Description

The WPEXXCT23BL is a bi-directional TVS diode array, utilizing leading monolithic silicon technology to provide fast re-sponse time and low ESD clamping voltage, making this device an ideal solution for protecting sensitive semicon-ductor components from damage. The WPEXXCT23BL com-plies with the IEC 61000-4-2 (ESD) with ±30kV air and ±30kV contact discharge. It is assembled into a lead-free SOT-23 package. It is designed to protect components which are connected to data and transmission lines from voltage surges.

Features

- 300W peak pulse power (8/20μs)
- Protects two bi-directional lines
- Ultra low leakage: nA level
- Operating voltage: 3.3V, 5V, 12V, 15V, 24V, 32V, 36V
- Low clamping voltage
- Complies with following standards:
  – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±30kV
    Contact discharge: ±30kV
- RoHS Compliant

Mechanical Characteristics

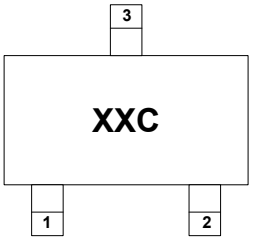
- Package: SOT-23
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

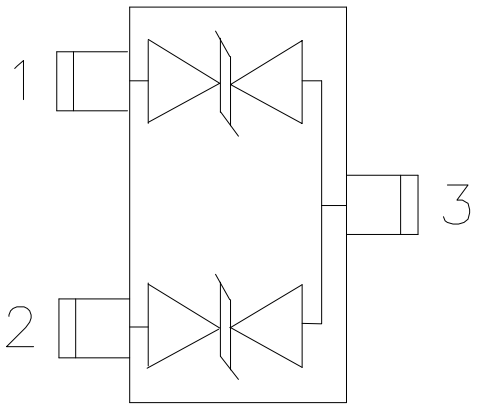
- Cellular Handsets and Accessories
- Notebooks and Handhelds
- Portable Instrumentation
- Set Top Box
- Industrial Controls
- Server and Desktop PC

Marking Information

XXC = Device Marking



Dimensions and Pin Configuration



Circuit and Pin Schematic

Ordering Information

Part Number	Packaging	Reel Size
WPEXXCT23BL	3000/Tape & Reel	7 inch

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	300	W
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

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

WPE03CT23BL

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	3.8			V	I_T = 1mA
Reverse Leakage Current	I_R			1.0	μA	V_{RWM} = 3.3V
Clamping Voltage	V_C			6	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			12	V	I_{PP} = 25A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			25	A	t_p = 8/20μs
Junction Capacitance	C_J			100	pF	VR = 0V, f = 1MHz, Pin 1 to Pin 3 or Pin 2 to Pin 3

WPE05CT23BL

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA
Reverse Leakage Current	I_R			1.0	μA	V_{RWM} = 5V
Clamping Voltage	V_C			8	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			15	V	I_{PP} = 20A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			20	A	t_p = 8/20μs
Junction Capacitance	C_J			80	pF	VR = 0V, f = 1MHz, Pin 1 to Pin 3 or Pin 2 to Pin 3

WPE12CT23BL						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			12	V	
Breakdown Voltage	V_{BR}	13.3			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 12V
Clamping Voltage	V_C			18	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			25	V	I_{PP} = 12A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			12	A	t_p = 8/20μs
Junction Capacitance	C_J			50	pF	VR = 0V, f = 1MHz, Pin 1 to Pin 3 or Pin 2 to Pin 3

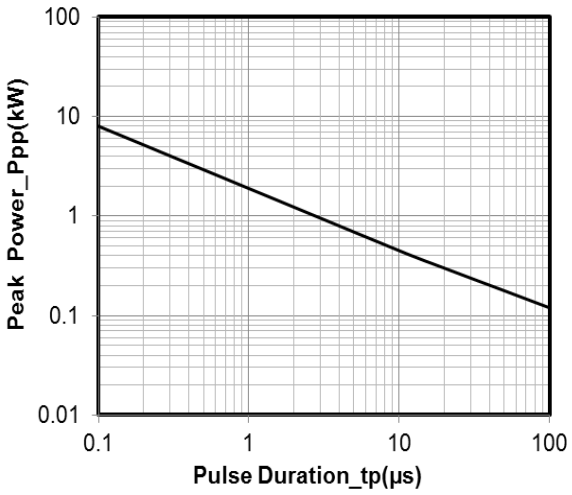
WPE15CT23BL						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			15	V	
Breakdown Voltage	V_{BR}	16.7			V	I_T = 1mA
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 15V
Clamping Voltage	V_C			20	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			37.5	V	I_{PP} = 8A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			8	A	t_p = 8/20μs
Junction Capacitance	C_J			40	pF	VR = 0V, f = 1MHz, Pin 1 to Pin 3 or Pin 2 to Pin 3

WPE24CT23BL						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			24	V	
Breakdown Voltage	V_{BR}	27			V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 24V
Clamping Voltage	V_C			40	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			60	V	I_{PP} = 5A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			5	A	t_p = 8/20μs
Junction Capacitance	C_J		15	30	pF	VR = 0V, f = 1MHz, Pin 1 to Pin 3 or Pin 2 to Pin 3

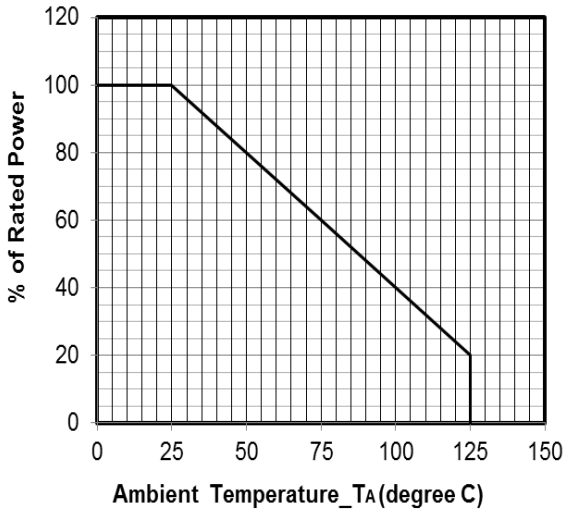
WPE32CT23BL						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			32	V	
Breakdown Voltage	V_{BR}	35.6			V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 36V
Clamping Voltage	V_C			45	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			67	V	I_{PP} = 4.5A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			4	A	t_p = 8/20μs
Junction Capacitance	C_J		15	25	pF	VR = 0V, f = 1MHz, Pin 1 to Pin 3 or Pin 2 to Pin 3

WPE36CT23BL						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			36	V	
Breakdown Voltage	V_{BR}	38			V	I_T = 1mA
Reverse Leakage Current	I_R			0.2	μA	V_{RWM} = 36V
Clamping Voltage	V_C			50	V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C			75	V	I_{PP} = 4A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			4	A	t_p = 8/20μs
Junction Capacitance	C_J		12	20	pF	VR = 0V, f = 1MHz, Pin 1 to Pin 3 or Pin 2 to Pin 3

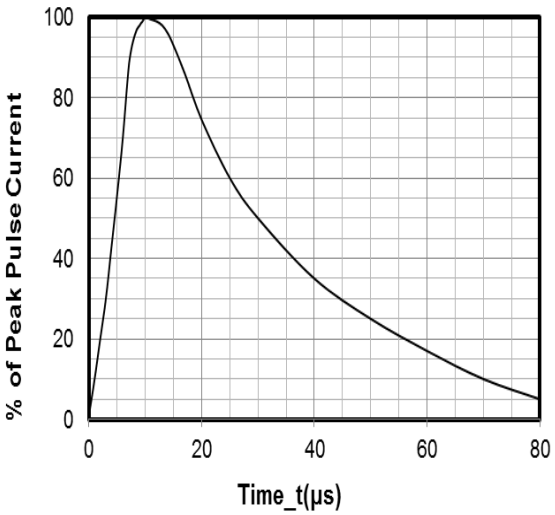
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



Peak Pulse Power vs. Pulse Time

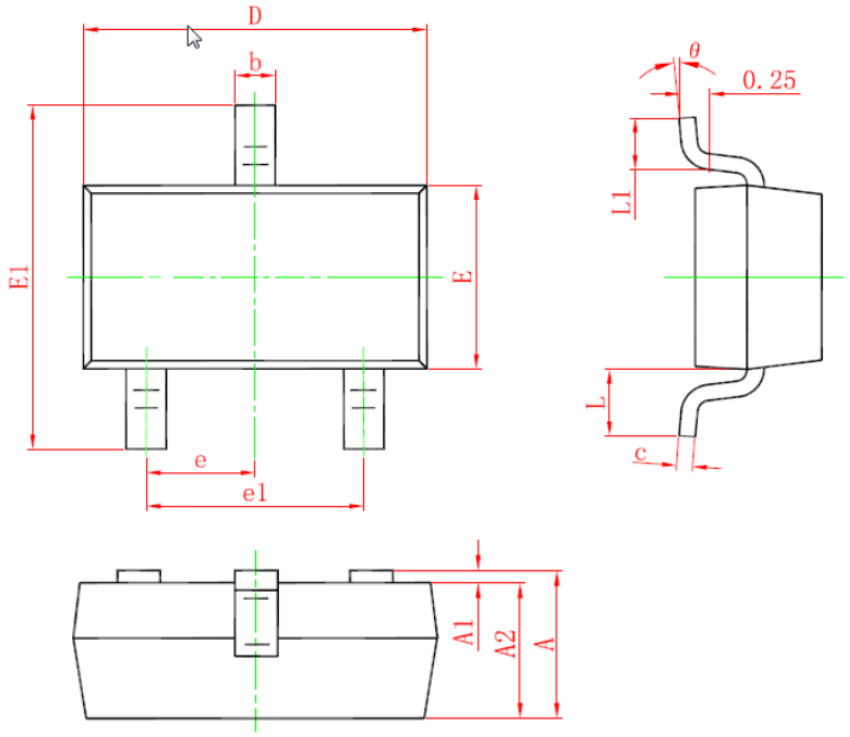


Power Derating Curve



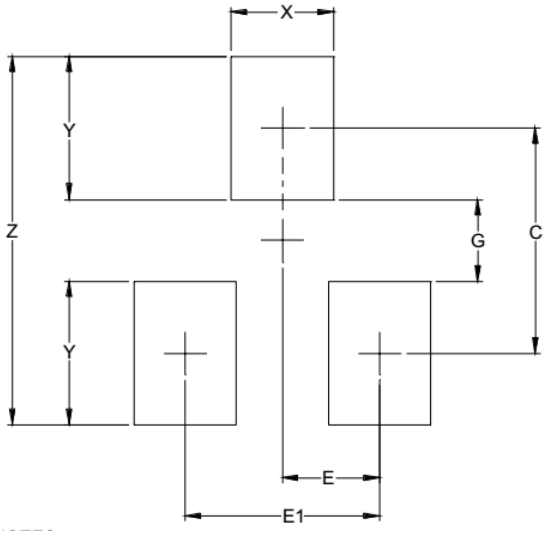
8 X 20μs Pulse Waveform

SOT-23 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	- -	1.15	0.035	- -	0.045
A1	0.00	- -	0.10	0.000	- -	0.004
A2	0.90	- -	1.05	0.035	- -	0.041
b	0.30	- -	0.50	0.012	- -	0.020
c	0.08	- -	0.15	0.003	- -	0.006
D	2.80	- -	3.00	0.110	- -	0.118
E	1.20	- -	1.40	0.047	- -	0.055
E1	2.25	- -	2.25	0.089		0.100
e	0.95TYP			0.037TYP		
e1	1.80	- -	2.00	0.071	- -	0.079
L	0.55REF			0.022REF		
L1	0.30	- -	0.50	0.012	- -	0.020
Θ	0°	- -	8°	0°	- -	8°

Suggested Land Pattern



SYM	DIMENSIONS	
	INCHES	MILLIMETERS
C	.087	2.20
E	.037	0.95
E1	.075	1.90
G	.031	0.80
X	.039	1.00
Y	.055	1.40
Z	.141	3.60

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