



Parameters	Ratings	Units
Blocking Voltage	350	$V_P$
Load Current	100	mA
Max On-resistance	35	$\Omega$
LED Current to Operate	1	mA

### Transient Protection Characteristics

Peak Pulse Power	$V_{WM}$
600W	40.2V

### Features

- 100% Solid State
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- 3750V<sub>rms</sub> Input/Output Isolation
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable

### Applications

- Security
- Sensor Circuitry
- Instrumentation
- Multiplexers
- Data Acquisition
- Electronic Switching
- I/O Subsystems
- Aerospace
- Industrial Controls

### Description

The CPC1335 is a single-pole normally open (1-Form-A) solid state relay with bi-directional transient voltage suppressor (TVS) relay protection, which is designed to meet the requirements of EN50130-4 (installation class 3).

The relay output is constructed with efficient MOSFET switches and photovoltaic die that use Clare's patented OptoMOS architecture. The input, a highly efficient GaAlAs infrared LED, controls the optically coupled output.

The CPC1335 is available in an 8-pin, space-saving surface-mount package.

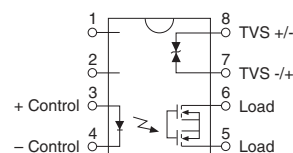
### Approvals

- UL Recognized Component: File #E76270
- EN/IEC 60950 Compliant
- CSA Certified Component: Certificate # 1172007

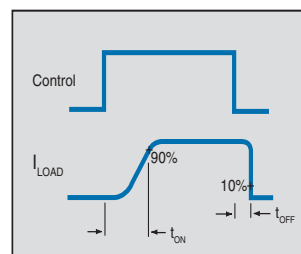
### Ordering Information

Part #	Description
CPC1335P	8-Pin Flatpack (50/Tube)
CPC1335PTR	8-Pin Flatpack (1000/Reel)

### Pin Configuration



### Switching Characteristics of Normally Open (Form A) Devices



## Absolute Maximum Ratings

Parameter	Ratings	Units
SSR Output Blocking Voltage	350	V <sub>p</sub>
TVS Working Voltage, Maximum (V <sub>WM</sub> )	40.2	V
Reverse Input Voltage	5	V
Input Control Current Peak (10ms)	50	mA
	1	A
Input Power Dissipation <sup>1</sup>	150	mW
SSR Output Power Dissipation <sup>2</sup>	400	mW
TVS Peak Pulse Power (P <sub>pp</sub> ) (I <sub>pp</sub> =9.3A, 10/1000μs pulse)	600	W
Isolation Voltage Input to Output	3750	V <sub>rms</sub>
Operating Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate Linearly 1.33 mw / °C

<sup>2</sup> Derate Linearly 6.67 mw / °C

Electrical absolute maximum ratings are at 25°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

Parameters	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
Load Current Continuous <sup>1</sup>	I <sub>F</sub> =2mA	I <sub>L</sub>	-	-	100	mA
	t=10ms	I <sub>LPK</sub>	-	-	350	
Peak						
On-resistance <sup>2</sup>	I <sub>L</sub> =100mA	R <sub>ON</sub>	-	25	35	Ω
Off-State Leakage Current	V <sub>L</sub> =350V	I <sub>LEAK</sub>	-	-	1	μA
Switching Speeds Turn-On	I <sub>F</sub> =2mA, V <sub>L</sub> =10V	T <sub>ON</sub>	-	-	10	ms
		T <sub>OFF</sub>	-	-	10	
Turn-Off						
Output Capacitance	50V; f=1MHz	C <sub>OUT</sub>	-	40	-	pF
<b>Input Characteristics @ 25°C</b>						
Input Control Current <sup>3</sup>	I <sub>L</sub> =100mA	I <sub>F</sub>	-	-	1	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μA
<b>Common Characteristics @ 25°C</b>						
Input to Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF

<sup>1</sup> Load current derates linearly from 100 mA @ 25°C to 70mA @ 85°C

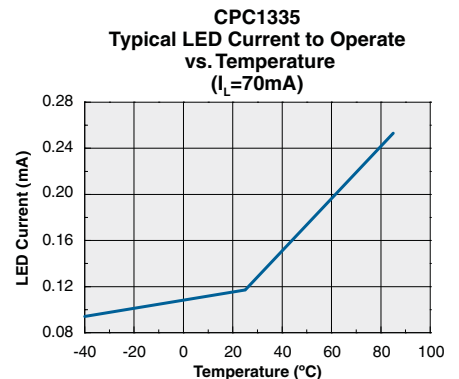
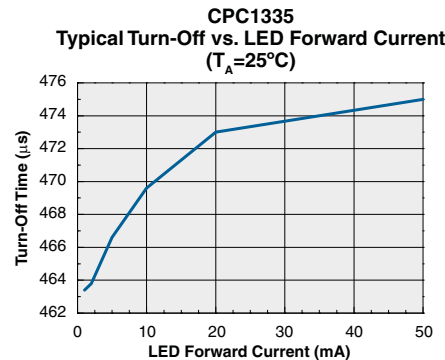
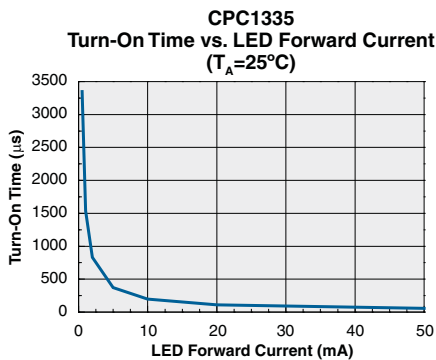
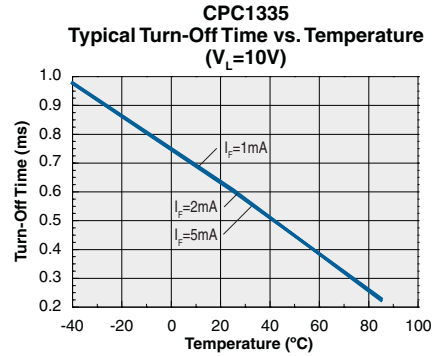
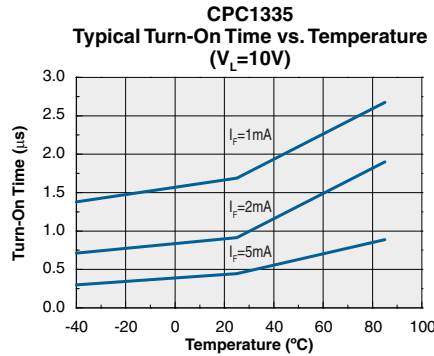
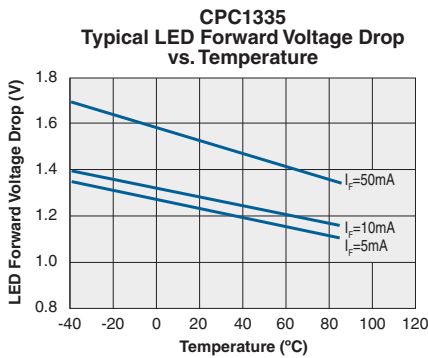
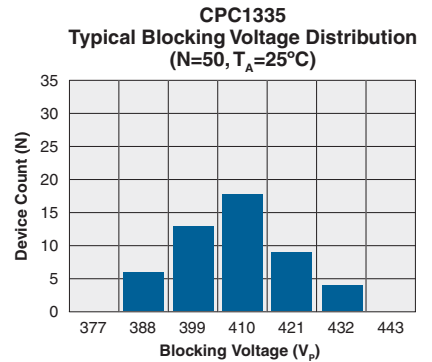
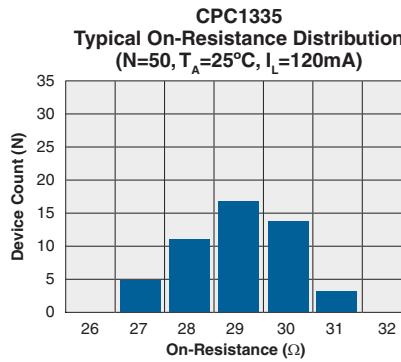
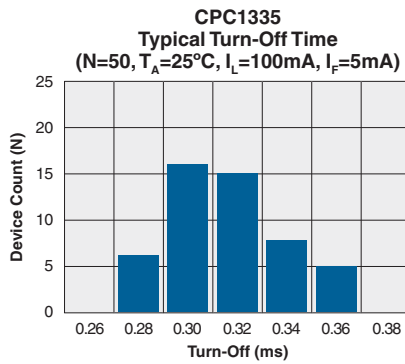
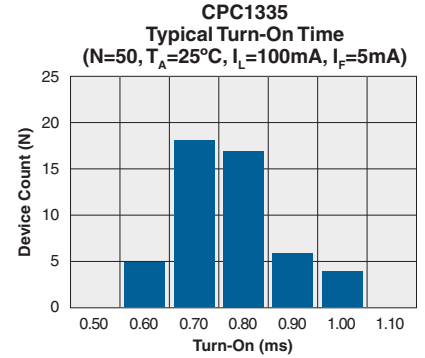
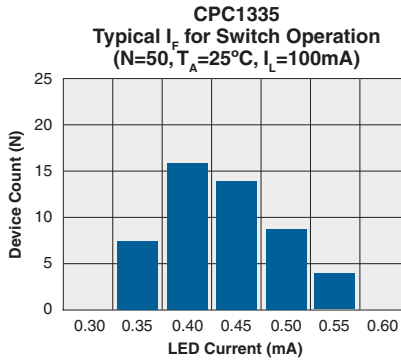
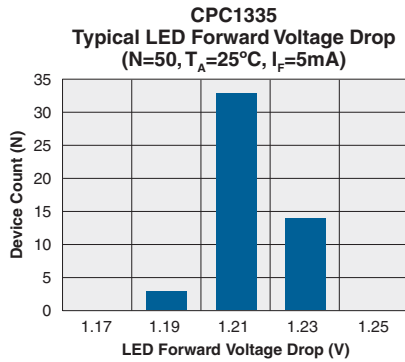
<sup>2</sup> Measurement taken within 1 second of on time

<sup>3</sup> For applications requiring high temp operation (greater than 60°C) a minimum LED drive current of 3mA is recommended.

## Electrical Characteristics: TVS

Parameters	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
Clamping Voltage	I <sub>pp</sub> =9.3A	V <sub>C</sub>	-	-	66.5	V
Reverse Breakdown Voltage	I=1mA	V <sub>BR</sub>	44.4	-	-	V
Reverse Leakage Current	V <sub>WM</sub> =40.2V	I <sub>L</sub>	-	-	5	μA

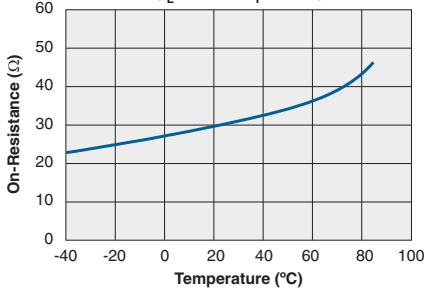
**PERFORMANCE DATA\***



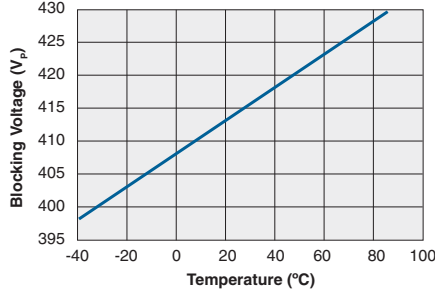
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA\*

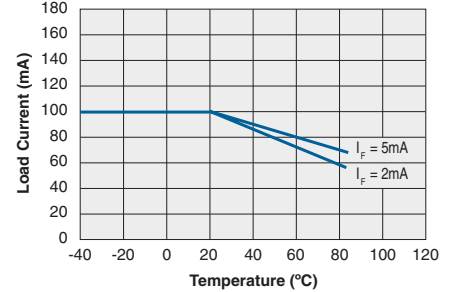
CPC1335  
Typical On-Resistance vs. Temperature  
( $I_L=50\text{mA}$ ,  $I_F=3\text{mA}$ )



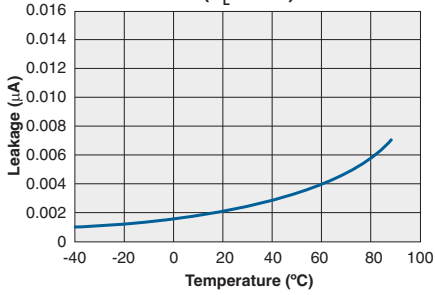
CPC1335  
Typical Blocking Voltage vs. Temperature



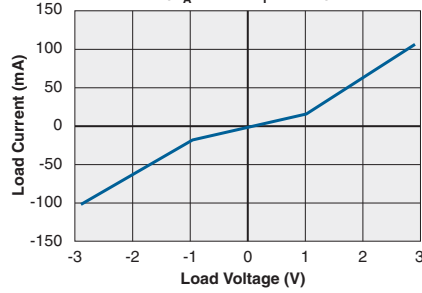
CPC1335  
Typical Load Current vs. Temperature



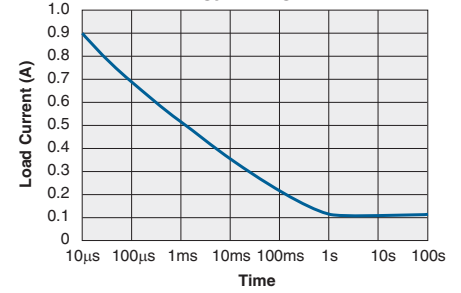
CPC1335  
Typical Leakage vs. Temperature  
Measured Across Pins 5 & 6  
( $V_L=350\text{V}$ )



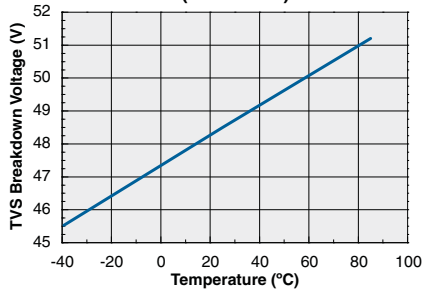
CPC1335  
Typical Load Current vs. Load Voltage  
( $T_A=25^\circ\text{C}$ ,  $I_F=5\text{mA}$ )



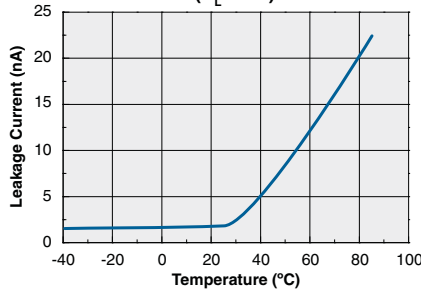
CPC1335  
Energy Rating Curve



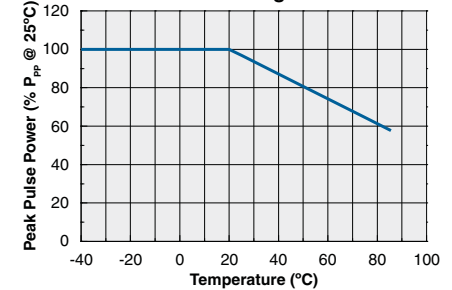
CPC1335  
TVS Diode Breakdown Voltage vs. Temperature  
(Pins 7 & 8)



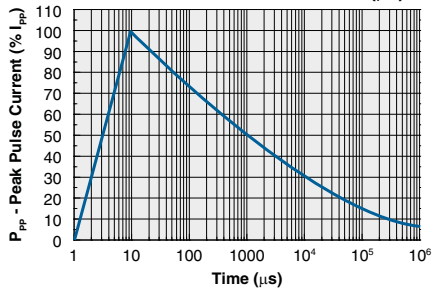
CPC1335  
TVS Diode Leakage vs. Temperature  
(Pins 7 & 8)  
( $V_L=40\text{V}$ )



CPC1335  
TVS Derating Curve



CPC1335  
TVS Pulse Waveform 10/1000 (μs)



\*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.

**Manufacturing Information**

**Soldering**

For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

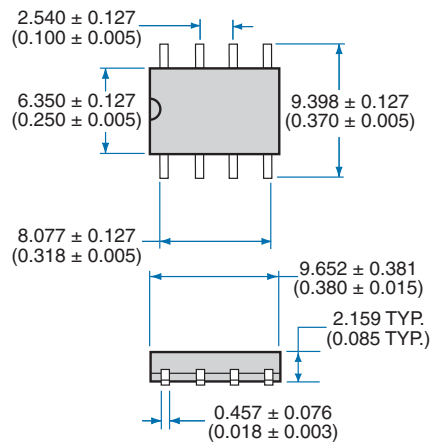
**Washing**

Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

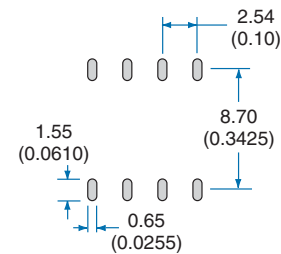


**MECHANICAL DIMENSIONS**

**8 Pin Flatpack Package**

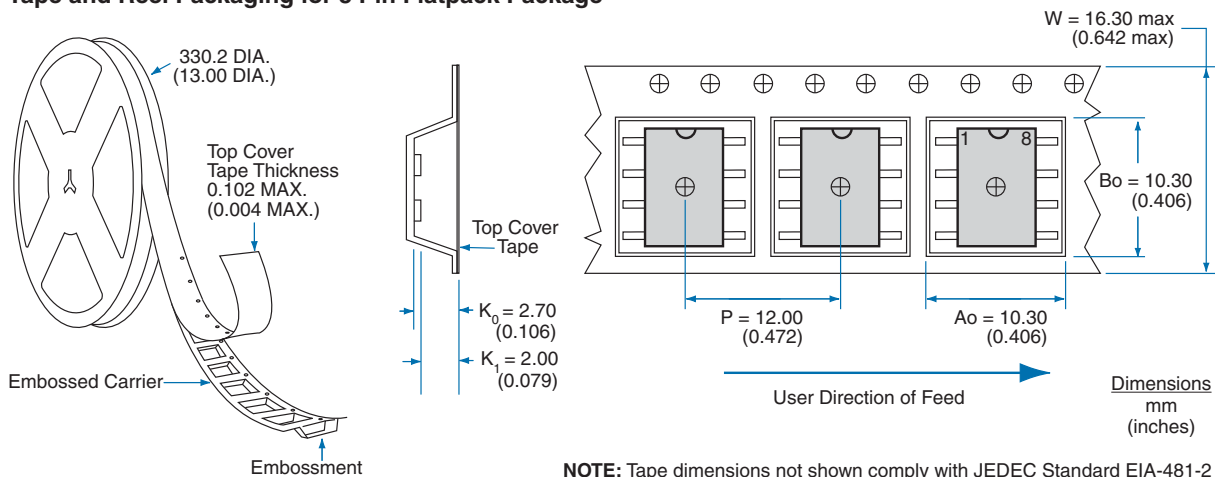


**Recommended PCB Land Pattern**



Dimensions  
mm  
(inches)

**Tape and Reel Packaging for 8 Pin Flatpack Package**



**NOTE:** Tape dimensions not shown comply with JEDEC Standard EIA-481-2

Dimensions  
mm  
(inches)

**For additional information please visit our website at: [www.clare.com](http://www.clare.com)**

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