

阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .



Parameter	Rating	Units
Blocking Voltage	350	V _P
Load Current	120	mA
Max On-Resistance	35	Ω

Features

- Current Limited
- 3750V_{rms} Input/Output Isolation
- Low Drive Power Requirements (TTL/CMOS Compatible)
- High Reliability
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- No Moving Parts
- Small 8-Pin Package
- Machine Insertable, Wave Solderable
- Surface Mount and Tape & Reel Versions Available

Applications

- Telecommunications
 - Telecom Switching
 - Tip/Ring Circuits
 - Modem Switching (Laptop, Notebook, Pocket Size)
 - Hook Switch
 - Dial Pulsing
 - Ground Start
 - Ringing Injection
- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
 - Meters (Watt-Hour, Water, Gas)
- Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

Description

The TS120L integrated circuit device combines a 350V, current-limited, normally open (1-Form-A) relay with a Darlington transistor optocoupler in a single package. The relay uses optically coupled MOSFET technology to provide 3750V_{rms} of input to output isolation. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS® architecture, in which highly efficient GaAIAs infrared LEDs control the optically coupled output.

Telecom circuit designers, using the TS120L, can now take advantage of two discrete functions in a single component that uses less space than traditional discrete component solutions.

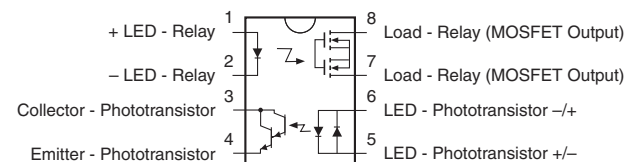
Approvals

- UL Recognized Component: File E76270
- CSA Certified Component: Certificate 1175739
- EN/IEC 60950 Certified Component:
TUV Certificate: B 10 05 49410 006

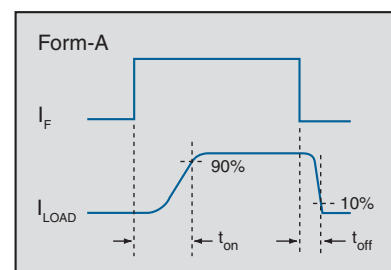
Ordering Information

Part #	Description
TS120L	8-Pin DIP (50/Tube)
TS120PL	8-Pin Flatpack (50/Tube)
TS120PLTR	8-Pin Flatpack (1000/Reel)
TS120LS	8-Pin Surface Mount (50/Tube)
TS120LSTR	8-Pin Surface Mount (1000/Reel)

Pin Configuration



Switching Characteristics of Normally Open Devices



Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Relay Blocking Voltage	350	V _P
Input Power Dissipation ¹	150	mW
Input Control Current, Relay	50	mA
Peak (10ms)	1	A
Input Control Current, Detector	100	mA
Total Power Dissipation ²	800	mW
Isolation Voltage, Input to Output	3750	V _{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

¹ Derate linearly 1.33 mW / °C

² Derate linearly 6.67 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.

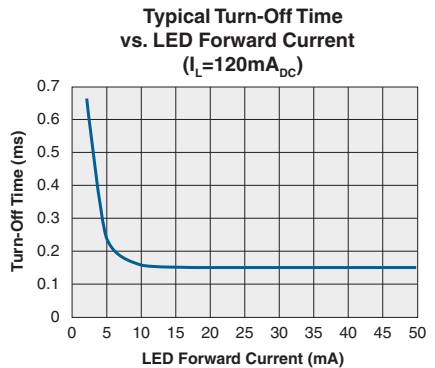
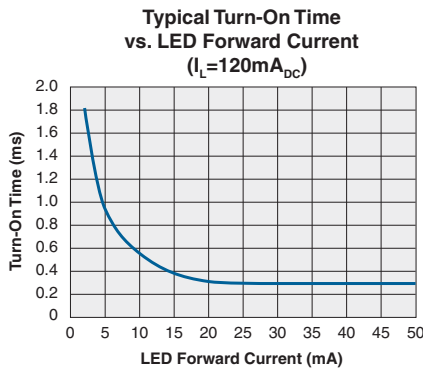
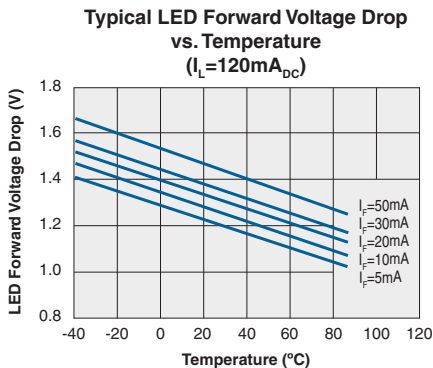
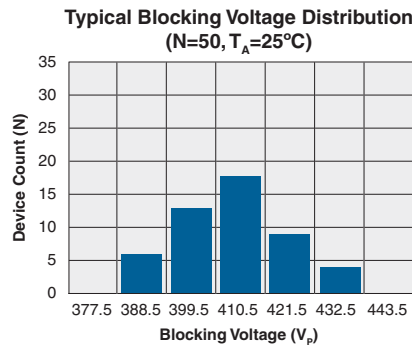
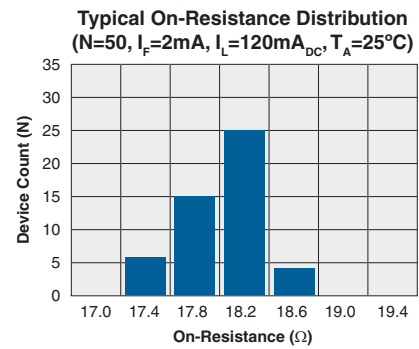
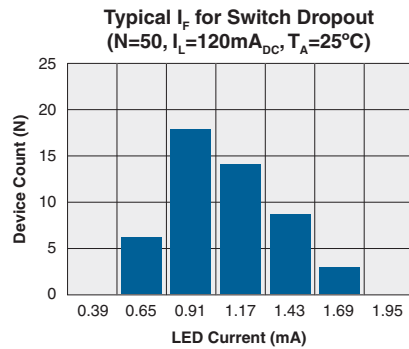
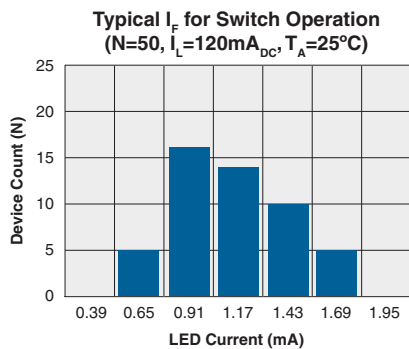
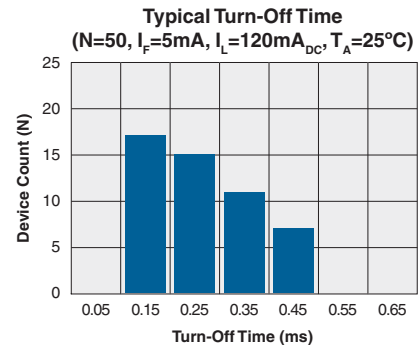
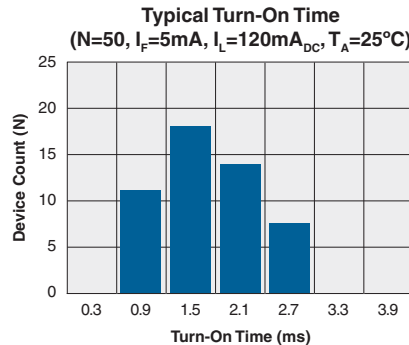
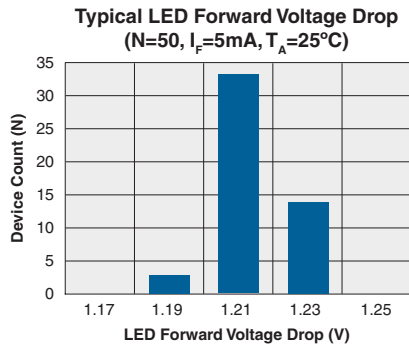
Electrical Characteristics @25°C: Relay Section

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current						
Continuous	-	I _L	-	-	120	mA
Peak	t=10ms	I _{LPK}	-	-	350	mA
Current Limit	I _F =5mA	I _{CL}	130	170	210	mA
On-Resistance	I _L =120mA	R _{ON}	-	-	35	Ω
Off-State Leakage Current	V _L =350V	I _{LEAK}	-	-	1	μA
Switching Speeds						
Turn-On	I _F =5mA, V _L =10V	t _{on}	-	-	2.5	ms
Turn-Off		t _{off}	-	-	2.5	ms
Output Capacitance	V _L =50V, f=1MHz	C _{OUT}	-	25	-	pF
Input Characteristics						
Input Control Current to Activate	I _L =120mA	I _F	-	-	5	mA
Input Control Current to Deactivate	-	I _F	0.4	0.7	-	mA
Input Voltage Drop	I _F =5mA	V _F	0.9	1.2	1.4	V
Reverse Input Voltage	-	V _R	-	-	5	V
Reverse Input Current	V _R =5V	I _R	-	-	10	μA
Common Characteristics						
Input to Output Capacitance	-	C _{I/O}	-	3	-	pF

Electrical Characteristics @25°C: Detector Section

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Phototransistor Blocking Voltage	I _C =10μA	BV _{CEO}	20	50	-	V
Phototransistor Dark Current	V _{CE} =5V, I _F =0mA	I _{CEO}	-	100	1000	nA
Saturation Voltage	I _C =0.15mA, I _F =0.05mA	V _{SAT}	-	0.5	0.8	V
Current Transfer Ratio	I _F =0.05mA, V _{CE} =0.8V	CTR	300	1000	-	%
Input Characteristics						
Input Control Current	I _C =2mA, V _{CE} =0.5V	I _F	-	1	2	mA
Input Voltage Drop	I _F =5mA	V _F	0.9	1.2	1.4	V
Input to Output Capacitance	-	-	-	3	-	pF
Isolation, Input to Output	-	V _{I/O}	3750	-	-	V _{rms}

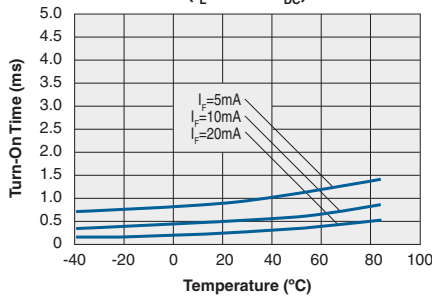
PERFORMANCE DATA: RELAY



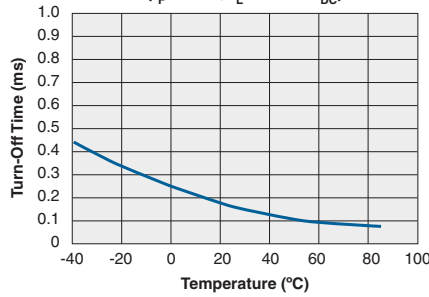
* The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA: RELAY (cont.)

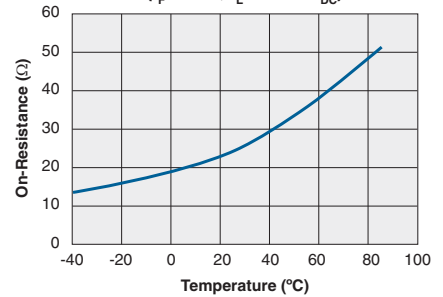
Typical Turn-On Time vs. Temperature
($I_L=120\text{mA}_{DC}$)



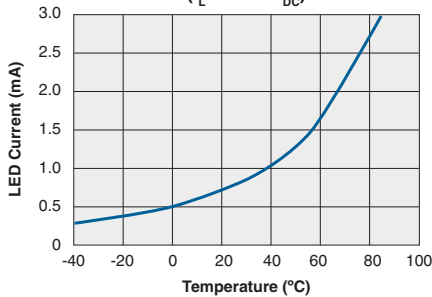
Typical Turn-Off Time vs. Temperature
($I_F=5\text{mA}$, $I_L=120\text{mA}_{DC}$)



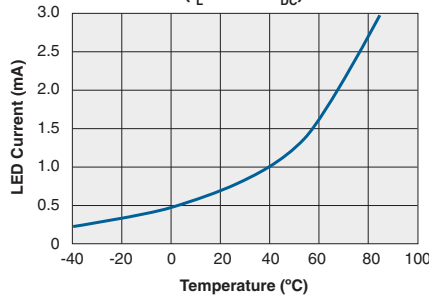
Typical On-Resistance vs. Temperature
($I_F=5\text{mA}$, $I_L=120\text{mA}_{DC}$)



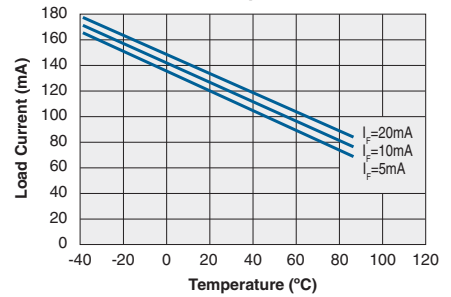
Typical I_F for Switch Operation vs. Temperature
($I_L=120\text{mA}_{DC}$)



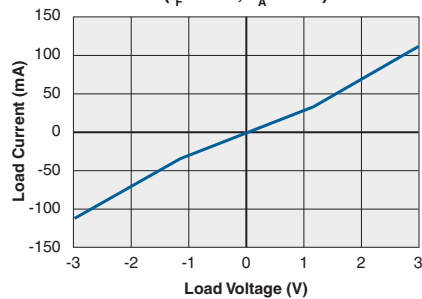
Typical I_F for Switch Dropout vs. Temperature
($I_L=120\text{mA}_{DC}$)



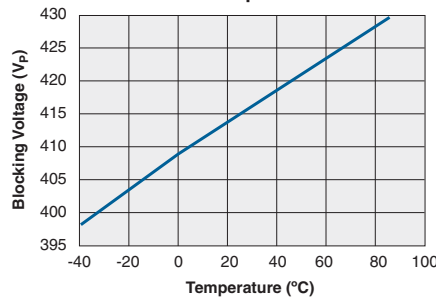
Typical Load Current vs. Temperature



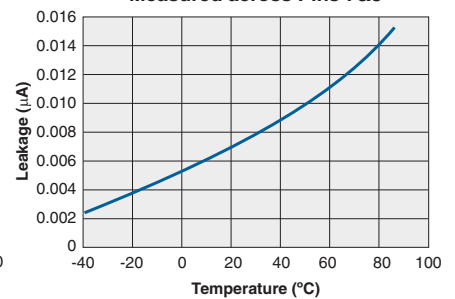
Typical Load Current vs. Load Voltage
($I_F=2\text{mA}$, $T_A=25^\circ\text{C}$)



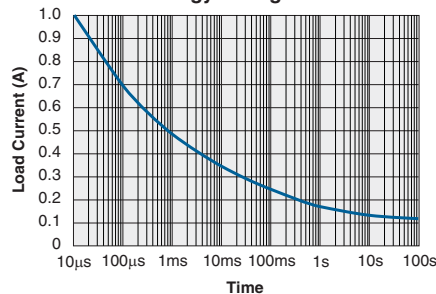
Typical Blocking Voltage vs. Temperature



Typical Leakage vs. Temperature Measured across Pins 7&8



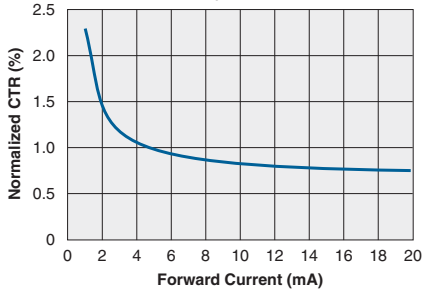
Energy Rating Curve



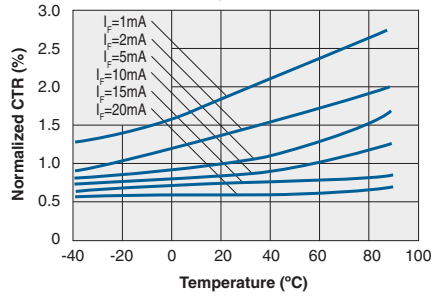
* The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA: DETECTOR

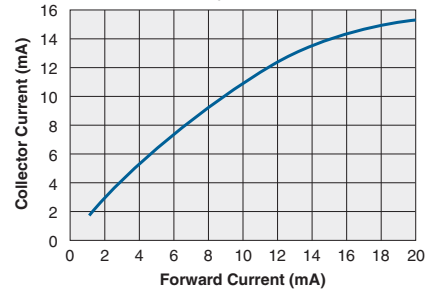
Typical Normalized CTR vs. Forward Current
($V_{CE}=0.8V$)



Typical Normalized CTR vs. Temperature
($V_{CE}=0.8V$)



Typical Collector Current vs. Forward Current
($V_{CE}=0.8V$)



* 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

Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. Clare classified all of 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) rating** 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) Rating
TS120L / TS120PL / TS120LS	MSL 1

ESD Sensitivity



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

Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

Device	Maximum Temperature x Time
TS120L / TS120LS	250°C for 30 seconds
TS120PL	260°C for 30 seconds

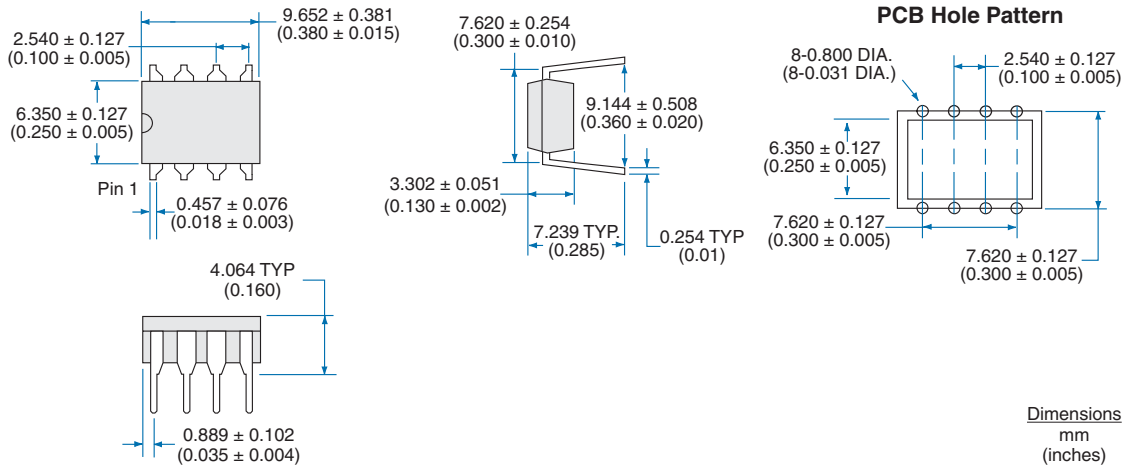
Board Wash

Clare recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since Clare employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

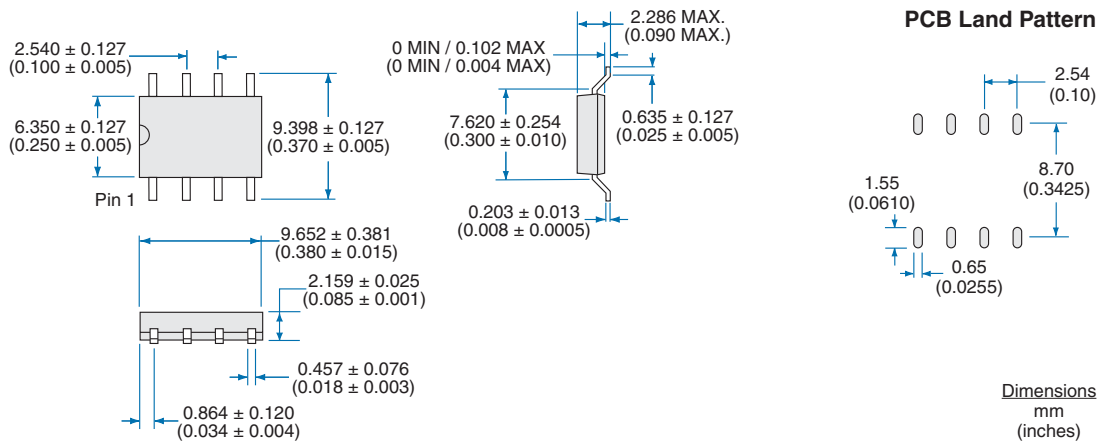


Mechanical Dimensions

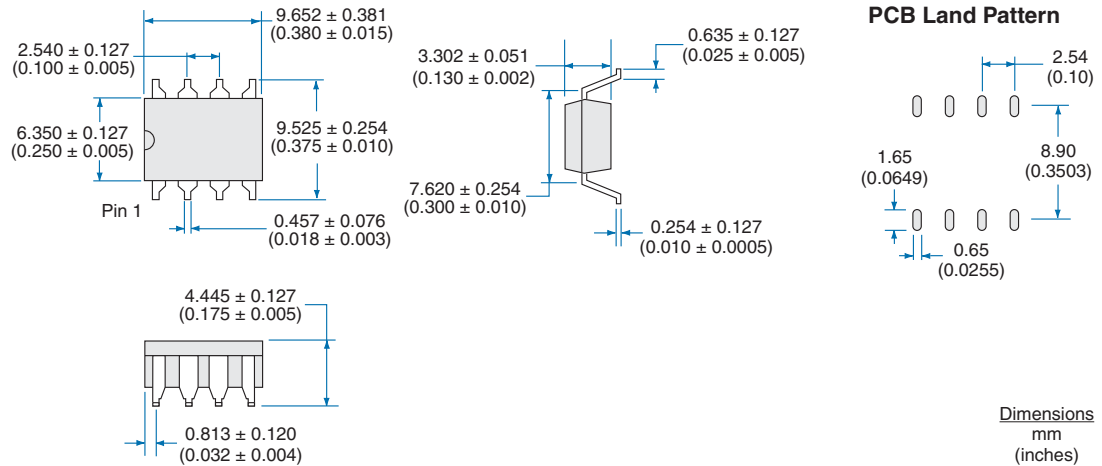
TS120L



TS120PL

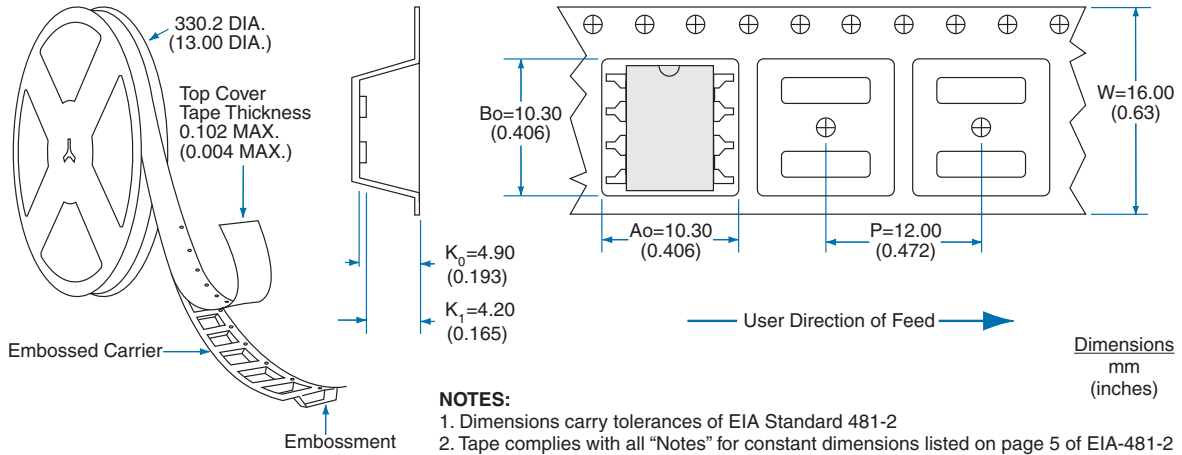


TS120LS

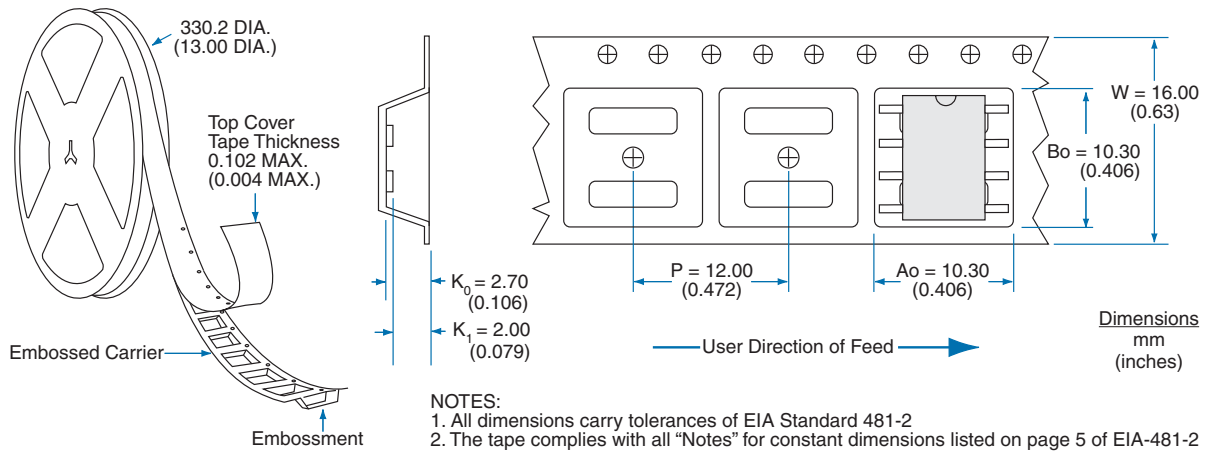


Mechanical Dimensions

TS120LS Tape & Reel



TS120PL Tape & Reel



For additional information please visit our website at: www.clare.com

Clare, Inc. makes no representations or warranties with respect to the accuracy or completeness of the contents of this publication and reserves the right to make changes to specifications and product descriptions at any time without notice. Neither circuit patent licenses nor indemnity are expressed or implied. Except as set forth in Clare's Standard Terms and Conditions of Sale, Clare, Inc. assumes no liability whatsoever, and disclaims any express or implied warranty, relating to its products including, but not limited to, the implied warranty of merchantability, fitness for a particular purpose, or infringement of any intellectual property right.

The products described in this document are not designed, intended, authorized or warranted for use as components in systems intended for surgical implant into the body, or in other applications intended to support or sustain life, or where malfunction of Clare's product may result in direct physical harm, injury, or death to a person or severe property or environmental damage. Clare, Inc. reserves the right to discontinue or make changes to its products at any time without notice.