

Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	350	V _P
Input Power Dissipation ¹	150	mW
Input Control Current, Relay Peak (10ms)	50 1	mA A
Input Control Current, Detector	100	mA
Reverse Input Voltage	5	V
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.

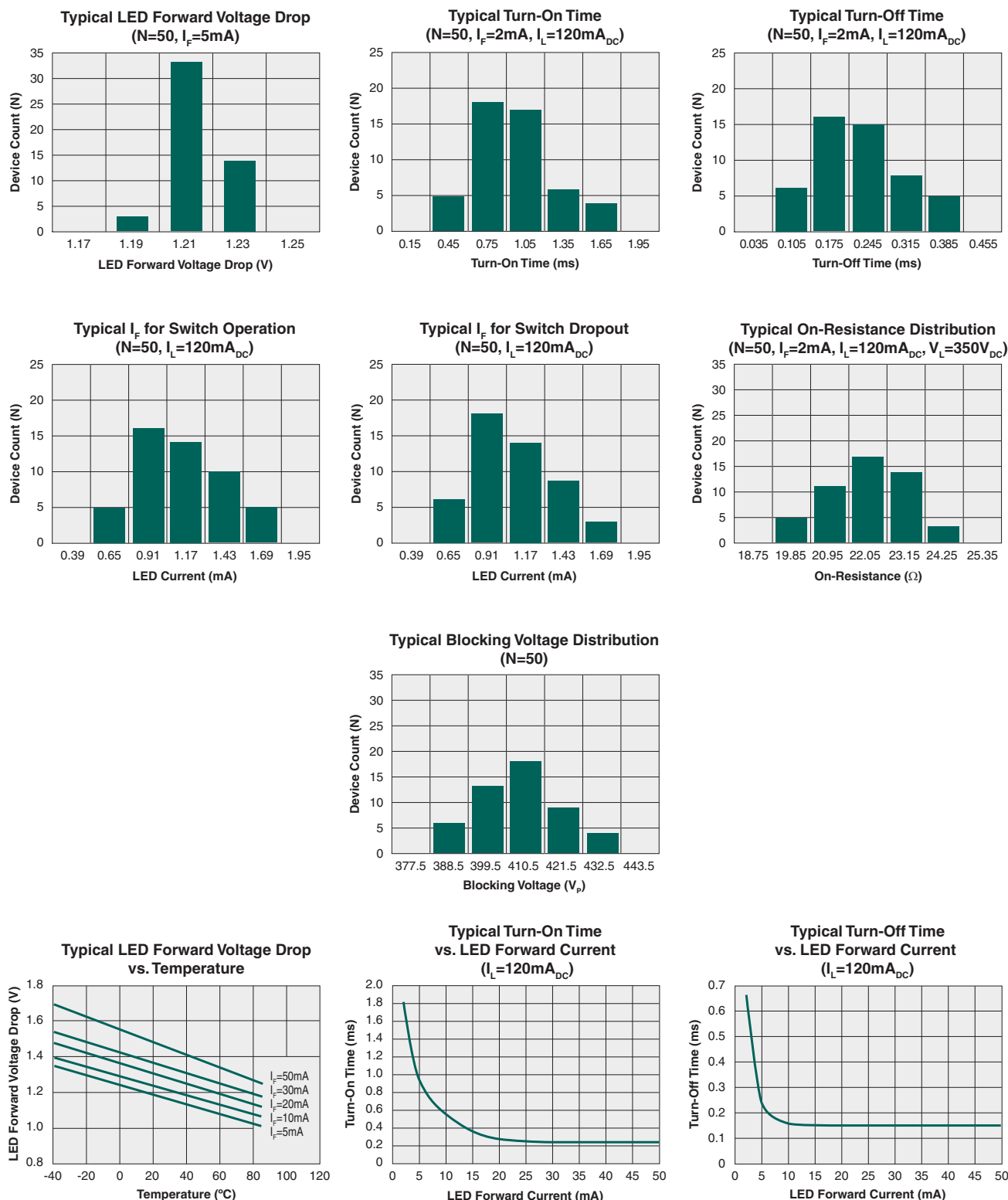
Electrical Characteristics @25°C: Relay Section

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current						
Continuous	-	I _L	-	-	120	mA _{rms} / mA _{DC}
Peak	t=10ms	I _{LPK}	-	-	±350	mA _p
On-Resistance	I _L =120mA	R _{ON}	-	23	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}	-	-	3	ms
Turn-Off		t _{off}	-	-	3	ms
Output Capacitance	V _L =50V, f=1MHz	C _{OUT}	-	25	-	pF
Input Characteristics						
Input Control Current to Activate	I _L =120mA	I _F	-	-	2	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 Current	V _R =5V	I _R	-	-	10	μA
Common Characteristics						
Input to Output Capacitance	-	C _{IO}	-	3	-	pF

Electrical Characteristics @25°C: Detector Section

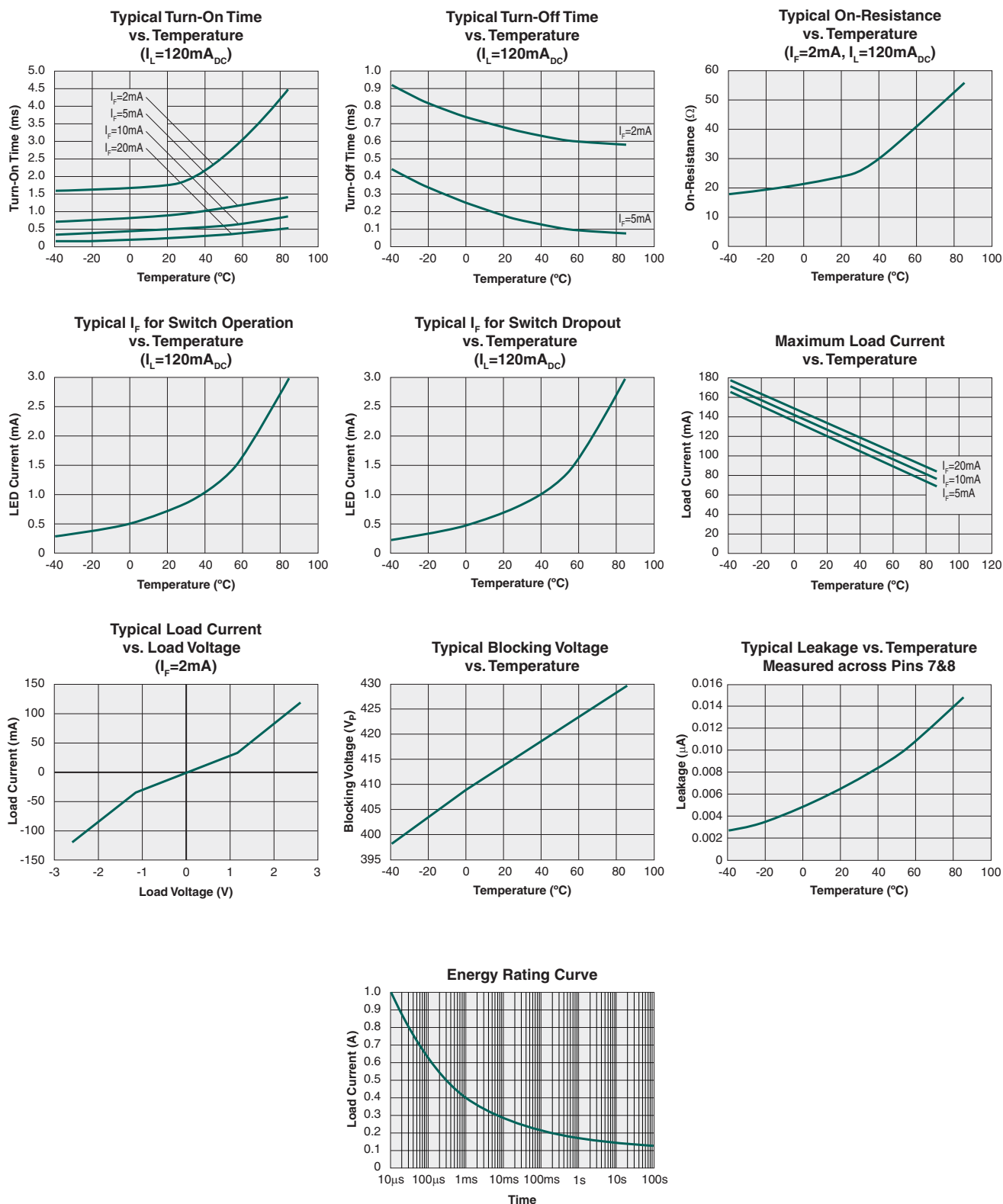
Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Phototransistor Blocking Voltage	I _C =10μA	BV _{CEO}	20	50	-	V
Phototransistor Dark Current	V _{CE} =5V, I _F =0mA	I _{CEO}	-	50	500	nA
Saturation Voltage	I _C =2mA, I _F =16mA	V _{SAT}	-	0.3	0.5	V
Current Transfer Ratio	I _F =6mA, V _{CE} =0.5V	CTR	33	100	-	%
Input Characteristics						
Input Control Current	I _C =2mA, V _{CE} =0.5V	I _F	-	2	6	mA
Input Voltage Drop	I _F =5mA	V _F	0.9	1.2	1.4	V
Input Current (Detector Must be Off)	I _C =1μA, V _{CE} =5V	I _F	5	25	-	μA
Isolation, Input to Output	-	V _{IO}	3750	-	-	V _{rms}

RELAY PERFORMANCE DATA @25°C (Unless Otherwise Noted)*



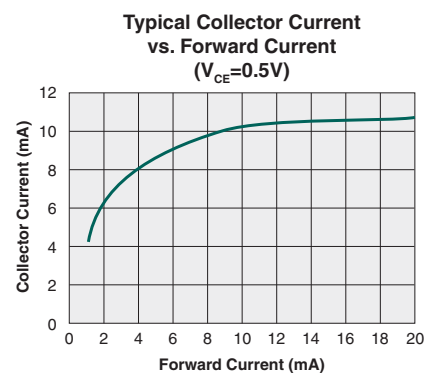
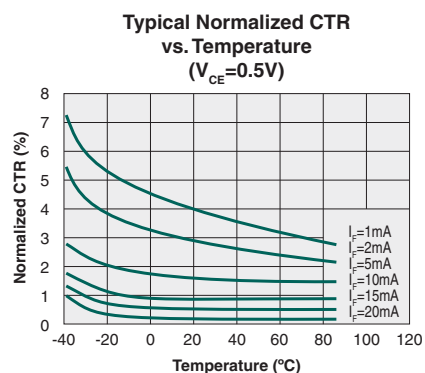
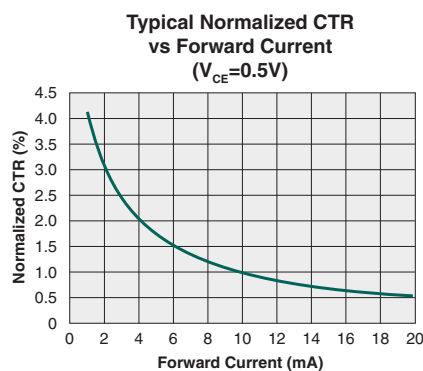
* The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

RELAY PERFORMANCE DATA @25°C (Unless Otherwise Noted)*



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DETECTOR PERFORMANCE DATA @25°C (Unless Otherwise Noted)*



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Manufacturing Information

Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits Division 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
TS117 / TS117P / TS117S	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
TS117 / TS117S	250°C for 30 seconds
TS117P	260°C for 30 seconds

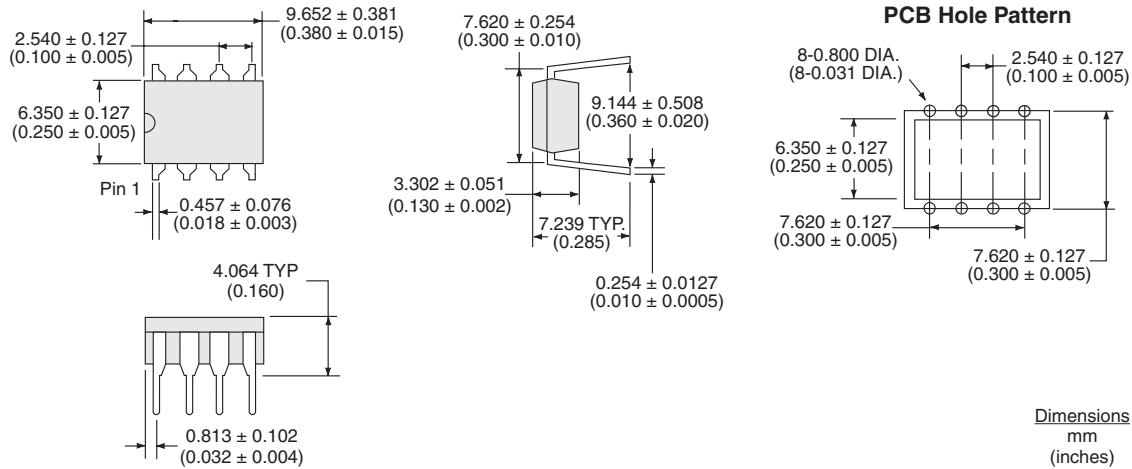
Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division 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.

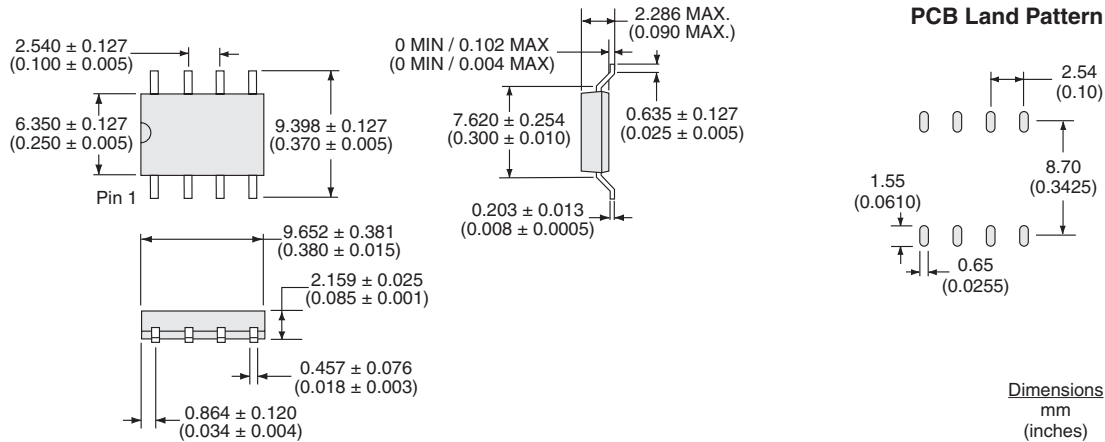


Mechanical Dimensions

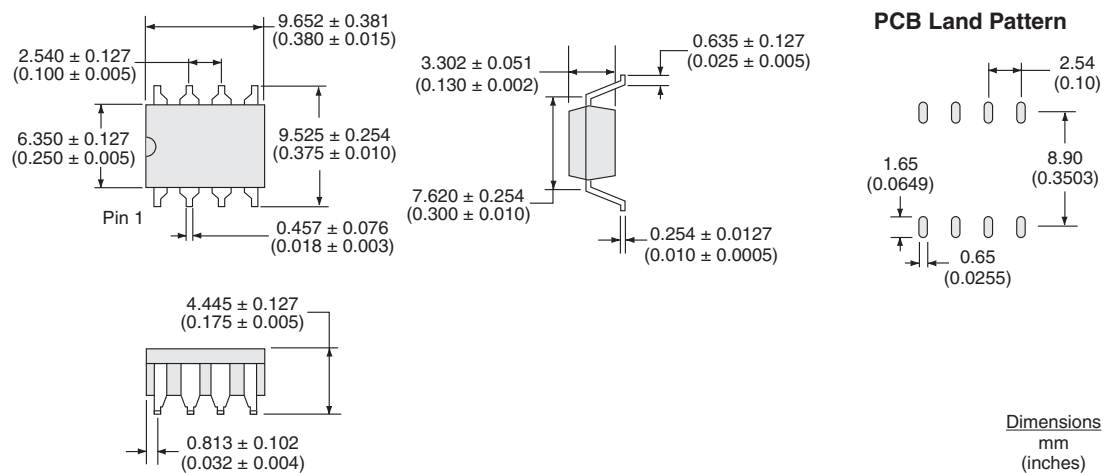
TS117



TS117P



TS117S



Technical drawing of a 35mm film magazine, showing side and top views with dimensions in mm (inches).

Side View Dimensions:

- 330.2 DIA. (13.00 DIA.)
- Top Cover Tape Thickness 0.102 MAX. (0.004 MAX.)
- Embossed Carrier
- $K_0 = 4.90$ (0.193)
- $K_1 = 4.20$ (0.165)

Top View Dimensions:

- $B_0 = 10.30$ (0.406)
- $A_0 = 10.30$ (0.406)
- $P = 12.00$ (0.472)
- $W = 16.00$ (0.63)

NOTES:

- User Direction of Feed —

Dimensions
mm
(inches)

330.2 DIA. (13.00 DIA.)

Top Cover Tape Thickness 0.102 MAX. (0.004 MAX.)

Embossed Carrier

$K_0 = 2.70$ (0.106)

$K_1 = 2.00$ (0.079)

$P = 12.00$ (0.472)

$A_o = 10.30$ (0.406)

$W = 16.00$ (0.63)

$B_o = 10.30$ (0.406)

— User Direction of Feed —→

Dimensions
mm
(inches)

NOTES:
1. All dimensions carry tolerances of EIA Standard 481-2
2. The tape complies with all "Notes" for constant dimensions listed on page 5 of EIA-481-2

Specification: DS-TS117-R10
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