



ISOCOM
COMPONENTS

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

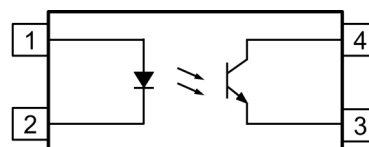
- Long Creepage 8mm
- High AC Isolation voltage 5000V_{RMS}
- CTR Selections Available
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231
- VDE Approval 40042752

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

ISOCOM COMPONENTS 2004 LTD

Unit 25B, Park View Road West, Park View Industrial Estate
Hartlepool, Cleveland, TS25 1PE, United Kingdom
Tel : +44 (0)1429 863 609 Fax : +44 (0)1429 863 581
e-mail : sales@isocom.co.uk
<http://www.isocom.com>

ISOCOM COMPONENTS ASIA LTD

Hong Kong Office
Block A, 8/F, Wah Hing Industrial Mansion
36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong
Tel : +852 2995 9217 Fax : +852 8161 6292
e-mail : sales@isocom.com.hk

ISLT100xV

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 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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COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	$I_F = 5\text{mA}$, $V_{CE} = 5\text{V}$				%
		ISLT1001V	50		600	
		ISLT1007V	80		160	
		ISLT1008V	130		260	
		ISLT1009V	200		400	
		$I_F = 10\text{mA}$, $V_{CE} = 5\text{V}$				
		ISLT1002V	63		125	
		ISLT1003V	100		200	
		ISLT1004V	160		320	
		$I_F = 1\text{mA}$, $V_{CE} = 5\text{V}$				
		ISLT1002V	22			
		ISLT1003V	34			
		ISLT1004V	56			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 10\text{mA}$, $I_C = 1\text{mA}$			0.3	V
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				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%, $t = 1\text{ min}$ (Note 1)	5000			V_{AC}
Input - Output Isolation Resistance	R_{I-O}	R.H. = 40% to 60% Notation: Resistance with input leads shorted together and output leads shorted together. (Note 1)	5×10^{10}			Ω



ISLT100xV

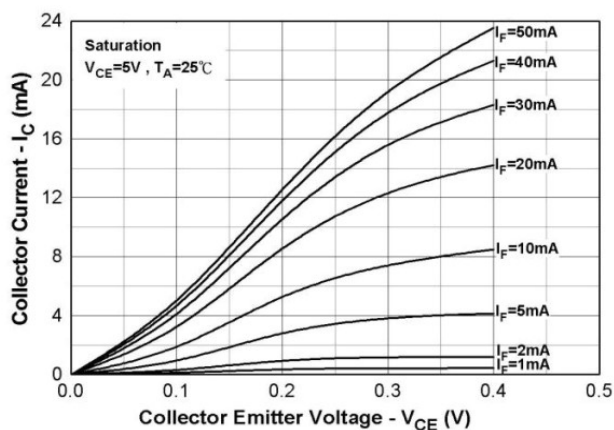


Fig 1 Collector Current vs Collector-Emitter Voltage (1)

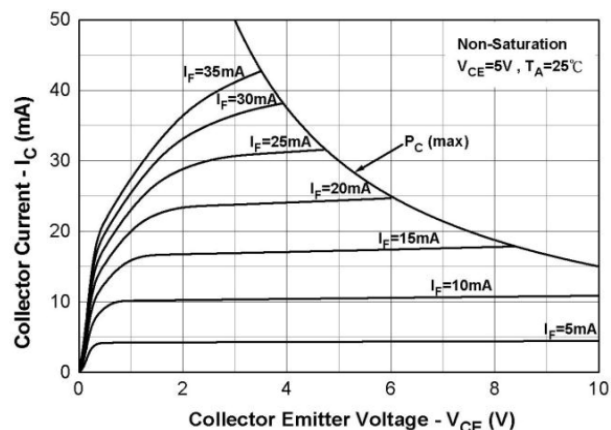


Fig 2 Collector Current vs Collector-Emitter Voltage (2)

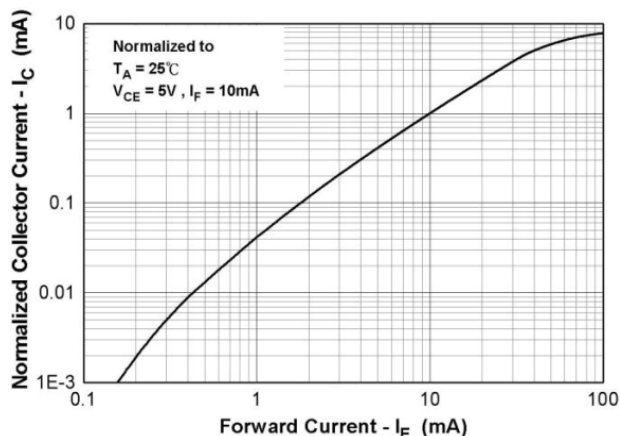


Fig 3 Normalized Collector Current vs Forward Current

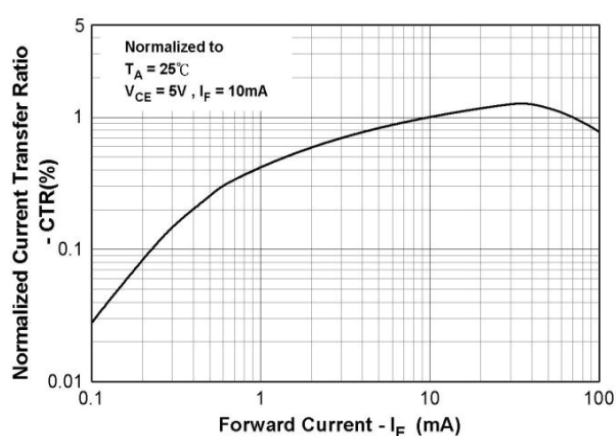


Fig 4 Normalized Current Transfer Ratio vs Forward Current

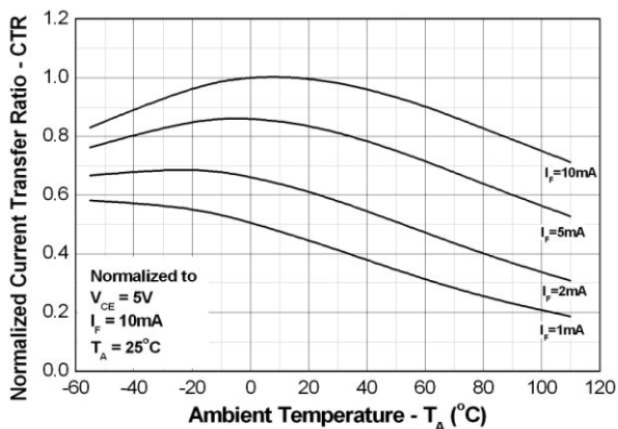


Fig 5 Normalized Current Transfer Ratio vs Ambient Temperature (1)

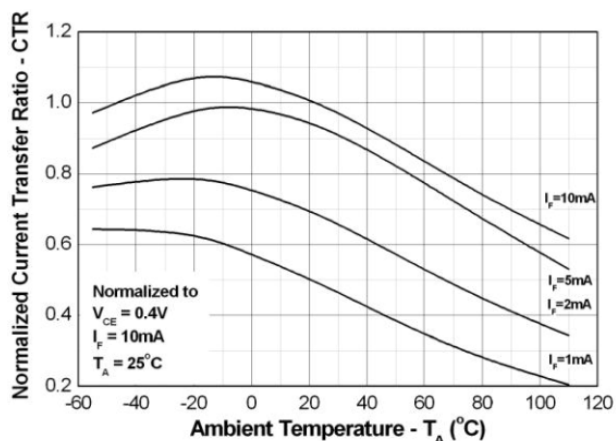


Fig 6 Normalized Current Transfer Ratio vs Ambient Temperature (2)



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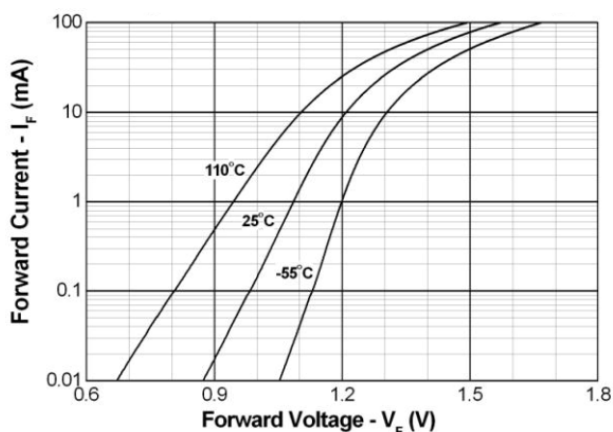


Fig 7 Forward Current vs Forward Voltage

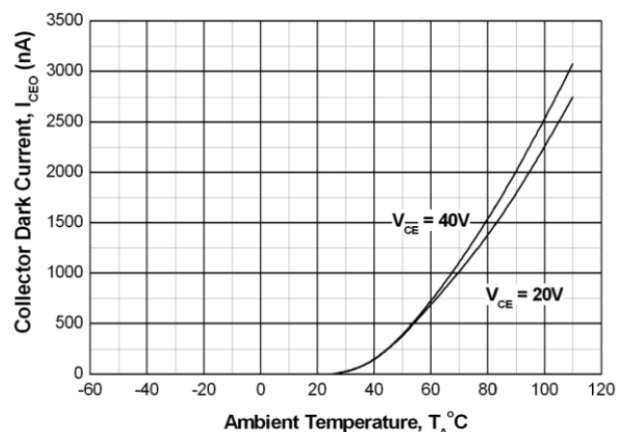


Fig 8 Collector Dark Current vs Ambient Temperature

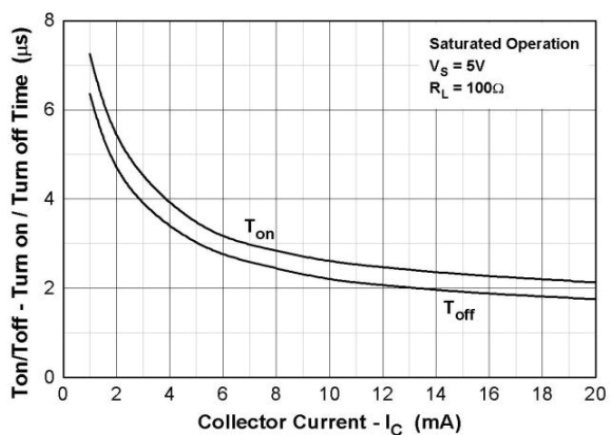


Fig 9 Turn on/off Time vs Collector Current

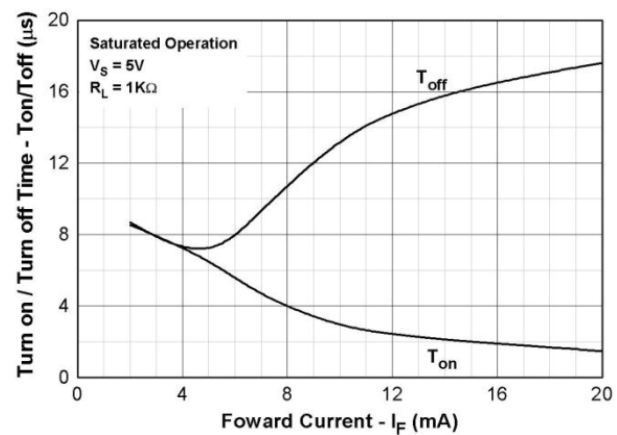
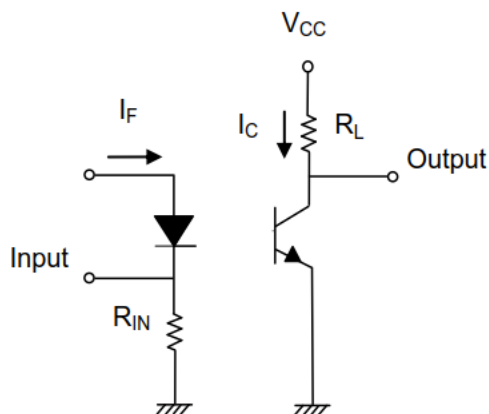


Fig 10 Turn on/off Time vs Forward Current



Switching Time Test Circuit and Waveforms

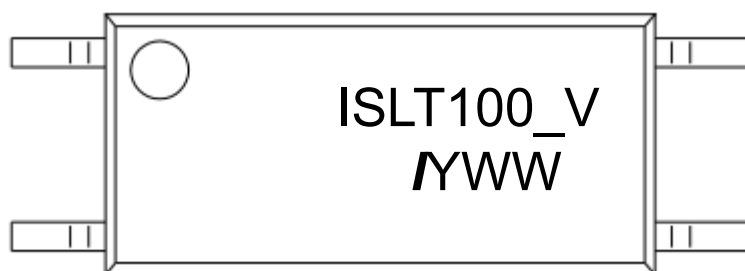
ISLT100xV

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

NB: Units marked ISLT1000V = ISLT1001V

DEVICE MARKING

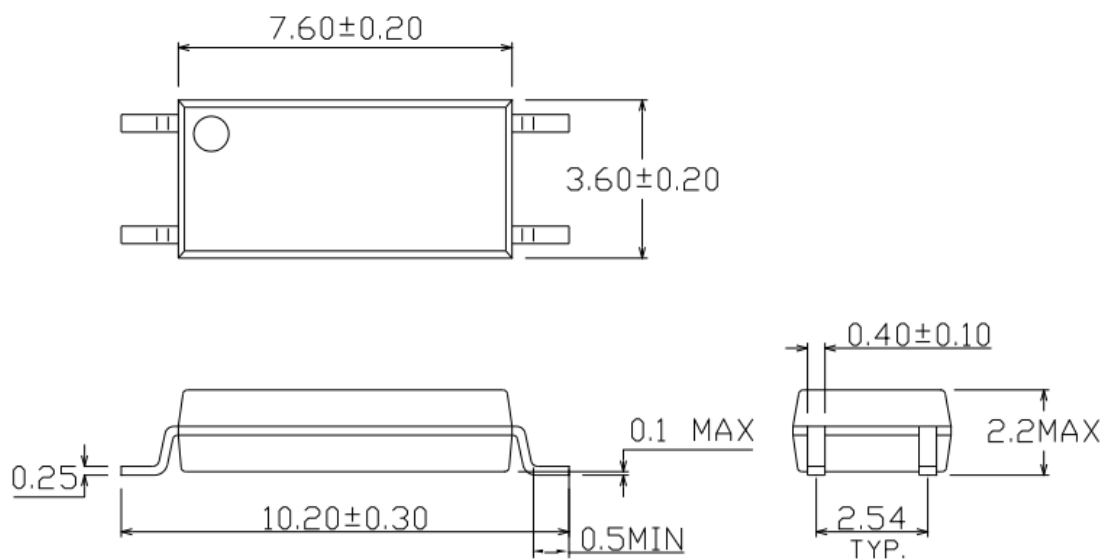


ISLT100_V denotes Device Part Number where “_” denotes the CTR Grade
 I denotes Isocom
 Y denotes 1 digit Year code
 WW denotes 2 digit Week code

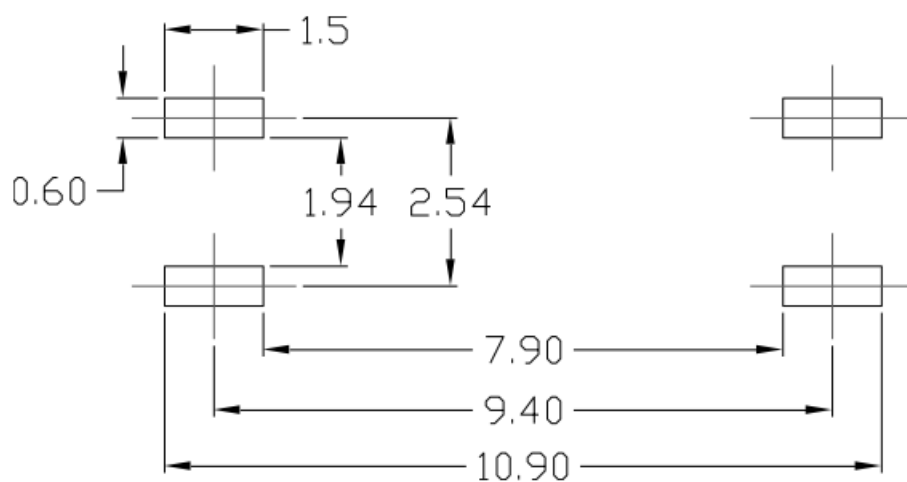


ISLT100xV

PACKAGE DIMENSIONS (mm)



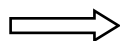
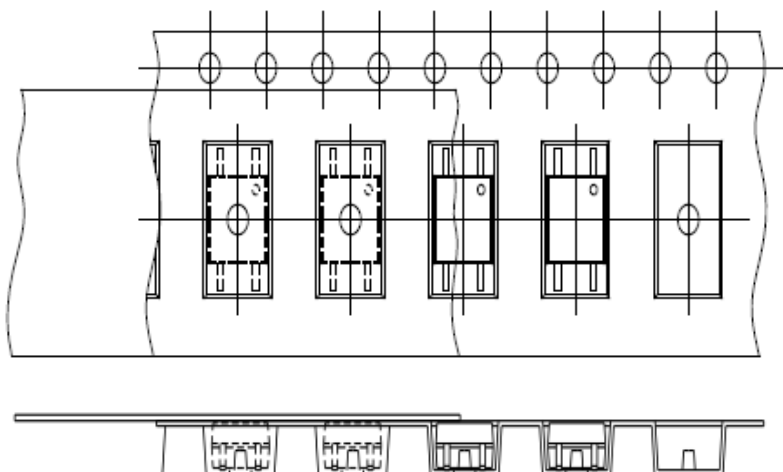
RECOMMENDED SOLDER PAD LAYOUT (mm)



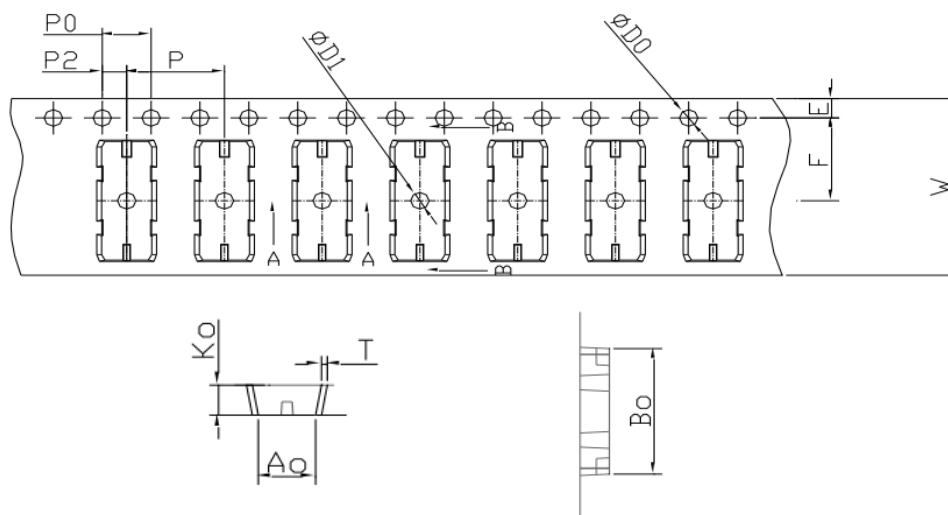


ISLT100xV

TAPE AND REEL PACKAGING



Direction of feed from reel



Dimension No.	A₀	B₀	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	K₀
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

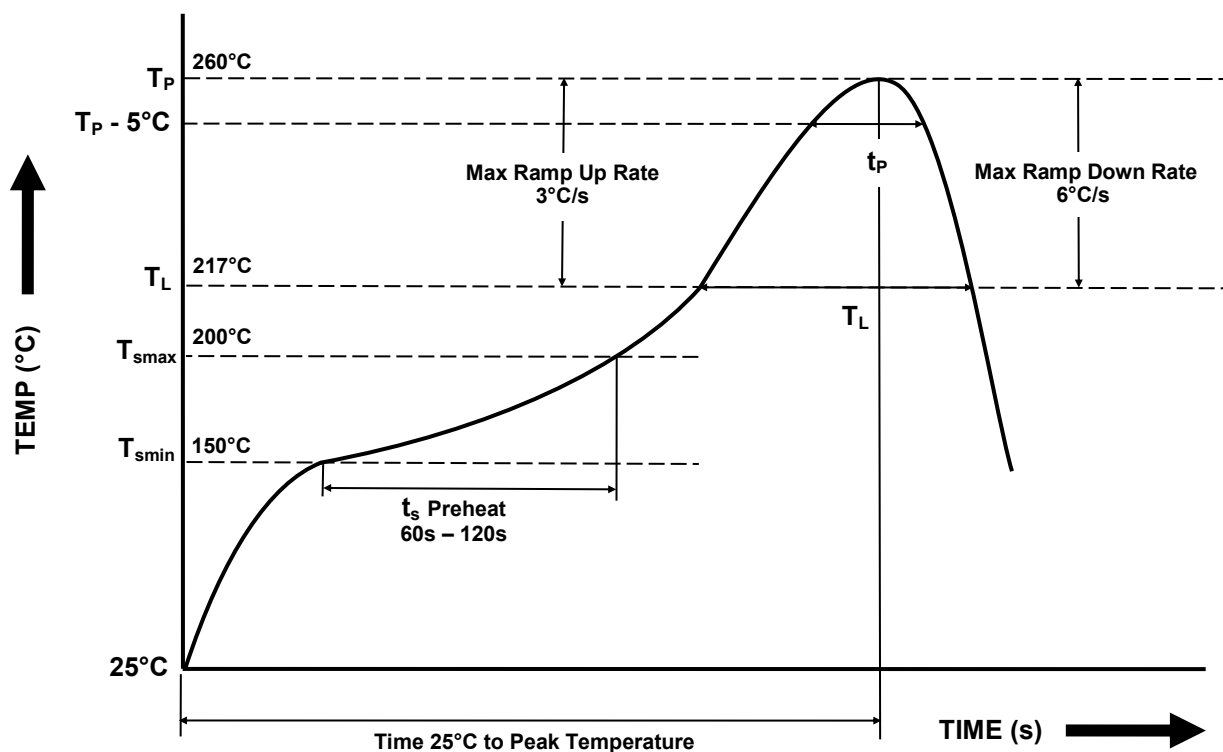


ISLT100xV

IR REFLOW SOLDERING TEMPERATURE PROFILE

One Time Reflow Soldering is Recommended.

Do not immerse device body in solder paste.



Profile Details	Conditions
Preheat <ul style="list-style-type: none">- Min Temperature (T_{SMIN})- Max Temperature (T_{SMAX})- Time T_{SMIN} to T_{SMAX} (t_s)	150°C 200°C 60s - 120s
Soldering Zone <ul style="list-style-type: none">- 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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