

Description

The µClamp®3601P is a high-surge transient voltage suppressor (TVS) optimized for protection of sensitive digital sensors used in proximity switches and industrial control applications. The µClamp3601P protects the components from over-voltages caused by **Electro-Static Discharge (ESD)**, **Electrical Fast Transients (EFT)**, and **Tertiary Lightning**.

The µClamp3601P features a working voltage of 33 volts with a minimum breakdown voltage of 34 volts. They are rated to handle a continuous forward current of up to 260mA with a low forward voltage drop of less than 1 volt (IF = 200mA). They are designed with high surge capability (2 Amps at $t_p=1.2/50\mu s$) and a low clamping voltage of <60V.

The µClamp3601P is in an 2-pin SLP1006P2 package. It measures 1.0 x 0.6 x 0.5mm. The leads are spaced at a pitch of 0.65mm and are finished with lead-free NiPdAu. Each device will protect one line operating at 33 volts. The small size and unique features of the µClamp3601P make it ideal for protection of DC high-side proximity switches in industrial and automotive applications.

The µClamp3601P is qualified to AEC-Q100 Grade1.

Features

- ◆ Transient protection for data and power lines to
IEC 61000-4-2 (ESD) $\pm 20kV$ (air), $\pm 15kV$ (contact)
IEC 61000-4-4 (EFT) 40A (5/50ns)
IEC 61000-4-5 (Lightning) 2A (1.2/50 μs)
- ◆ Ultra-small package
- ◆ Bidirectionally protects one data line
- ◆ Low clamping voltage
- ◆ Working voltage: 33V
- ◆ Low leakage current
- ◆ Solid-state silicon-avalanche technology
- ◆ Qualified to AEC-Q100 Grade1

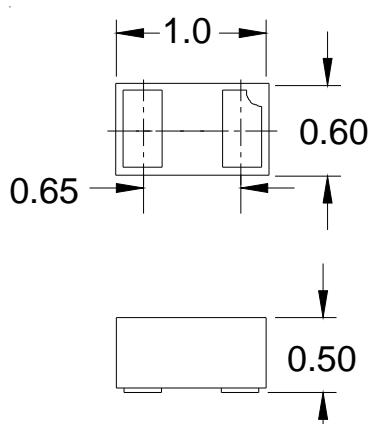
Mechanical Characteristics

- ◆ SLP1006P2 package
- ◆ Pb-Free, Halogen Free, RoHS/WEEE Compliant
- ◆ Nominal Dimensions: 1.0 x 0.6 x 0.5 mm
- ◆ Lead Finish: NiPdAu
- ◆ Molding compound flammability rating: UL 94V-0
- ◆ Marking: Marking code, cathode band
- ◆ Packaging: Tape and Reel

Applications

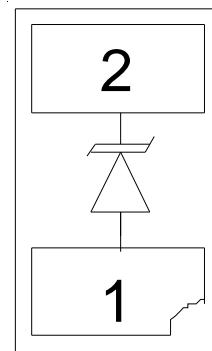
- ◆ Two, Three, and Four Wire DC High-Side Proximity Switches
- ◆ Digital Sensor Input Protection
- ◆ Industrial Controls
- ◆ 24V - 33V DC Supply Protection
- ◆ Automotive Applications

Dimensions



Maximum Dimensions (mm)

Schematic & Pin Configuration



SLP1006P2 (Bottom View)

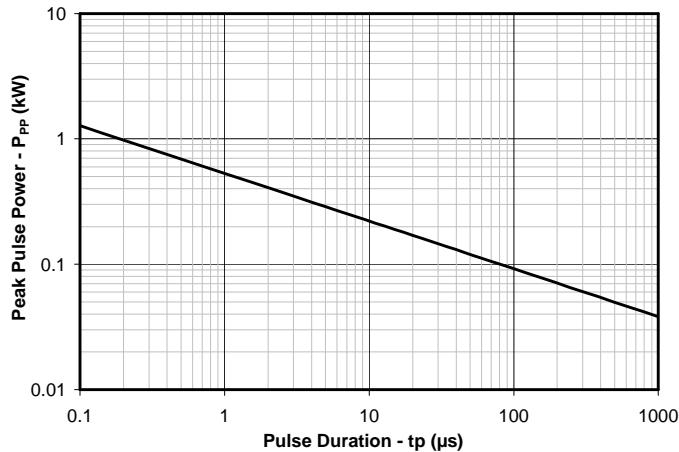
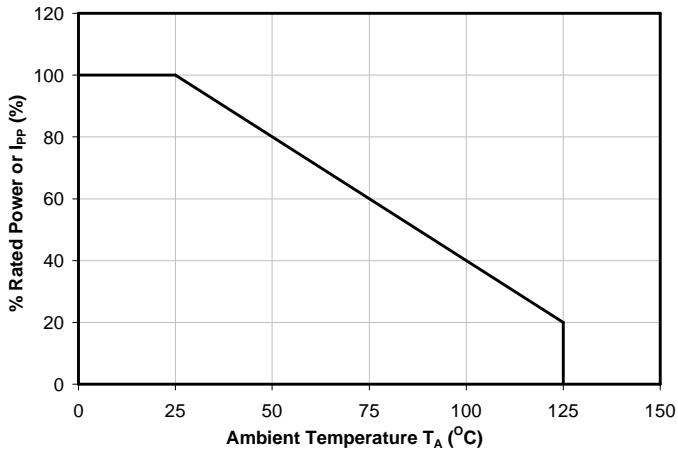
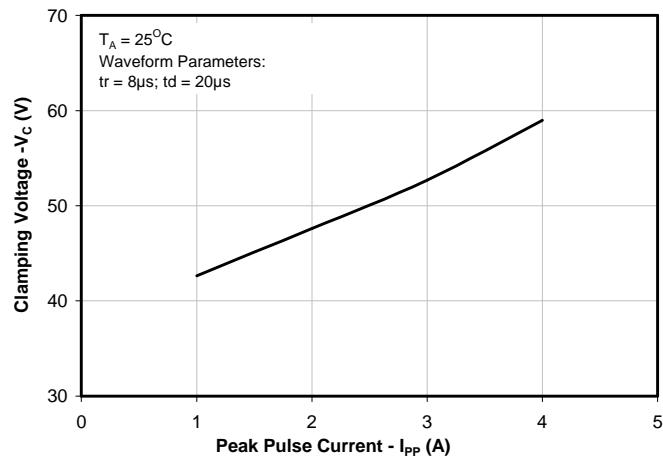
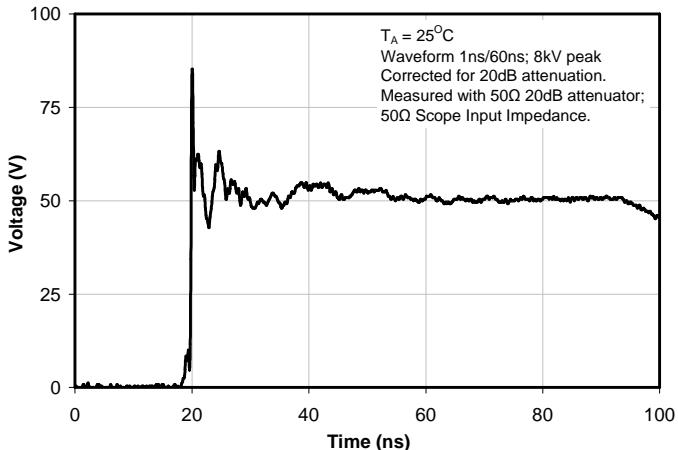
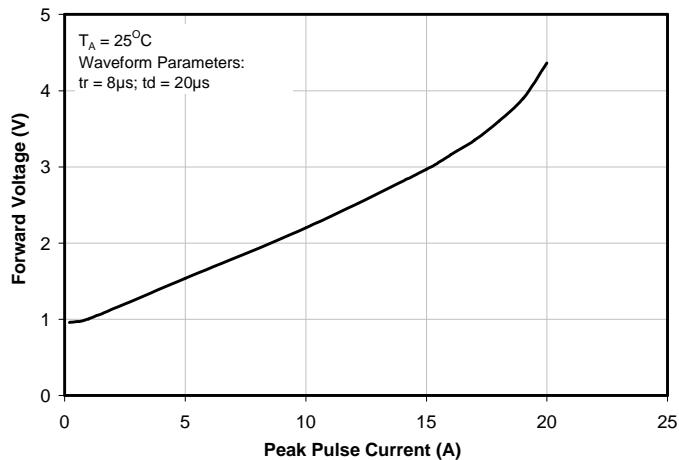
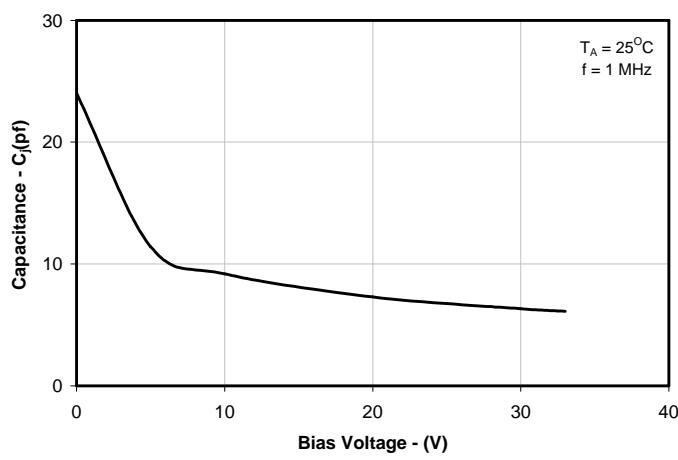
PROTECTION PRODUCTS

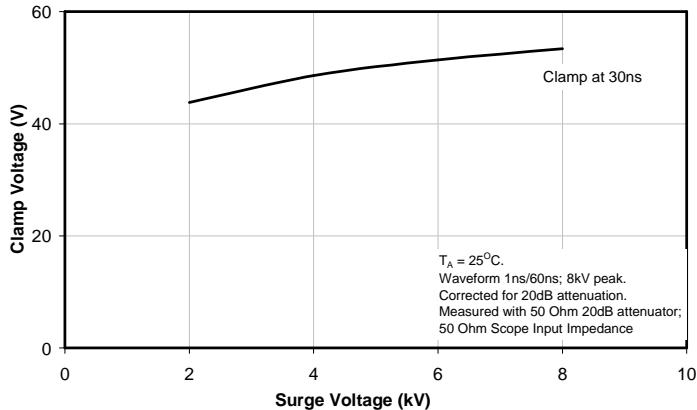
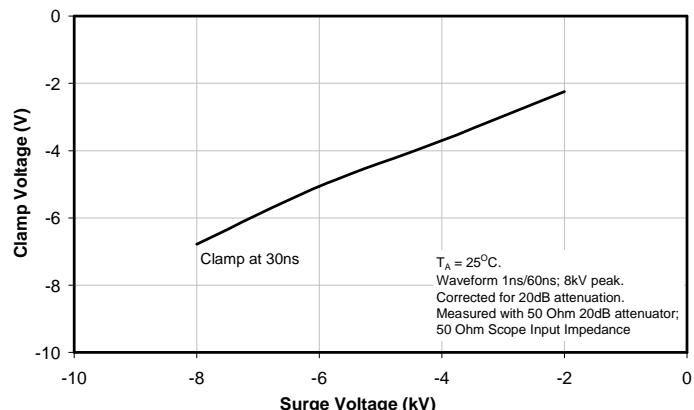
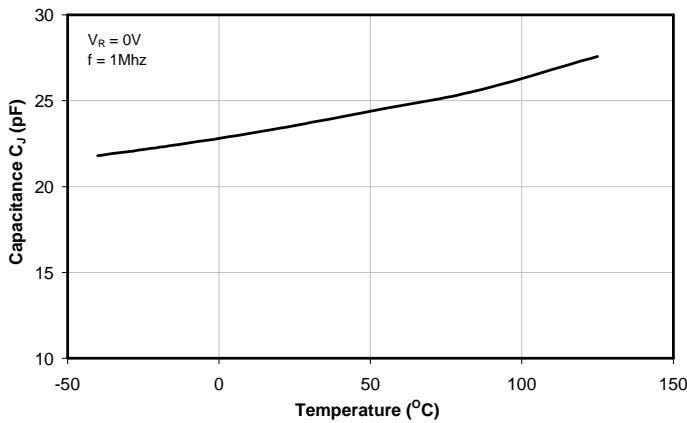
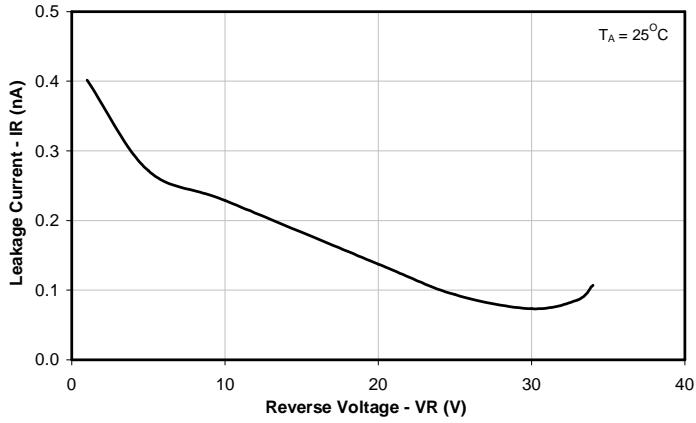
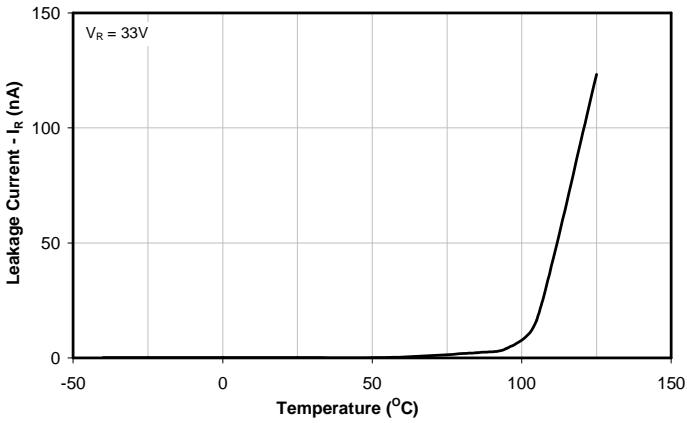
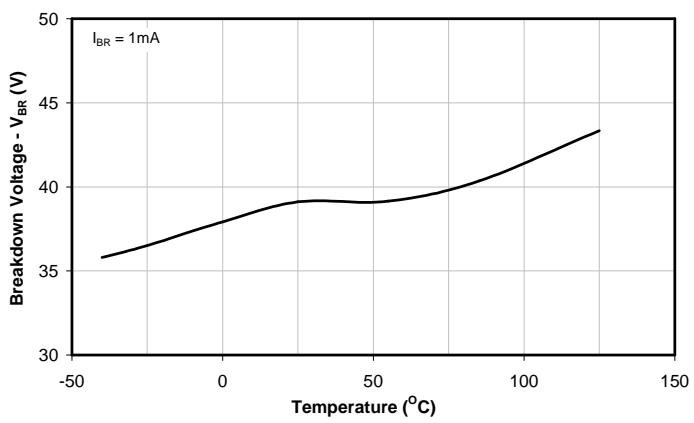
Absolute Maximum Ratings

Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu s$)	P_{pk}	170	Watts
Peak Pulse Power ($t_p = 1.2/50\mu s$)	P_{pk}	125	Watts
Peak Pulse Current ($t_p = 1.2/50\mu s$)	I_{pp}	2	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	+/- 20 +/- 15	kV
Continuous Forward Current	I_{FMAX}	260	mA
Operating Temperature	T_J	-40 to +125	°C
Storage Temperature	T_{STG}	-55 to +150	°C

Electrical Characteristics (T=25°C unless otherwise specified)

Parameter	Symbol	Conditions		Minimum	Typical	Maximum	Units
Reverse Stand-Off Voltage	V_{RWM}					33	V
Reverse Breakdown Voltage	V_{BR}	$I_t = 1mA$	T=25 °C	36			V
			T=-40 °C to 125 °C	34		45	
Reverse Leakage Current	I_R	$V_{RWM} = 33V$	T=25 °C			1	µA
			T=125 °C			5	
Forward Voltage	V_F	$I_F = 200mA$				1	V
Clamping Voltage	V_c	$I_{pp} = 2A, t_p = 1.2/50\mu s$				60	V
Junction Capacitance	C_j	$V_R = 0V, f = 1MHz$	T=25 °C			25	pF
			T=-40 °C to 125 °C			35	

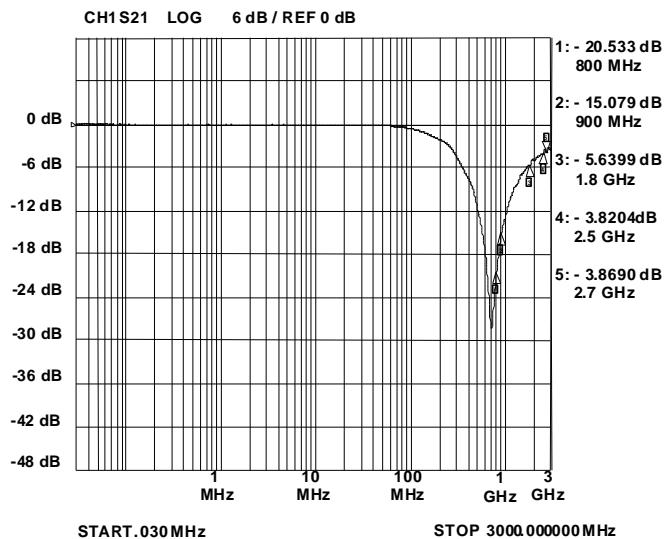
PROTECTION PRODUCTS
Typical Characteristics
Non-Repetitive Peak Pulse Power vs. Pulse Time

Power Derating Curve

Clamping Voltage vs. Peak Pulse Current

**ESD Clamping
(8kV Contact per IEC 61000-4-2)**

Forward Voltage vs. Forward Current

Junction Capacitance vs. Reverse Voltage


PROTECTION PRODUCTS
Typical Characteristics
Typical Positive Clamping Voltage vs Surge Voltage

Typical Negative Clamping Voltage vs Surge Voltage

Typical Junction Capacitance vs Temperature

Typical Leakage Current vs Reverse Voltage

Typical Leakage Current vs Temperature

Typical Breakdown Voltage vs Temperature


PROTECTION PRODUCTS

Typical Characteristics

Typical Insertion Loss



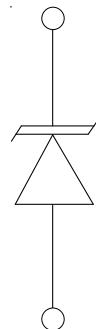
Applications Information

Device Connection for Protection of Two, Three, and Four Wire Proximity Switches

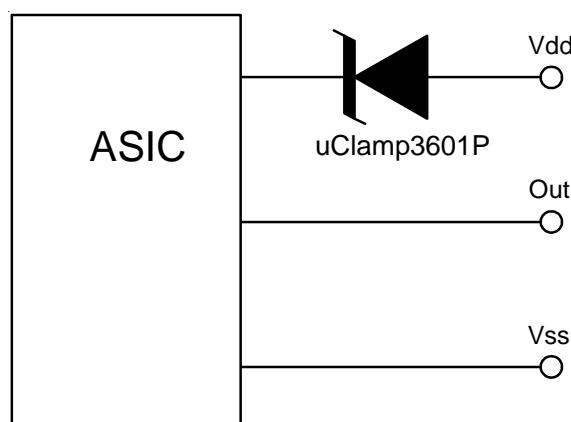
Digital sensors help to bridge the gap between the physical world and the digital world in applications such as computer controlled factory automation. In such environments, transient voltages can easily disrupt or damage sensitive sensor inputs. The μ Clamp3601P provides transient voltage protection for the digital sensors to ESD, lightning, and CDE events.

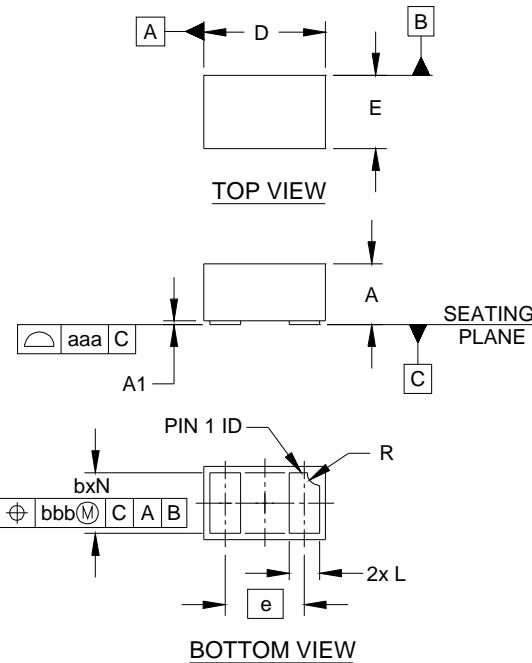
The μ Clamp3601P is designed to meet the high surge capability and low clamping voltage needed to protect the ASIC and control logic used in proximity switches. The μ Clamp3601P provides protection for the power and I/O lines.

Device Schematic & Pin Configuration



Application Example

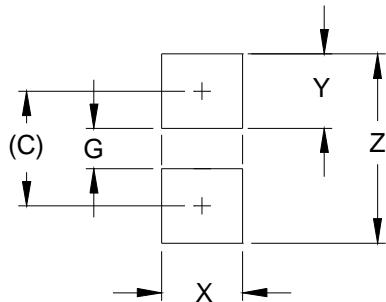


PROTECTION PRODUCTS
Outline Drawing - SLP1006P2


DIMENSIONS						
DIM	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.016	.020	.022	0.40	0.50	0.55
A1	.000	.001	.002	0.00	0.03	0.05
b	.018	.020	.022	0.45	0.50	0.55
D	.035	.039	.043	0.90	1.00	1.10
E	.020	.024	.028	0.50	0.60	0.70
e	.026 BSC			0.65 BSC		
L	.008	.010	.012	0.20	0.25	0.30
R	.002	.004	.006	0.05	0.10	0.15
N	2			2		
aaa	.003			0.08		
bbb	.004			0.10		

NOTES:

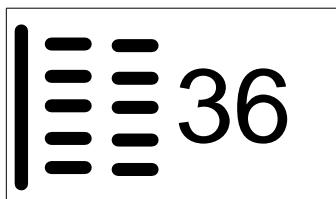
1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).

Land Pattern - SLP1006P2


DIMENSIONS		
DIM	INCHES	MILLIMETERS
C	(.033)	(0.85)
G	.012	0.30
X	.024	0.60
Y	.022	0.55
Z	.055	1.40

NOTES:

1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).
2. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY.
CONSULT YOUR MANUFACTURING GROUP TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.

PROTECTION PRODUCTS
Marking

Ordering Information

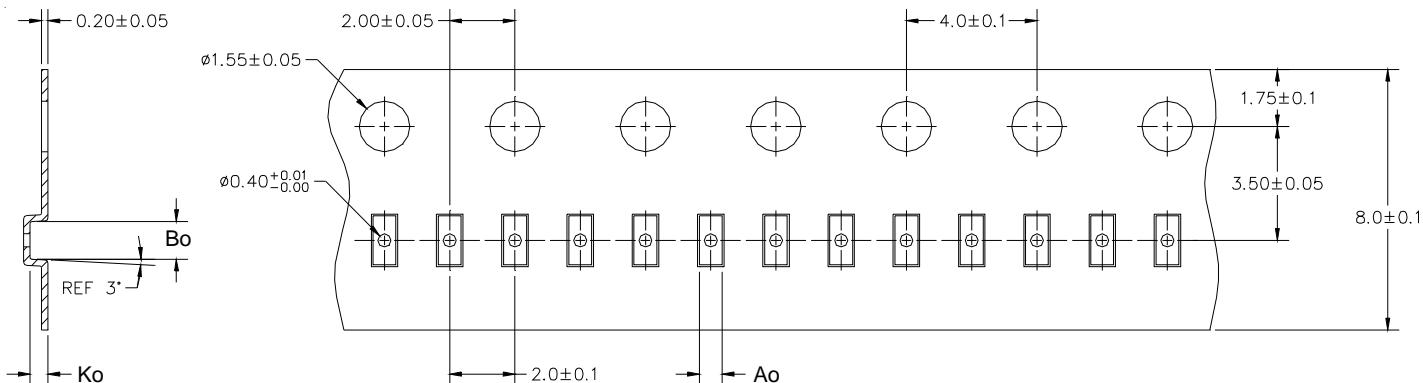
Part Number	Qty per Reel	Reel Size
uClamp3601P.TNT	10,000	7 Inch

Notes:

- 1) MicroClamp, uClamp and µClamp are trademarks of Semtech Corporation

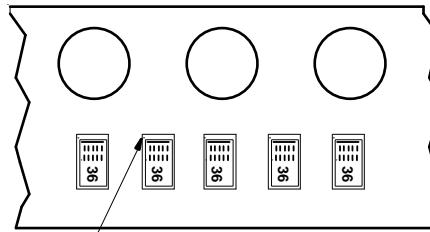
Notes:

- 1) Marking will also include line matrix date code

Tape and Reel Specification

Device Orientation in Tape

A0	B0	K0
0.69 +/- 0.10 mm	1.19 +/- 0.10 mm	0.66 +/- 0.10 mm

Note: All dimensions in mm unless otherwise specified



Cathode Band Location
(Towards Sprocket Holes)

Contact Information

Semtech Corporation
Protection Products Division
200 Flynn Rd., Camarillo, CA 93012
Phone: (805)498-2111 FAX (805)498-3804

ООО "ЛайфЭлектроникс"

"LifeElectronics" LLC

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибуторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибуторских договоров

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помочь разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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