ISLT100xV

DESCRIPTION

The ISLT100xV 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

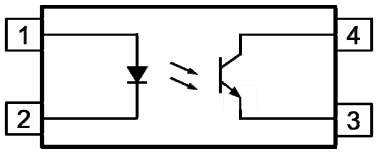
- Long Creepage 8mm
- High AC Isolation voltage 5000V_{RMS}
- CTR Selections Available
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231
  VDE Approval 40042752

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



1 Anode
2 Cathode
3 Emitter
4 Collector

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Stresses exceeding the absolute maximum ratings can cause permanent damage to the device.
Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

Input	
Forward Current	60mA
Peak Forward Current (1µs, pulse)	1.5A
Reverse Voltage	6V
Power dissipation	100mW
Output	
Collector to Emitter Voltage V_{CEO}	80V
Emitter to Collector Voltage V_{ECO}	7V
Collector Current	50mA
Power Dissipation	150mW
Total Package	
Isolation Voltage	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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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

INPUT

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

OUTPUT

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

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	I_F = 5mA, V_{CE} = 5V				%
		ISLT1001V	50		600	
		ISLT1007V	80		160	
		ISLT1008V	130		260	
		ISLT1009V	200		400	
		I_F = 10mA, V_{CE} = 5V				
		ISLT1002V	63		125	
		ISLT1003V	100		200	
		ISLT1004V	160		320	
		I_F = 1mA, V_{CE} = 5V				
		ISLT1002V	22			
		ISLT1003V	34			
		ISLT1004V	56			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 10mA, I_C = 1mA			0.3	V
Floating Capacitance	C_f	V_F = 0V, f = 1MHz			1.0	pF
Turn On Time	t_{on}	V_{CE} = 2V, Ic = 5mA, R_L = 100Ω		4		µs
Turn Off Time	t_{off}			3		µs
Output Rise Time	t_r				18	µs
Output Fall Time	t_f				18	µs

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage	V_{ISO}	R.H. = 40% to 60%, t = 1 min (Note 1)	5000			V_{AC}
Input - Output Isolation Resistance	R_{I-O}	R.H. = 40% to 60% V_{I-O} = 500VDC (Note 1)	$5x10^{10}$			Ω

Note 1 : Measured with input leads shorted together and output leads shorted together.

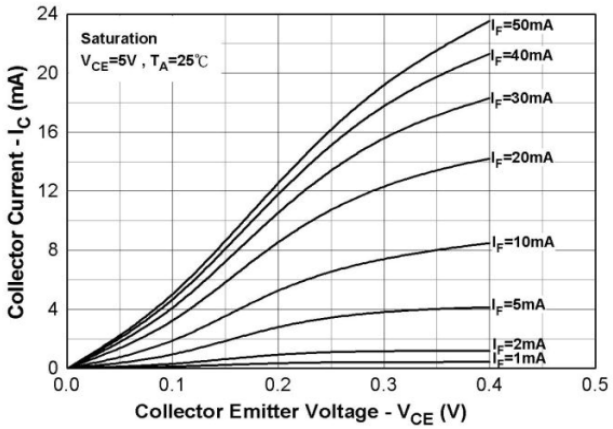


Fig 1 Collector Current vs Collector-Emitter Voltage (1)

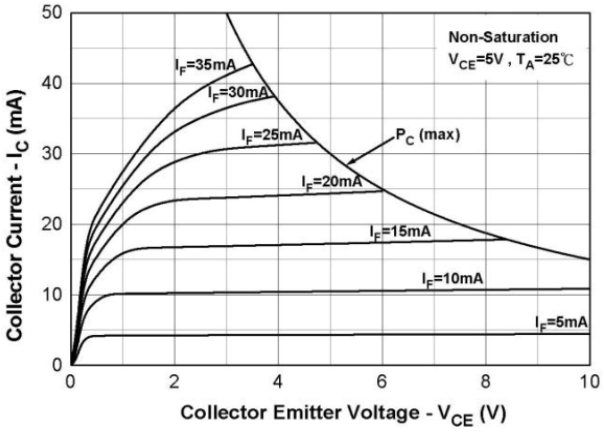


Fig 2 Collector Current vs Collector-Emitter Voltage (2)

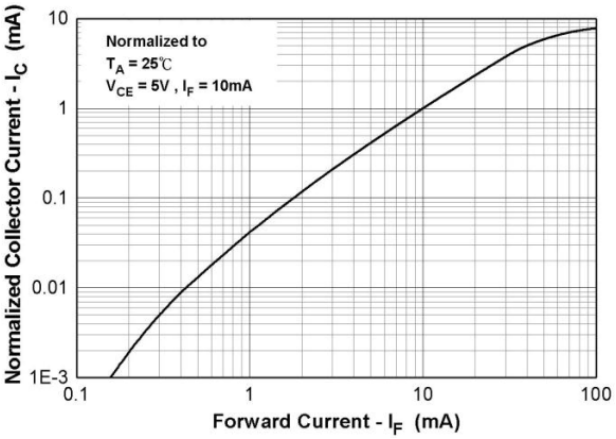


Fig 3 Normalized Collector Current vs Forward Current

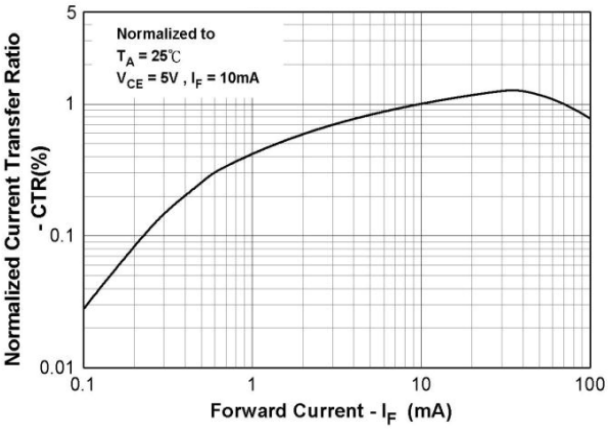


Fig 4 Normalized Current Transfer Ratio vs Forward Current

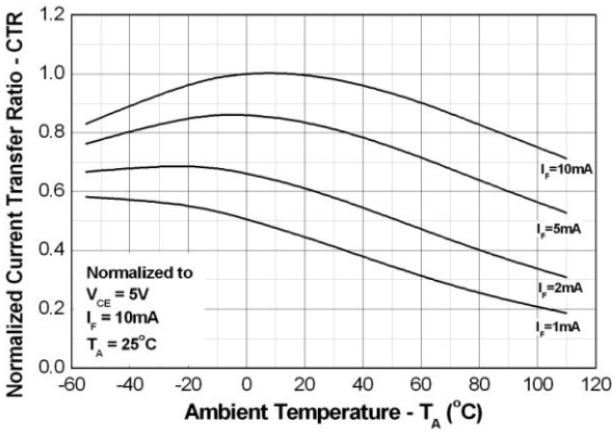


Fig 5 Normalized Current Transfer Ratio vs Ambient Temperature (1)

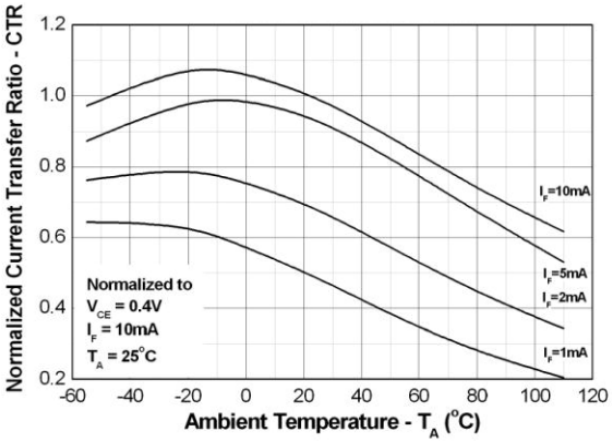


Fig 6 Normalized Current Transfer Ratio vs Ambient Temperature 2)

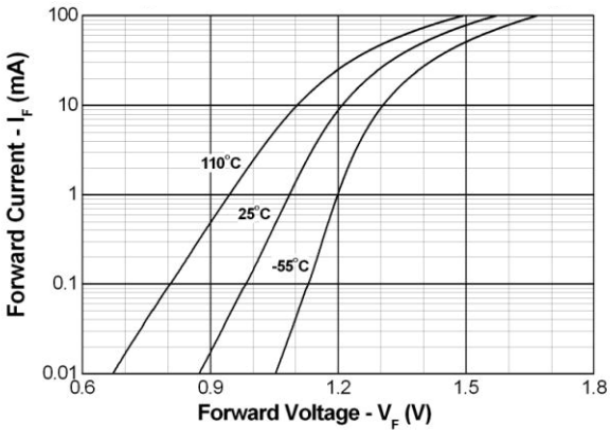


Fig 7 Forward Current vs Forward Voltage

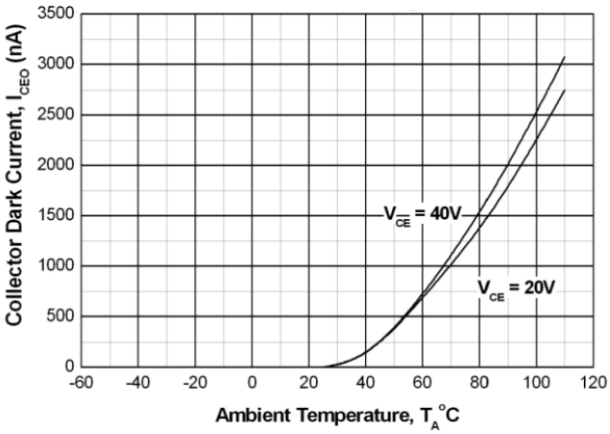


Fig 8 Collector Dark Current vs Ambient Temperature

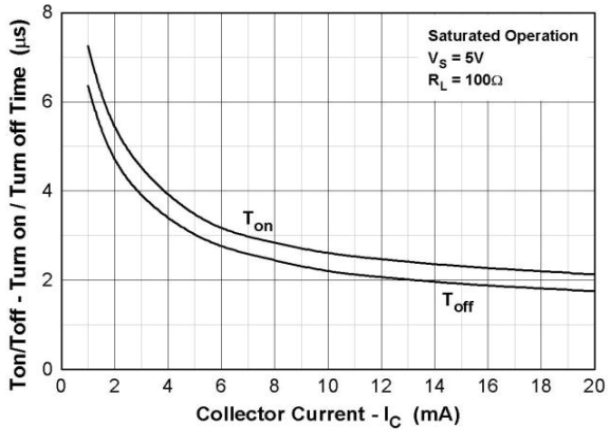


Fig 9 Turn on/off Time vs Collector Current

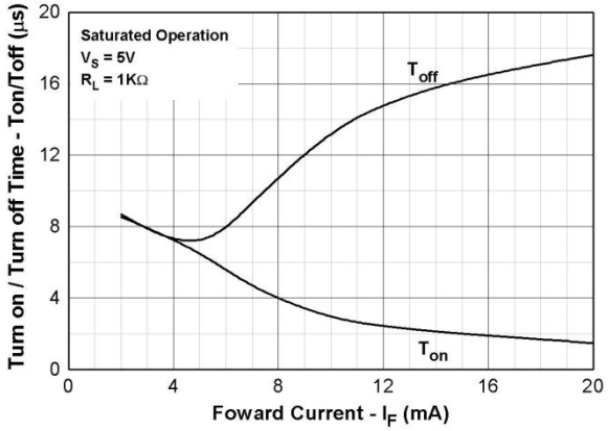
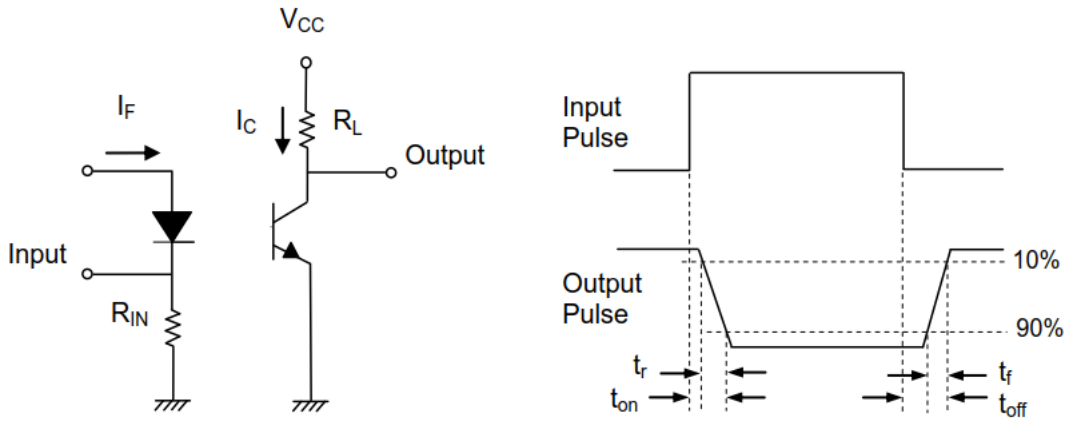


Fig 10 Turn on/off Time vs Forward Current



Switching Time Test Circuit and Waveforms

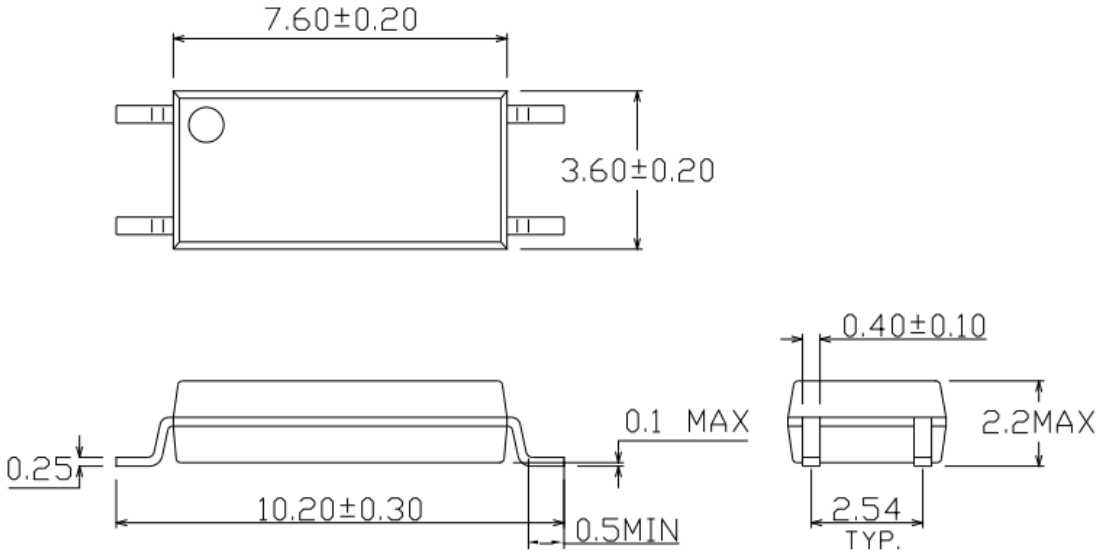
ORDER INFORMATION

ISLT100xV			
After PN	**PN**	**Description**	**Packing quantity**
Any CTR Grade	ISLT1001V, ISLT1002V, ISLT1003V, ISLT1004V, ISLT1007V, ISLT1008V, ISLT1009V	Surface Mount Tape & Reel	3000 pcs per reel

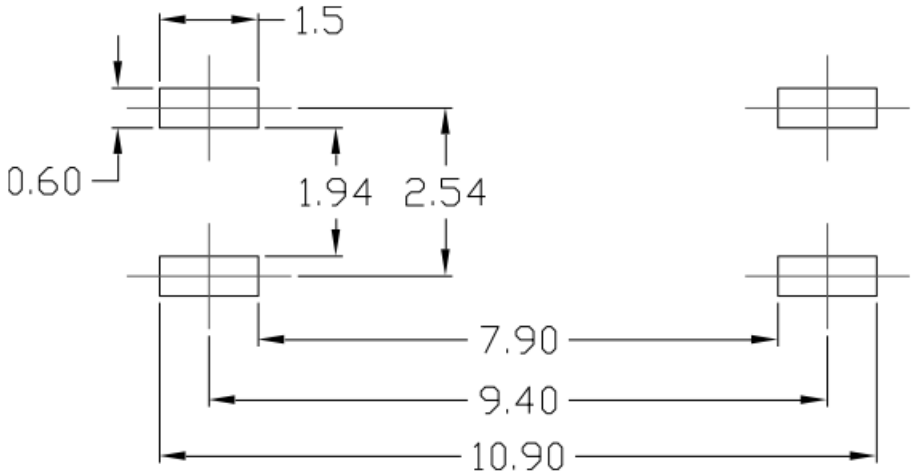
DEVICE MARKING

ISLT101_V	denotes Device Part Number where "_" denotes the CTR Grade
I	denotes Isocom
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code

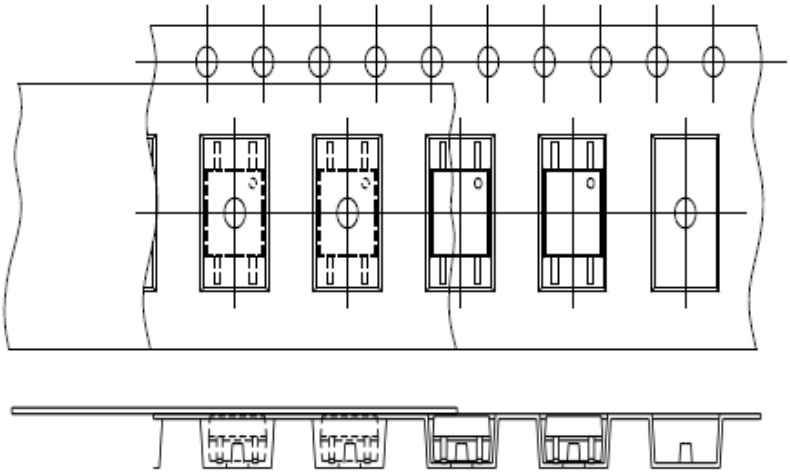
PACKAGE DIMENSIONS (mm)



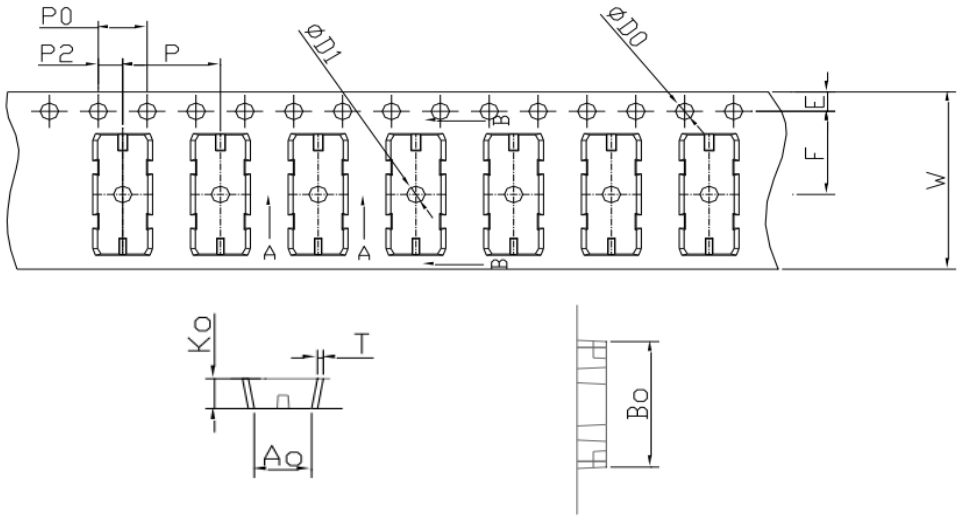
RECOMMENDED SOLDER PAD LAYOUT (mm)



TAPE AND REEL PACKAGING

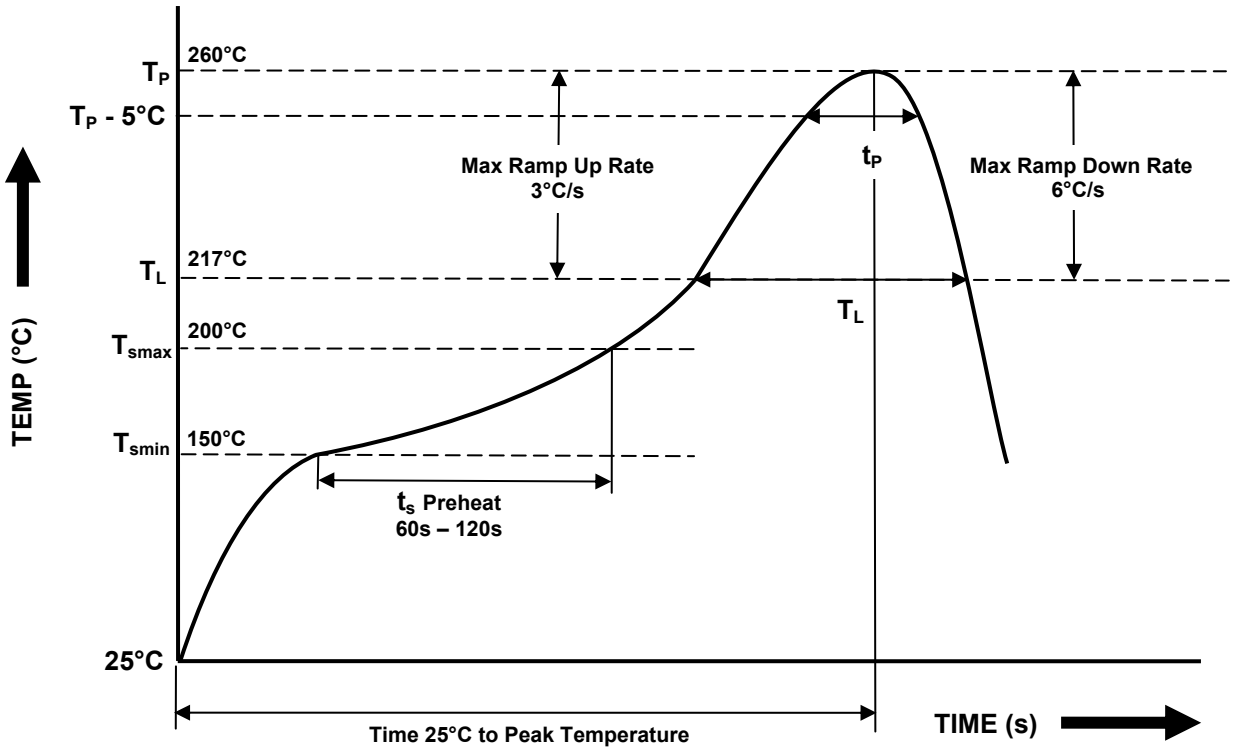


Direction of feed from reel



Dimension No.	A_0	B_0	D0	D1	E	F
Dimension (mm)	3.9±0.10	10.82±0.10	1.5+0.1/-0	1.5±0.10	1.75±0.10	7.5±0.10
Dimension No.	**P0**	**P**	**P2**	**T**	**W**	K_0
Dimension (mm)	4.0±0.15	8.0±0.10	2.0±0.10	0.4±0.05	16.0±0.3	2.25±0.1

IR REFLOW SOLDERING TEMPERATURE PROFILE
One Time Reflow Soldering is Recommended.
Do not immerse device body in solder paste.



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

ISOCOM COMPONENTS

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