

SMD Varistors, CN Standard



Construction

- Rectangular varistor element in multilayer technology, without encapsulation
- Termination: silver palladium

Features

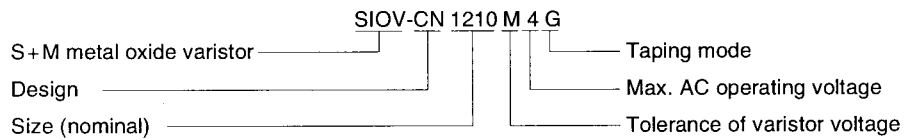
- Electrical equivalents to leaded types SIOV-SR
- Good solderability
- Suitable for ESD protection
- Types with controlled capacitance available
- PSpice models

Taping

- Supply on 8/12/16-mm tape, for tape dimensions [see pages 111/112](#), for reel dimensions and packing units [see page 113](#)

Type designation

Detailed description of coding system [on page 33](#)



General technical data

Climatic category	55/125/56 (55/85/56)	in accordance with IEC 68-1
LCT	- 55 °C	
UCT	+ 85 °C (CN0603) + 125 °C (CN0805...2220)	
Damp heat, steady state (93 % r.h., 40 °C)	56 days	in accordance with IEC 68-2-3
Operating temperature	- 55 ... + 125 °C (85 °C)	in accordance with CECC 42 000
Storage temperature	- 55 ... + 150 °C (125 °C)	
Response time	< 0,5 ns	
Solderability	235 °C, 2 s	in accordance with IEC 68-2-58
Resistance to soldering heat	260 °C, 10 s	in accordance with IEC 68-2-20

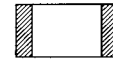


Standard

Maximum ratings (0603: $T_A = 85\text{ °C}$; 0805 ... 2220: $T_A = 125\text{ °C}$)

Type	Ordering code	V_{RMS}	V_{DC}	i_{max} 8/20 μs	W_{max} (2 ms)	P_{max}
SIOV-		V	V	A	J	W
CN0603M4G	Q69500-V0040-M060	4	5,5	30	0,1	0,003
CN0805M4G	Q69510-V0040-M062	4	5,5	100	0,1	0,005
CN1206M4G	Q69520-V0040-M062	4	5,5	150	0,3	0,008
CN1210M4G	Q69530-V0040-M062	4	5,5	250	0,4	0,010
CN1812M4G	Q69580-V0040-M062	4	5,5	500	0,8	0,015
CN2220M4G	Q69540-V0040-M062	4	5,5	1000	1,4	0,020
CN0603M6G	Q69500-V0060-M060	6	8	30	0,1	0,003
CN0805M6G	Q69510-V0060-M062	6	8	120	0,2	0,005
CN1206M6G	Q69520-V0060-M062	6	8	200	0,4	0,008
CN1210M6G	Q69530-V0060-M062	6	8	300	0,7	0,010
CN1812M6G	Q69580-V0060-M062	6	8	500	1,0	0,015
CN2220M6G	Q69540-V0060-M062	6	8	1200	3,6	0,020
CN0603K7G	Q69500-V0070-K060	7	9	30	0,1	0,003
CN0603L8G	Q69500-V0080-L060	8	11	30	0,1	0,003
CN0805L8G	Q69510-V0080-L062	8	11	120	0,2	0,005
CN1206L8G	Q69520-V0080-L062	8	11	200	0,5	0,008
CN1210L8G	Q69530-V0080-L062	8	11	400	1,0	0,010
CN1812L8G	Q69580-V0080-L062	8	11	800	1,8	0,015
CN2220L8G	Q69540-V0080-L062	8	11	1200	4,2	0,020
CN0603K11G	Q69500-V0110-K060	11	14	30	0,2	0,003
CN0805K11G	Q69510-V0110-K062	11	14	120	0,2	0,005
CN1206K11G	Q69520-V0110-K062	11	14	200	0,5	0,008
CN1210K11G	Q69530-V0110-K062	11	14	400	1,2	0,010
CN1812K11G	Q69580-V0110-K062	11	14	800	1,9	0,015
CN2220K11G	Q69540-V0110-K062	11	14	1200	5,4	0,020
CN0603K14G	Q69500-V0140-K060	14	18	30	0,2	0,003
CN0805K14G	Q69510-V0140-K062	14	18	120	0,3	0,005
CN1206K14G	Q69520-V0140-K062	14	18	200	0,5	0,008
CN1210K14G	Q69530-V0140-K062	14	18	400	1,5	0,010
CN1812K14G	Q69580-V0140-K062	14	18	800	2,3	0,015
CN2220K14G	Q69540-V0140-K062	14	18	1200	5,8	0,020

Standard



Characteristics ($T_A = 25\text{ °C}$)

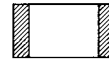
Type	V_V (1 mA) V	ΔV_V (1 mA) %	Max. clamping voltage		C_{typ} (1 kHz) pF	L_{typ} nH	Derating curve Page	V/I char- acteristic Page
			v V	i A				
SIOV-								
CN0603M4G	8	± 20	19	1,0	200	1,0	175	197
CN0805M4G	8	± 20	19	1,0	700	1,5	175	198
CN1206M4G	8	± 20	17	1,0	1500	1,8	177	199
CN1210M4G	8	± 20	17	2,5	5000	1,8	178	200
CN1812M4G	8	± 20	17	5,0	10000	2,5	179	201
CN2220M4G	8	± 20	17	10,0	24000	3,0	181	202
CN0603M6G	11	± 20	27	1,0	200	1,0	175	197
CN0805M6G	11	± 20	27	1,0	600	1,5	176	198
CN1206M6G	11	± 20	25	1,0	1200	1,8	177	199
CN1210M6G	11	± 20	25	2,5	4000	1,8	178	200
CN1812M6G	11	± 20	25	5,0	8000	2,5	179	201
CN2220M6G	11	± 20	25	10,0	20000	3,0	181	202
CN0603K7G	12,5	± 10	27	1,0	200	1,0	175	197
CN0603L8G	15	± 15	33	1,0	150	1,0	175	197
CN0805L8G	15	± 15	33	1,0	500	1,5	176	198
CN1206L8G	15	± 15	30	1,0	1000	1,8	177	199
CN1210L8G	15	± 15	30	2,5	3000	1,8	179	200
CN1812L8G	15	± 15	30	5,0	6000	2,5	180	201
CN2220L8G	15	± 15	30	10,0	16000	3,0	181	202
CN0603K11G	18	± 10	35	1,0	120	1,0	175	197
CN0805K11G	18	± 10	35	1,0	400	1,5	176	198
CN1206K11G	18	± 10	33	1,0	800	1,8	177	199
CN1210K11G	18	± 10	33	2,5	2400	1,8	179	200
CN1812K11G	18	± 10	33	5,0	5000	2,5	180	201
CN2220K11G	18	± 10	33	10,0	12000	3,0	181	202
CN0603K14G	22	± 10	40	1,0	100	1,0	175	197
CN0805K14G	22	± 10	40	1,0	350	1,5	176	198
CN1206K14G	22	± 10	38	1,0	700	1,8	177	199
CN1210K14G	22	± 10	38	2,5	2000	1,8	179	200
CN1812K14G	22	± 10	38	5,0	4500	2,5	180	201
CN2220K14G	22	± 10	38	10,0	10000	3,0	181	202



Standard

Maximum ratings (0603: $T_A = 85\text{ °C}$; 0805 ... 2220: $T_A = 125\text{ °C}$)

Type	Ordering code	V_{RMS}	V_{DC}	i_{max} 8/20 μ s	W_{max} (2 ms)	P_{max}
SIOV-		V	V	A	J	W
CN0805K17G	Q69510-V0170-K062	17	22	120	0,3	0,005
CN1206K17G	Q69520-V0170-K062	17	22	200	0,6	0,008
CN1210K17G	Q69530-V0170-K062	17	22	400	1,7	0,010
CN1812K17G	Q69580-V0170-K062	17	22	800	2,7	0,015
CN2220K17G	Q69540-V0170-K062	17	22	1200	7,2	0,020
CN0805K20G	Q69510-V0200-K062	20	26	80	0,3	0,005
CN1206K20G	Q69520-V0200-K062	20	26	200	0,7	0,008
CN1210K20G	Q69530-V0200-K062	20	26	400	1,9	0,010
CN1812K20G	Q69580-V0200-K062	20	26	800	3,0	0,015
CN2220K20G	Q69540-V0200-K062	20	26	1200	7,8	0,020
CN0805K25G	Q69510-V0250-K062	25	31	80	0,3	0,005
CN1206K25G	Q69520-V0250-K062	25	31	200	1,0	0,008
CN1210K25G	Q69530-V0250-K062	25	31	300	1,7	0,010
CN1812K25G	Q69580-V0250-K062	25	31	800	3,7	0,015
CN2220K25G	Q69540-V0250-K062	25	31	1200	9,6	0,020
CN1206K30G	Q69520-V0300-K062	30	38	200	1,1	0,008
CN1210K30G	Q69530-V0300-K062	30	38	300	2,0	0,010
CN1812K30G	Q69580-V0300-K062	30	38	800	4,2	0,015
CN2220K30G	Q69540-V0300-K062	30	38	1200	12,0	0,020
CN1206K35G	Q69520-V0350-K062	35	45	120	0,6	0,008
CN1210K35G	Q69530-V0350-K062	35	45	250	2,0	0,010
CN1812K35G	Q69580-V0350-K062	35	45	500	4,0	0,015
CN2220K35G	Q69540-V0350-K062	35	45	1000	7,7	0,020
CN1206K40G	Q69520-V0400-K062	40	56	120	0,7	0,008
CN1210K40G	Q69530-V0400-K062	40	56	250	2,3	0,010
CN1812K40G	Q69580-V0400-K062	40	56	500	4,8	0,015
CN2220K40G	Q69540-V0400-K062	40	56	1000	9,0	0,020
CN1206K50G	Q69520-V0500-K062	50	65	120	0,8	0,008
CN1210K50G	Q69530-V0500-K062	50	65	200	1,6	0,010
CN1812K50G	Q69580-V0500-K062	50	65	400	4,5	0,015
CN2220K50G	Q69540-V0500-K062	50	65	800	5,6	0,020


Characteristics ($T_A = 25\text{ }^\circ\text{C}$)

Type	V_V (1 mA) V	ΔV_V (1 mA) %	Max. clamping voltage		C_{typ} (1 kHz) pF	L_{typ} nH	Derating curve Page	VI char- acteristic Page
			v V	i A				
CN0805K17G	27	± 10	46	1,0	300	1,5	176	198
CN1206K17G	27	± 10	44	1,0	650	1,8	177	199
CN1210K17G	27	± 10	44	2,5	1800	1,8	179	200
CN1812K17G	27	± 10	44	5,0	4000	2,5	180	201
CN2220K17G	27	± 10	44	10,0	9000	3,0	181	202
CN0805K20G	33	± 10	56	1,0	300	1,5	176	198
CN1206K20G	33	± 10	54	1,0	600	1,8	177	199
CN1210K20G	33	± 10	54	2,5	1500	1,8	179	200
CN1812K20G	33	± 10	54	5,0	3000	2,5	180	201
CN2220K20G	33	± 10	54	10,0	7000	3,0	181	202
CN0805K25G	39	± 10	67	1,0	250	1,5	176	198
CN1206K25G	39	± 10	65	1,0	550	1,8	177	199
CN1210K25G	39	± 10	65	2,5	1200	1,8	178	200
CN1812K25G	39	± 10	65	5,0	2500	2,5	180	201
CN2220K25G	39	± 10	65	10,0	5000	3,0	181	202
CN1206K30G	47	± 10	77	1,0	500	1,8	177	199
CN1210K30G	47	± 10	77	2,5	1000	1,8	178	200
CN1812K30G	47	± 10	77	5,0	2000	2,5	180	201
CN2220K30G	47	± 10	77	10,0	4000	3,0	181	202
CN1206K35G	56	± 10	90	1,0	300	1,8	176	199
CN1210K35G	56	± 10	90	2,5	600	1,8	178	200
CN1812K35G	56	± 10	90	5,0	1200	2,5	179	201
CN2220K35G	56	± 10	90	10,0	2500	3,0	181	202
CN1206K40G	68	± 10	110	1,0	250	1,8	176	199
CN1210K40G	68	± 10	110	2,5	500	1,8	178	200
CN1812K40G	68	± 10	110	5,0	1000	2,5	179	201
CN2220K40G	68	± 10	110	10,0	2000	3,0	181	202
CN1206K50G	82	± 10	135	1,0	120	1,8	176	199
CN1210K50G	82	± 10	135	2,5	250	1,8	177	200
CN1812K50G	82	± 10	135	5,0	500	2,5	179	201
CN2220K50G	82	± 10	135	10,0	1000	3,0	180	202



Standard

Maximum ratings (0603: $T_A = 85\text{ °C}$; 0805 ... 2220: $T_A = 125\text{ °C}$)

Type	Ordering code	V_{RMS}	V_{DC}	i_{max} 8/20 μ s	W_{max} (2 ms)	P_{max}
SIOV-		V	V	A	J	W
CN1206K60G	Q69520-V0600-K062	60	85	120	0,9	0,008
CN1210K60G	Q69530-V0600-K062	60	85	200	2,0	0,010
CN1812K60G	Q69580-V0600-K062	60	85	400	5,8	0,015
CN2220K60G	Q69540-V0600-K062	60	85	800	6,8	0,020

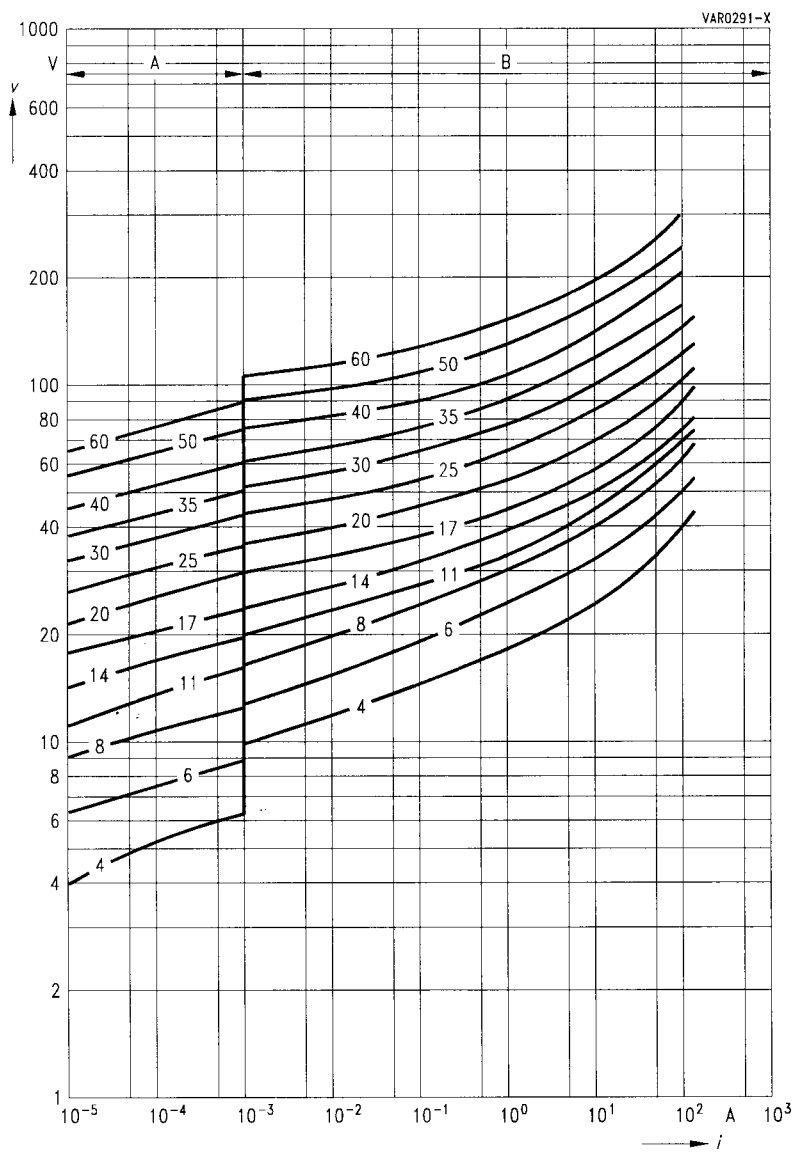
Characteristics ($T_A = 25\text{ °C}$)

Type	V_V (1 mA) V	ΔV_V (1 mA) %	Max. clamping voltage		C_{typ} (1 kHz) pF	L_{typ} nH	Derating curve Page	V/I char- acteristic Page
			v	i				
CN1206K60G	100	± 10	165	1,0	100	1,8	176	199
CN1210K60G	100	± 10	165	2,5	200	1,8	177	200
CN1812K60G	100	± 10	165	5,0	400	2,5	179	201
CN2220K60G	100	± 10	165	10,0	800	3,0	180	202

V/I Characteristics

$$v = f(i)$$

A = Leakage current for worst-case
 B = Protection level varistor tolerances

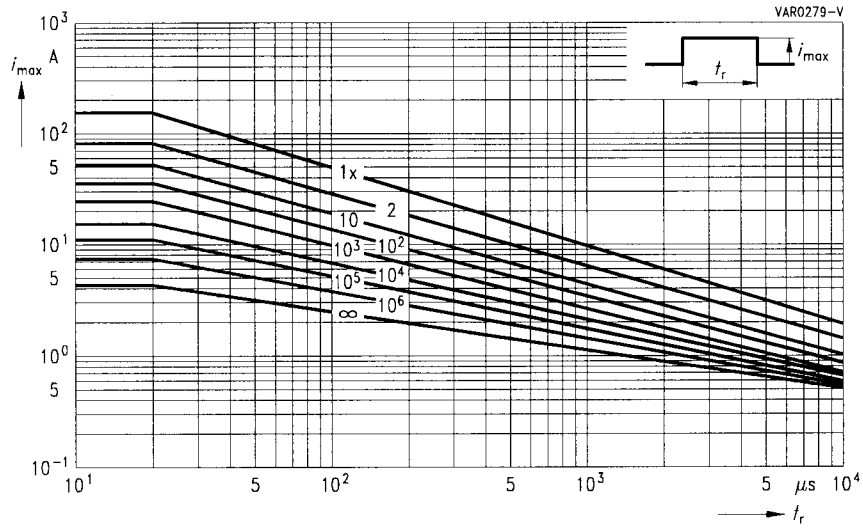


SIOV-CN1206M4G ... K60G

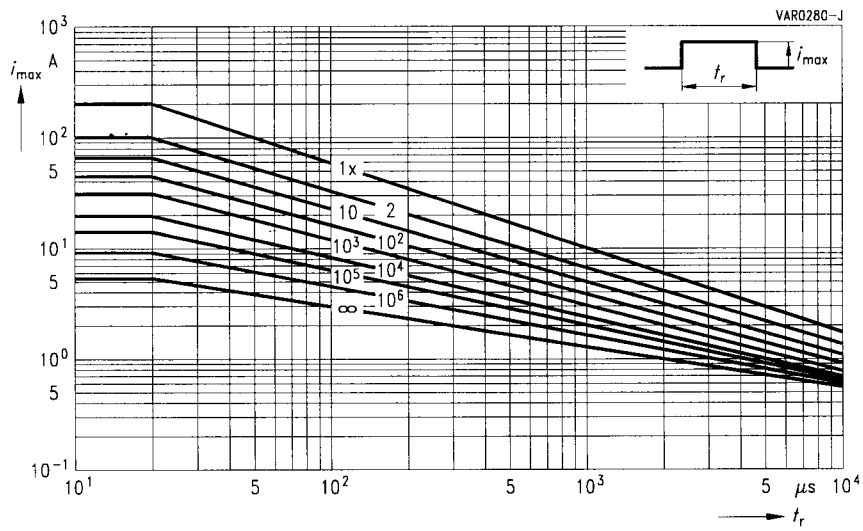
Derating Curves

Maximum surge current

$$i_{\max} = f(t_r, \text{pulse train})$$



SIOV-CN1206M4G



SIOV-CN1206M6G ... K30G
 SIOV-CN1206S14BAUTOG
 SIOV-CN1210K50G ... K60G