TLP620, TLP620-2, TLP620-4

DESCRIPTION

The TLP620, TLP620-2 and TLP620-4 series of optocouplers consist of two infrared light emitting diodes connected in reverse parallel optically coupled to an NPN silicon photo transistor in a space efficient Dual In Line Plastic Package.

FEATURES

- AC Isolation Voltage 5300V_{RMS}
- Wide Operating Temperature Range -30°C to +100°C
- Lead Free and RoHS Compliant
- UL File E91231 Package Code “EE”
- VDE Approval Certificate No. 40028086

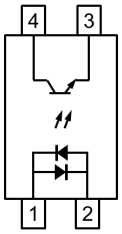
APPLICATIONS

- Computer Terminals
- Industrial System Controllers
- Measuring Instruments
- Signal Transmission between Systems of Different Potentials and Impedances

ORDER INFORMATION

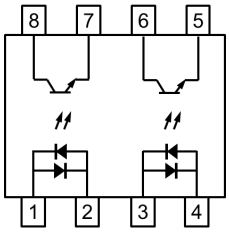
- Add X after PN for VDE Approval
- Add G after PN for 10mm lead spacing
- Add SM after PN for Surface Mount version
- Add SMT&R after PN for Surface Mount Tape & Reel version available for TLP620SM TLP620-2SM
- Consult Factory for Tape and Reel version of TLP620-4SM

TLP620



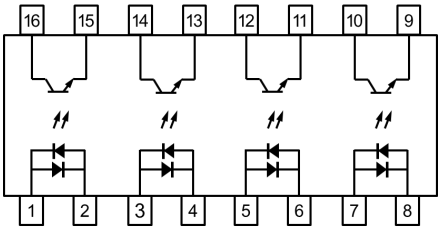
1	Anode/Cathode
2	Cathode/Anode
3	Emitter
4	Collector

TLP620-2



1, 3	Anode/Cathode
2, 4	Cathode/Anode
5, 7	Emitter
6, 8	Collector

TLP620-4



1, 3, 5, 7	Anode/Cathode
2, 4, 6, 8	Cathode/Anode
9, 11, 13, 15	Emitter
10, 12, 14, 16	Collector

ISOCOM COMPONENTS 2004 LTD
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e-mail : sales@isocom.com.hk

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	50mA
Power dissipation	70mW
Junction Temperature	125 °C

Output

Collector to Emitter Voltage BV_{CEO}	55V
Emitter to Collector Voltage BV_{ECO}	6V
Collector Current	50mA
Power Dissipation	150mW
Junction Temperature	125 °C

Total Package

Isolation Voltage	$5300V_{RMS}$
Total Power Dissipation	200mW
Operating Temperature	-30 to 100 °C
Storage Temperature	-55 to 125 °C
Lead Soldering Temperature (10s)	260°C

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ELECTRICAL CHARACTERISTICS (Ambient Temperature = 25°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = ±20mA		1.2	1.4	V
Terminal Capacitance	C_t	V = 0V, f = 1KHz		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector—Emitter breakdown Voltage	BV_{CEO}	I_C = 0.1mA, I_F = 0mA	55			V
Emitter—Collector breakdown Voltage	BV_{ECO}	I_E = 10µA, I_F = 0mA	6			V
Collector-Emitter Dark Current	I_{CEO}	V_{CE} = 20V, I_F = 0mA			100	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	I_F = ±5mA, V_{CE} = 5V Optional CTR Grades GR GB GB (I_F=±1mA, V_{CE}=0.4V)	50 100 100 30		600 300 600	%
Collector—Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = ±8mA, I_C = 2.4mA GB (I_F=±1mA, I_C=0.4V)			0.4 0.4	V
Output Rise Time	t_r	V_{CE} = 2V I_C = 2mA R_L = 100Ω		4	18	µs
Output Fall Time	t_f			3	18	

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Input to Output Isolation Voltage	V_{ISO}	R.H. = 40% to 60 % t = 1 min	5300			V_{RMS}
Input to Output Resistance	R_{ISO}	V_{IO} = 500VDC R.H. = 40% to 60 %	5×10^{10}	1×10^{11}		Ω

Device is considered a two terminal device : Input pins are shorted together and Output pins are shorted together.

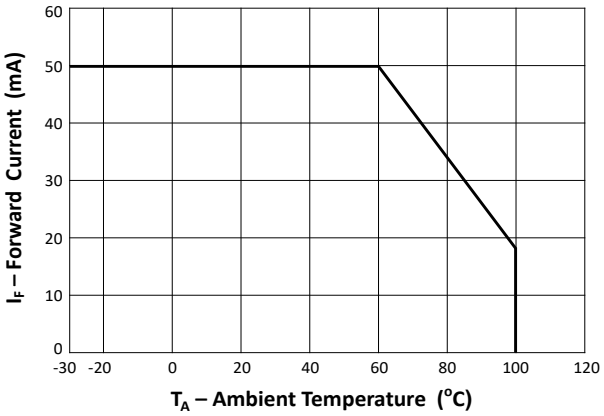


Fig 1 Forward Current vs Ambient Temperature

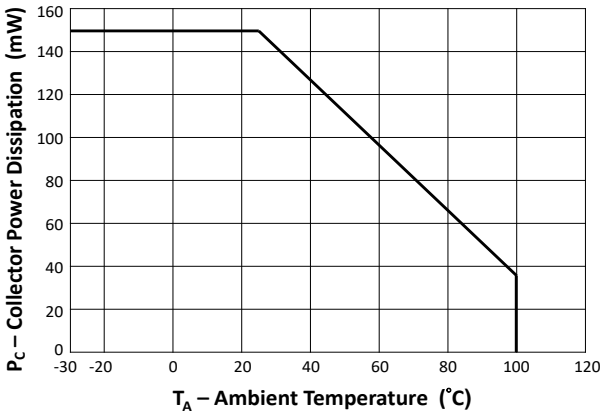


Fig 2 Collector Power Dissipation vs Ambient Temperature

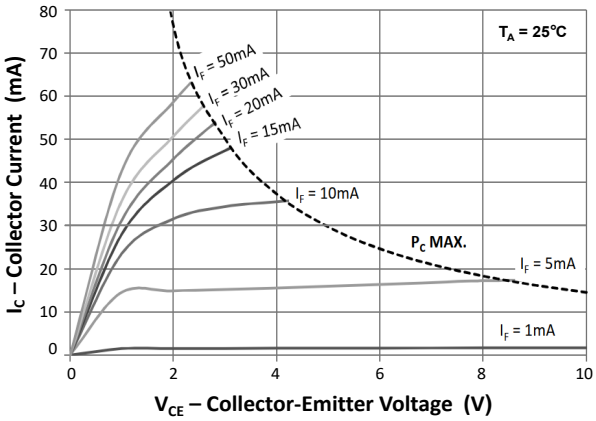


Fig 3 Collector Current vs Collector-Emitter Voltage (1)

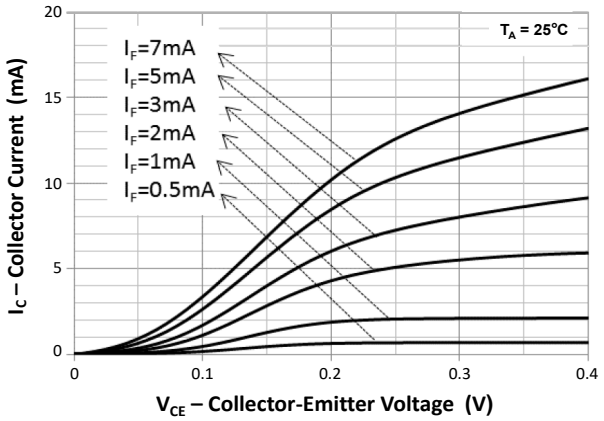


Fig 4 Collector Current vs Collector-Emitter Voltage (2)

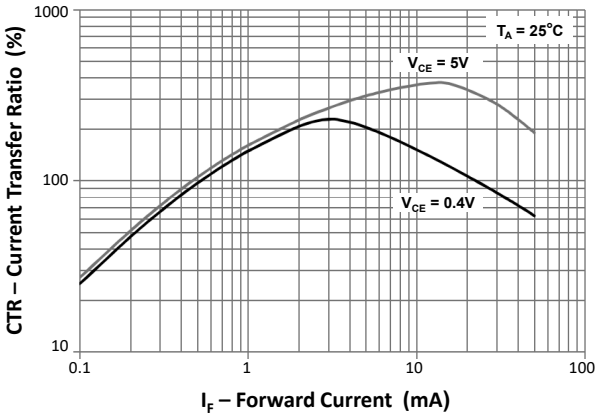


Fig 5 Current Transfer Ratio vs Forward Current

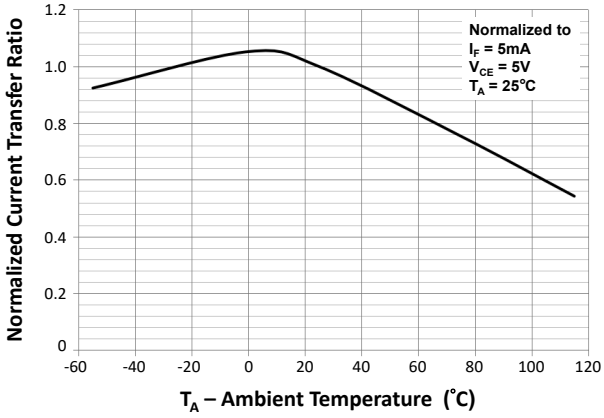


Fig 6 Normalized Current Transfer Ratio vs Ambient Temperature

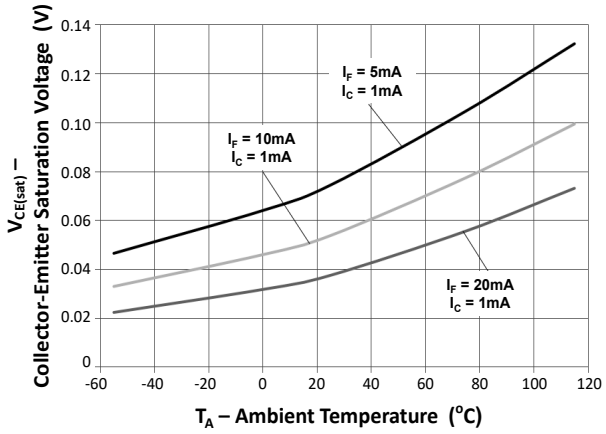


Fig 7 Collector-Emitter Saturation Voltage vs Ambient Temperature

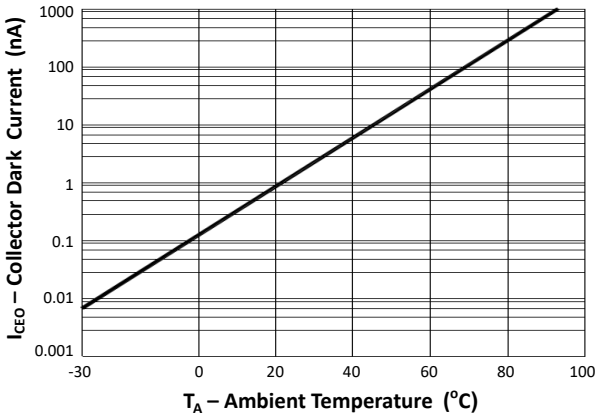


Fig 8 Collector Dark Current vs Ambient Temperature

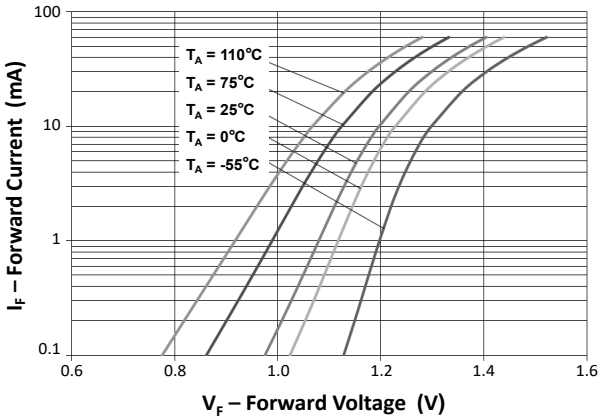


Fig 9 Forward Current vs Forward Voltage

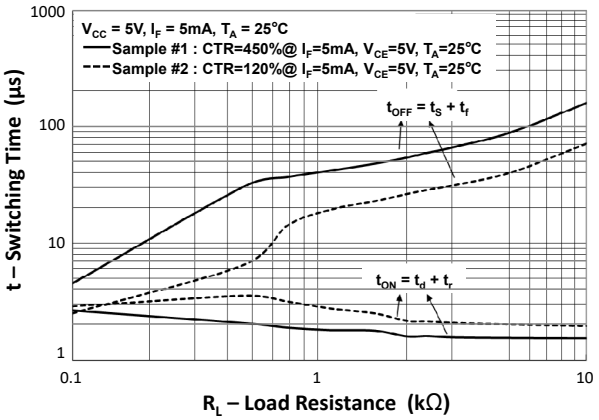


Fig 10 Switching Time vs Load Resistance

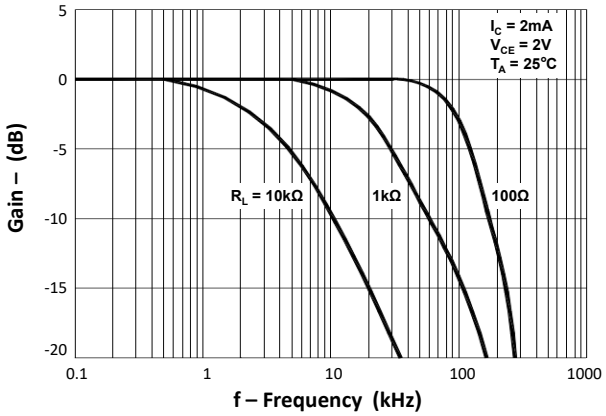
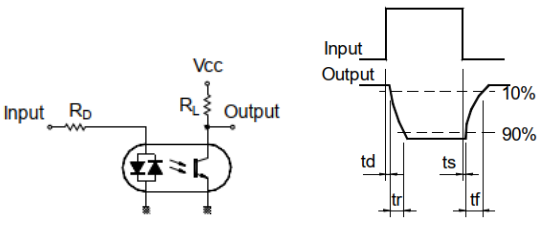
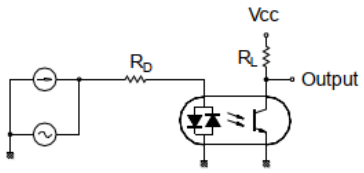


Fig 11 Frequency Response



Response Time Test Circuit



Frequency Response Test Circuit

ORDER INFORMATION

TLP620 (UL)			
After PN	**PN**	**Description**	**Packing quantity**
None	TLP620, TLP620GB, TLP620GR	Standard DIP4	100 pcs per tube
G	TLP620G, TLP620GGB TLP620GGR	10mm Lead Spacing	100 pcs per tube
SM	TLP620SM, TLP620GBSM TLP620GRSM	Surface Mount	100 pcs per tube
SMT&R	TLP620SMT&R, TLP620GBSMT&R TLP620GRSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

TLP620-2 (UL)			
After PN	**PN**	**Description**	**Packing quantity**
None	TLP620-2, TLP620-2GB TLP620-2GR	Standard DIP8	50 pcs per tube
G	TLP620-2G, TLP620-2GGB TLP620-2GGR	10mm Lead Spacing	50 pcs per tube
SM	TLP620-2SM, TLP620-2GBSM TLP620-2GRSM	Surface Mount	50 pcs per tube
SMT&R	TLP620-2SMT&R TLP620-2GBSMT&R TLP620-2GRSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

TLP620-4 (UL)			
After PN	**PN**	**Description**	**Packing quantity**
None	TLP620-4, TLP620-4GB TLP620-4GR	Standard DIP16	25 pcs per tube
G	TLP620-4G, TLP620-4GGB TLP620-4GGR	10mm Lead Spacing	25 pcs per tube
SM	TLP620-4SM, TLP620-4GBSM TLP620-4GRSM	Surface Mount	25 pcs per tube

Consult Factory for Tape and Reel version of TLP620-4SM

ORDER INFORMATION

TLP620 (UL and VDE)			
After PN	**PN**	**Description**	**Packing quantity**
None	TLP620X, TLP620XGB TLP620XGR	Standard DIP4	100 pcs per tube
G	TLP620XG, TLP620XGGB TLP620XGGR	10mm Lead Spacing	100 pcs per tube
SM	TLP620XSM, TLP620XGBSM TLP620XGRSM	Surface Mount	100 pcs per tube
SMT&R	TLP620XSMT&R, TLP620XGBSMT&R TLP620XGRSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

TLP620-2 (UL and VDE)			
After PN	**PN**	**Description**	**Packing quantity**
None	TLP620-2X, TLP620-2XGB TLP620-2XGR	Standard DIP8	50 pcs per tube
G	TLP620-2XG, TLP620-2XGGB TLP620-2XGGR	10mm Lead Spacing	50 pcs per tube
SM	TLP620-2XSM TLP620-2XGBSM TLP620-2XGRSM	Surface Mount	50 pcs per tube
SMT&R	TLP620-2XSMT&R TLP620-2XGBSMT&R TLP620-2XGRSMT&R	Surface Mount Tape & Reel	1000 pcs per reel

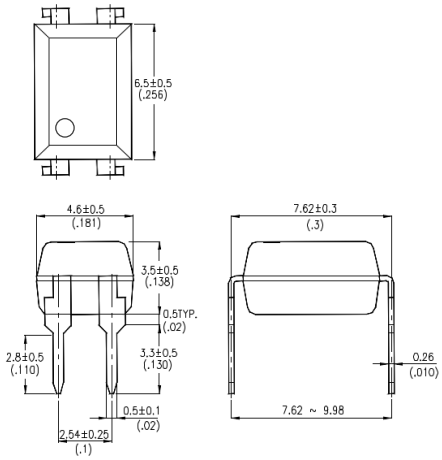
TLP620-4 (UL and VDE)			
After PN	**PN**	**Description**	**Packing quantity**
None	TLP620-4X, TLP620-4XGB TLP620-4XGR	Standard DIP16	25 pcs per tube
G	TLP620-4XG, TLP620-4XGGB TLP620-4XGGR	10mm Lead Spacing	25 pcs per tube
SM	TLP620-4XSM TLP620-4XGBSM TLP620-4XGRSM	Surface Mount	25 pcs per tube

Consult Factory for Tape and Reel version of TLP620-4XSM

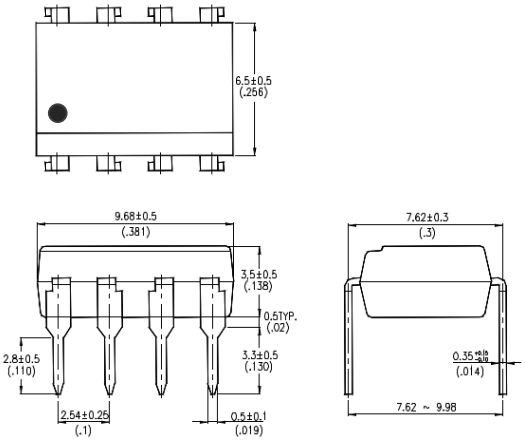
PACKAGE DIMENSIONS in mm (inch)

DIP

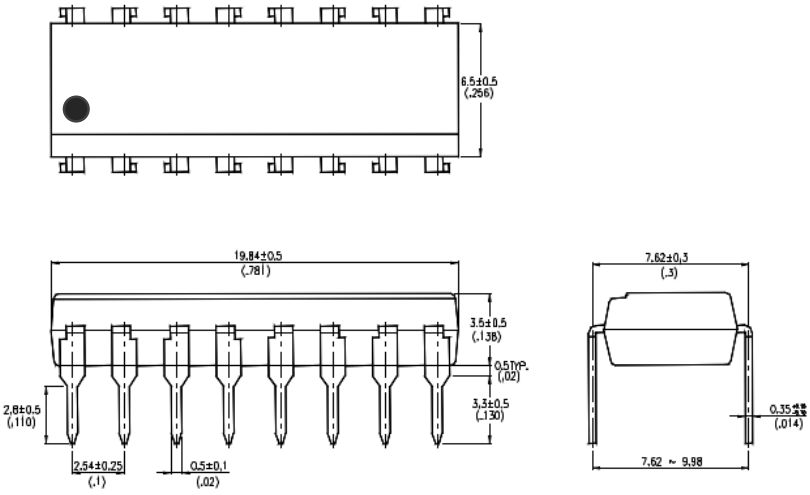
TLP620



TLP620-2



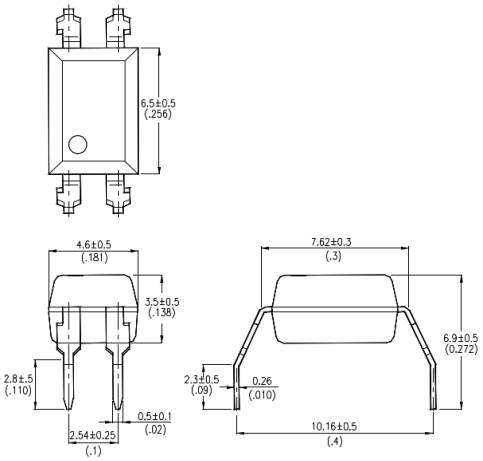
TLP620-4



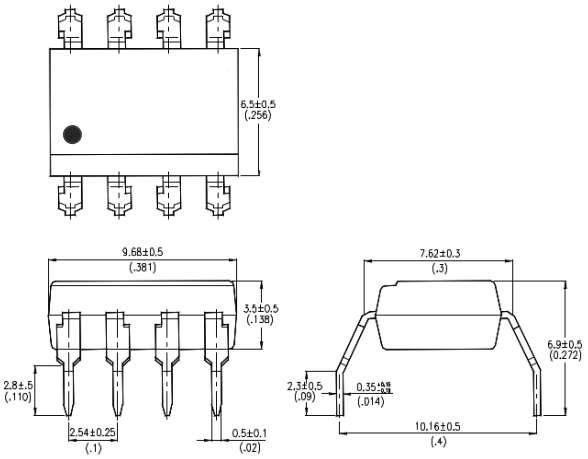
PACKAGE DIMENSIONS in mm (inch)

G Form

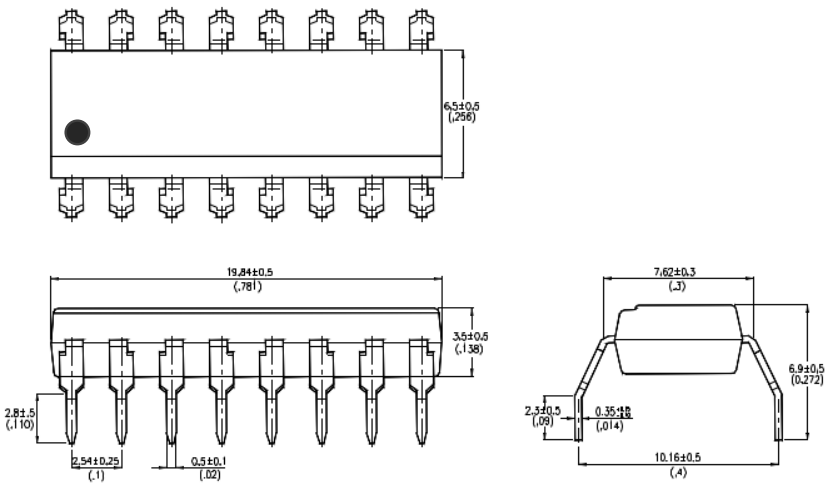
TLP620G



TLP620-2G



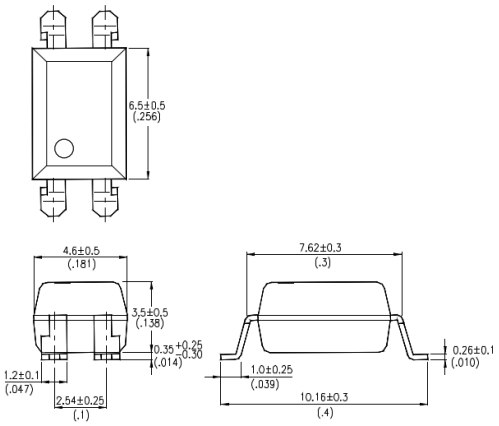
TLP620-4G



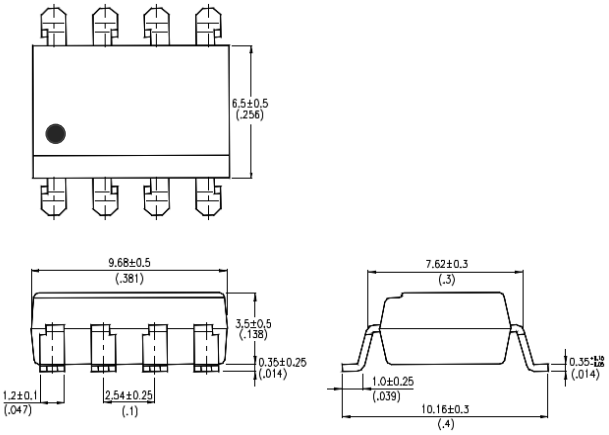
PACKAGE DIMENSIONS in mm (inch)

SMD

TLP620SM



TLP620-2SM



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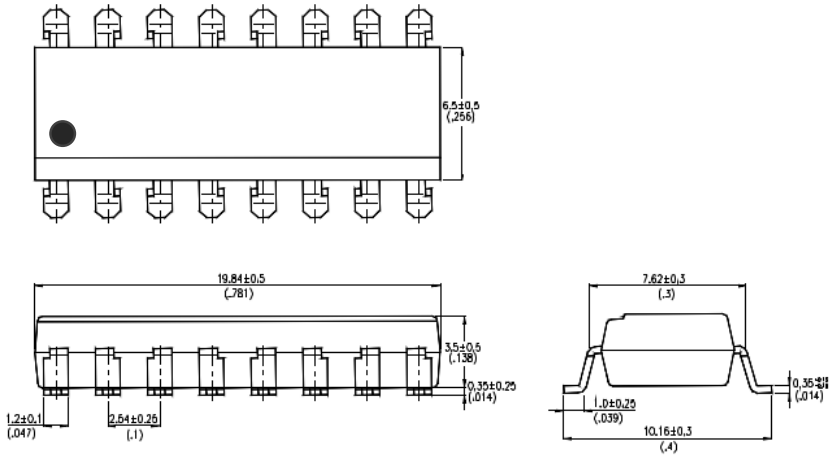
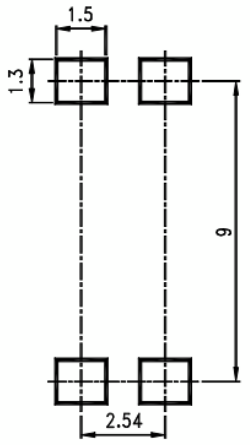
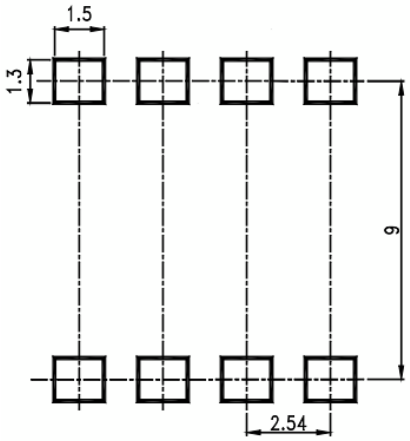


RECOMMENDED PAD LAYOUT FOR SMD (mm)

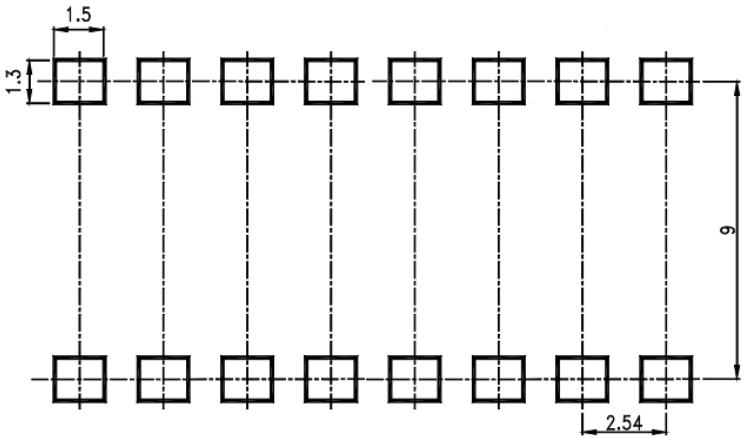
TLP620SM



TLP620-2SM

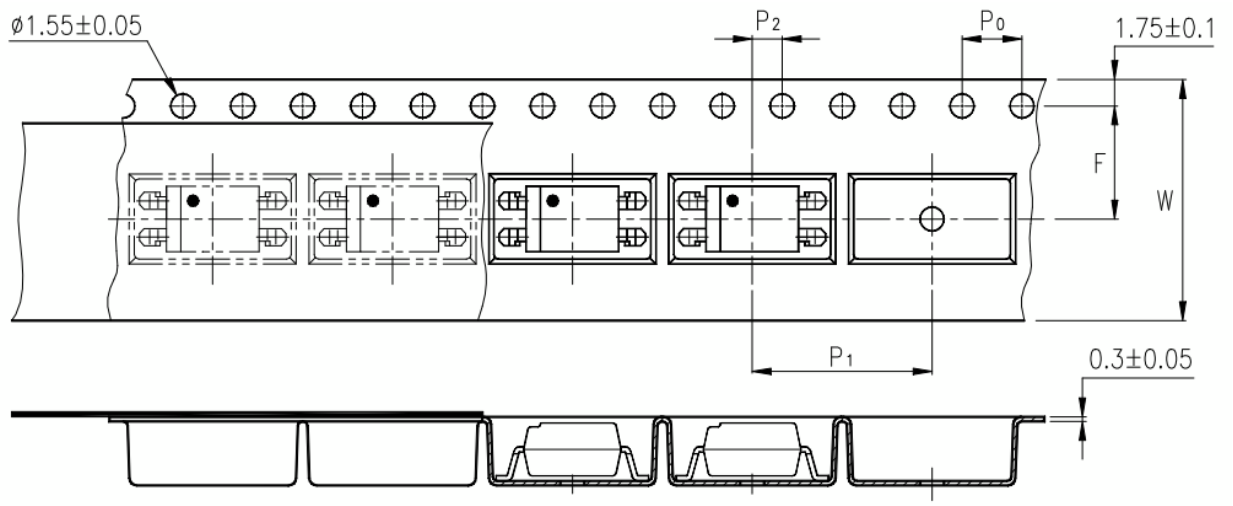


TLP620-4SM

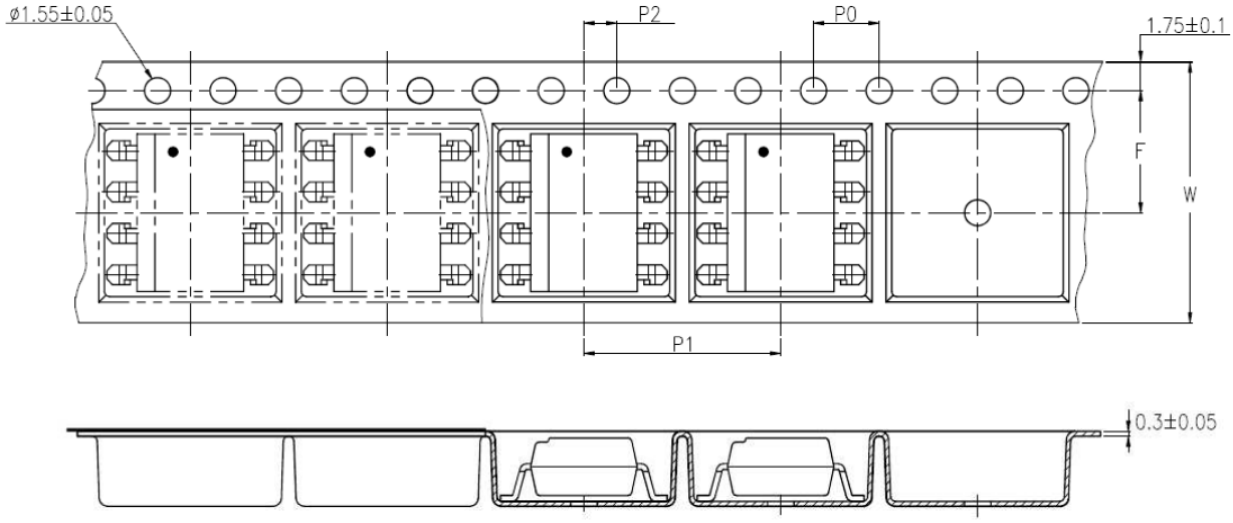


TAPE AND REEL PACKAGING

TLP620SMT&R

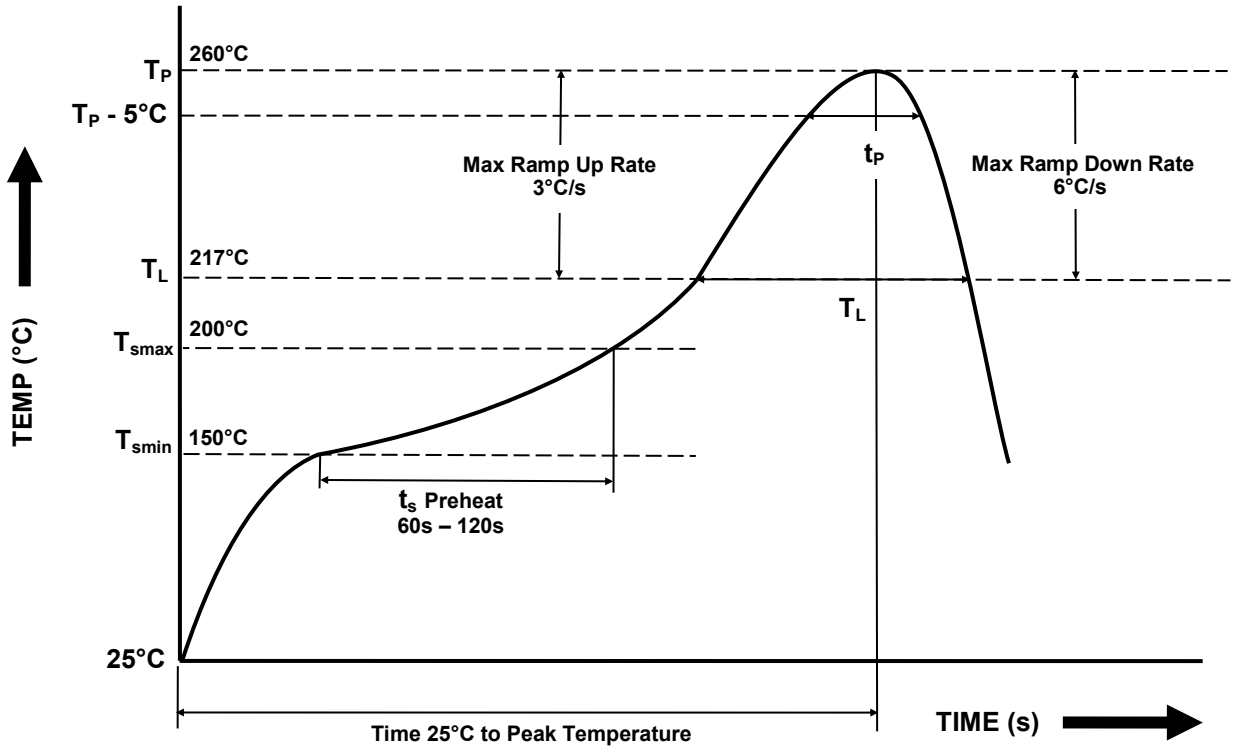


TLP620-2SMT&R



Description	Symbol	Dimension mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P_0	4 ± 0.1 (0.15)
Distance of Compartment to Sprocket Holes	F	7.5 ± 0.1 (0.295)
	P_2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P_1	12 ± 0.1 (0.472)

IR REFLOW SOLDERING TEMPERATURE PROFILE FOR SMD
(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) - Time at Peak Temperature - 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 10s max 217°C 30s max 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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In developing your designs, please ensure that Isocom Components products are used within specified operating ranges as set forth in the most recent Isocom Components products specifications.

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The products described in this document are subject to the foreign exchange and foreign trade laws.

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