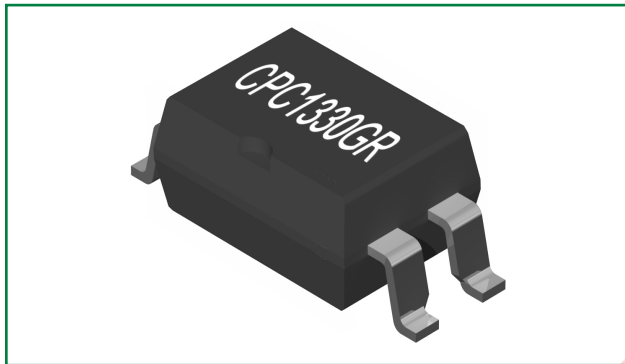
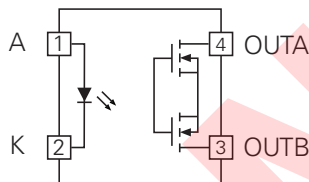
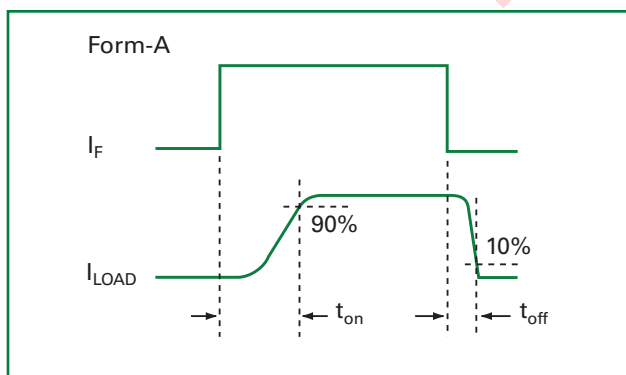


CPC1330350 V, 120 mA_{RMS}/mA_{DC}, Normally Open Relay**Key Attributes**

Characteristic	Rating	Unit
Blocking Voltage	350	V _P
Load Current	120	mA _{RMS} /mA _{DC}
On-Resistance (max.)	30	Ω
Isolation Voltage, Input to Output	5000	V _{RMS}

**Pin Configuration** (DIP-4)**Switching Characteristics****Description**

The CPC1330 is a bidirectional, normally open (1-Form-A) Solid State Relay with an enhanced input to output isolation barrier of 5000 V_{RMS}.

The relay output is constructed with efficient MOSFET switches that uses Littelfuse's patented OptoMOS® architecture. The input, a highly efficient infrared LED, controls the optically coupled output.

Features

- 5000 V_{RMS} Input to Output Isolation
- 350 V_P Blocking Voltage
- Low Drive Power Requirements
- No EMI/RFI Generation
- Small 4-Pin Package

Applications

- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Security
- Industrial Controls

Approvals

- UL 1577 Recognized Component: File E76270
- CSA Certified Component: Certificate 1172007
- EN 62368-1: TUV Certificate # B 082667 0008

Ordering Information

Part	Description
CPC1330G	4-Pin DIP (100/Tube)
CPC1330GR	4-Pin Surface Mount (100/Tube)
CPC1330GRTR	4-Pin Surface Mount (1000/Reel)

Specifications

Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	350	V _P
Reverse Input Voltage	5	V
Input Control Current		
Continuous	50	mA
Peak (10 ms)	1	A
Power Dissipation		
Input ¹	100	mW
Package Total ²	550	
Isolation Voltage, Input to Output (60 s)	5000	V _{RMS}
Operating Temperature, Ambient (T _A)	-40 to +85	°C
Storage Temperature (T _{STG})	-40 to +125	

¹ Derate linearly 1.33 mW/°C

² Derate output power linearly 3 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.

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.

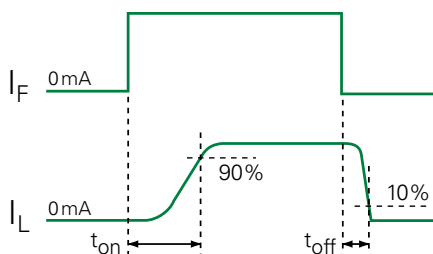
Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Value			Units
			Minimum	Typical	Maximum	
Output Characteristics						
Blocking Voltage	$I_L = 1\text{ }\mu\text{A}$	V_{DRM}	350	—	—	V
Load current:						
Continuous	—	I_L	—	—	120	$\text{mA}_{\text{RMS}}/\text{mA}_{\text{DC}}$
Peak	$t = 10\text{ ms}$	I_{LPK}	—	—	± 350	mA_P
On-resistance ¹	$I_L = 120\text{ mA}$	R_{on}	—	25	30	Ω
Off-state leakage current	$V_L = 350\text{ V}_\text{P}$	I_{LK}	—	—	1	μA
Switching speeds:						
Turn-on	$I_F = 5\text{ mA}$, $V_L = 10\text{ V}$ (See Timing Diagram)	t_{on}	—	—	2	ms
Turn-off		t_{off}	—	—	1	
Output capacitance	$I_F = 0\text{ mA}$, $V_L = 50\text{ V}$, $f = 1\text{ MHz}$	C_{OUT}	—	25	—	pF
Input Characteristics						
Input control current to activate ²	$I_L = 120\text{ mA}$	I_F	—	0.33	2	mA
Input control current to deactivate	—	I_F	0.2	0.3	—	
Input voltage drop	$I_F = 5\text{ mA}$	V_F	0.9	1.2	1.4	V
Reverse input current	$V_R = 5\text{ V}$	I_R	—	—	10	μA
Common Characteristics						
Capacitance, input to output	$V_{\text{IO}} = 0\text{ V}$, $f = 1\text{ MHz}$	C_{IO}	—	3	—	pF

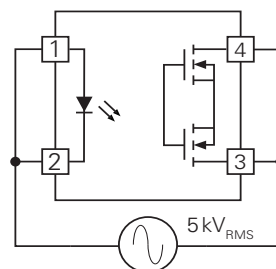
¹ Measurement taken within 1 second of on-time.

² For operation above 60 °C a minimum input current of 4 mA is recommended.

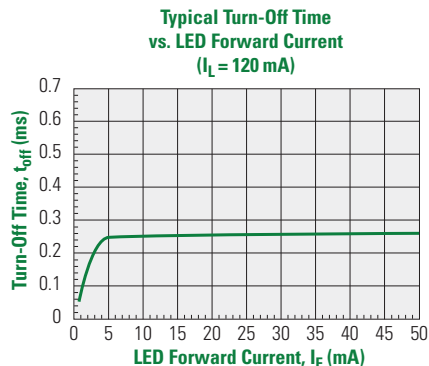
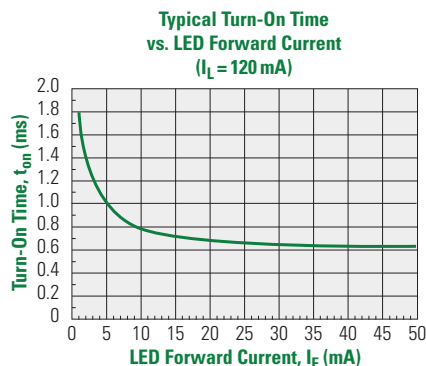
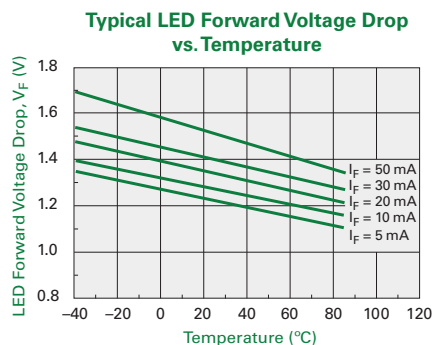
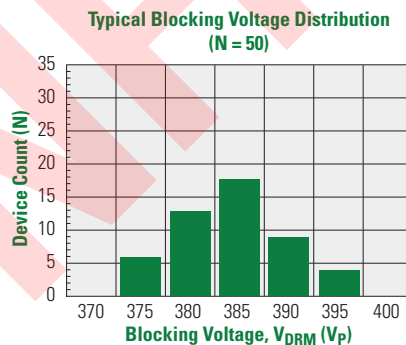
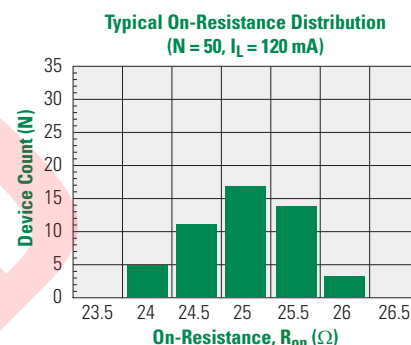
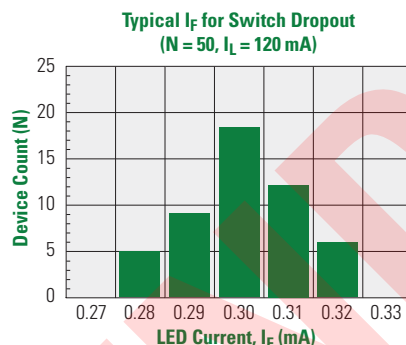
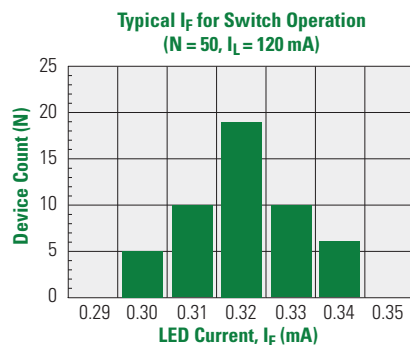
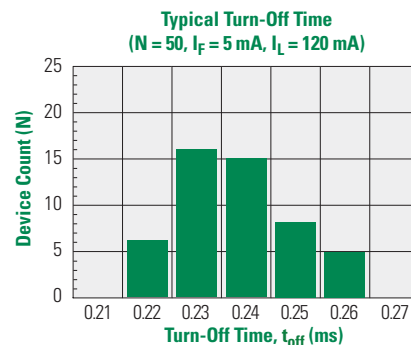
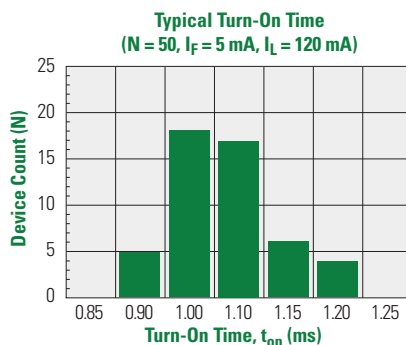
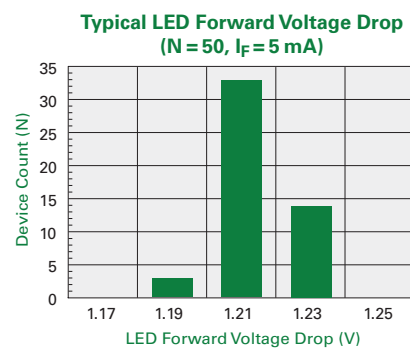
Timing Diagram



Isolation Test Circuit

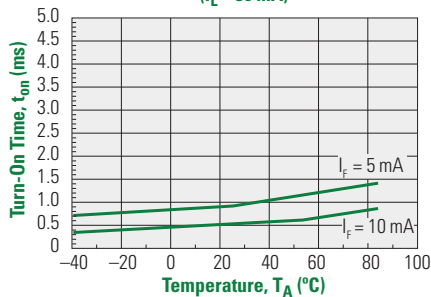
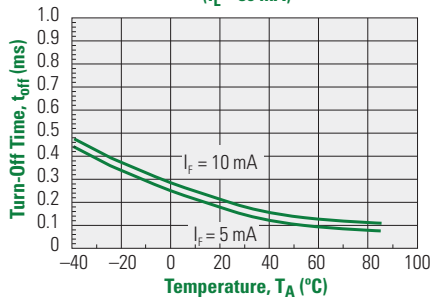
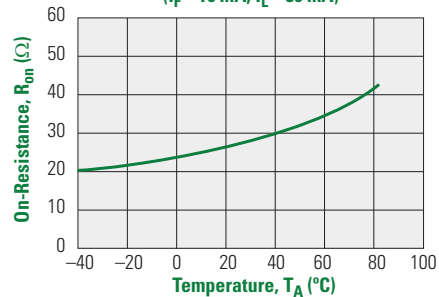
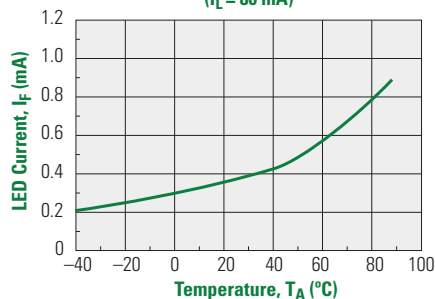
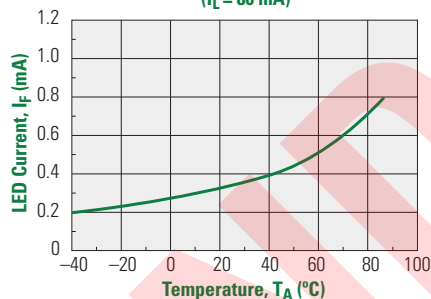
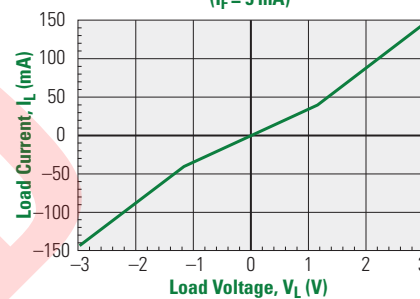
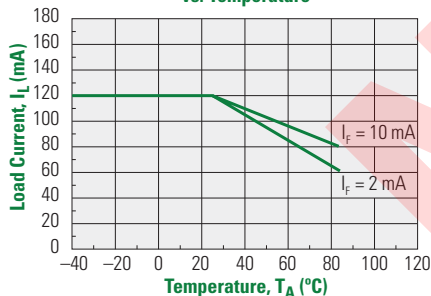
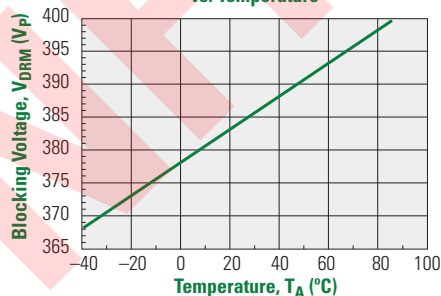
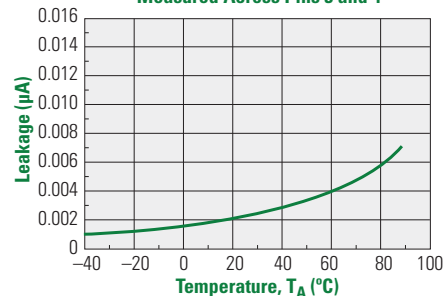


Characteristic Curves

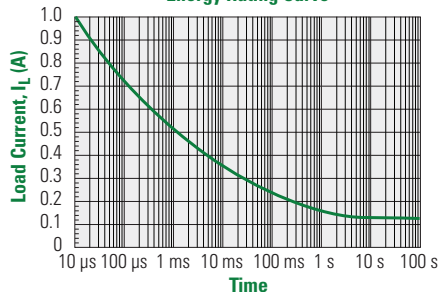


Unless otherwise noted, data presented in these graphs is typical of device operation at $T_A = 25^\circ\text{C}$.

Characteristic Curves

Typical Turn-On Time
vs. Temperature
($I_L = 80\text{ mA}$)Typical Turn-Off Time
vs. Temperature
($I_L = 80\text{ mA}$)Typical On-Resistance
vs. Temperature
($I_F = 10\text{ mA}$, $I_L = 80\text{ mA}$)Typical I_F for Switch Operation
vs. Temperature
($I_L = 80\text{ mA}$)Typical I_F for Switch Dropout
vs. Temperature
($I_L = 80\text{ mA}$)Typical Load Current
vs. Load Voltage
($I_F = 5\text{ mA}$)Maximum Load Current
vs. TemperatureTypical Blocking Voltage
vs. TemperatureTypical Leakage vs. Temperature
Measured Across Pins 3 and 4

Energy Rating Curve



Unless otherwise noted, data presented in these graphs is typical of device operation at $T_A = 25^\circ\text{C}$.

Manufacturing Information

Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. Littelfuse classifies 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)** classification 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) Classification
CPC1330G	MSL 1
CPC1330GR	MSL 3

ESD Sensitivity



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

Soldering Profile

Provided in the table below is the Classification Temperature (T_C) of this product and the maximum dwell time ($T_C - 5$)°C. The classification temperature sets the Maximum Body Temperature allowed for this device during lead-free reflow processes. Additionally, for the CPC1330GR, the solder reflow profile given in Technical Brief TB-200 "**Pb-Free Solder Reflow Profile for Select Devices**" must be followed. For the through-hole device, CPC1330G, and any other processes, the guidelines of **J-STD-020** must be observed.

Device	Classification Temperature (T_C)	Dwell Time (T_P)	Max Reflow Cycles
CPC1330GR	250°C	15 seconds	3

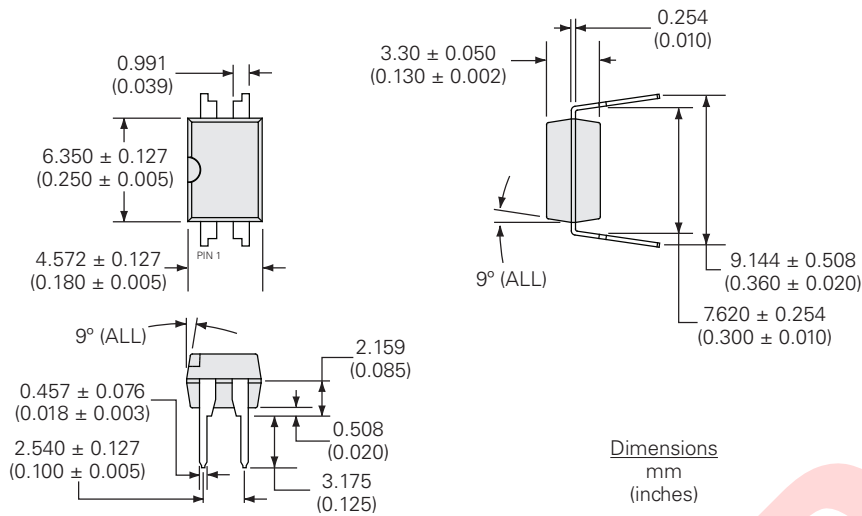
Board Wash

Littelfuse 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.

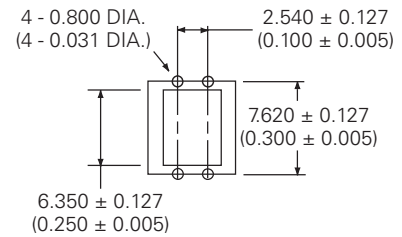


Mechanical Dimensions

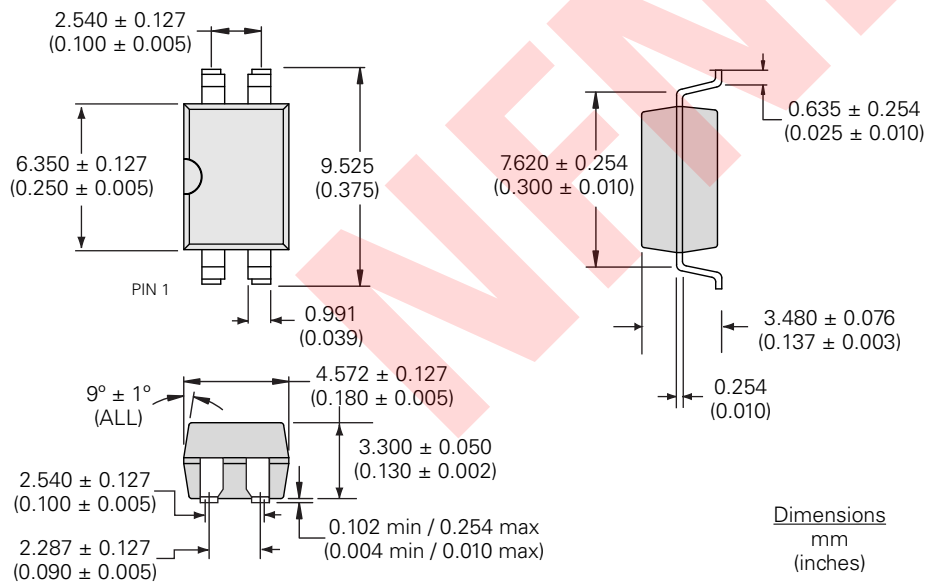
CPC1330G



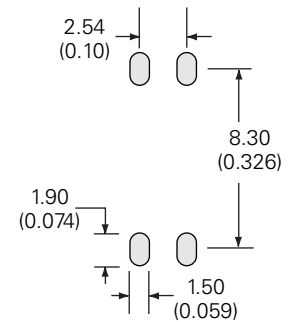
PC Board Pattern (Top View)



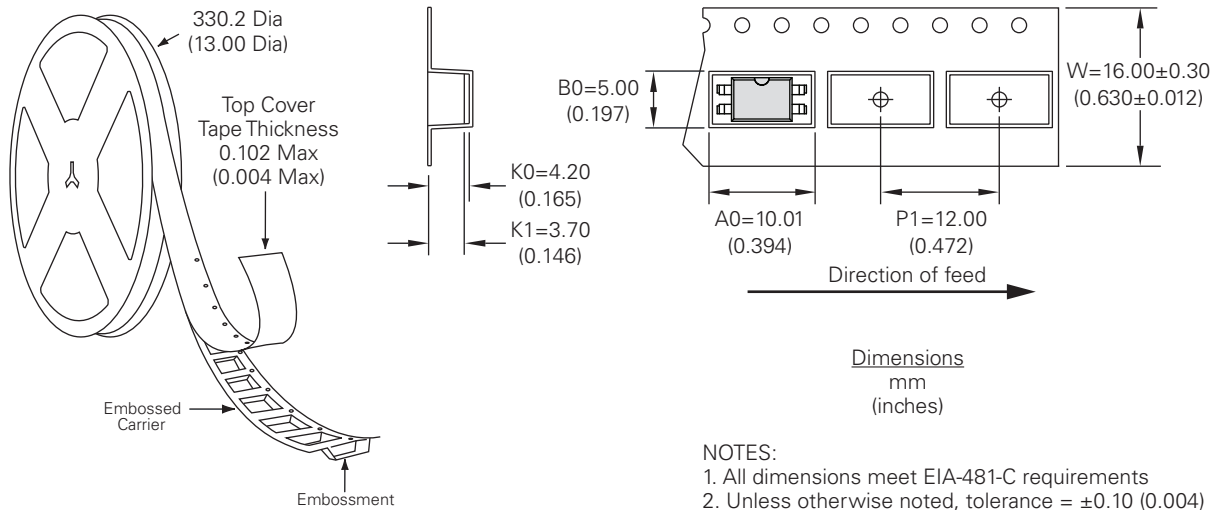
CPC1330GR



PCB Land Pattern



CPC1330GRTR Tape and Reel



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