Offset	—	—	0.15	—	μV	I_F=5.0 mA

Typical Performance Characteristics

Figure 1. LED Current for Switch Turn-on vs. Temperature

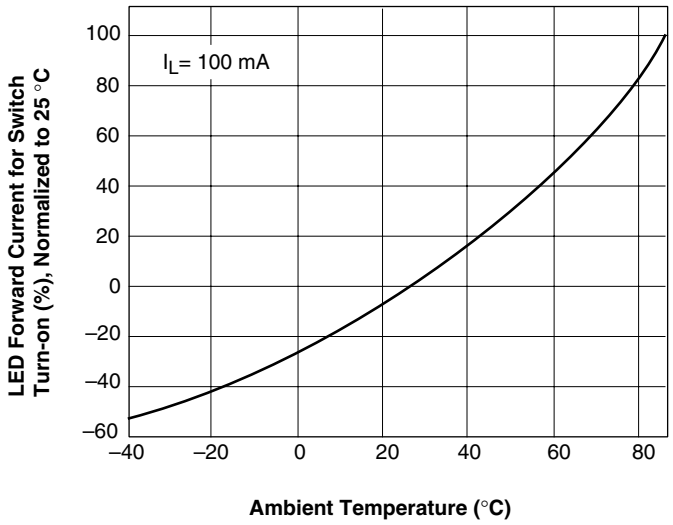


Figure 2. ON-Resistance vs. Temperature

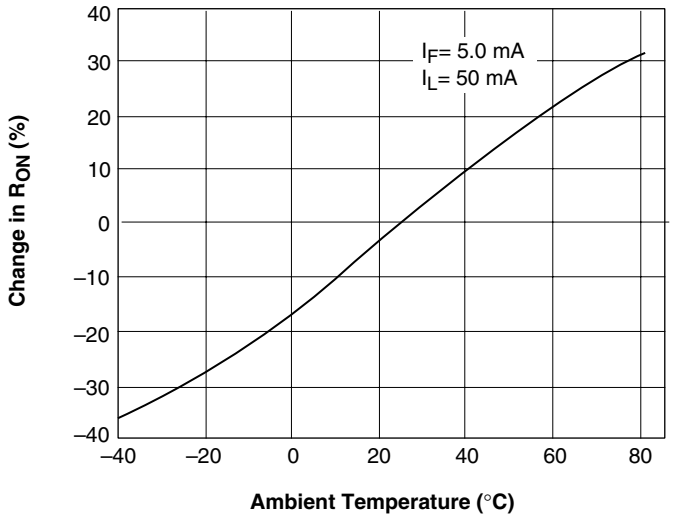


Figure 3. Current Limit vs. Temperature

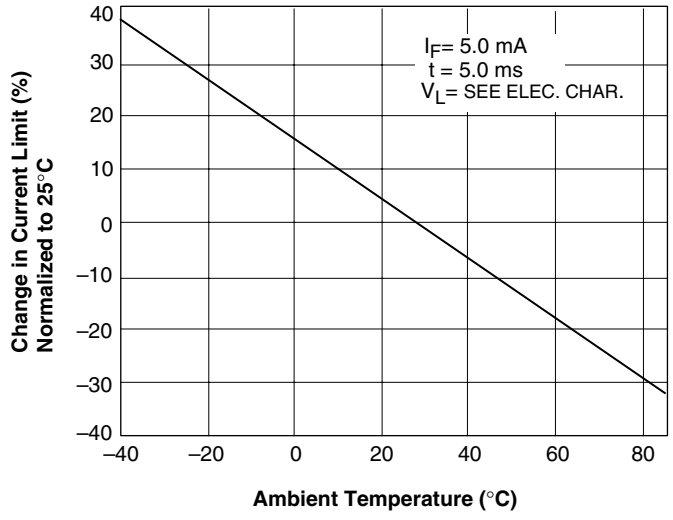


Figure 4. Switch Breakdown Voltage vs. Temperature

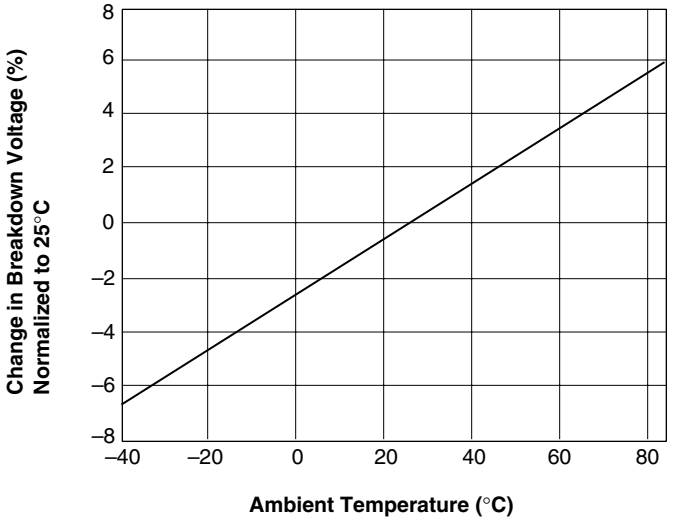


Figure 5. Switch Capacitance vs. Applied Voltage

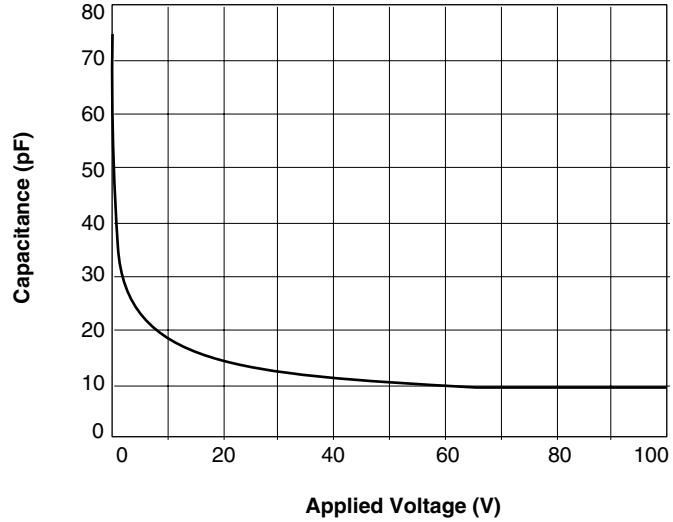


Figure 6. Leakage Current vs. Applied Voltage

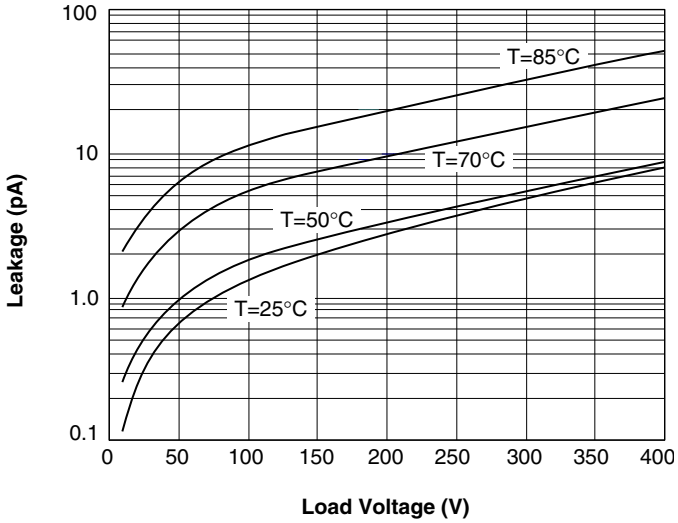


Figure 7. Leakage Current vs. Applied Voltage

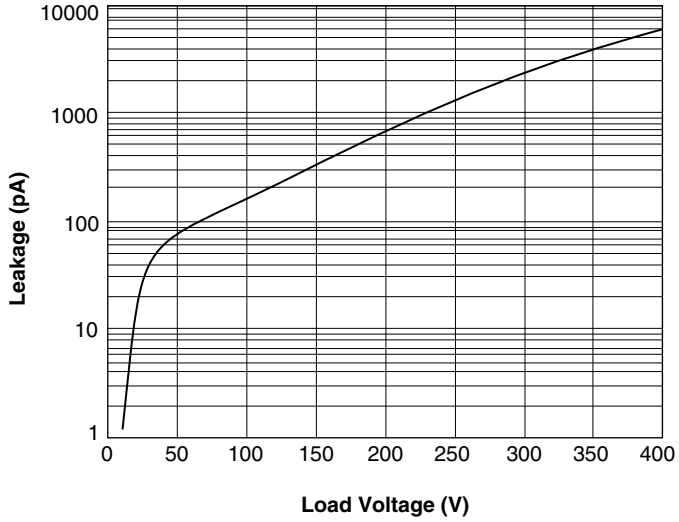


Figure 8. Turn-off Time vs. Temperature

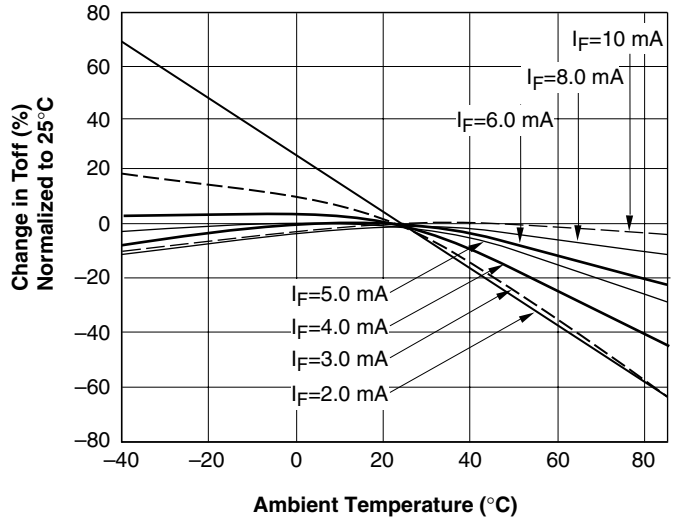


Figure 9. Turn-on Time vs. LED Current