

ESD Protection device

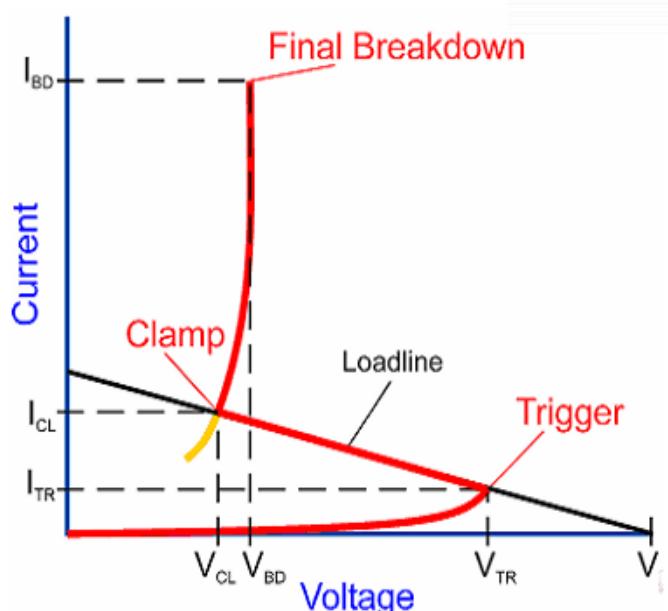
Description:

The TQP200002 ESD protection device is fabricated in GaAs MESFET technology and has been especially developed for high frequency applications. It delivers bi-directional protection with very low leakage currents and extremely low capacitance. It is ideally suited for cellular handsets, cordless phone, and broadband applications like CATV set top boxes and LNBs.

Features:

- Snap-Back ESD protection
- High current capability
- Low clamp voltages 15 or 30 V
- Low trigger voltages 18, 25 or 41 V
- Low capacitance 0.22 pF
- Thin Small Leadless Package ($A = 1.8\text{mm}^2$)

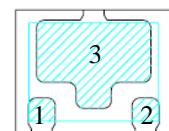
Snap-Back characteristics:



Applications:

- ESD protection
- Surge protection

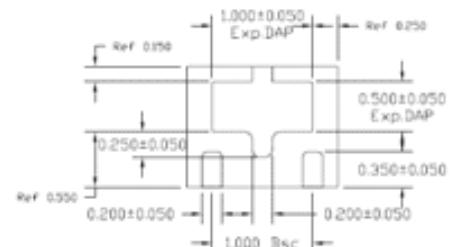
Package Outline:



TOP VIEW

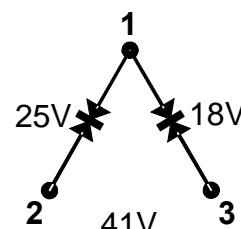
 Denote plating area

Top view



Bottom view

Schematic Symbol:

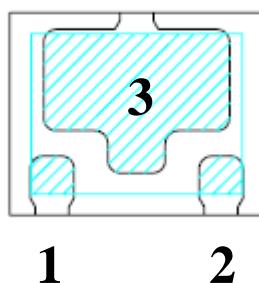


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Absolute Maximum Ratings

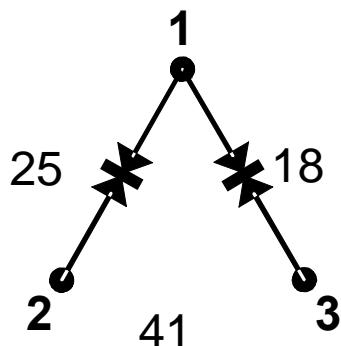
Parameter	Symbol	Values	Unit
Peak pulse power	$P_{1,2}$	tbd	W
Peak pulse current	$I_{1,2}$	10	A
Peak pulse power	$P_{1,3}$	tbd	W
Peak pulse current	$I_{1,3}$	10	A
Peak pulse power	$P_{2,3}$	tbd	W
Peak pulse current	$I_{2,3}$	10	A

Typical Electrical Characteristics TQP200002
 $T_A = 25 \text{ }^\circ\text{C}$

Parameter	Symbol	Limit Values			Unit
		min	typ	max	
Trigger Voltage	V_1	13	18	23	V
Clamp Voltage	V_{cl1}	10	15	20	V
Leakage current (1V)	$I_{leak,1}$		20		nA
Leakage current (15V)	$I_{leak,1}$		500		nA
Capacitance (1V, 10MHz)	C_1		290		fF
Trigger Voltage	V_2	20	25	30	V
Clamp Voltage	V_{cl2}	10	15	20	V
Leakage current (1V)	$I_{leak,2}$		20		nA
Leakage current (15V)	$I_{leak,2}$		500		nA
Capacitance (1V, 10MHz)	C_2		290		fF
Trigger Voltage	V_3	36	41	46	V
Clamp Voltage	V_{cl3}	20	30	40	V
Leakage current (1V)	$I_{leak,3}$		15		nA
Leakage current (15V)	$I_{leak,3}$		300		nA
Capacitance (1V, 10MHz)	C_3		220		fF

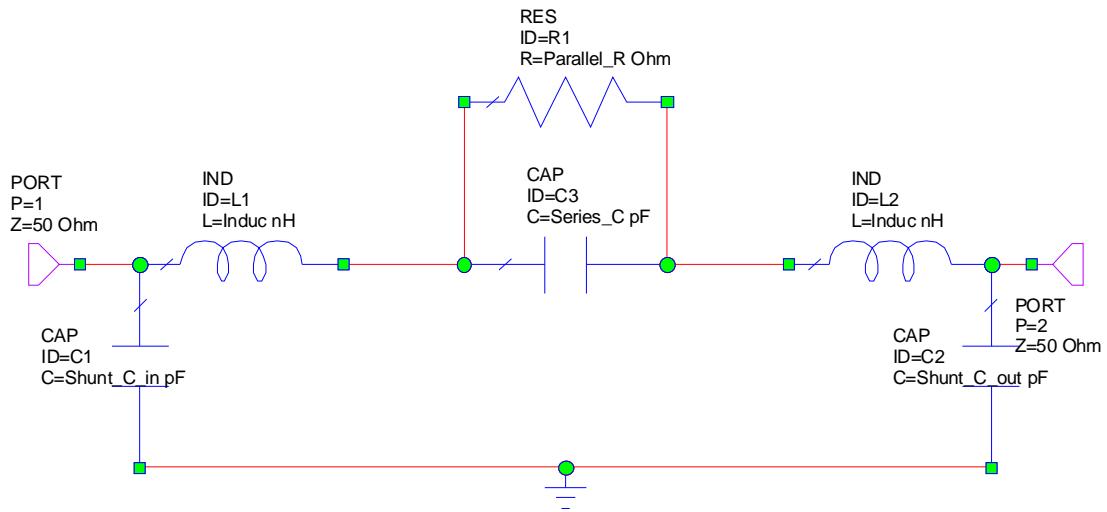
ESD Protection device**Pinning****Figure 1** TQP200002 Outline: T/SLP-3 Package

Pad	Symbol	Function
1	V_1	Measured between Input 1 - Input 3
2	V_2	Measured between Input 1 - Input 2
3	V_3	Measured between Input 2 - Input 3

Functional Diagram**Figure 2** TQP200002 Functional Diagram

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Small Signal Model: Pin 2 to Pin 3

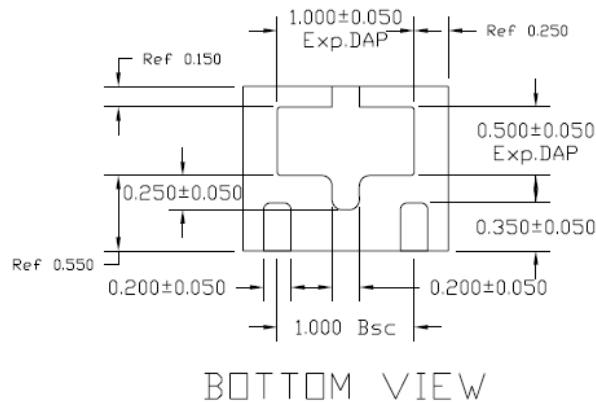
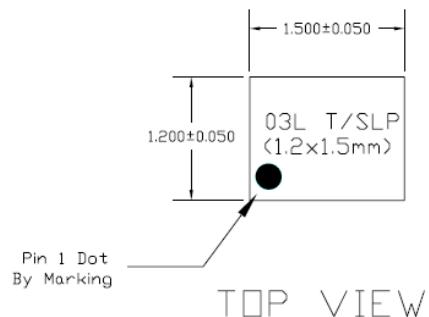


Pin 2 to Pin 3 Small Signal Element	Value	Units
Series_C	0.22	pF
Shunt_C_In**	0.08	pF
Shunt_C_Out**	0.01	pF
Series_Inductance	0.2	nH
Parallel Resistance	230	MΩ

**** Note:** Values of the shunt capacitance are dependent upon board material and the board pad sizes, and will be layout dependent.

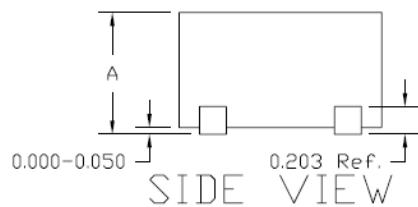
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Package Outline of T/SLP-3 Package



NOTE:
1) TSLP AND SLP SHARE THE SAME EXPOSE OUTLINE
BUT WITH DIFFERENT THICKNESS:

A	TSLP		SLP	
	MAX.	0.800	MIN.	0.900
	NOM.	0.750	MIN.	0.850
MIN.	0.700		0.800	



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Part Marking:



WHITE INK OR LASER MARK.

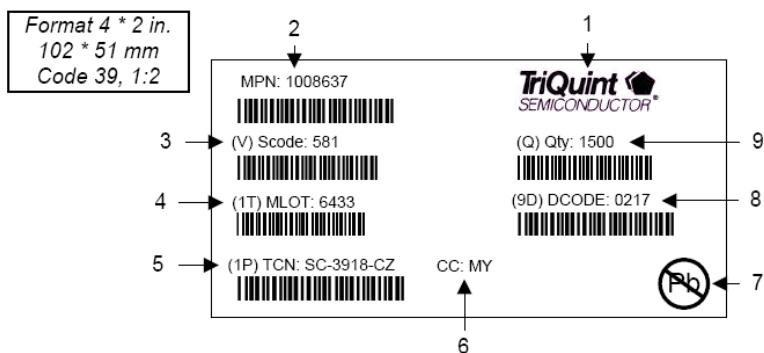
Line 1: XX = Last 2 digits of TriQuint assembly lot number.

Product Label: (example)

TriQuint Standard Customer Label (No CPN)

NO.	DESIGNATION	Data Identifier	SHORT NAME	LENGTH	REMARK
1	Manufacturer		TriQuint Semiconductor	NA	Name of Firm.
2	Manufacturer Part Number		MPN	18	
3	Supplier Code	V	Scode	10	Vendor Code.
4	Lot Number	1T	MLOT	13	Lot/Batch Number. 3 lot Maximum.
5	TriQuint Catalog Number	1P	TCN	40	
6	Country Code		CC	3	Country of Origin
7	PB Free Logo				Lead Free Marking
8	Date Code	9D	DCODE	4	Format: "YYWW"
9	Quantity	Q	QTY	9	

Figure 1



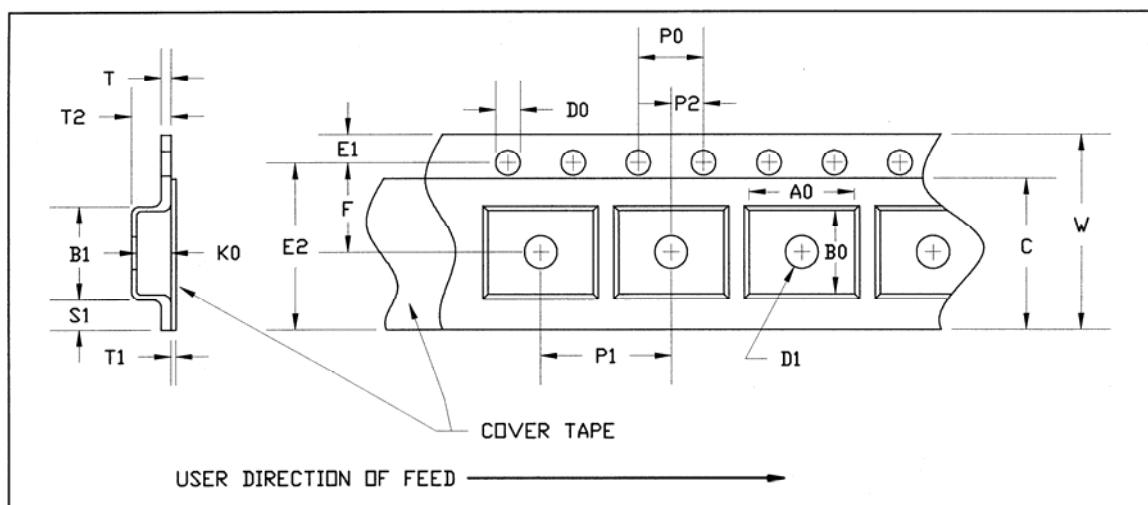
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Tape and Reel Information:



03L (T/SLP) 1.2X1.5mm

USER DIRECTION FEED 

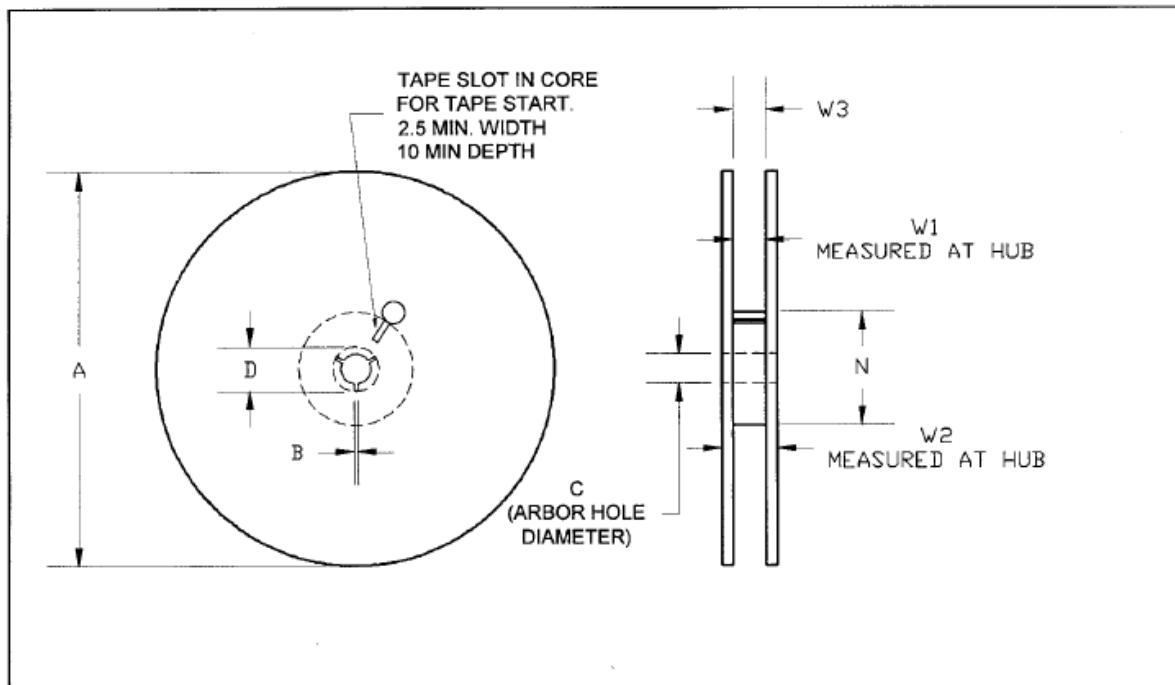


T/SLP CARRIER AND COVER TAPE DIMENSIONS

PART	FEATURE	SYMBOL	SIZE (in)	SIZE (mm)
CAVITY	LENGTH	A0	0.053	1.35
	WIDTH	B0	0.068	1.75
	DEPTH	K0	0.040	1.02
	PITCH	P1	0.157	4.00
DISTANCE BETWEEN CENTERLINE	CAVITY TO PERFORATION LENGTH DIRECTION	P2	0.079	2.00
	CAVITY TO PERFORATION WIDTH DIRECTION	F	0.138	3.50
COVER TAPE	WIDTH	C	0.213	5.40
CARRIER TAPE	WIDTH	W	0.315	8.00

ESD Protection device

Reel Dimensions



Reel Dimensions for 8mm Carrier Tape – 13" Reel (Blue)

T/SLP			13" REEL	
PART	FEATURE	SYMBOL	SIZE (in)	SIZE (mm)
FLANGE	DIAMETER	A	12.992	330.0
	THICKNESS	W2	0.567	14.4
	SPACE BETWEEN FLANGE	W1	0.331	8.4
HUB	OUTER DIAMETER	N	3.937	100.0
	ARBOR HOLE DIAMETER	C	0.512	13.0
	KEY SLIT WIDTH	B	0.059	1.5
	KEY SLIT DIAMETER	D	0.795	20.2

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Carton Label: (example)

Format: 4 * 6.5 in 102 * 166 mm Code 39 1:2	Ship From: TRIQUINT SEMICONDUCTOR, INC 1300 NE BROOKWOOD PARKWAY HILLSBORO, OR 97124	Ship To:
Supplier Code: 10 Character Max. + TQS Shipper Number. (Pkg. ID/Serial Number)	(3S) Pkg ID: 581+23099631 	
Customer Purchase Order. 20 Character Max.	(K) Trans ID: 	
Customer Part Number. 22 Character Max.	(P) CPN: 	
Quantity.	(Q) QTY: 5000 	
Supplier Product Number. 21 Character Max.	(1P) SPN: CGB 241 E6327 	MPN: 1022084
Box Count (1/3, 2/3, etc.)	(13Q) Pkg Count: 1/1 	
Package Weight 1.9 LB / 0.84 KG	 Lead Free Logo	
<i>All Barcodes Contain Data Identifier Followed by Data, e.g. K812934657</i>		
<i>Manufacturer's Part Number</i>		

ESD Protection device

Packing List Label: (example)

Format: 4 * 6.5 in 102 * 166 mm Code 39 1:2	Ship From: TRIQUINT SEMICONDUCTOR, INC 3200 NE BROOKWOOD PARKWAY HILLSBORO, OR 97124	Ship To:
Supplier Code: 10 Character Max. + TQS Shipper Number. (Pkg. ID/Serial Number).	(4S) Pkg ID: 581+23099631 	
Customer Purchase Order. 20 Character Max.	(K) Trans ID: 	
Customer Product Number. 22 Character Max.	(P) CPN: 	
Total Quantity	(Q) QTY: 5000 	
Supplier Product Number. 21 Character Max.	(1P) SPN: CGB 241 E6327 	MPN: 1022084
Total Box Count	(Z) Tot Pkg Count: 1 of 1 	
Package Weight 1.9 LB / 0.84 KG	 Lead Free Logo	
<i>All Barcodes Contain Data Identifier Followed by Data, e.g. K8934657</i>		
Manufacturer's Part Number		

ESD Protection device

Ordering Information:

Type	Marking	Package
TQP200002	XXXX	T/SLP-3

RoHS: The TQP200002 is compliant with RoHS Directive (Restrictions on the use of certain Hazardous Substances in Electrical and Electronic Equipment).

Additional Information

For latest specifications, additional product information, worldwide sales and distribution locations, and information about TriQuint:

Web: www.triquint.com Tel: (503) 615-9000
Email: info_wireless@tqs.com Fax: (503) 615-8902

For technical questions and additional information on specific applications:

Email: info_wireless@tqs.com

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