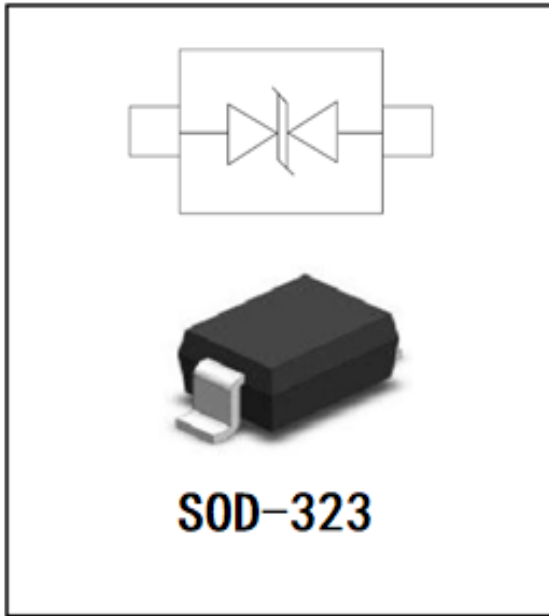


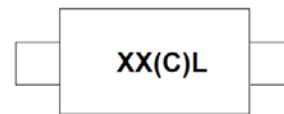
## 1-Line Bi-directional TVS Diode



### Features

- 300W peak pulse power (8/20 $\mu$ s)
- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 3.3V, 5V, 8V, 12V, 24V, 36V
- Ultra low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
  - Air discharge:  $\pm 30$ Kv
  - Contact discharge:  $\pm 30$ kV
- RoHS Compliant

### Marking Information



Part Number	Marking
ASD33CL	33L
ASD05CL	05CL
ASD08CL	08L
ASD12CL	12L
ASD24CL	24L
ASD36CL	36L

### ■ Maximum Ratings

PARAMETER	SYMBOL	VALUE	UNIT
Peak Pulse Power (8/20 $\mu$ s)	Ppk	300	W
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V <sub>ESD</sub>	$\pm 30$ $\pm 30$	KV
Operating Temperature Range	T <sub>J</sub>	-55 to +125	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C



# ASD33CL THRU ASD36CL

## ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

ASD33CL						
PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse Standoff Voltage	V <sub>RWM</sub>	V				3.3
Reverse Leakage Current	I <sub>R</sub>	μA	V <sub>RWM</sub> =3.3V			1.0
Breakdown Voltage	V <sub>(BR)</sub>	V	I <sub>T</sub> =1mA	3.8		
Clamping Voltage	V <sub>C</sub>	V	I <sub>PP</sub> =1A(8/20μs pules)			6
Clamping Voltage	V <sub>C</sub>	V	I <sub>PP</sub> =25A(8/20μs pules)			12
Peak Pulse Current	I <sub>PP</sub>	A	t <sub>p</sub> =8/20μs			25
Junction Capacitance	C <sub>J</sub>	pF	V <sub>R</sub> =0V,f=1MHz			100

ASD05CL						
PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse Standoff Voltage	V <sub>RWM</sub>	V				5
Reverse Leakage Current	I <sub>R</sub>	μA	V <sub>RWM</sub> =5V			1.0
Breakdown Voltage	V <sub>(BR)</sub>	V	I <sub>T</sub> =1mA	6		
Clamping Voltage	V <sub>C</sub>	V	I <sub>PP</sub> =1A(8/20μs pules)			8
Clamping Voltage	V <sub>C</sub>	V	I <sub>PP</sub> =20A(8/20μs pules)			15
Peak Pulse Current	I <sub>PP</sub>	A	t <sub>p</sub> =8/20μs			20
Junction Capacitance	C <sub>J</sub>	pF	V <sub>R</sub> =0V,f=1MHz			80

ASD08CL						
PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse Standoff Voltage	V <sub>RWM</sub>	V				8
Reverse Leakage Current	I <sub>R</sub>	μA	V <sub>RWM</sub> =8V			0.5
Breakdown Voltage	V <sub>(BR)</sub>	V	I <sub>T</sub> =1mA	8.5		
Clamping Voltage	V <sub>C</sub>	V	I <sub>PP</sub> =1A(8/20μs pules)			13
Clamping Voltage	V <sub>C</sub>	V	I <sub>PP</sub> =18A(8/20μs pules)			17
Peak Pulse Current	I <sub>PP</sub>	A	t <sub>p</sub> =8/20μs			18
Junction Capacitance	C <sub>J</sub>	pF	V <sub>R</sub> =0V,f=1MHz			60



## ASD33CL THRU ASD36CL

ASD12CL						
PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse Standoff Voltage	$V_{RWM}$	V				12
Reverse Leakage Current	$I_R$	$\mu A$	$V_{RWM}=12V$			0.5
Breakdown Voltage	$V_{(BR)}$	V	$I_T=1mA$	13.3		
Clamping Voltage	$V_C$	V	$I_{PP}=1A(8/20\mu s \text{ pules})$			18
Clamping Voltage	$V_C$	V	$I_{PP}=12A(8/20\mu s \text{ pules})$			25
Peak Pulse Current	$I_{PP}$	A	$t_p=8/20\mu s$			12
Junction Capacitance	$C_J$	pF	$V_R=0V, f=1MHz$		32	

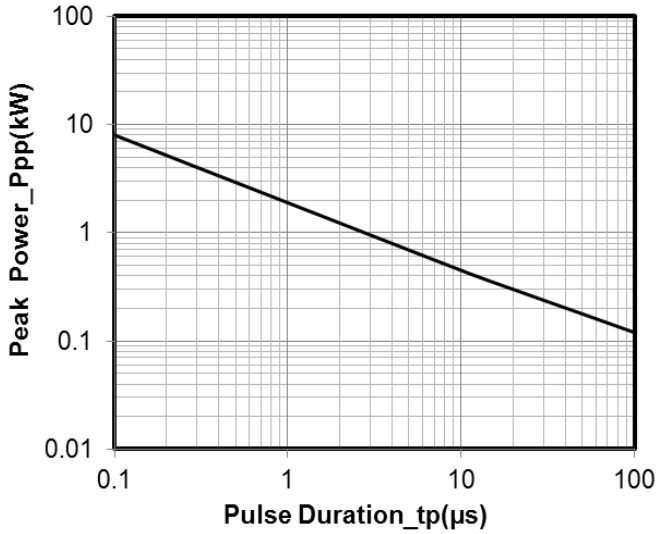
ASD24CL						
PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse Standoff Voltage	$V_{RWM}$	V				24
Reverse Leakage Current	$I_R$	$\mu A$	$V_{RWM}=24V$			0.2
Breakdown Voltage	$V_{(BR)}$	V	$I_T=1mA$	27		
Clamping Voltage	$V_C$	V	$I_{PP}=1A(8/20\mu s \text{ pules})$			40
Clamping Voltage	$V_C$	V	$I_{PP}=5A(8/20\mu s \text{ pules})$			60
Peak Pulse Current	$I_{PP}$	A	$t_p=8/20\mu s$			5
Junction Capacitance	$C_J$	pF	$V_R=0V, f=1MHz$		15	

ASD36CL						
PARAMETER	Symbol	UNIT	Conditions	Min	Typ	Max
Reverse Standoff Voltage	$V_{RWM}$	V				364
Reverse Leakage Current	$I_R$	$\mu A$	$V_{RWM}=36V$			0.2
Breakdown Voltage	$V_{(BR)}$	V	$I_T=1mA$	38		
Clamping Voltage	$V_C$	V	$I_{PP}=1A(8/20\mu s \text{ pules})$			50
Clamping Voltage	$V_C$	V	$I_{PP}=4A(8/20\mu s \text{ pules})$			75
Peak Pulse Current	$I_{PP}$	A	$t_p=8/20\mu s$			4
Junction Capacitance	$C_J$	pF	$V_R=0V, f=1MHz$		12	

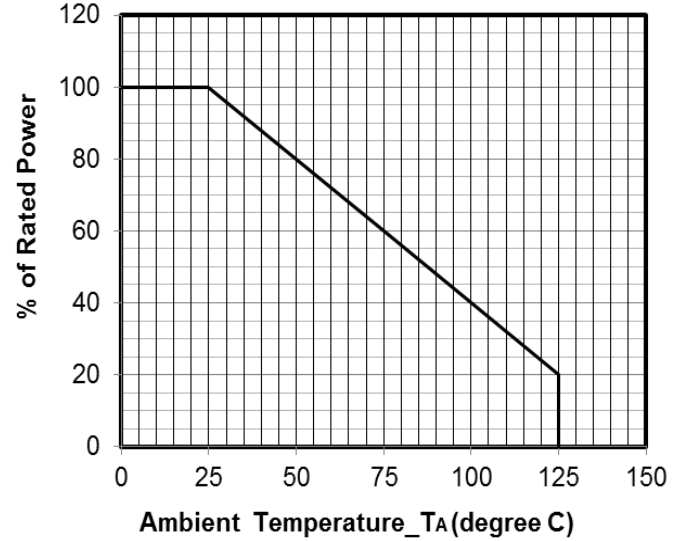


# ASD33CL THRU ASD36CL

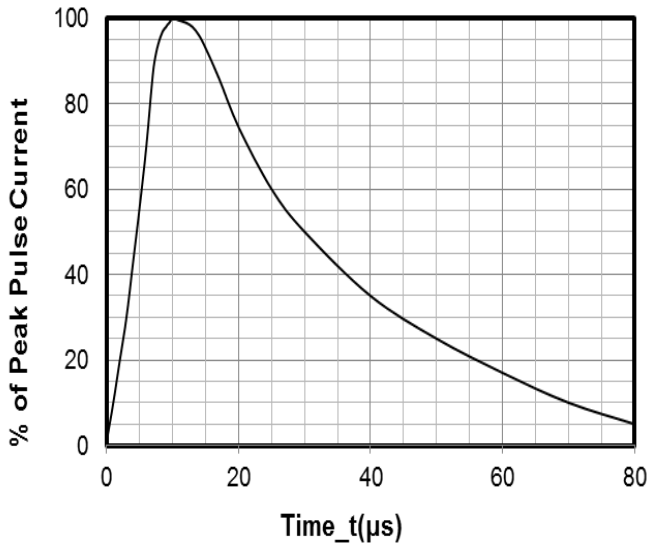
## ■ Characteristics (Typical)



Peak Pulse Power vs. Pulse Time

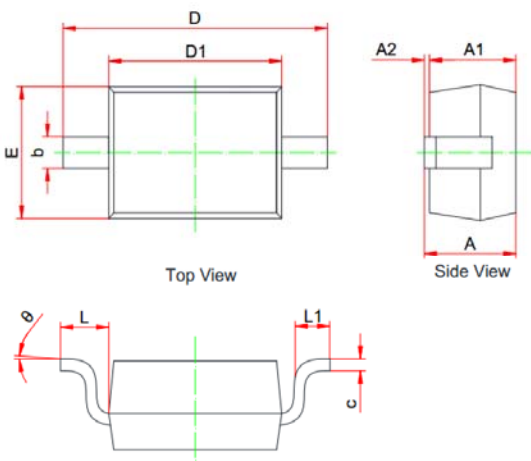


Power Derating Curve



8 X 20μs Pulse Waveform

## ■ Outline Dimensions

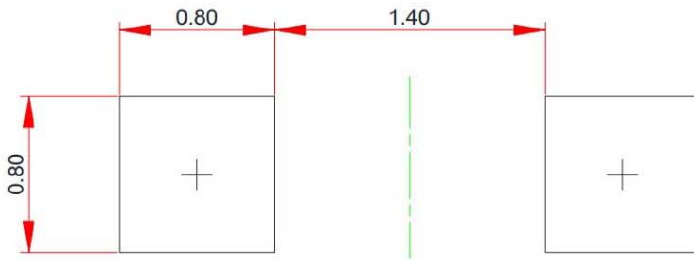


SYM	MILLIMETERS		
	MIN	NOM	MAX
A	0.800	--	1.100
A1	0.800	--	0.900
A2	0.000	--	0.100
b	0.250	--	0.400
c	0.080	--	0.177
D1	1.600	1.700	1.800
D	2.300	--	2.800
E	1.150	--	1.400
L	0.475REF		
L1	0.100	--	0.500
θ	0°	--	8°



# ASD33CL THRU ASD36CL

## ■ Soldering Footprint



Unit: mm



## ASD33CL THRU ASD36CL

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