

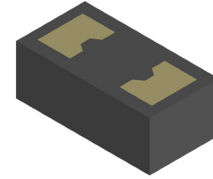
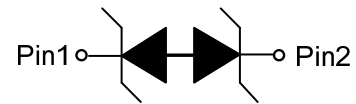
**ESD54191CZ**
**1-Line, Bi-directional, Transient Voltage Suppressors**
<http://www.sh-willsemi.com>
**Descriptions**

The ESD54191CZ is a TVS (Transient Voltage Suppressor) designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge).

The ESD54191CZ incorporates one pair of low capacitance diodes.

The ESD54191CZ may be used to provide ESD protection up to  $\pm 30\text{kV}$  (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 13A (8/20 $\mu\text{s}$ ) according to IEC61000-4-5.

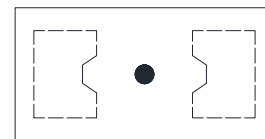
The ESD54191CZ is available in DWN0603-2L package. Standard products are Pb-free and Halogen-free.


**DWN0603-2L (Bottom View)**

**Pin configuration**
**Features**

- Stand-off voltage:  $\pm 5.5\text{V}$  Max.
- Transient protection for each line according to IEC61000-4-2 (ESD):  $\pm 30\text{kV}$  (contact discharge)  
IEC61000-4-5 (surge): 13A (8/20 $\mu\text{s}$ )
- Low capacitance:  $C_J = 20\text{pF}$  typ.
- Low leakage current:  $I_R < 1\text{nA}$  typ.
- Low clamping voltage:  $V_{CL} = 9\text{V}$  typ. @  $I_{PP} = 16\text{A}$  (TLP)
- Solid-state silicon technology

**Applications**

- Cellular handsets
- Tablets
- Laptops
- Other portable devices
- Network communication devices



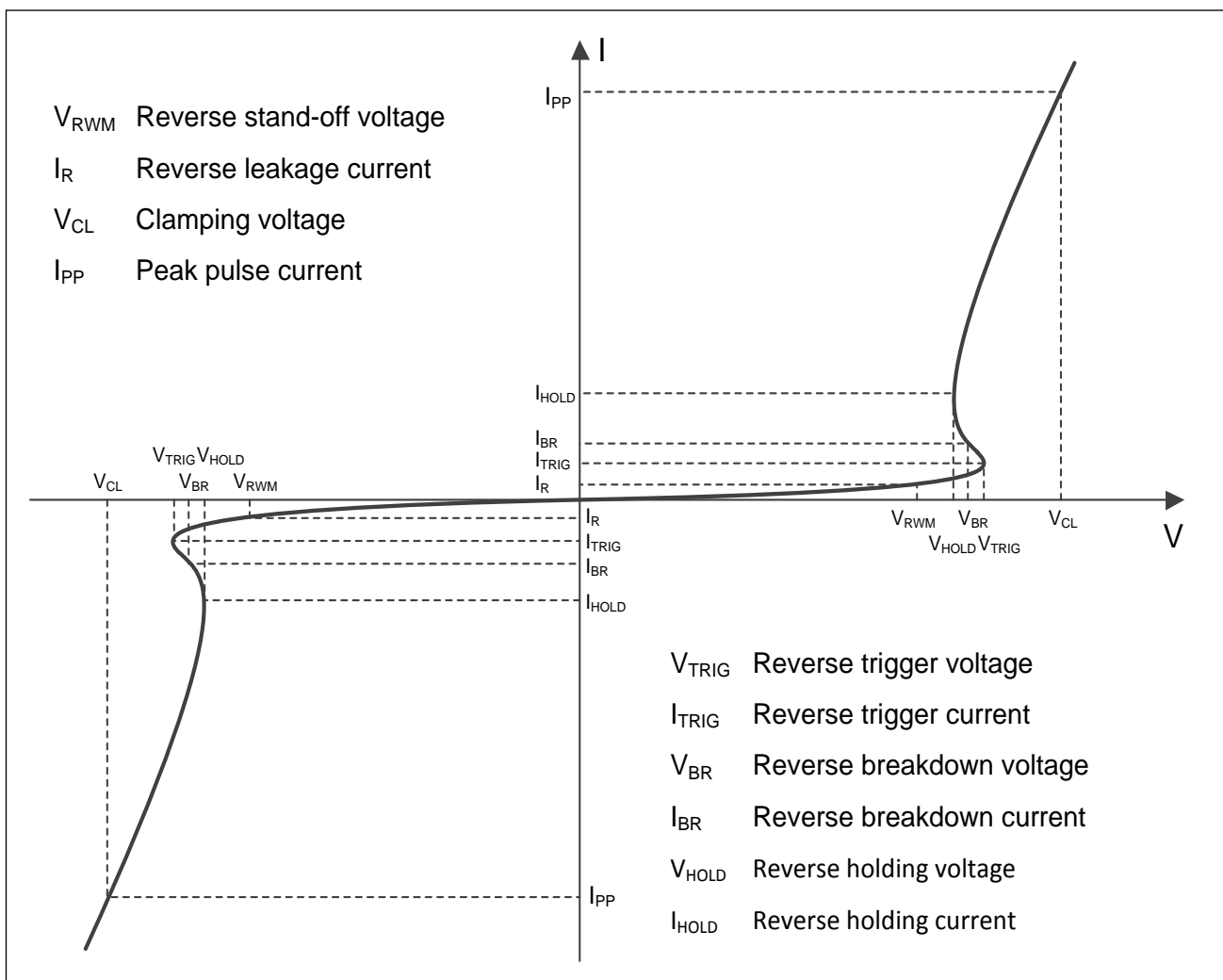
• = Device code

**Marking (Top View)**
**Order information**

Device	Package	Shipping
ESD54191CZ-2/TR	DWN0603-2L	10000/Tape&Reel

**Absolute maximum ratings**

Parameter	Symbol	Rating	Unit
Peak pulse power ( $t_p = 8/20\mu s$ )	$P_{pk}$	182	W
Peak pulse current ( $t_p = 8/20\mu s$ )	$I_{PP}$	13	A
ESD according to IEC61000-4-2 air discharge	$V_{ESD}$	$\pm 30$	kV
ESD according to IEC61000-4-2 contact discharge		$\pm 30$	
Junction temperature	$T_J$	125	$^{\circ}C$
Operating temperature	$T_{OP}$	-40~85	$^{\circ}C$
Lead temperature	$T_L$	260	$^{\circ}C$
Storage temperature	$T_{STG}$	-55~150	$^{\circ}C$

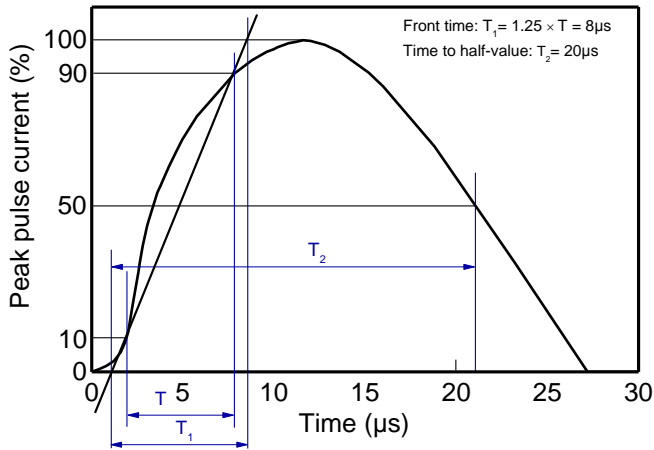
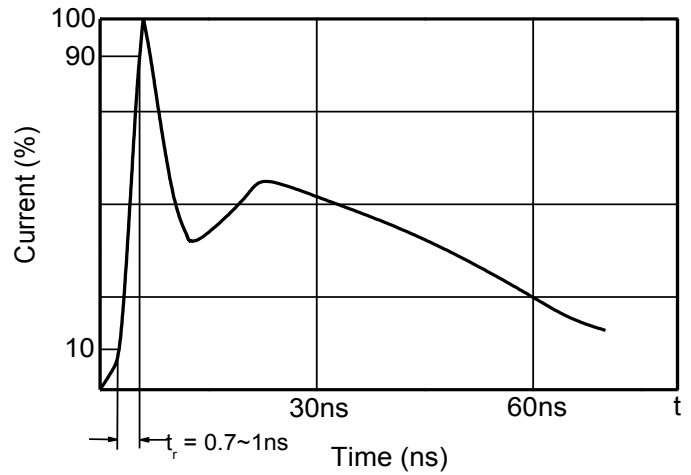
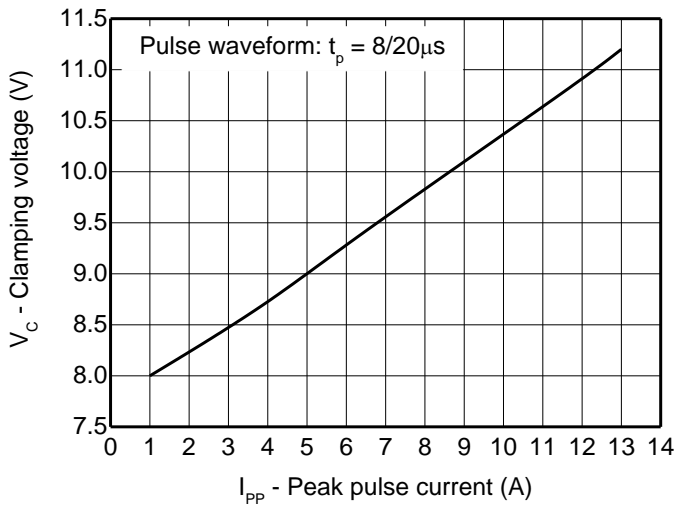
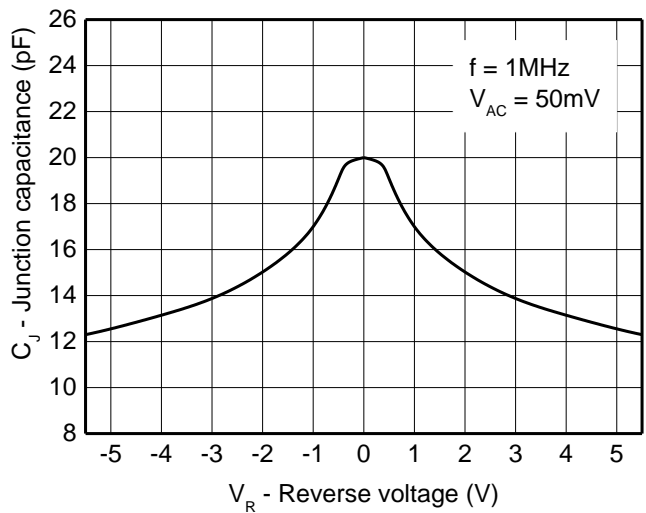
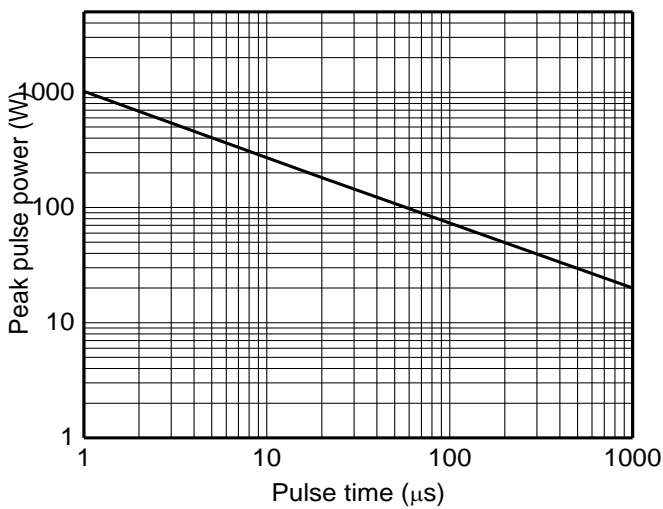
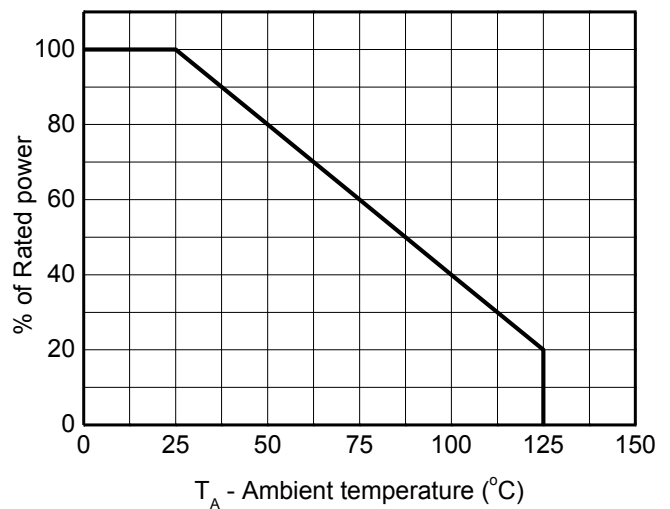
**Electrical characteristics ( $T_A=25^{\circ}C$ , unless otherwise noted)**

**Definitions of electrical characteristics**

**Electrical characteristics (T<sub>A</sub>=25 °C, unless otherwise noted)**

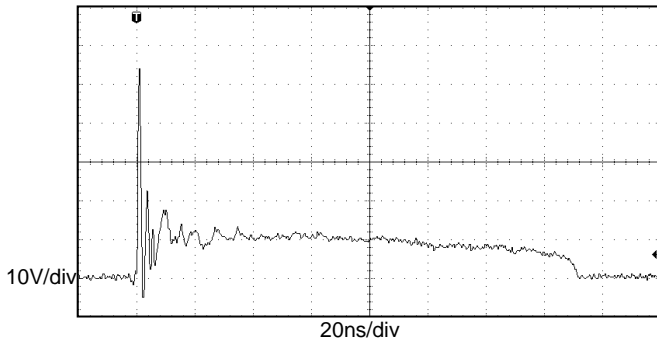
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse maximum working voltage	V <sub>RWM</sub>				±5.5	V
Reverse leakage current	I <sub>R</sub>	V <sub>RWM</sub> = 5.5V		<1	50	nA
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>T</sub> = 1mA	6.5	8.1	9.0	V
Clamping voltage <sup>1)</sup>	V <sub>CL</sub>	I <sub>PP</sub> = 16A, t <sub>p</sub> = 100ns		9		V
Dynamic resistance <sup>1)</sup>	R <sub>DYN</sub>			0.08		Ω
Clamping voltage <sup>2)</sup>	V <sub>CL</sub>	V <sub>ESD</sub> = 8kV		10		V
Clamping voltage <sup>3)</sup>	V <sub>CL</sub>	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs			10	V
		I <sub>PP</sub> = 13A, t <sub>p</sub> = 8/20μs			14	V
Junction capacitance	C <sub>J</sub>	V <sub>R</sub> = 0V, f = 1MHz		20	25	pF

*Notes:*

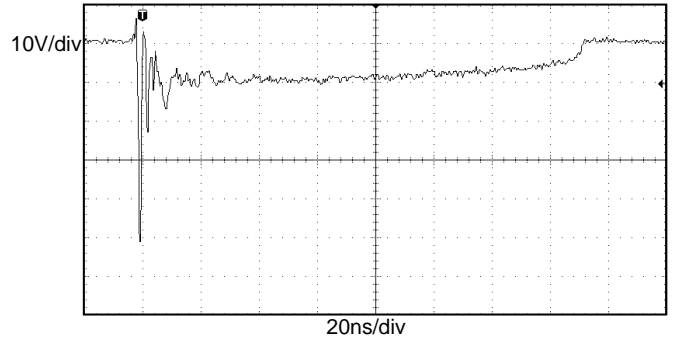
- 1) TLP parameter: Z<sub>0</sub> = 50Ω, t<sub>p</sub> = 100ns, t<sub>r</sub> = 2ns, averaging window from 60ns to 80ns. R<sub>DYN</sub> is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5.

**Typical characteristics ( $T_A=25^\circ\text{C}$ , unless otherwise noted)**

**8/20 $\mu\text{s}$  waveform per IEC61000-4-5**

**Contact discharge current waveform per IEC61000-4-2**

**Clamping voltage vs. Peak pulse current**

**Capacitance vs. Reverse voltage**

**Non-repetitive peak pulse power vs. Pulse time**

**Power derating vs. Ambient temperature**

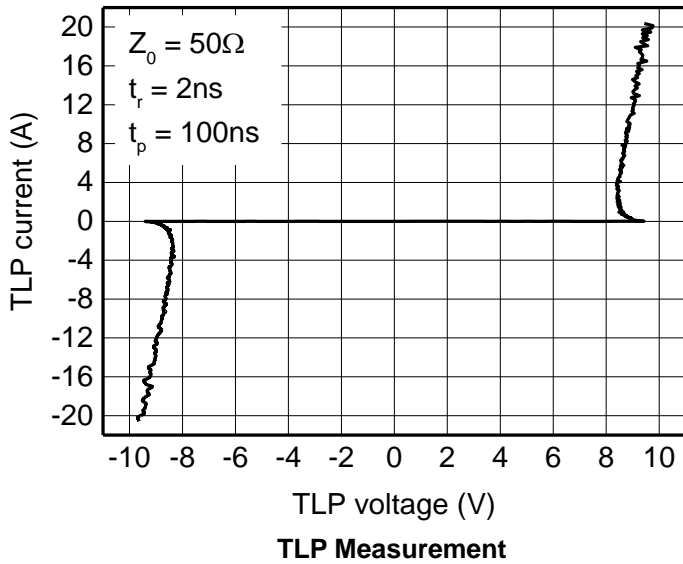
Typical characteristics ( $T_A = 25^\circ\text{C}$ , unless otherwise noted)

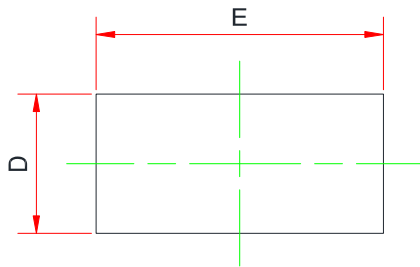
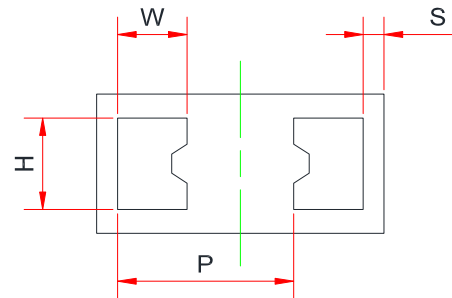
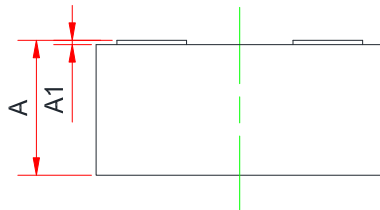


**ESD clamping**  
 (+8kV contact discharge per IEC61000-4-2)

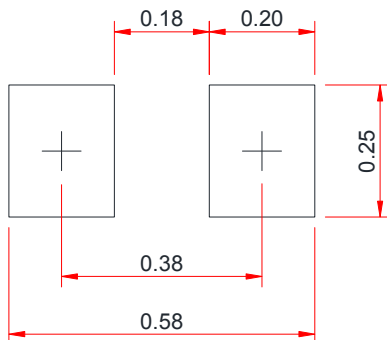


**ESD clamping**  
 (-8kV contact discharge per IEC61000-4-2)

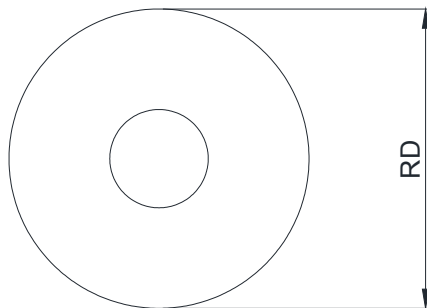
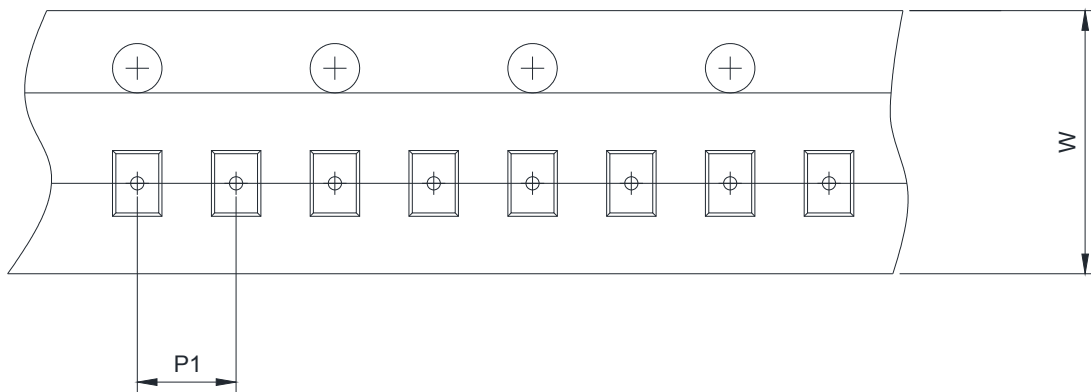
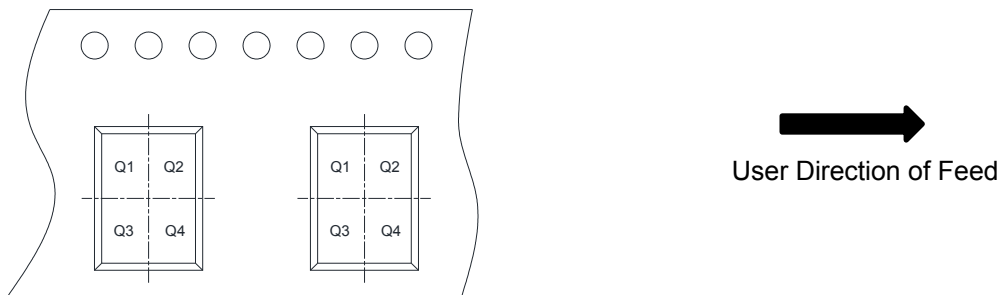


**PACKAGE OUTLINE DIMENSIONS**
**DWN0603-2L**

**Top View**

**Bottom View**

**Side View**

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.268	0.310	0.352
A1	0.000	-	0.005
D	0.290	0.320	0.350
E	0.590	0.620	0.650
W	0.150 Ref.		
H	0.210 Ref.		
S	0.045 Ref.		
P	0.380 Ref.		

**Recommend land pattern (Unit: mm)**

**Notes:**

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

**TAPE AND REEL INFORMATION**
**Reel Dimensions**

**Tape Dimensions**

**Quadrant Assignments For PIN1 Orientation In Tape**


RD	Reel Dimension	<input checked="" type="checkbox"/> 7inch <input type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input checked="" type="checkbox"/> 8mm <input type="checkbox"/> 12mm
P1	Pitch between successive cavity centers	<input checked="" type="checkbox"/> 2mm <input type="checkbox"/> 4mm <input type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input type="checkbox"/> Q1 <input type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [ESD Suppressors / TVS Diodes](#) category:*

*Click to view products by [Will Semiconductor](#) manufacturer:*

Other Similar products are found below :

[NTE4902](#) [P4SMAJ15A](#) [P4SMAJ26A](#) [SMAJ400CA-TP](#) [TGL34-47CA](#) [ESDAULC45-1BF4](#) [SM1605E3/TR13](#) [SMF20A-TP](#) [P4SMAJ12A](#)  
[CPDUR24V-HF](#) [CPDQC5V0USP-HF](#) [CPDQC5V0-HF](#) [MPLAD30KP280A](#) [MPLAD30KP45CAE3](#) [MMBZ27VCLQ-7-F](#) [MMAD1108/TR13](#)  
[MPLAD30KP24A](#) [MPLAD30KP30CAE3](#) [ACPDQC5V0R-HF](#) [DFLT170A-7](#) [NTE4900](#) [NTE4926](#) [NTE4938](#) [JANTX1N6144A](#)  
[JANTX1N6057A](#) [SMF22A-TP](#) [SMF12A-TP](#) [SLVU2.8-TP](#) [SMLJ6.5CA-TP](#) [SMAJ6.5CA-TP](#) [MMAD1108E3/TR13](#) [JANTX1N6160A](#)  
[D5V0M1U2LP3-7](#) [SMAJ400A-TP](#) [AOZ8811DT-03](#) [AOZ8831DI-05](#) [AOZ8831DT-03](#) [SMAJ188CA](#) [3SMC33CA BK](#) [CPDQC3V3C-HF](#)  
[CPDQC12VE-HF](#) [GRPADATAJANTX1N6041A](#) [MPLAD30KP170CA](#) [82357120100](#) [5.0SMLJ15CA-TP](#) [5KP18A-TP](#) [P6KE8.2A-TP](#)  
[MPLAD30KP43CAE3](#) [SMAJ43A-TP](#) [D26V0H1U2LP16-7](#)