



CPC1983Y 600V, 0.5A_{DC} Single-Pole Normally Open Power SIP Relay

Parameter	Rating	Units
Blocking Voltage	600	V _P
Load Current	0.5	A _{DC}
On-Resistance (max)	6	Ω

Features

- Handle Load Currents Up to 0.5A
- 600V_P Blocking Voltage
- 2500V_{rms} Input/Output Isolation
- Power SIP Package
- High Reliability
- Low Drive Power Requirements
- No EMI/RFI Generation
- Flammability Rating UL 94 V-0

Applications

- Industrial Controls
- Motor Control
- Robotics
- Medical Equipment—Patient/Equipment Isolation
- Instrumentation
- Multiplexers
- Data Acquisition
- Electronic Switching
- I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- IC Equipment
- Home Appliances

Description

IXYS Integrated Circuits brings OptoMOS technology, reliability, and compact size to a new family of high power Solid State Relays.

As part of this family, the CPC1983Y single-pole, normally open (1-Form-A) Solid State Power Relay is rated for up to 0.5A_{DC} continuous load current.

The CPC1983Y employs optically coupled MOSFET technology to provide $2500V_{rms}$ of input to output isolation. The optically coupled outputs, that use patented OptoMOS architecture, are controlled by a highly efficient infrared LED.

This combination of low on-resistance and high load current handling capability makes this relay suitable for a variety of high performance switching applications.

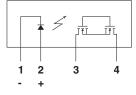
Approvals

- UL 508 Recognized Component: File E69938
- CSA Certified Component: Certificate 1172007

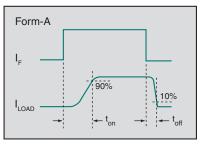
Ordering Information

Part #	Description
CPC1983Y	4-Pin (8-Pin Body) Power SIP Package (25 per tube)

Pin Configuration



Switching Characteristics of Normally Open Devices







Absolute Maximum Ratings @ 25°C

Parameter	Symbol	Rating	Unit
Blocking Voltage	VL	600	V _P
Reverse Input Voltage	V _R	5	V
Input control Current	I	50	mA
Peak (10ms)	۱ _F	1	А
Input Power Dissipation ¹	P _{IN}	150	mW
Total Power Dissipation ²	Ρ _T	2400	mW
Isolation Voltage, Input to Output	V _{ISO}	2500	V _{rms}
Operational Temperature, Ambient	T _A	-40 to +85	°C
Storage Temperature	T _{STG}	-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.

Typical values are characteristic of the device at +25°C, and are the result of engineering evaluations. They are provided for information purposes only, and are not part of the manufacturing testing requirements.

¹ Derate linearly 1.33 mW / °C

² Derate output power linearly 20 mW / °C

Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Min	Тур	Max	Unite
Output Characteristics						
Blocking Voltage	I _L =1μA	V _{DRM}	600	-	-	V
Load Current	I _F =5mA, Free air					
Continuous	· -	I,	-	-	0.5	A _{DC}
Peak	t=10ms	I _{LPK}	-	-	3	A
On-Resistance ¹	I _F =5mA, I _I =0.5A	R _{on}	-	3.5	6	Ω
Off-State Leakage Current	$I_{\rm F}=0{\rm mA}, V_{\rm I}=600V_{\rm P}$	I _{LEAK}	-	-	1	μA
Switching Speeds	· • •					
Turn-On		t _{on}	-	2.2	5	
Turn-Off	I _F =5mA, V _L =10V	t _{off}	-	0.15	2	ms
Output Capacitance	I _F =0mA, V _I =50V, f=1MHz	C _{OUT}	-	41	-	pF
Input Characteristics		00.				1
Input Control Current to Activate	I ₁ =0.5A	l _e	-	1.3	5	mA
Input Control Current to Deactivate	-	I _F	0.5	-	-	mA
Input Voltage Drop	I _F =5mA	V _F	0.9	1.36	1.5	V
Reverse Input Current	V _B =5V	I _B	-	-	10	μA
Input/Output Characteristics	, I.			1		- 1
Capacitance, Input to Output	V _{IO} =0V, f=1MHz	C _{IO}	-	2	-	pF

¹ Measurement taken within 1 second of on-time.

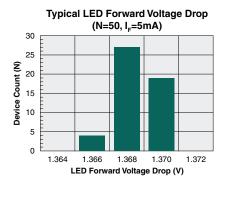
Thermal Characteristics

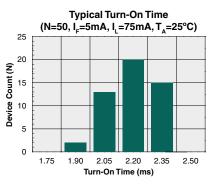
Parameter	Conditions	Symbol	Rating	Units
Thermal Impedance (junction to case)	-	θ_{JC}	1.5	°C/W

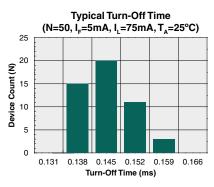


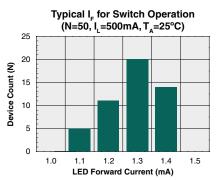
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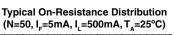


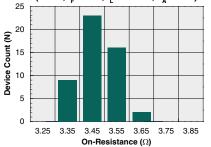




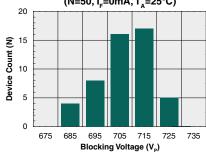


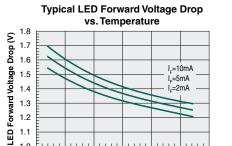






Typical Blocking Voltage Distribution (N=50, I_=0mA, T_=25°C)





25

Temperature (°C)

Typical I₂ for Switch Operation

(I,=300mA)

Temperature (°C)

0

50

75

100

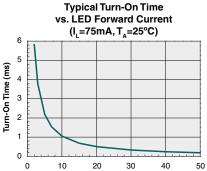
3.0

2.5 2.0 1.5 1.0

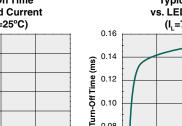
1.0

0.5

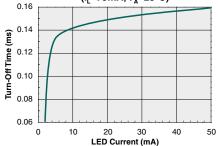
-40 -20

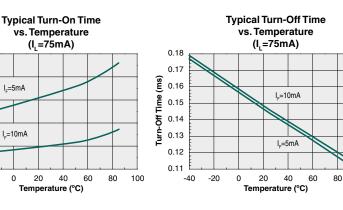


LED Current (mA)



Typical Turn-Off Time vs. LED Forward Current (I_L=75mA, T_A=25°C)





*Unless otherwise noted, data presented in these graphs is typical of device operation at 25°C.

1.0

1.8

1.6

1.4 1.2

1.0

0.8

-40 -20 0 20 40 60 80 100

LED Current (mA)

-50

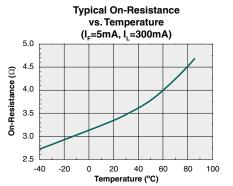
-25

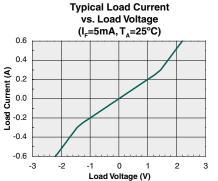
100

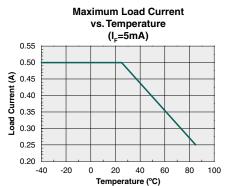


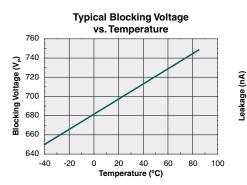
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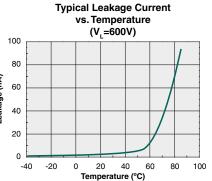
PERFORMANCE DATA*

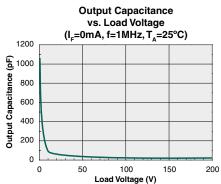


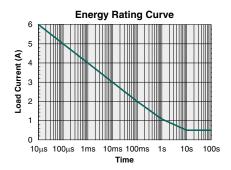












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Manufacturing Information

ESD Sensitivity



This product is ESD Sensitive, and should be handled according to the industry standard **JESD-625**.

Soldering Profile

The Maximum Solder Temperature and the Maximum Total Dwell Time in all solder waves the device pins (leads) may be at the Maximum Solder Temperature is given in the table below. The body temperature of the device must not exceed the Maximum Body Temperature shown below at any time during the soldering process.

Device	Maximum Solder Temperature	Maximum Body Temperature	Maximum Total Dwell Time	Wave Cycles
CPC1983Y	260°C	245°C	10 seconds	1

Board Wash

IXYS Integrated Circuits recommends the use of no-clean flux formulations. Board washing to reduce or remove flux residue following the solder reflow process is acceptable provided proper precautions are taken to prevent damage to the device. These precautions include but are not limited to: using a low pressure wash and providing a follow up bake cycle sufficient to remove any moisture trapped within the device due to the washing process. Due to the variability of the wash parameters used to clean the board, determination of the bake temperature and duration necessary to remove the moisture trapped within the package is the responsibility of the user (assembler). Cleaning or drying methods that employ ultrasonic energy may damage the device and should not be used. Additionally, the device must not be exposed to halide flux or solvents.

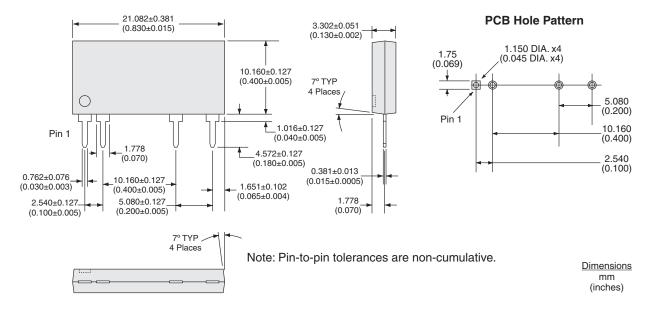






MECHANICAL DIMENSIONS

CPC1983Y



For additional information please visit our website at: https://www.ixysic.com



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