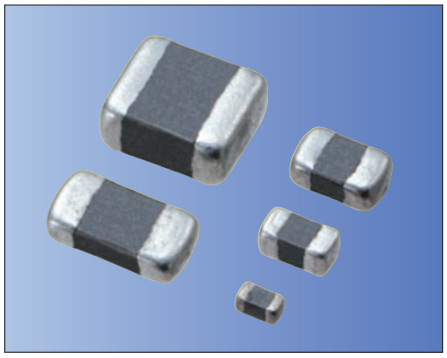
Transient Voltage Suppressors
VC, VJ Series



Pb Free RoHS Compliant

The AVX TransGuard Transient Voltage Suppressors (TVS) with unique high-energy multilayer construction represents state-of-the-art over/ voltage circuit protection.
Monolithic multilayer construction provides/ protects from voltage transients caused by ESD, lightning, NEMP, inductive switching, etc.
True surface mount product is provided in EIA industry stadard packages.
Through-hole components are supplied as conformally coated axial devices.
VJ (Automotive) Series has load dump capabilities of DP7637-2 12V and 24V Pulse 5 according to ISO standard.

Features

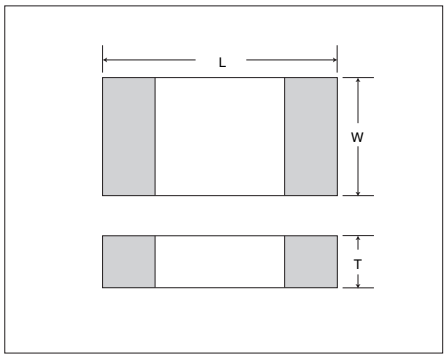
- Excellent clamping ratio
- High transient current capability
- Quick response (<1n sec.)
- Low voltage (From 3.3V)
- Small size (0603 to 1210 Size)
- Low leakage current
- Operating Temp. –55°C to +125°C

Applications

- ESD and I/O Protection
- Data Line Protection
- Automotive Electronics Protection
- ESD/ EMP Protected Connectors

Dimensions

(Unit: mm)



VC Series

TYPE	L	W	T
0402/ 04LC	1.00±0.10	0.50±0.10	0.60 max.
0603/ 06LC	1.60±0.15	0.80±0.15	0.90 max.
0805/ 08LC	2.01±0.20	1.25±0.20	1.02 max.
1206/ 12LC	3.20±0.20	1.60±0.20	1.02 max.
1210	3.20±0.20	2.49±0.20	1.70 max.
1812	4.50±0.20	3.20±0.20	1.70 max.

VJ Series

TYPE	L	W	T
20	3.2±0.2	1.6±0.2	1.7 max.
13	3.2±0.2	2.5±0.2	1.7 max.
14	4.5±0.2	3.2±0.2	1.7 max.
15	5.7±0.2	5.0±0.2	1.7 max.

How to Order

VC Series

VC 0402 05 X 150 W P
① ② ③ ④ ⑤ ⑥ ⑦

① Series
② Size

0402	1005	04LC	1005 low capacitance
0603	1608	06LC	1608 low capacitance
0805	2012	08LC	2012 low capacitance
1206	3216	12LC	3216 low capacitance
1210	3225		
1812	4532		

③ Working Voltage (VDC)

03	3.3	31	31
05	5.6	38	38
09	9	45	45
12	12	48	48
14	14	56	56
18	18	60	60
26	26	65	65
30	30		

④ Transient Energy (J)

A	0.1	N	1.1
C	0.3	H	1.2
D	0.4	J	1.5
E	0.5	S	2.0
K	0.6	P	3.0
F	0.7	U	4.0 to 5.0
L	0.8	V	0.02
G	0.9	X	0.05
M	1.0		

⑤ Clamping Voltage (V)

100	12	400	42	770	77
150	18	500	50	900	90
200	22	540	54	101	100
250	27	560	60	111	110
300	32	580	60	121	120
380	38	620	67	131	130
390	42	650	65/ 67		

⑥ Packing Quantity (pcs.)

	0402 04LC	0603/ 06LC 0805/ 08LC 1206/ 12LC	1210 1812
R	—	4,000	2,000
W	10,000	—	—

* 7" Reel

⑦ Termination

P	Plated Sn

VJ Series

VJ 20 MA 0160 K BA
① ② ③ ④ ⑤ ⑥

① Series
② Size

20	3216
13	3225
14	4532
15	5750

③ Code

MC/ PC	Standard
MA/ PA	Automotive

④ Working Voltage (VDC)

0180	18
0260	26
0300	30
0340	34
0480	48
0600	60

⑤ Breakdown Voltage

K	±10%

⑥ Packing Quantity (pcs.)

BA	VJ20	4,000
	VJ13	2,000
	VJ14	1,500
	VJ15	1,250

BA: 7" Reel

VC Series

Part Number	Working Voltage		Breakdown Voltage		Clamping Voltage		Leakage Current	Transient Energy	Peak Current	Capacitance		Case Size (JIS)
	V_W (DC)	V_W (AC)	V_B	V_B Tol.	V_C	I_{VC}	I_L	E_T	I_P	Cap	Freq.	
	V	V_{rms}	V	%	V	A	μA	J	A	pF	Hz	
VC040205X150	5.6	4	8.5	±20	18	1	35	0.05	20	175	1M	1005
VC040209X200	9	6.4	12.7	±15	22	1	25	0.05	20	175	1M	1005
VC040214X300	14	10	18.5	±12	32	1	15	0.05	20	100	1M	1005
VC040218X400	18	13	25.5	±10	42	1	10	0.05	20	65	1M	1005
VC060303A100	3.3	2.3	5	±20	12	1	100	0.1	30	1450	1k	1608
VC060305A150	5.6	4	8.5	±20	18	1	35	0.1	30	750	1k	1608
VC060309A200	9	6.4	12.7	±15	22	1	25	0.1	30	550	1k	1608
VC060314A300	14	10	18.5	±12	32	1	15	0.1	30	350	1k	1608
VC060318A400	18	13	25.5	±10	42	1	10	0.1	30	150	1k	1608
VC060326A580	26	18	34.5	±10	60	1	10	0.1	30	155	1k	1608
VC060330A650	30	21	41	±10	67	1	10	0.1	30	125	1k	1608
VC080503A100	3.3	2.3	5	±20	12	1	100	0.1	40	1400	1k	2012
VC080503C100	3.3	2.3	5	±20	12	1	100	0.3	120	5000	1k	2012
VC080505A150	5.6	4	8.5	±20	18	1	35	0.1	40	1100	1k	2012
VC080505C150	5.6	4	8.5	±20	18	1	35	0.3	120	3000	1k	2012
VC080509A200	9	6.4	12.7	±15	22	1	25	0.1	40	750	1k	2012
VC080512A250	12	8.5	16	±15	27	1	25	0.1	40	525	1k	2012
VC080514A300	14	10	18.5	±12	32	1	15	0.1	40	325	1k	2012
VC080514C300	14	10	18.5	±12	32	1	15	0.3	120	900	1k	2012
VC080518A400	18	13	25.5	±10	42	1	10	0.1	30	225	1k	2012
VC080518C400	18	13	25.5	±10	42	1	10	0.3	100	550	1k	2012
VC080526A580	26	18	34.5	±10	60	1	10	0.1	30	120	1k	2012
VC080526C580	26	18	34.5	±10	60	1	10	0.3	100	250	1k	2012
VC080530A650	30	21	41	±10	67	1	10	0.1	30	90	1M	2012
VC120603A100	3.3	2.3	5	±20	12	1	100	0.1	40	1250	1k	3216
VC120603D100	3.3	2.3	5	±20	12	1	100	0.4	150	4700	1k	3216
VC120605A150	5.6	4	8.5	±20	18	1	35	0.1	40	1200	1k	3216
VC120605D150	5.6	4	8.5	±20	18	1	35	0.4	150	3000	1k	3216
VC120614A300	14	10	18.5	±12	32	1	15	0.1	40	600	1k	3216
VC120614D300	14	10	18.5	±12	32	1	15	0.4	150	1050	1k	3216
VC120618E380	18	13	22	±10	38	1	15	0.5	200	800	1k	3216
VC120618A400	18	13	25.5	±10	42	1	10	0.1	30	350	1k	3216
VC120618D400	18	13	25.5	±10	42	1	10	0.4	150	900	1k	3216
VC120626F540	26	20	33	±10	54	1	15	0.7	200	600	1k	3216
VC120626D580	26	18	34.5	±10	60	1	10	0.4	120	500	1k	3216
VC120631M650	31	25	39	±10	65	1	15	1	200	500	1k	3216
VC120630D650	30	21	41	±10	67	1	10	0.4	120	400	1k	3216
VC120638N770	38	30	47	±10	77	1	15	1.1	200	350	1k	3216
VC120645K900	45	35	56	±10	90	1	15	0.6	200	260	1k	3216
VC120648D101	48	34	62	±10	100	1	10	0.4	100	225	1k	3216
VC120656F111	56	40	68	±10	110	1	15	0.7	100	180	1k	3216
VC120665L131	65	50	82	±10	135	1	15	0.8	100	120	1k	3216
VC121018J390	18	13	25.5	±10	42	5	10	1.5	500	3100	1k	3225
VC121026H560	26	18	34.5	±10	60	5	10	1.2	300	2150	1k	3225
VC121030G620	30	21	41	±10	67	5	10	0.9	220	1750	1k	3225
VC121030H620	30	21	41	±10	67	5	10	1.2	280	1850	1k	3225
VC121038S770	38	30	47	±10	77	2.5	15	2	300	750	1k	3225
VC121048G101	48	34	62	±10	100	5	10	0.9	220	450	1k	3225
VC121048H101	48	34	62	±10	100	5	10	1.2	250	500	1k	3225
VC121060J121	60	42	76	±10	120	5	10	1.5	250	400	1k	3225
VC181226P540	26	20	33	±10	54	5	15	3	800	3000	1k	4532
VC181238U770	38	30	47	±10	77	5	15	4.2	800	1700	1k	4532
VC181245U900	45	35	56	±10	90	5	15	4	500	1200	1k	4532
VC181256U111	56	40	68	±10	110	5	15	4.8	500	800	1k	4532

(Low Capacitance)

Part Number	Working Voltage		Clamping Voltage		Leakage Current	Transient Energy	Peak Current	Capacitance	Case Size
	V_W (DC)	V_W (AC)	V_C	I_{VC}	I_L	E_T	I_P	(1MHz)	
	V	V_{rms}	V	A	μA	J	A	pF	
VC04LC18V500	≤18V	≤14	50	1	10	0.02	15	40	1005
VC06LC18X500	≤18V	≤14	50	1	10	0.05	30	50	1608
VC08LC18A500	≤18V	≤14	50	1	10	0.10	30	80	2012
VC12LC18A500	≤18V	≤14	50	1	10	0.10	30	200	3216

VJ Series

Part Number	Working Voltage	Breakdown Voltage	Clamping Voltage		Transient Energy	Peak Current	Capacitance	Case Size
	V_W (DC)	V_B	V_C	I_{VC}	E_T	I_P	(1MHz)	
	V	V	V	A	J	A	pF	
VJ13MC0180KBA	18	21.5 to 26.5	45	10	1.5	500	3000	3225
VJ13MC0260KBA	26	29.7 to 36.3	62	10	1.2	300	1120	3225
VJ13MC0300KBA	30	35 to 43	73	10	0.9	220	1020	3225
VJ13PC0300KBA	30	35 to 43	73	10	1.2	280	1150	3225
VJ13MC0480KBA	48	54.5 to 66.5	110	10	0.9	220	800	3225
VJ13PC0480KBA	48	54.5 to 66.5	110	10	1.2	250	840	3225
VJ13MC0600KBA	60	67 to 83	126	10	1.5	250	600	3225

VJ (Automotive) Series

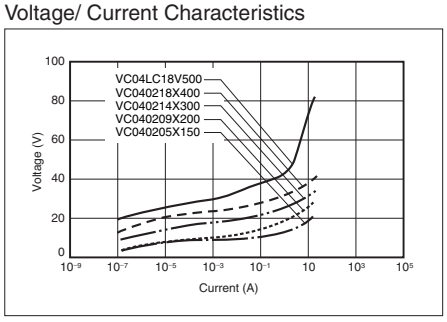
Part Number	Working Voltage		Breakdown Voltage	Clamping Voltage		Leakage Current	Transient Energy	Load Dump	Jump Start	Peak Current	Power Consumption	Capacitance	Case Size
	V_W (DC)	V_W (AC)	V_B	V_C	I_{VC}	I_L	E_T	(10×)	(5 min.)	I_P		(1kHz)	
	V	V_{rms}	V	V	A	μA	J	J	V	A	W	pF	
VJ20MA0160KBA	16	14	22 to 27	40	1	50	0.6	1.5	24.5	200	0.008	900	3216
VJ13MA0160KBA	16	14	22 to 27	40	2.5	25	1.6	3	24.5	400	0.010	1800	3225
VJ14MA0160KBA	16	14	22 to 27	40	5	100	2.4	6	24.5	800	0.015	5000	4532
VJ15MA0160KBA	16	14	22 to 27	40	10	100	5.8	12	24.5	1200	0.030	11000	5750
VJ15PA0160KBA	16	14	22 to 27	40	10	100	5.8	25	24.5	1200	0.030	16000	5750
VJ15MA0340KBA	34	30	42.3 to 51.7	77	10	100	12	12	50	1200	0.030	4000	5750

V_W (DC) : DC Working Voltage
V_W (AC) : AC Working Voltage
V_B : Typical Breakdown Voltage (1mA$_{DC}$)
V_C : Clamping Voltage
I_{VC} : Test Current for V_C (8×20μS)

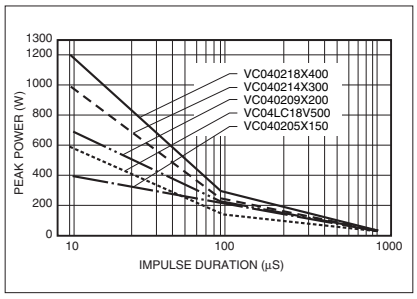
I_L : Maximum leakage current at the working voltage
E_T : Transient Energy Rating (10×1000μS)
I_P : Peak Current Rating (8×20μS)
Cap : Typical capacitance (1kHz, 0.5Vrms)
Load Dump : ISO DP7637-2 Pulse 5

Typical Performance Curves

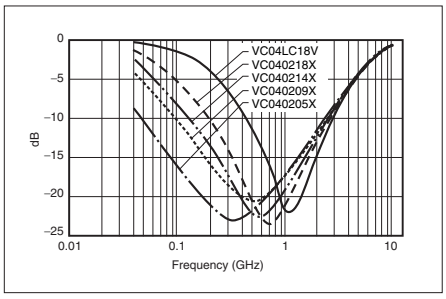
Voltage/ Current Characteristics



Peak Power vs. Pulse Duration

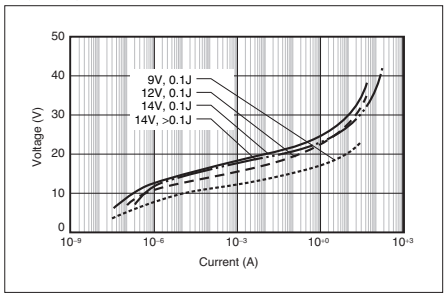


Insertion Loss Characteristics

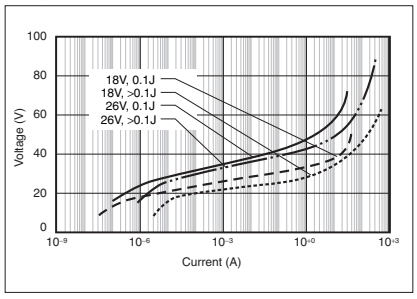


Voltage/ Current Characteristics (For each rated voltage)

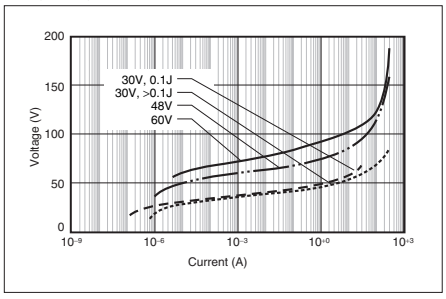
9V, 12V, 14V



18V, 26V

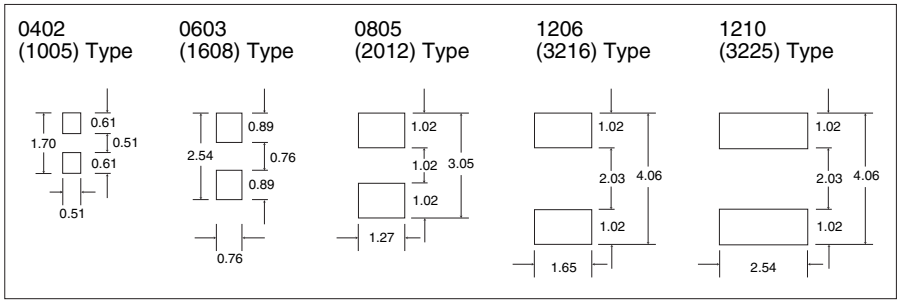


30V, 48V, 60V



Recommended Land Pattern

(Unit: mm)



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