

Photo DMOS-FET Relay

Description

The **LU410** is a 1-Form B solid state relay in a 4 pin DIP package that employs optically coupled MOSFET technology to provide 3750V/5000V of input to output isolation. The optically coupled input is controlled by a highly efficient GaAlAs infrared LED and MOS FETs on the output side.

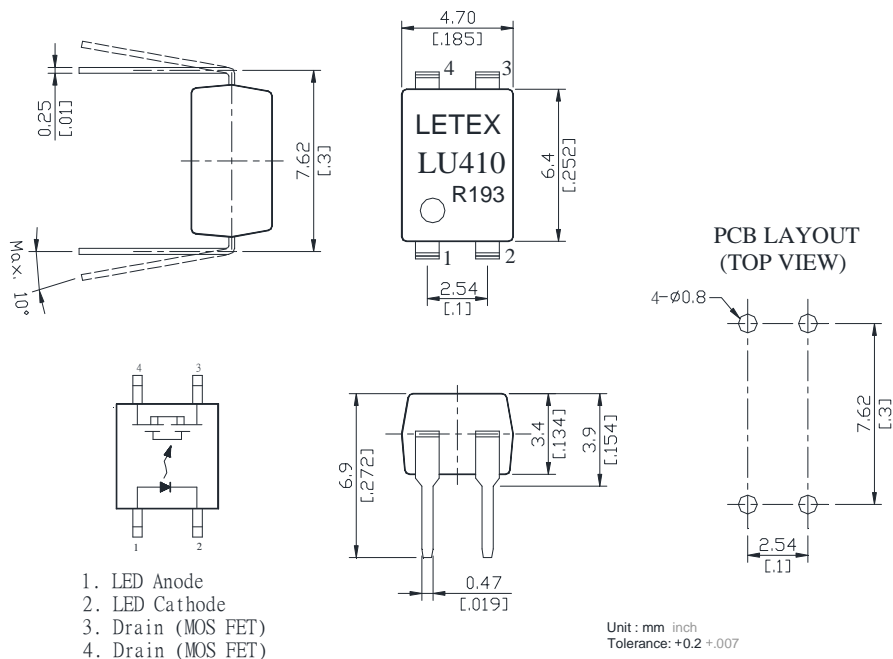
Features

- Low driver power requirements (TTL/CMOS Compatible)
- Contact form: Normally-On (1b)
- Load voltage: 400V max.
- On-Resistance: 50Ω max.
- 3750/5000Vrms Input/Output isolation
- Tape & Reel version available

Applications

- Telecommunications (PC, Electronic notepad)
- Measuring and Testing equipment
- Industrial control
- Security equipments
- High speed inspection machine

Outline Dimensions



1. LED Anode
2. LED Cathode
3. Drain (MOS FET)
4. Drain (MOS FET)

Photo DMOS-FET Relay Specifications

Part Name: LU410

(Load voltage: 400V / Load current: 120mA)

Absolute Maximum Ratings (Ambient Temperature: 25°C)

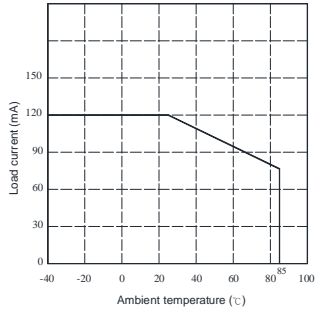
Item		Symbol	Value	Units	Note
Input	Continuous LED Current	IF	50	mA	
	Peak LED Current	IFP	1000	mA	f=100Hz, duty=1%
	LED Reverse Voltage	VR	5	V	
	Input Power Dissipation	PIn	75	mW	
Output	Load Voltage	VL	400	V(AC peak or DC)	
	Load Current	IL	120	mA	
	Peak Load Current	IPeak	0.3	A	1ms(1 pulse)
	Output Power Dissipation	Pout	500	mW	
Total Power Dissipation		PT	550	mW	
I/O Breakdown Voltage		VI/O	3750	Vrms	RH=60%, 1min
I/O Breakdown Voltage(Suffix-V)		VI/O	5000	Vrms	RH=60%, 1min
Operating Temperature		Topr	-40 to +85	°C	
Storage Temperature		Tstg	-40 to +100	°C	
Pin Soldering Temperature		Tsol	260	°C	10 sec max.

Electrical Specifications (Ambient Temperature: 25°C)

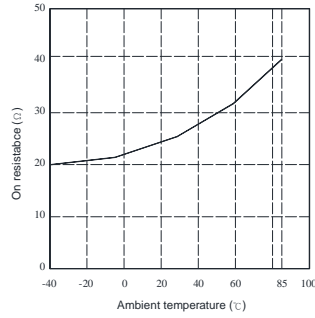
Item		Symbol	MIN.	TYP.	MAX.	Units	Conditions
Input	LED Forward Voltage	V _F		1.2	1.5	V	IF=10mA
	Operation LED Current	IFon		0.5	5.0	mA	
	Recovery LED Current	IFoff		0.35	0.5	mA	
	Recovery LED Voltage	V _{Foff}	0.5			V	
Output	On-Resistance	R _{on}		20	50	Ω	IF=0mA, IL=100mA, Time to flow is within 1 sec.
	Off-State Leakage Current	I _{Leak}			10	uA	IF=5mA, VL=400V
	Output Capacitance	C _{out}		165		pF	IF=5mA, VL=0, f=1MHz
Transmission	Turn-On Time	T _{on}		0.02	1.0	ms	IF=10mA, IL=100mA
	Turn-Off Time	T _{off}		0.5	3.0	ms	
Coupled	I/O Isolation Resistance	R _{I/O}	10 ¹⁰			Ω	DC500V
	I/O Capacitance	C _{I/O}		0.8		pF	f=1MHz

Reference Data

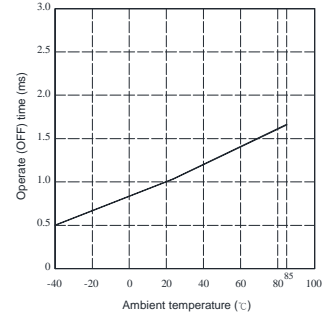
Load current Vs. Ambient temperature



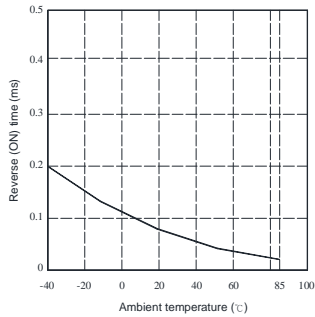
On resistance Vs. Ambient temperature



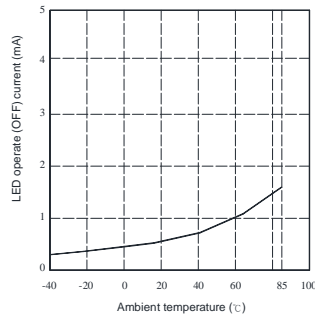
Operate (OFF) time Vs. Ambient temperature



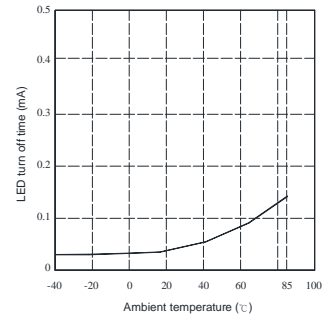
Reverse (ON) time Vs. Ambient temperature



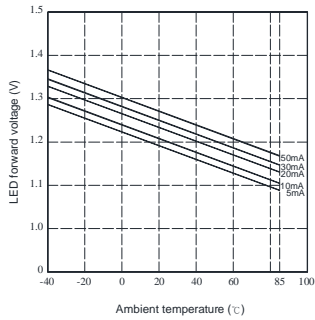
LED operate (OFF) current Vs. Ambient temperature



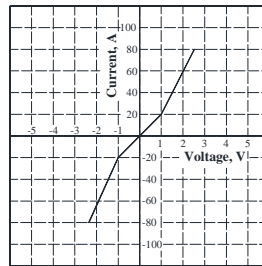
LED turn off current Vs. Ambient temperature



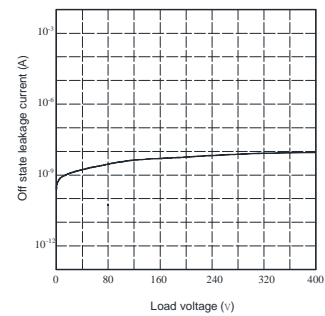
LED forward voltage Vs. Ambient temperature



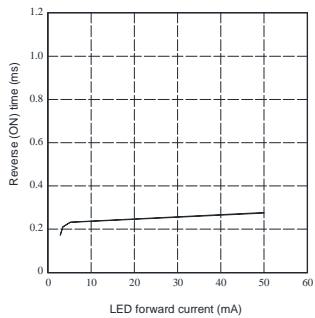
Voltage Vs. current characteristics of output at MOS portion



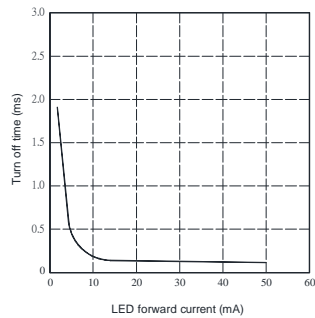
Off state leakage current Vs. Load voltage characteristics



LED forward current Vs. Reverse (ON) time characteristics



LED forward current Vs. Operate (OFF) time characteristics



Applied voltage Vs. output capacitance characteristics

