Description

DSLCxxCI a 3.3V~24V bi-directional TVS diode array, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The DSLCxxCI has a low capacitance with a typical value at 1pF,and complies with the IEC 61000-4-2(ESD) standard with ±30kV air and ±30kV contact discharge. It is assembled into a lead-free SOT-143 package. The small size, low capacitance and high ESD surge protection make DSLCxxCI an ideal choice to protect cell phone, wireless systems, and communication equipment.

Features

- 150W peak pulse power (8/20μs)
- Ultra low capacitance ： 1.0pF typical
- Ultra low leakage：nA level
- Low Operating：3.3V,5V,8V,12V,15V,24V
- Low clamping voltage
- Protects one power line or data line
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    Air discharge: ±30kV
    Contact discharge: ±30kV
  - – IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant

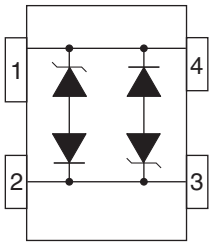
Mechanical Characteristics

- Package: SOT-143
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

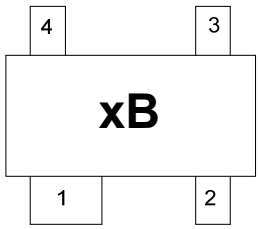
- USB Ports
- Smart Phones
- Wireless Systems
- Ethernet 10/100/1000 Base T

Dimensions and Pin Configuration



Circuit and Pin Schematic

Marking Information



xB : Device Marking Code

Ordering Information

Part Number	Marking	Packaging	Reel Size
DSLCxxCI	x B	3000/Tape & Reel	7 inch

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

Parameter	Symbol	Value	Unit
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±30 ±30	kV
Operating Temperature Range	T_J	−40 to +85	°C
Storage Temperature Range	Tstg	−55 to +150	°C

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

DSLC03CI (Marking Code: 3B)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			3.3	V	
Breakdown Voltage	V_{BR}	4			V	I_T = 1mA
Reverse Leakage Current	I_R		1	100	nA	V_{RWM} = 3.3V
Clamping Voltage	V_C		7		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		12		V	I_{PP} = 10A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			10	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

DSLC05CI (Marking Code: 5B)						
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	100	nA	V_{RWM} = 5V
Clamping Voltage	V_C		9		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		12		V	I_{PP} = 8.5A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			8.5	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

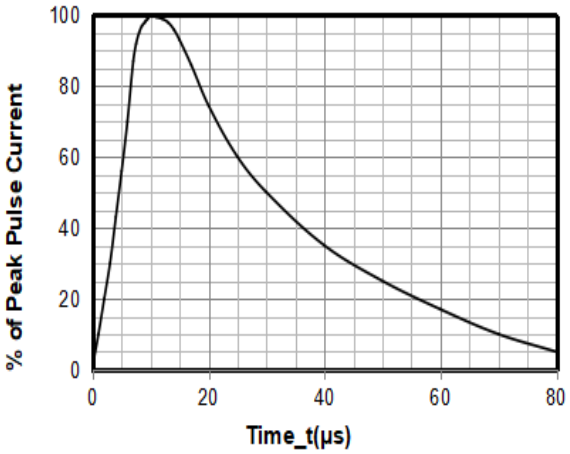
DSLC08CI(Marking Code: 8B)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			8	V	
Breakdown Voltage	V_{BR}	8.5			V	I_T = 1mA
Reverse Leakage Current	I_R		1	100	nA	V_{RWM} = 8V
Clamping Voltage	V_C		12		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		12		V	I_{PP} = 7A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			7	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

DSLC12CI (Marking Code: 12B)						
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		1	100	nA	V_{RWM} = 12V
Clamping Voltage	V_C		19		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		25		V	I_{PP} = 5A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			5	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

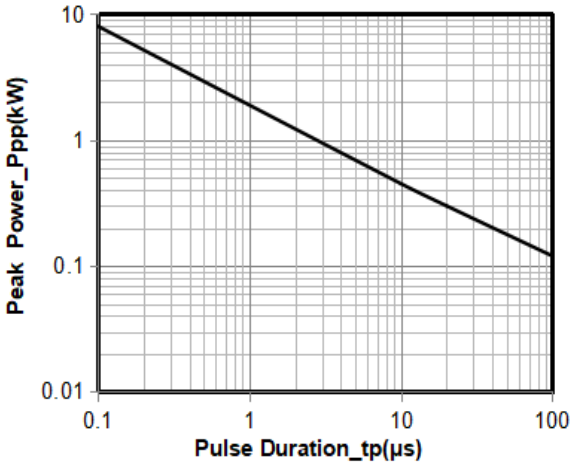
DSLC15CI(Marking Code: 15B)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			15	V	
Breakdown Voltage	V_{BR}	16.7			V	I_T = 1mA
Reverse Leakage Current	I_R		1	100	nA	V_{RWM} = 15V
Clamping Voltage	V_C		20		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		35		V	I_{PP} = 4A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			4	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

DSLC24CI (Marking Code: 24B)						
Parameter	**Symbol**	**Min**	**Typ**	**Max**	**Unit**	**Test Condition**
Reverse Working Voltage	V_{RWM}			24	V	
Breakdown Voltage	V_{BR}	26.7			V	I_T = 1mA
Reverse Leakage Current	I_R		1	100	nA	V_{RWM} = 24V
Clamping Voltage	V_C		40		V	I_{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V_C		71		V	I_{PP} = 2A (8 x 20μs pulse)
Peak Pulse Current	I_{PP}			2	A	tp=8/20μs
Junction Capacitance	C_J		1		pF	VR = 0V, f = 1MHz

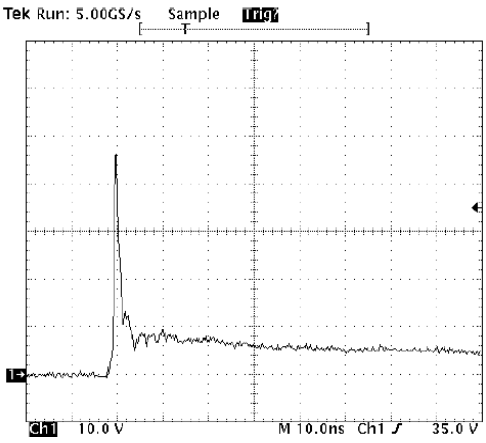
Typical Performance Characteristics (T_A=25℃ unless otherwise Specified)



8 X 20μs Pulse Waveform



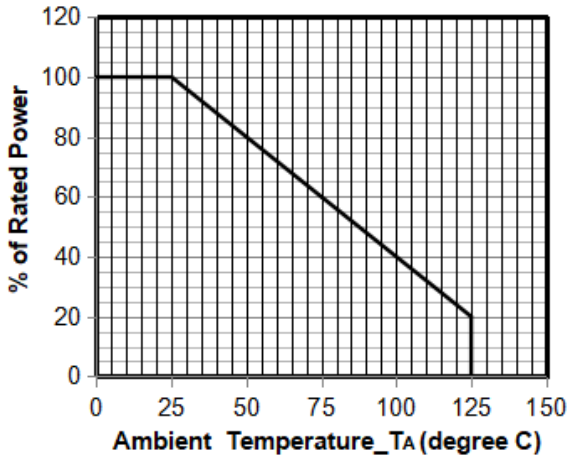
Peak Pulse Power vs. Pulse Time



Note：Data is taken with a 10x attenuator

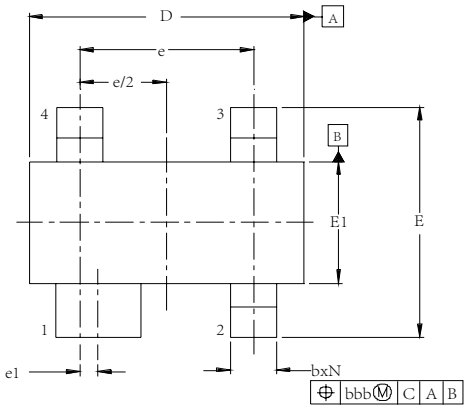
ESD Clamping Voltage

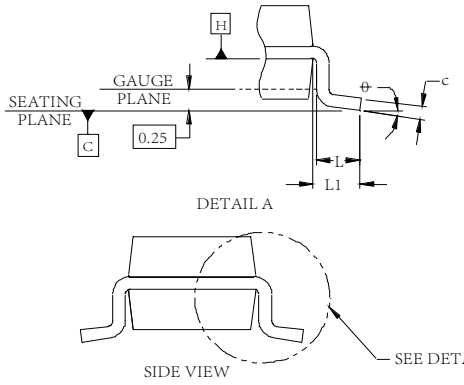
8 kV Contact per IEC61000−4−2



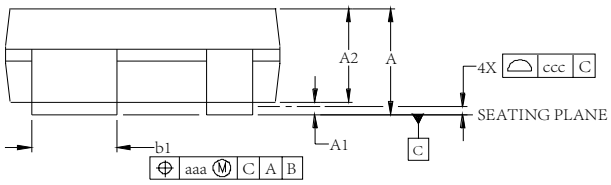
Power Derating Curve

SOT-143 Package Outline Drawing

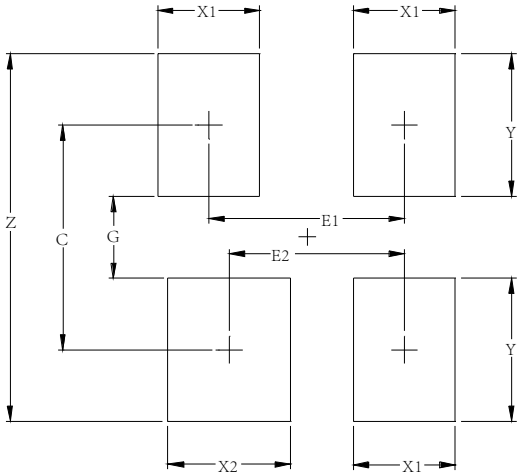




DIM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	.031	-	.048	0.80	-	1.22
A1	.000	-	.006	0.013	-	0.15
A2	.029	.035	.042	0.75	0.90	1.07
b	.011	-	.020	0.30	-	0.51
b1	.029	-	.037	0.76	-	0.94
c	.003	-	.008	0.08	-	0.20
D	.110	.114	.120	2.80	2.90	3.04
E	.082	.093	.104	2.10	2.37	2.64
E1	.047	.051	.055	1.20	1.30	1.40
e	.075			1.92 BSC		
e1	.008			0.20 BSC		
L	.015	.020	.024	0.40	0.50	0.60
L1	(.021)			(0.54)		
N	4			4		
θ	0°	-	8°	0°	-	8°
aaa	.006			0.15		
bbb	.008			0.20		
ccc	.004			0.10		



Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.20	0.087
E1	1.92	0.076
E2	1.72	0.068
G	0.80	0.031
X1	1.00	0.039
X2	1.20	0.047
Y	1.40	0.055
Z	3.60	0.141

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