



## Discription

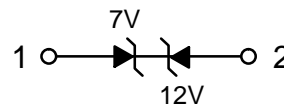
The HESDNC712B1EL-B protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD. It gives designer the flexibility to protect one bi-directional line in applications where arrays are not practical.



SOD-323

## Features

- Protects two +12V to -7V lines
- Low clamping voltage:  $V_{CL}=19V @ I_{PP}=18A(P1-P2)$ ,  
 $V_{CL}=12V @ I_{PP}=18A(P2-P1)$ ,
- Ultra low leakage current:  $I_{RM} < 10 \text{ nA}$
- IEC 61000-4-2(ESD):  $\pm 30kV$  (Air),  $\pm 30kV$  (Contact)
- IEC 61000-4-5 (surge):  $I_{PPM}=18 \text{ A}$



Circuit Diagram

## Application information

- RS-485 transceivers with extended common mode range
- Automatic Teller Machines
- Lighting Control-DALI
- Communication Equipments
- HFC systems
- Networks

## Ordering information

Product ID	Pack	Qty(PCS)
HESDNC712B1EL-B	SOD-323	3000

## Absolute Ratings( $T_{amb} = 25^{\circ}C$ )

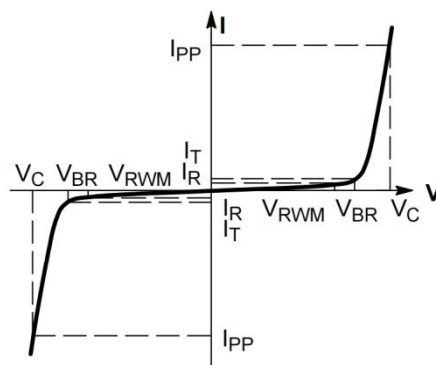
Parameter	Symbol	Value	Unit
Peak Pulse Power ( $t_p = 8/20\mu s$ )	$P_{PK}$	360/252	W
Peak Pulse Current( $t_p = 8/20\mu s$ )	$I_{PP}$	18/18	A
ESD voltage IEC 61000-4-2 (air discharge)	$V_{ESD}$	30	KV
ESD voltage IEC 61000-4-2 (contact discharge)	$V_{ESD}$	30	KV
Storage Temperature Range	$T_{stg}$	-55 to +150	$^{\circ}C$
Operating Temperature Range	$T_{OP}$	-40 to +85	$^{\circ}C$



**Electrical Characteristics** Ratings at 25°C ambient temperature unless otherwise specified.

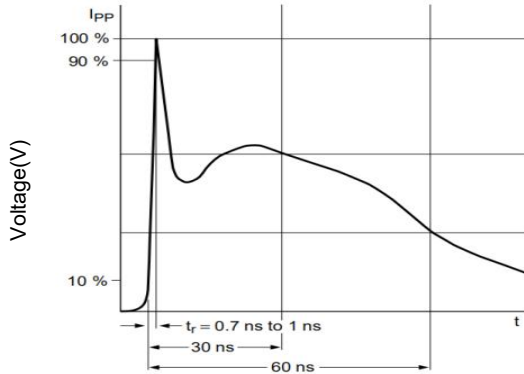
Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	$V_{RWM}$	--	--	12	V	Pin1 To Pin2
		--	--	7	V	Pin2 To Pin1
Breakdown Voltage	$V_{BR}$	13	14.5	17.0	V	Pin1 To Pin2, $I_T=1mA$
		7.5	8.5	9.5	V	Pin2 To Pin1, $I_T=1mA$
Leakage Current $I_{Leak}$	$I_R$	--	--	50	nA	Pin1 To Pin2, $V_R=12V$
		--	--	50	nA	Pin2 To Pin1, $V_R=7V$
Clamping Voltage	$V_C$	--	19	20	V	Pin1 To Pin2, $I_{PP}=18A, T_p=8/20\mu s$
Clamping Voltage	$V_C$	--	12	14	V	Pin2 To Pin1, $I_{PP}=18A, T_p=8/20\mu s$
Junction Capacitance	$C_J$	--	30	32	pF	$V_R=0V, f=1MHz$

Symbol	Parameters
$V_{RWM}$	Peak Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$

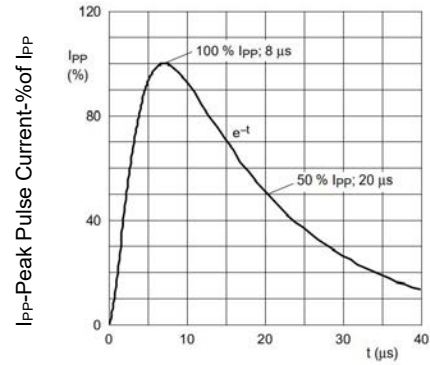




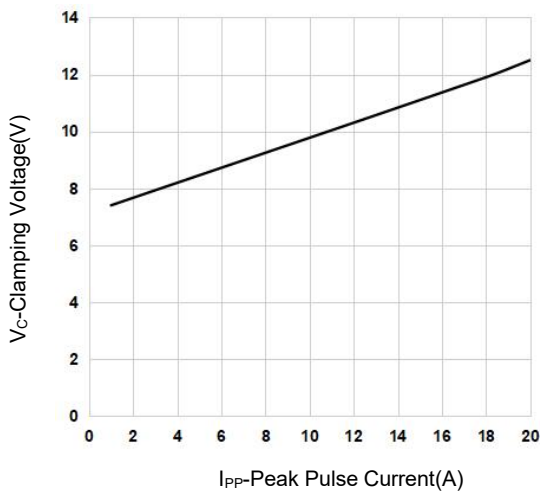
## Typical Characteristics



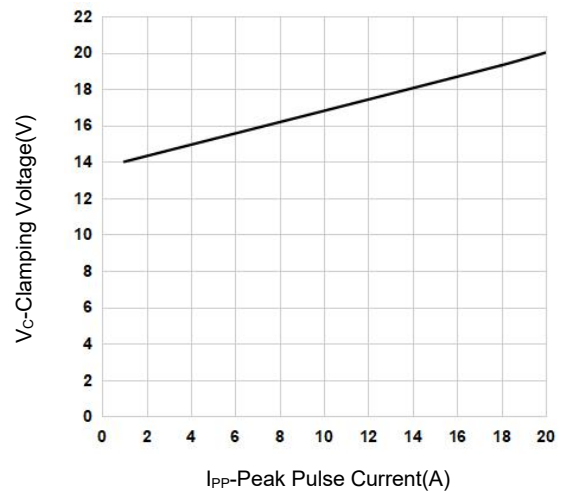
Time(nS)  
IEC61000-4-2 Pulse Waveform



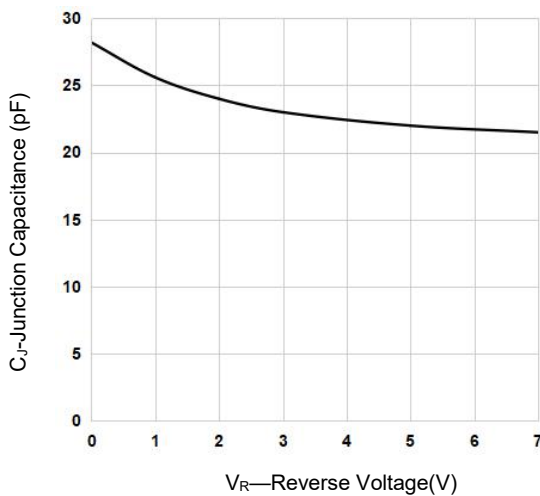
T-Time(μS)  
IEC61000-4-5 8X20μs Pulse Waveform



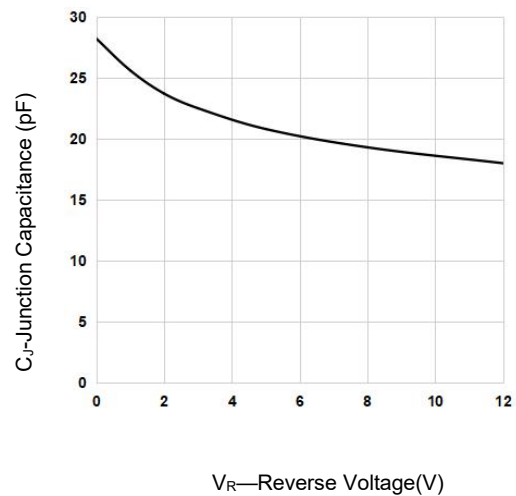
Clamping Voltage vs. Peak Pulse Current (P1-P2 7V)



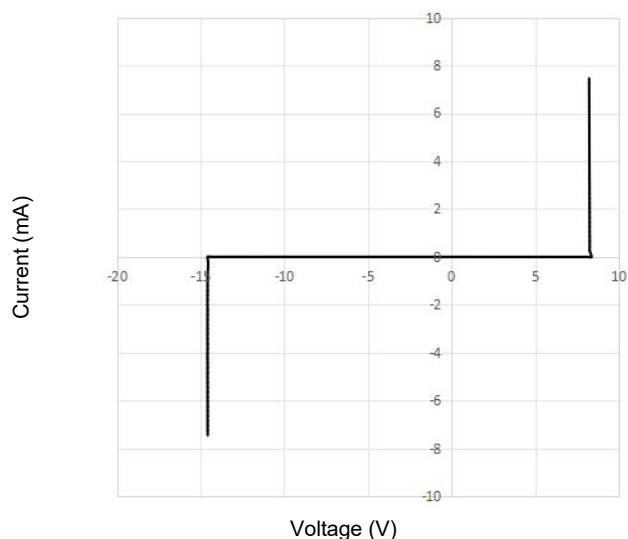
Clamping Voltage vs. Peak Pulse Current (P2-P1 12V)



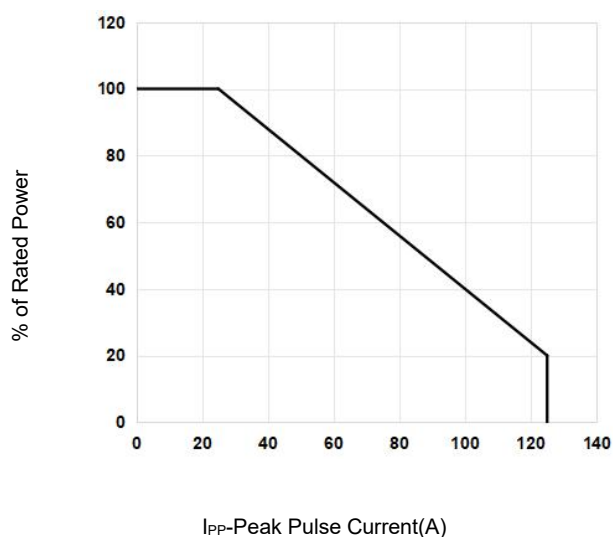
Peak Pulse Power vs. Pulse Time (P1-P2 7V)



Junction Capacitance vs. Reverse Voltage(P2-P1 12V)

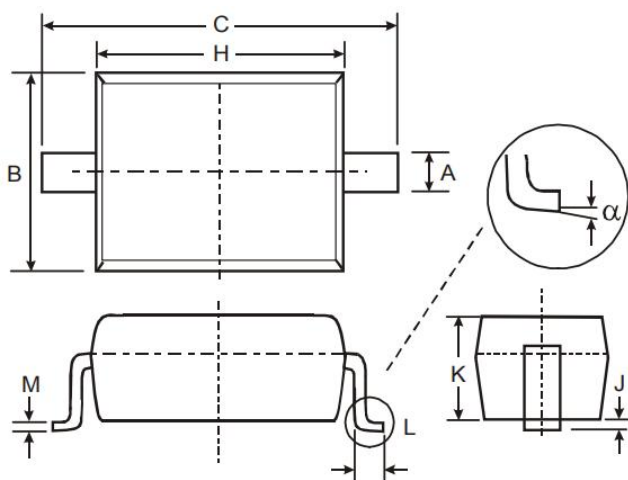


Voltage vs Current (P2-P1)



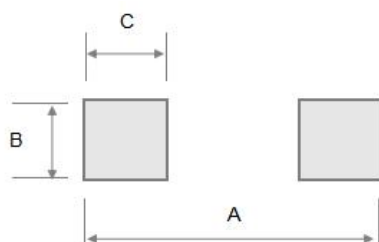
Clamping Voltage vs. Peak Pulse Current

## OUTLINE AND DIMENSIONS



SYMBOL	DIMENSIONS	
	MIN	MAX
A	0.25	0.40
B	1.20	1.40
C	2.35	2.75
H	1.50	1.80
J	0.01	0.15
K	0.75	1.05
L	0.20	0.40
M	0.08	0.25
$\alpha$	0°	8°

## SOLDERING FOOTPRINT



SYMBOL	DIMENSIONS
A	3.20
B	0.80
C	0.80



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