



ISLT100X

DESCRIPTION

The ISLT100X series optocouplers consists of an infrared emitting diode optically coupled to an NPN silicon photo transistor.

These devices belong to Isocom Long Creepage Range of Optocouplers.

FEATURES

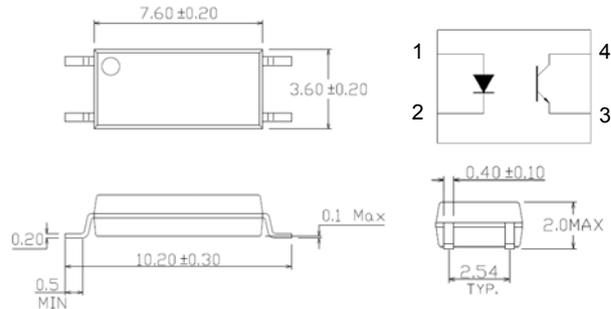
- Long Creepage 8mm
- High AC Isolation voltage 5000V_{RMS}
- CTR Selections Available
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231, Model THP

APPLICATIONS

- Switching Mode Power Supply
- System Appliances
- Measuring Instruments
- Telecommunication Equipments
- Signal Transmission between Systems of Different Potentials and Impedances

ORDER INFORMATION

- Available in Tape and Reel with 3000pcs per reel



All dimensions in mm.

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Input Diode

Forward Current	60mA
Peak Forward Current (1μs, pulse)	1.5A
Reverse Voltage	6V
Power dissipation	100mW

Output Transistor

Collector to Emitter Voltage V _{CEO}	80V
Emitter to Collector Voltage V _{ECO}	7V
Collector Current	50mA
Power Dissipation	150mW

Total Package

Isolation Voltage (1 minute, R.H. 40 - 60%)	5000V _{RMS}
Total Power Dissipation	250mW
Operating Temperature	-55 to 110 °C
Storage Temperature	-55 to 125 °C
Lead Soldering Temperature (10s)	260°C

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ISLT100X

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	$I_F = 50\text{mA}$		1.45	1.5	V
Reverse Current	I_R	$V_R = 6\text{V}$			10	μA
Input Capacitance	C_{IN}	$V_F = 0\text{V}, f = 1\text{KHz}$		50		pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = 0.1\text{mA}, I_F = 0\text{mA}$	80			V
Emitter-Collector B Breakdown Voltage	BV_{ECO}	$I_E = 0.1\text{mA}, I_F = 0\text{mA}$	7			V
Collector-Emitter Dark Current	I_{CEO}	$V_{CE} = 20\text{V}, I_F = 0\text{mA}$			100	nA



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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit			
Current Transfer Ratio	CTR	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	ISLT1001	50		600	%		
			ISLT1007	80		160			
			ISLT1008	130		260			
			ISLT1009	200		400			
		$I_F = 10\text{mA}, V_{CE} = 5\text{V}$	ISLT1002	63		125			
			ISLT1003	100		200			
			ISLT1004	160		320			
			$I_F = 1\text{mA}, V_{CE} = 5\text{V}$	ISLT1002	22				
		ISLT1003		34					
		ISLT1004		56					
		Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_F = 10\text{mA}, I_C = 1\text{mA}$				0.3
		Input to Output Isolation Voltage	V_{ISO}	See note 1	5000				V_{RMS}
Input to Output Isolation Resistance	R_{ISO}	$V_{IO} = 500\text{V}$ See note 1	5×10^{10}			Ω			
Floating Capacitance	C_f	$V_F = 0\text{V}, f = 1\text{MHz}$			1.0	pF			
Turn On Time	t_{on}	$V_{CE} = 2\text{V}, I_c = 5\text{mA},$ $R_L = 100\Omega$		4		μs			
Turn Off Time	t_{off}			3		μs			
Output Rise Time	t_r			2	18	μs			
Output Fall Time	t_f			3	18	μs			

Note 1 : Measured with input leads shorted together and output leads shorted together, R.H 40% to 60%



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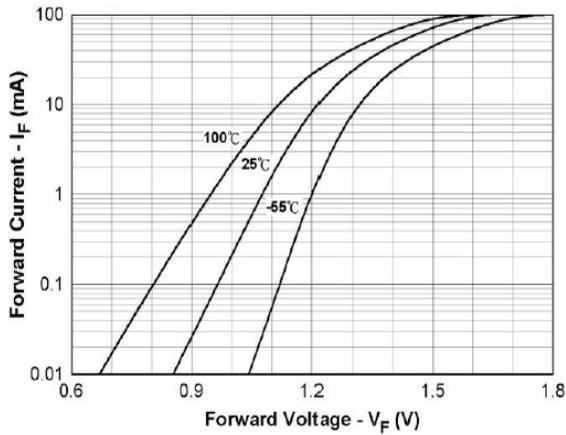


Fig 1 Forward Current vs Forward Voltage

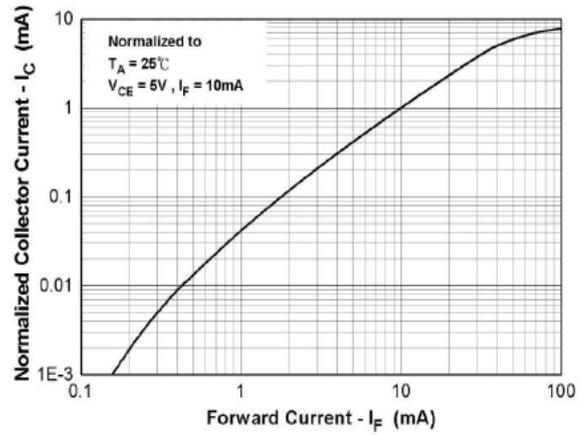


Fig 2 Normalized Collector Current vs Forward Current

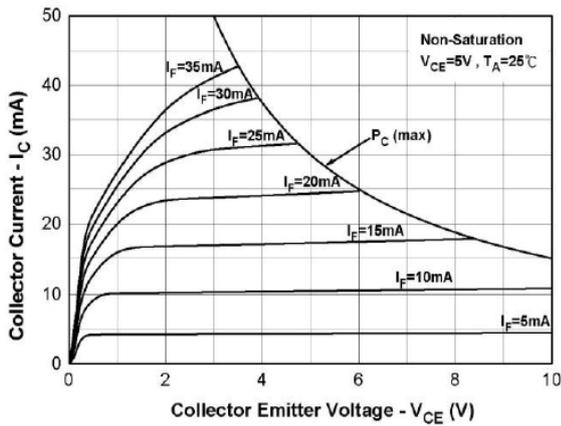


Fig 3 Collector Current vs Collector-Emitter Voltage (1)

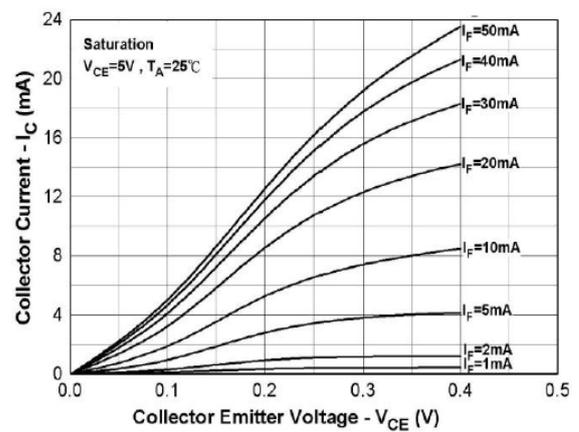


Fig 4 Collector Current vs Collector-Emitter Voltage (2)

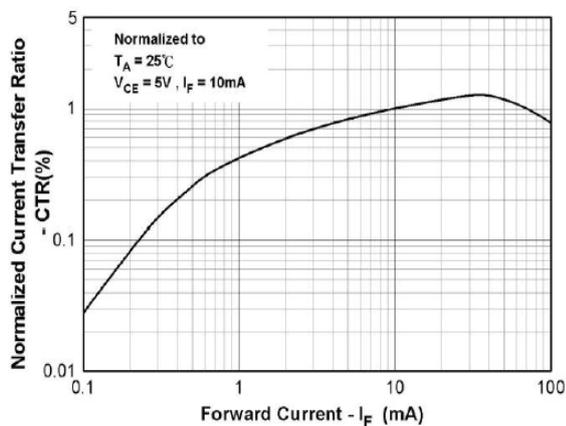


Fig 5 Normalized Current Transfer Ratio vs Forward Current

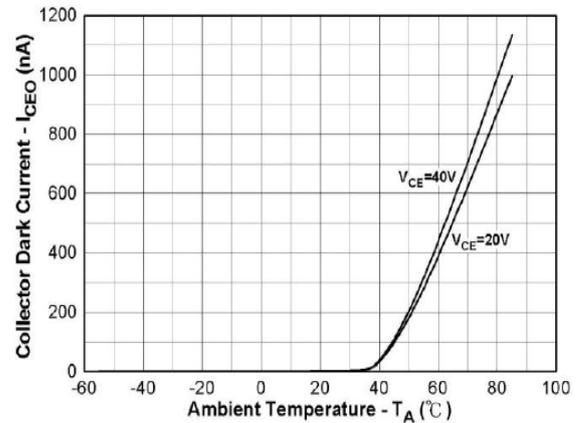


Fig 6 Collector Dark Current vs Ambient Temperature



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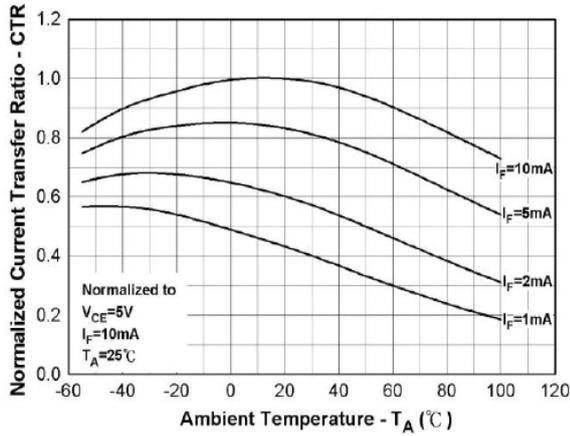


Fig 7 Normalized Current Transfer Ratio vs Ambient Temperature (1)

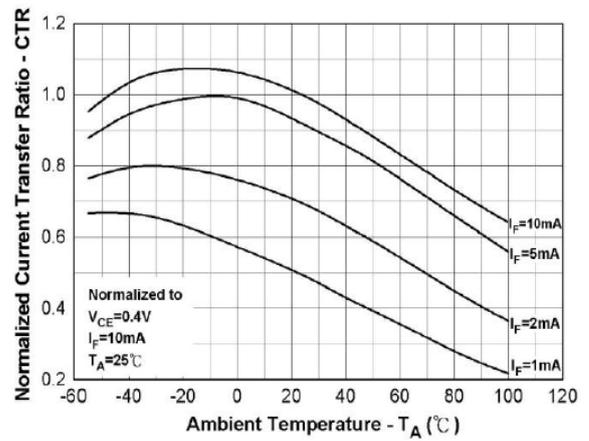


Fig 8 Normalized Current Transfer Ratio vs Ambient Temperature (2)

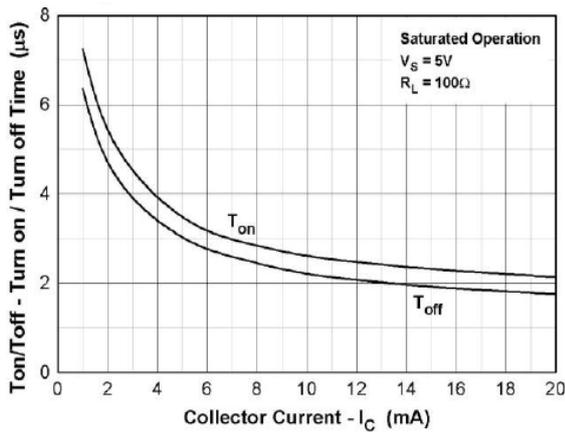


Fig 9 Turn on/off Time vs Collector Current

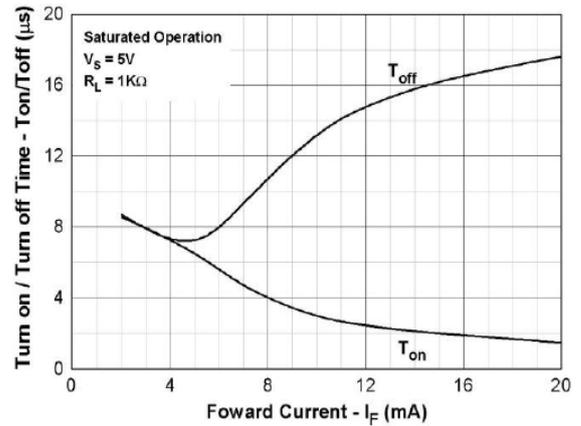
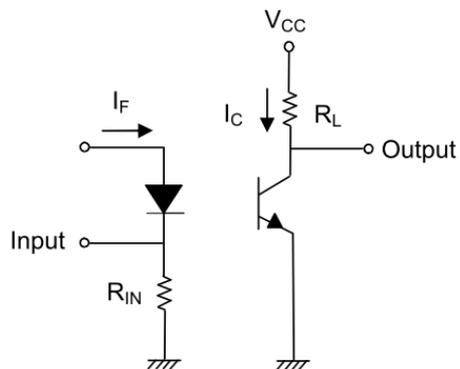


Fig 10 Turn on/off Time vs Forward Current



Switching Time Test Circuit and Waveforms

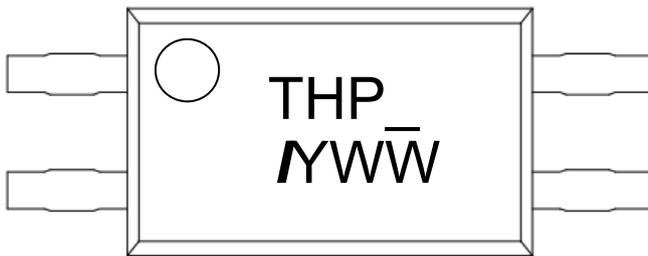


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ORDER INFORMATION

ISLT1000			
After PN	PN	Description	Packing quantity
Any CTR Grade	ISLT1001, ISLT1002, ISLT1003, ISLT1004, ISLT1007, ISLT1008, ISLT1009	Surface Mount Tape & Reel	3000 pcs per reel

DEVICE MARKING

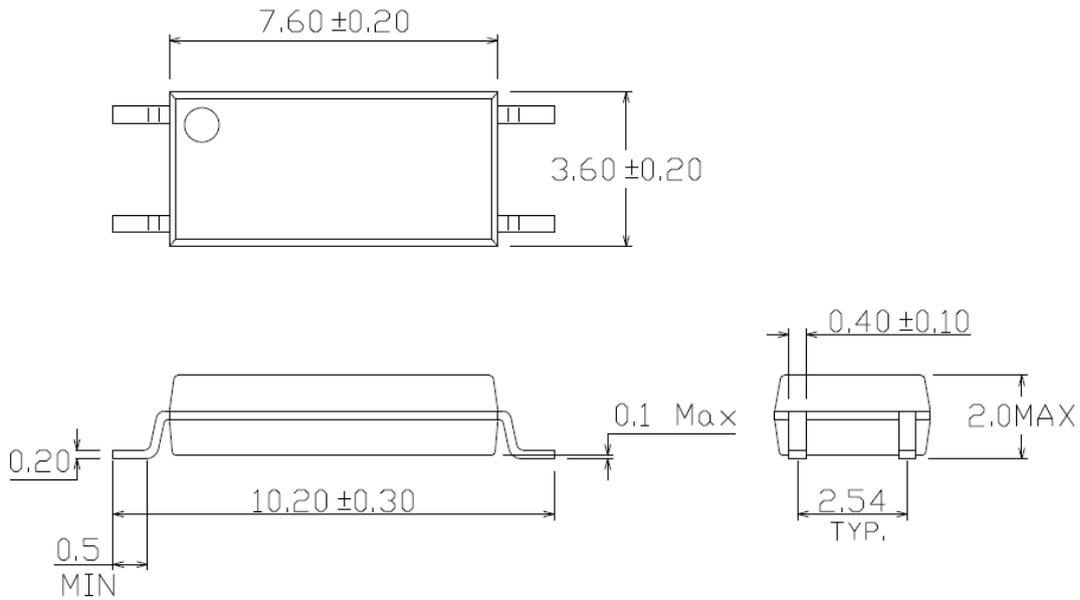


THP_ denotes Device Part Number where “_” denoted CTR Grade
I denotes Isocom
Y denotes 1 digit Year code
WW denotes 2 digit Week code

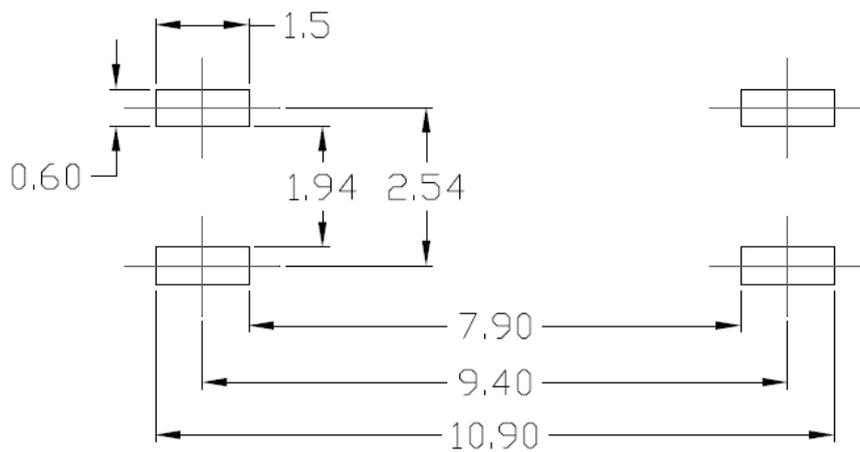


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PACKAGE DIMENSIONS (mm)



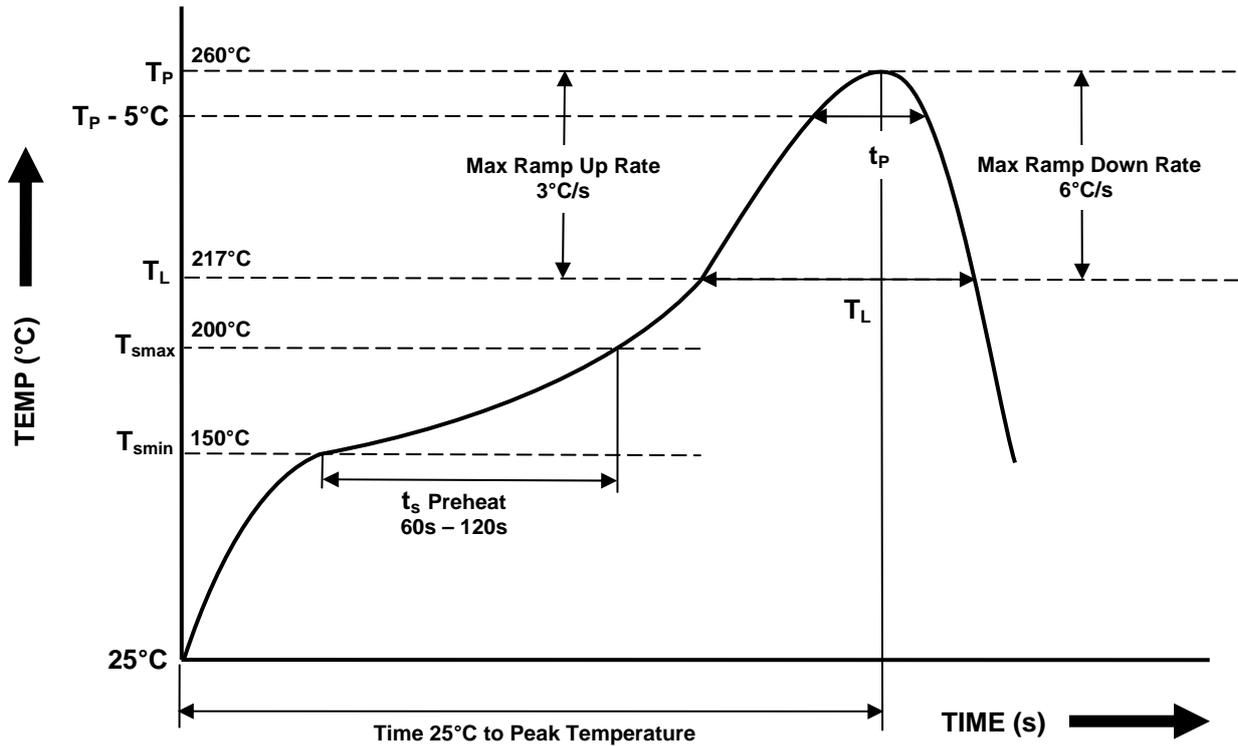
RECOMMENDED SOLDER PAD LAYOUT (mm)





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IR REFLOW SOLDERING TEMPERATURE PROFILE
(One Time Reflow Soldering is Recommended)

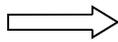
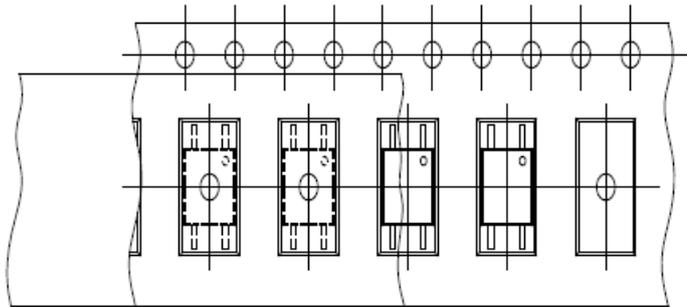


Profile Details	Conditions
Preheat - Min Temperature (T _{SMIN}) - Max Temperature (T _{SMAX}) - Time T _{SMIN} to T _{SMAX} (t _s)	150°C 200°C 60s - 120s
Soldering Zone - Peak Temperature (T _P) - Liquidous Temperature (T _L) - Time within 5°C of Actual Peak Temperature (T _P - 5°C) - Time maintained above T _L (t _L) - Ramp Up Rate (T _L to T _P) - Ramp Down Rate (T _P to T _L)	260°C 217°C 30s 60s - 100s 3°C/s max 6°C/s max
Average Ramp Up Rate (T _{smax} to T _P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max

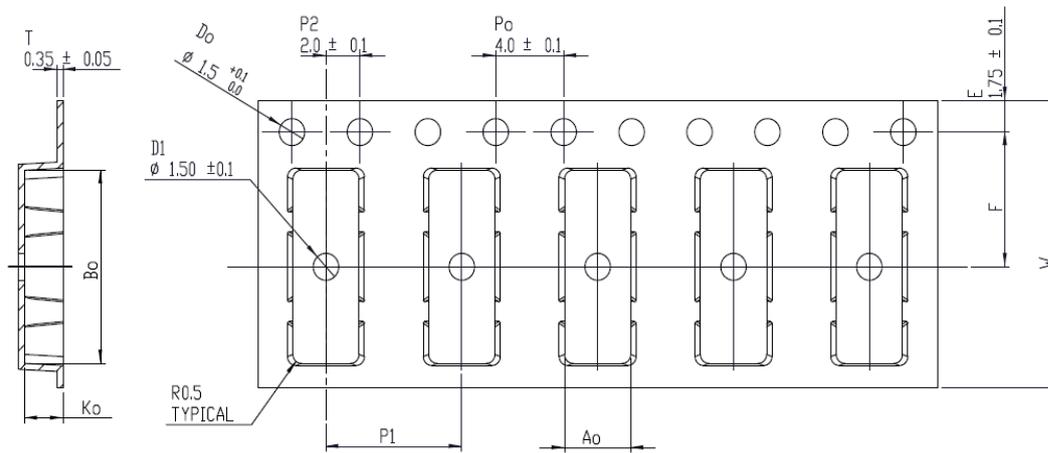


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TAPE AND REEL PACKAGING



Direction of feed from reel



Dimension No.	Ao	Bo	Do	D1	E	F
Dimension (mm)	3.9±0.1	10.75±0.10	1.5+0.1/-0	1.5±0.1	1.75±0.10	7.5±0.1
Dimension No.	Po	P1	P2	T	W	Ko
Dimension (mm)	4.0±0.1	8.0±0.1	2.0±0.1	0.35±0.05	16.0±0.3	2.25±0.10

