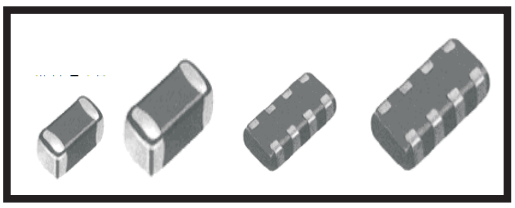
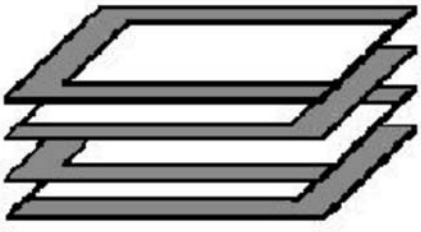
■ 片式壓敏電阻器 (MLV)
MULTILAYER CHIP VARISTOR

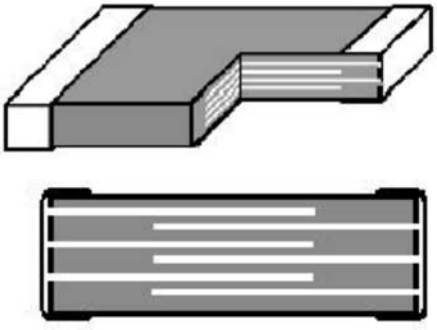


多層片式壓敏電阻器(MLV) 是一種浪涌電壓抑制器。它是采用先進的叠層片式化技術制造的半導體陶瓷元件，它能爲被保護元件(電路) 提供强有力的保護，同時具有優良的浪涌能量吸收能力及内部散熱能力。該元件是一種無引綫的片式結構，其寄生電感非常小、響應速度非常快(響應時間<0.5ns) ，因此它具有優良的ESD及各種浪涌噪聲的抑制能力。與傳統的齊納二極管和圓片壓敏電阻器相似，具有體積小、重量輕、響應速度快的特點。

Multilayer Chip Varistors (MLV) are Transient Voltage Suppressors (TVS) which manufactured from semicon ductingceramics by the highly advanced multilayer formation technologies, which can offer rugged protection, excellent transient energy absorption and internal heat dissipation. The devices are leadless chip form, eliminating lead inductance and guaranteeing a faster speed of response time of less than 0.5ns, which makes the m fast enough to ensure reliable protection against ESD pulse and other specific transient events. These transient suppression devices are significantly smaller footprints and lower profiles than traditional zener diodes or radial MOVs.



Multilayer Formation Technologies



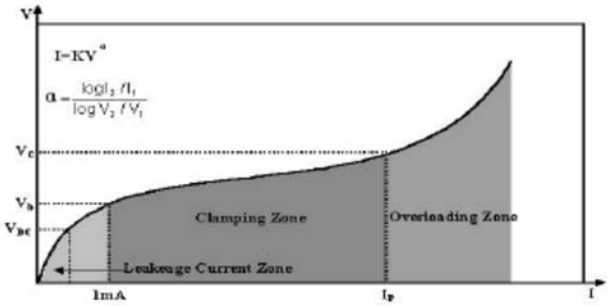
Section of the chip

• 特征 FEATURES

＊ 叠層片式陶瓷結構
＊ 無引綫，産品尺寸1005[0402]、1608[0603]、2012[0805] 、3216[1206]、 3225[1210]、4532[1812] 、5750[2220]、8063[3225] 和 1080[4032]
Leadless 1005[0402], 1608[0603], 2012[0805], 3216[1206], 3225[1210], 4532[1812], 8063[3225] and 1080[4032] Chip Size
＊ 温度範圍：－55℃ ~ ＋125℃
-55℃ to ＋125℃ Operating Temperature Range
＊ 工作電壓範圍$V_{w(dc)}$＝3.3 ~ 615V
Operating Voltage Range Vw(DC) =3.3V to 615V
＊ 具有雙向限制特性
適合ESD保護
Inherent Bi-directional Clamping
＊ 漏電流非常小
Very Low Leakage Current
＊ 寄生電感小、響應速度快(響應時間<0.5ns)
Low Inductance, Fast Response (Response time<0.5ns)
＊ 優良的温度系數
Excellent Temperature Coefficient
＊ 良好的焊接性能(端電極爲三層電鍍或銀/鈀/鉑合金)
Good Solderability (The electrode termination is selectable in plated and silver /palladium/platinum.)

• 設計信息 INFORMATION FOR DESIGNER

壓敏特性 Voltage Dependent Characteristic
疊層片式壓敏電阻器是一種對電壓敏感的電阻器，具有對稱的伏安特性，其阻值隨着電壓上升呈非綫性下降，當電壓在一定範圍內進一步上升時，這種短路現象更加劇烈。
Transient Voltage Suppressors (Varistors) are voltage-dependent electrical resistors with symmetrical V/I characteristic. Their resistance value decrease with increasing voltage, thus "short-circuiting" further rises in overvoltage.



• 術語解釋 TERMS AND DESCRIPTIONS

直流工作電壓 Working DC Voltage (Vw(DC))
在規定的環境條件下，保證壓敏電阻器正常工作所允許連續施加的最大直流電壓值，它也作爲測量漏電流的參考點，在此電壓通常小于元件的壓敏電壓。
This is the maximum continuous DC voltage, which may be applied up to the maximum operating temperature of the device. The rated DC operating voltage (working voltage) is also used as the reference point for leakage current. This voltage is always less than the breakdown voltage of the device.

交流工作電壓 Working AC Voltage (Vw(AC))
在規定的環境條件下，保證壓敏電阻器正常工作所允許連續施加的最大交流電壓值。
This is the maximum continuous sinusoidal rms voltage, which maybe applied at any temperature up to the maximum operating temperature of the device.

最大浪涌電流 Maximum Surge Current (Peak Current IP)
在規定的脉衝波形(8/20μs)和相應的電壓下，保證壓敏電阻器正常工作所允許施加最大電流。這個脉衝可以施加在元件任意一端。
This is the maximum peak current, which may be applied for an 8/20μs impulse, with rated line voltage also applied, without causing device failure. The pulse can be applied to the device in either polarity with the same confidence factor.

最大的浪涌能量(能量耐量E_S) Maximum Surge Energy (Es)
在單個規定的脉衝波形（ 10/1000μs）下，保證壓敏電阻器正常工作時，其所能承受的最大的脉衝能量。
This is the maximum rated transient energy which may be dissipated for a single current pulse at a specified impulse duration (10/1000μs), with the rated DC or RMS voltage applied, without causing device failure.

漏電流（ I_L） leakage (IL) at Rated DC Voltage
在非傳導模式下，該元件具有非常高的阻抗（ 接近10^9 Ω）在系統中呈開路狀態，此時漏電流非常低(室温下<50μA)。與齊納二極管不同，叠層片式壓敏電阻器具有低漏電流特性，在最高工作温度下，漏電流不超過500μA。
In the no conducting mode, the device is at a very high impedance (approaching 10^9ohms) andappears as an almost open circuit in the system. The leakage current drawn at this level is very low(<50μA at ambient temperature) and, unlike the zener diode, the multilayer varistors have the added advantage that, when operated up to its maximum temperature, its leakage current will not increase above 500μA.

壓敏電壓 Varistor Voltage (VB(DC))
該電壓是壓敏電阻器從開路狀態進入導通狀態的電壓值，標稱壓敏電壓通常爲1mA直流電流所對應的電壓。
This is the voltage at which the device changes from the off state to the on state and enters its conduction mode of operation. The voltage is usually characterized at the 1mA point.

限制電壓 Clamping Voltage (Vc)
在規定脉衝波形（ 8/20μs）和電流下，元件兩端産生的峰值電壓，需要指出的是峰值電壓和峰值電流的産生在時間上不一定要一致。
This is the peak voltage appearing across the suppressor when measured at conditions of specified pulse current and specified waveform (8/20μs). It is important to note that the peak current and peak voltage may not necessarily be coincidental in time.

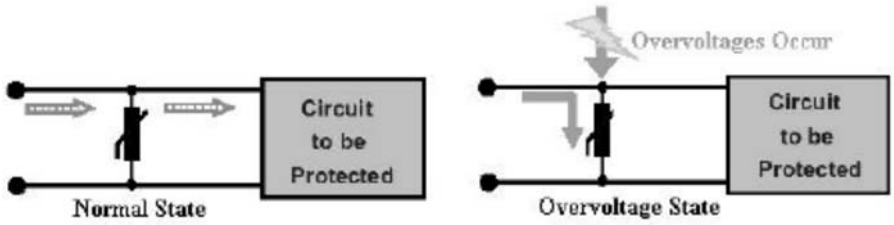
電容量 Capacitance (Cp)
這是元件在規定頻率（ 1MHz）和偏置電壓（ 0.5V）下的電容量。
This is the capacitance of the device at a specified frequency 1MHz and bias 0.5V

• 應用 APPLICATION

防止過電壓 The Prevention of Overvoltage

當施加的電壓升高到壓敏電壓時，壓敏電阻器的電流急劇上升，被保護設備的浪涌電壓迅速減小，從而使裝有壓敏電阻器的設備抗浪涌噪聲能力達到相應要求。壓敏電阻器可以抑制各種各樣的浪涌電壓，使電子設備免受干擾和破壞

When the voltage increases above the threshold of MLV, the suppressor will draws a rapidly increasing current, and then the overvoltage is considerably attenuated away from the protection of the equipments should be supplemented by including specific components that will raise the withstand capabilities to the required level. Varistors provide protection against all kind of overv oltage and prevent electronic equipment from being damaged by transient events.



具體應用 Specific Application

- 抑制各種感性負載切換或各種瞬間噪聲在電路板中產生的EFT和浪涌電壓。
  Suppression of Inductive Switching or Other Transient Events Such as EFT and Surge Voltage at the Circuit Board Level.
- 保護元件和電路，防止在電源供應、控制和信號綫產生的ESD。
  Protection of Components and Circuits Sensitive to ESD Transients Occurring on Power supplies, Control and Signal Lines.
- 爲IC、CMOS和MOSFET提供在綫過壓保護。
  Provides On-Board Transient Voltage Protection for ICs, CMOS and MOSFET.
- 在許多領域中可替換較大的表面貼裝TVS齊納二極管。
  Replace Larger Surface Mount TVS Zeners in Many Applications
- 用于協助各種終端產品實現電磁兼容性。
  Used to Help Achieve Electromagnetic Compliance of End Products

• 產品規格型號的表示方法 PART NUMBER IDENTIFICATION

＊ Multilayer Chip Varistor 片式壓敏電阻器

FPV	160808	G	3R3	P	M	T
①	②	③	④	⑤	⑥	⑦

① 產品代號 Product Code

FPV	風華叠層片式壓敏電阻器 Multilayer Chip Varistor

② 規格尺寸(L×W×T) (mm) Dimensions

100505	1.0×0.5×0.5
160808	1.6×0.8×0.8
201209	2.0×1.2×0.9
321611	3.2×1.6×1.1
322513	3.2×2.5×1.3
451616	4.5×1.6×1.6
453215	4.5×3.2×1.5
5750	5.7×5.0
8063	8.0×6.3
1080	10.2×8.0

③ 產品系列 Product Series

E	高耐能型 High energy absorb type
S	高速型High speed type
G	通用型 General type

④ 直流工作電壓 Working DC Voltage

3R3	3.3V
240	24V

⑤ 端頭 Termination

P	電鍍 Plated
S	鉑/鈀/銀 Non-plated Pt/Pd/Ag

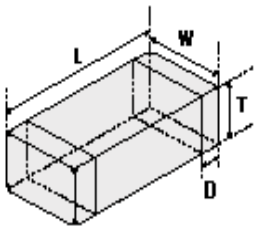
⑥ 誤差 Tolerance

K	±10%
L	±15%
M	±20%

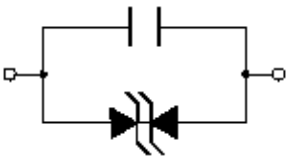
⑦ 包裝方式 Packaging Style

T	編帶包裝 Tape & Reel
B	散裝 Bulk

• 外形尺寸及等效電路 SHAPE AND DIMENSIONS & EQUIVALENT CIRCUIT



Equivalent circuit



單位(Unit): mm/inch

Part Number	L	W	T	D
100505 (0402)	1.0±0.15 (0.040±0.006)	0.5±0.15 (0.020±0.006)	0.5±0.15 (0.020±0.006)	0.25±0.10 (0.010±0.004)
160808 (0603)	1.6±0.2 (0.063±0.008)	0.8±0.2 (0.031±0.008)	0.8±0.2 (0.031±0.008)	0.3±0.2 (0.01±0.008)
201209 (0805)	2.0±0.2 (0.079±0.008)	1.2±0.2 (0.047±0.008)	0.9±0.2 (0.035±0.008)	0.5±0.3 (0.020±0.012)
201212 (0805)	2.0±0.2 (0.079±0.008)	1.2±0.2 (0.047±0.008)	1.2±0.2 (0.047±0.008)	0.5±0.3 (0.020±0.012)
321611 (1206)	3.2±0.2 (0.126±0.008)	1.6±0.2 (0.063±0.008)	1.1±0.2 (0.043±0.008)	0.5±0.3 (0.020±0.012)
321609 (1206)	3.2±0.2 (0.126±0.008)	1.6±0.2 (0.063±0.008)	0.9±0.2 (0.035±0.008)	0.5±0.3 (0.020±0.012)
322513 (1210)	3.2±0.2 (0.126±0.008)	2.5±0.2 (0.098±0.008)	1.3±0.2 (0.051±0.008)	0.5±0.3 (0.020±0.012)
451616 (1806)	4.5±0.2 (0.186±0.008)	1.6±0.2 (0.063±0.008)	1.6±0.2 (0.063±0.008)	0.5±0.3 (0.020±0.012)
453215 (1812)	4.5±0.2 (0.180±0.008)	3.2±0.2 (0.126±0.008)	1.5±0.2 (0.060±0.008)	0.5±0.3 (0.020±0.012)
5750 (2220)	5.7±0.3 (0.22±0.012)	5.0±0.3 (0.20±0.012)	1.0~2.5 (0.050~0.100)	0.7±0.3 (0.028±0.012)
8063 (3225)	8.0±0.3 (0.32±0.012)	6.3±0.3 (0.250±0.012)	1.0~2.5 (0.050~0.100)	0.7±0.3 (0.028±0.012)
1080 (4032)	10.2±0.3 (0.400±0.012)	8.0±0.3 (0.320±0.012)	1.0~2.5 (0.050~0.100)	0.7±0.3 (0.028±0.012)

• 性能參數 SPECIFICATION

- 片式壓敏電阻器通用系列 Multilayer Chip Varistor General Series
  - 通用系列是FPV片式壓敏電阻器中主要的一種，其工作電壓寬、可靠性高，應用非常廣泛:
    General Series is a major series of FPV Mulitlayer Chip Varistors (MLV), which can provide widely working voltage, high reliability and suppress varies transient event
  - 爲各種IC提供浪涌電壓保護
    I Protection from transient voltage noise in all kinds of IC
  - 爲電源I/O接口提供ESD、EFT及浪涌保護
    I Protection from ESD, EFT and surge in power I/O port
  - 替代齊納二極管 I Replacement of zener diode

1005 (0402) TYPE

1005 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV100505G3R3□M□	3.3	2.5	5	±20%	14	0.05	20	300
FPV100505G5R6□L□	5.6	4	8	±15%	19	0.05	20	250
FPV100505G8R0□L□	8	5.7	12	±15%	27	0.05	20	230
FPV100505G9R0□L□	9	6.4	13	±15%	30	0.05	20	200
FPV100505G110□L□	11	7.8	16	±15%	33	0.05	20	180
FPV100505G120□L□	12	8.5	18	±15%	34	0.05	20	150
FPV100505G140□K□	14	10	20	±10%	35	0.05	20	120
FPV100505G160□K□	16	11.3	22	±10%	39	0.05	20	100
FPV100505G180□K□	18	12.7	25	±10%	44	0.05	20	90

1608 (0603) TYPE

1608 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV160808G3R3□M□	3.3	2.5	5	±20%	14	0.1	30	300
FPV160808G5R6□L□	5.6	4	8	±15%	19	0.1	30	280
FPV160808G8R0□L□	8	5.7	12	±15%	27	0.1	30	250
FPV160808G9R0□L□	9	6.4	13	±15%	30	0.1	30	240
FPV160808G110□L□	11	7.8	16	±15%	33	0.1	30	220
FPV160808G120□L□	12	8.5	18	±15%	34	0.1	30	210
FPV160808G140□K□	14	10	20	±10%	35	0.1	30	190
FPV160808G160□K□	16	11.3	22	±10%	39	0.1	30	180
FPV160808G180□K□	18	12.7	25	±10%	44	0.1	30	170
FPV160808G220□K□	22	15.6	30	±10%	53	0.1	30	150
FPV160808G240□K□	24	17	33	±10%	58	0.1	30	140
FPV160808G260□K□	26	18.4	36	±10%	63	0.1	30	120
FPV160808G300□K□	30	21.2	42	±10%	74	0.1	30	100

2012 (0805) TYPE

2012 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV2012□G3R3□M□	3.3	2.5	5	±20%	14	0.1	40	350
FPV2012□G5R6□L□	5.6	4	8	±15%	19	0.1	40	300
FPV2012□G8R0□L□	8	5.7	12	±15%	27	0.1	40	270
FPV2012□G9R0□L□	9	6.4	13	±15%	30	0.1	40	260
FPV2012□G110□L□	11	7.8	16	±15%	33	0.1	35	240
FPV2012□G120□L□	12	8.5	18	±15%	34	0.1	35	220
FPV2012□G140□K□	14	10	20	±10%	35	0.1	35	200
FPV2012□G160□K□	16	11.3	22	±10%	39	0.1	35	190
FPV2012□G180□K□	18	12.7	25	±10%	44	0.1	35	180
FPV2012□G220□K□	22	15.6	30	±10%	53	0.1	35	160
FPV2012□G240□K□	24	17	33	±10%	58	0.1	35	150
FPV2012□G260□K□	26	18.4	36	±10%	63	0.1	35	140
FPV2012□G300□K□	30	21.2	42	±10%	74	0.1	35	110

3216(2016) TYPE

3216 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV3216□G3R3□M□	3.3	2.5	5	±20%	14	0.1	40	600
FPV3216□G5R6□L□	5.6	4	8	±15%	19	0.1	40	560
FPV3216□G8R0□L□	8	5.7	12	±15%	27	0.1	40	500
FPV3216□G9R0□L□	9	6.4	13	±15%	30	0.1	40	450
FPV3216□G110□L□	11	7.8	16	±15%	33	0.1	35	400
FPV3216□G120□L□	12	8.5	18	±15%	34	0.1	35	300
FPV3216□G140□K□	14	10	20	±10%	35	0.1	35	270
FPV3216□G160□K□	16	11.3	22	±10%	39	0.1	35	250
FPV3216□G180□K□	18	12.7	25	±10%	44	0.1	35	240
FPV3216□G220□K□	22	15.6	30	±10%	53	0.1	35	220
FPV3216□G240□K□	24	17	33	±10%	58	0.1	35	210
FPV3216□G260□K□	26	18.4	36	±10%	63	0.1	35	200
FPV3216□G300□K□	30	21.2	42	±10%	74	0.1	35	180
FPV3216□G330□K□	33	23.3	45	±10%	79	0.1	35	150
FPV3216□G380□K□	38	27	51	±10%	90	0.1	35	130
FPV3216□G420□K□	42	30	56	±10%	99	0.1	35	110
FPV3216□G480□K□	48	34	62	±10%	110	0.1	35	90
FPV3216□G560□K□	56	40	72	±10%	127	0.1	35	80
FPV3216□G600□K□	60	45	76	±10%	134	0.1	35	70
FPV3216□G680□K□	68	48	86	±10%	151	0.1	35	60

- 片式壓敏電阻器高耐能系列
  MULTLAYER CHIP VARISTOR HIGH ENERGY ABSORB SERIES

  高耐能系列專爲吸收電路中存在的能量較大的瞬態電壓噪聲而設計的，其通流量大，吸收功率大、響應速度快。
  High Energy Absorb Series is design to absorb the high energy transient voltage in circuit, which provide high rate current, highly energy absorb ability and fast response speed
  應用 Application
  - 抑制各種感性負載切換或各種瞬間噪聲在電路板中産生的EFT和浪涌電壓。
    Suppression of Inductive Switching or Other Transient Events Such as EFT and Surge Voltage at the Circuit Board Level.
  - 保護元件和電路，防止在電源供應、控制和信號綫産生的ESD。
    Protection of Components and Circuits Sensitive to ESD Transients Occurring on Power supplies, Control and Signal Lines.
  - 爲IC、CMOS和MOSFET提供在綫過壓保護。
    Provides On-Board Transient Voltage Protection for ICs, CMOS and MOSFET.
  - 在許多領域中可替換較大的表面貼裝TVS齊納二極管。
    Replace Larger Surface Mount TVS Zeners in Many Applications

2012 (0805) TYPE

2012 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔV_B	Volts	Joules	Amps	pF
FPV2012□E3R3□M□	3.3	2.5	5	±20%	14	0.3	120	600
FPV2012□E5R6□L□	5.6	4	8	±15%	19	0.3	120	550
FPV2012□E8R0□L□	8	5.7	12	±15%	27	0.3	120	500
FPV2012□E9R0□L□	9	6.4	13	±15%	30	0.3	120	450
FPV2012□E110□L□	11	7.8	16	±15%	33	0.3	120	440
FPV2012□E120□L□	12	8.5	18	±15%	34	0.3	120	420
FPV2012□E140□K□	14	10	20	±10%	35	0.3	120	400
FPV2012□E160□K□	16	11.3	22	±10%	39	0.3	120	380
FPV2012□E180□K□	18	12.7	25	±10%	44	0.3	100	360
FPV2012□E220□K□	22	15.6	30	±10%	53	0.3	100	320
FPV2012□E240□K□	24	17	33	±10%	58	0.3	100	300
FPV2012□E260□K□	26	18.4	36	±10%	63	0.3	100	280
FPV2012□E300□K□	30	21.2	42	±10%	74	0.3	100	220

3216(1206) TYPE

3216 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV3216□E3R3□M□	3.3	2.5	5	±20%	14	0.4	150	1200
FPV3216□E5R6□L□	5.6	4	8	±15%	19	0.4	150	1100
FPV3216□E8R0□L□	8	5.7	12	±15%	27	0.4	150	1000
FPV3216□E9R0□L□	9	6.4	13	±15%	30	0.4	150	950
FPV3216□E110□L□	11	7.8	16	±15%	33	0.4	150	800
FPV3216□E120□L□	12	8.5	18	±15%	34	0.4	150	600
FPV3216□E140□K□	14	10	20	±10%	35	0.4	150	540
FPV3216□E160□K□	16	11.3	22	±10%	39	0.4	150	520
FPV3216□E180□K□	18	12.7	25	±10%	44	0.4	150	500
FPV3216□E220□K□	22	15.6	30	±10%	53	0.4	150	460
FPV3216□E240□K□	24	17	33	±10%	58	0.4	150	420
FPV3216□E260□K□	26	18.4	36	±10%	63	0.4	120	400
FPV3216□E300□K□	30	21.2	42	±10%	74	0.4	120	360
FPV3216□E330□K□	33	23.3	45	±10%	79	0.4	120	300
FPV3216□E380□K□	38	27	51	±10%	90	0.4	120	250
FPV3216□E420□K□	42	30	56	±10%	99	0.4	120	220
FPV3216□E480□K□	48	34	62	±10%	110	0.4	120	180
FPV3216□E560□K□	56	40	72	±10%	127	0.4	120	165
FPV3216□E600□K□	60	45	76	±10%	134	0.4	120	150
FPV3216□E680□K□	68	48	86	±10%	151	0.4	120	135

3225(1210) TYPE

3225 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV3225□E180□K□	18	12.7	25	±10%	44	1.5	300	1000
FPV3225□E220□K□	22	15.6	30	±10%	53	1.5	300	900
FPV3225□E240□K□	24	17	33	±10%	58	1.5	300	850
FPV3225□E260□K□	26	18.4	36	±10%	63	1.5	280	800
FPV3225□E300□K□	30	21.2	42	±10%	74	1.5	280	760
FPV3225□E330□K□	33	23.3	45	±10%	79	1.5	280	700
FPV3225□E380□K□	38	27	51	±10%	90	1.5	280	650
FPV3225□E420□K□	42	30	56	±10%	99	1.5	280	580
FPV3225□E480□K□	48	34	62	±10%	110	1.5	280	510
FPV3225□E560□K□	56	40	72	±10%	127	1.5	250	450
FPV3225□E600□K□	60	45	76	±10%	134	1.5	250	420
FPV3225□E680□K□	68	48	86	±10%	151	1.5	250	360

4532(1812) TYPE

4532 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV453215E180□K□	18	12.7	25	±10%	44	2.5	500	1500
FPV453215E220□K□	22	15.6	30	±10%	53	2.5	500	1200
FPV453215E240□K□	24	17	33	±10%	58	2.5	500	900
FPV453215E260□K□	26	18.4	36	±10%	63	2.5	500	800
FPV453215E300□K□	30	21.2	42	±10%	74	2.5	500	750
FPV453215E330□K□	33	23.3	45	±10%	79	2.5	500	700
FPV453215E380□K□	38	27	51	±10%	90	2.5	500	650
FPV453215E420□K□	42	30	56	±10%	99	2.5	500	600
FPV453215E480□K□	48	34	62	±10%	110	2.5	500	550
FPV453215E560□K□	56	40	72	±10%	127	2.5	500	500
FPV453215E600□K□	60	45	76	±10%	134	2.5	500	450
FPV453215E680□K□	68	48	86	±10%	151	2.5	500	400

5750（2220）TYPE

5750 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV5750E180□K□	18	12.7	25	±10%	44	2.5	600	4000
FPV5750E220□K□	22	15.6	30	±10%	53	2.5	600	3500
FPV5750E240□K□	24	17	33	±10%	58	2.5	600	3000
FPV5750E260□K□	26	18.4	36	±10%	63	2.5	600	2500
FPV5750E300□K□	30	21.2	42	±10%	74	2.5	600	2200
FPV5750E330□K□	33	23.3	45	±10%	79	2.5	600	2000
FPV5750E380□K□	38	27	51	±10%	90	2.5	600	1800
FPV5750E420□K□	42	30	56	±10%	99	2.5	600	1600
FPV5750E480□K□	48	34	62	±10%	110	2.5	600	1400
FPV5750E560□K□	56	40	72	±10%	127	2.5	600	1000
FPV5750E600□K□	60	45	76	±10%	134	2.5	600	800
FPV5750E680□K□	68	48	86	±10%	151	2.5	600	700

8063(3225) TYPE

8063 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV8063E14□K□	14	11	18	±10%	35@1A	0.3	100	1750
FPV8063E18□K□	18	14	22	±10%	44@1A	0.4	100	1450
FPV8063E22□K□	22	17	27	±10%	53@1A	0.5	100	1200
FPV8063E26□K□	26	20	33	±10%	63@1A	0.6	100	980
FPV8063E31□K□	31	25	39	±10%	69@1A	0.7	100	850
FPV8063E38□K□	38	30	47	±10%	90@1A	0.9	100	720
FPV8063E45□K□	45	35	56	±10%	99@1A	1.1	100	620
FPV8063E56□K□	56	40	68	±10%	127@1A	1.3	100	520
FPV8063E65□K□	65	50	82	±10%	144@5A	1.8	400	300
FPV8063E85□K□	85	60	100	±10%	176@5A	2.2	400	250
FPV8063E100□K□	100	75	120	±10%	211@5A	2.5	400	210
FPV8063E125□K□	125	95	150	±10%	264@5A	3.4	400	135
FPV8063E150□K□	150	115	180	±10%	317@5A	3.6	400	110
FPV8063E170□K□	170	130	205	±10%	361@5A	4.2	400	100
FPV8063E180□K□	180	140	220	±10%	387@5A	4.5	400	95
FPV8063E200□K□	200	150	240	±10%	422@5A	4.9	400	90
FPV8063E225□K□	225	175	270	±10%	475@5A	5.6	400	75
FPV8063E300□K□	300	230	360	±10%	634@5A	7.2	400	60
FPV8063E320□K□	320	250	390	±10%	686@5A	8.2	400	55
FPV8063E350□K□	350	275	430	±10%	757@5A	8.6	400	50
FPV8063E385□K□	385	300	470	±10%	827@5A	9.6	400	45

1080(4032) TYPE

1080 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV1080E14□K□	14	11	18	±10%	35@2.5	0.8	250	5000
FPV1080E18□K□	18	14	22	±10%	44@2.5	0.9	250	4500
FPV1080E22□K□	22	17	27	±10%	53@2.5	1.1	250	4000
FPV1080E26□K□	26	20	33	±10%	63@2.5	1.3	250	3500
FPV1080E31□K□	31	25	39	±10%	69@2.5	1.6	250	3000
FPV1080E38□K□	38	30	47	±10%	90@2.5	2.0	250	2800
FPV1080E45□K□	45	35	56	±10%	99@2.5	2.5	250	2500
FPV1080E56□K□	56	40	68	±10%	127@2.5	3.0	250	2000
FPV1080E65□K□	65	50	82	±10%	144@10A	4.2	1200	1900
FPV1080E85□K□	85	60	100	±10%	176@10A	4.8	1200	1700
FPV1080E100□K□	100	75	120	±10%	211@10A	5.9	1200	1500
FPV1080E125□K□	125	95	150	±10%	264@10A	7.6	1200	1350
FPV1080E150□K□	150	115	180	±10%	317@10A	8.4	1200	900
FPV1080E170□K□	170	130	205	±10%	361@10A	9.5	1200	700
FPV1080E180□K□	180	140	220	±10%	387@10A	10.0	1200	500
FPV1080E200□K□	200	150	240	±10%	422@10A	11.0	1200	400
FPV1080E225□K□	225	175	270	±10%	475@10A	13.0	1200	300
FPV1080E300□K□	300	230	360	±10%	634@10A	17.0	1200	200
FPV1080E320□K□	320	250	390	±10%	686@10A	19.0	1200	180
FPV1080E350□K□	350	275	430	±10%	757@10A	21.0	1200	105
FPV1080E385□K□	385	300	470	±10%	827@10A	23.0	1200	90
FPV1080E615□K□	615	460	750	±10%	1320@10A	36.0	600	55

備注：8063與1080直流工作電壓表示方法：18------18V 225-----225V。

Remark: The working DC voltage of 8063 and 1080 part number are identified as: 18------18V 225-----225V

- 片式壓敏電阻器高速系列
  Multilayer Chip Varistor High Speed Series
  高速系列方式壓敏電阻器是FPV電壓保護元件中的一族，其容量非常低反應速度非常快。
  高速系列產品爲高速數據綫和其它高頻領域提供ESD和EFT保護
  The Multilayer High-Speed Series is a very low capacitance extension to the FPV family of Transient Voltage Suppressor available in 1005,1608 and 2012 surface mount chip.
  The High Speed series provides protection from ESD and EFT in high speed data-line and other high frequency applications.
  數據、診斷I/O接口 Data, Diagnostic I/O Ports
  通用串行總綫（ USB） Universal Serial Bus (USB)
  視頻和音頻接口 Video & Audio Ports
  便携式手提設備 Portable/Hand-Held Products
  移動通信/峰窩電話 Mobile Communications/Cellular Phones
  計算機/DSP產品 Computer/DSP Products
  工業及醫學儀器 Industrial Instruments Including Medical

1005(0402) TYPE

1005 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV100505S3R3□M□	3.3	2.5	7	±20%	15	0.05	10	70
FPV100505S5R6□L□	5.6	4	11	±15%	24	0.05	10	45
FPV100505S8R0□L□	8	5.7	14	±15%	31	0.05	10	30
FPV100505S9R0□L□	9	6.4	15	±15%	33	0.05	10	26
FPV100505S110□L□	11	7.8	18	±15%	40	0.05	10	24
FPV100505S120□L□	12	8.5	20	±15%	44	0.05	10	20
FPV100505S140□K□	14	10	22	±10%	49	0.05	10	18
FPV100505S160□K□	16	11.3	24	±10%	53	0.05	10	15
FPV100505S180□K□	18	12.7	27	±10%	60	0.05	10	15

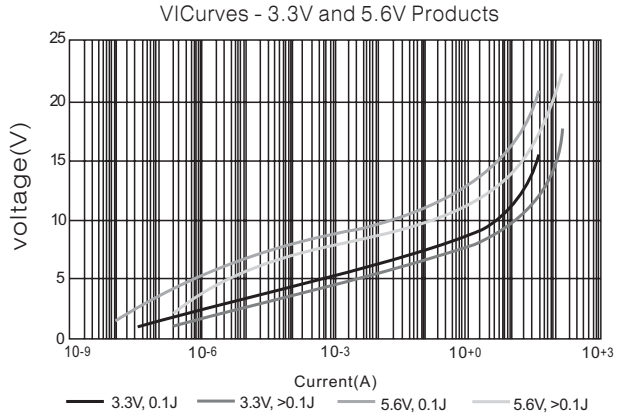
1608(0603) TYPE

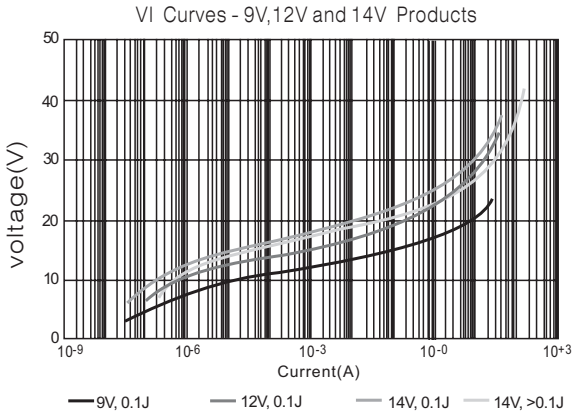
1608 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV160808S3R3□M□	3.3	2.5	7	±20%	15	0.05	10	180
FPV160808S5R6□L□	5.6	4	11	±15%	24	0.05	10	110
FPV160808S8R0□L□	8	5.7	14	±15%	31	0.05	10	80
FPV160808S9R0□L□	9	6.4	15	±15%	33	0.05	10	70
FPV160808S110□L□	11	7.8	18	±15%	40	0.05	10	60
FPV160808S120□L□	12	8.5	20	±15%	44	0.05	10	55
FPV160808S140□K□	14	10	22	±10%	49	0.05	10	50
FPV160808S160□K□	16	11.3	24	±10%	53	0.05	10	45
FPV160808S180□K□	18	12.7	27	±10%	60	0.05	10	40
FPV160808S220□K□	22	15.6	32	±10%	71	0.05	10	30
FPV160808S240□K□	24	17	35	±10%	77	0.05	10	25
FPV160808S260□K□	26	18.4	38	±10%	84	0.05	10	25
FPV160808S300□K□	30	21.2	44	±10%	97	0.05	10	20
FPV160808S680□K□	68	48	88	±10%	194	0.05	10	17
FPV160808S171□K□	171	130	205	±10%	340	0.05	10	4

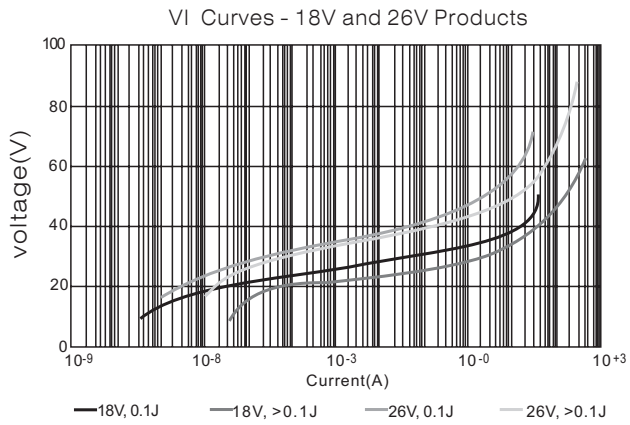
2012(0805) TYPE

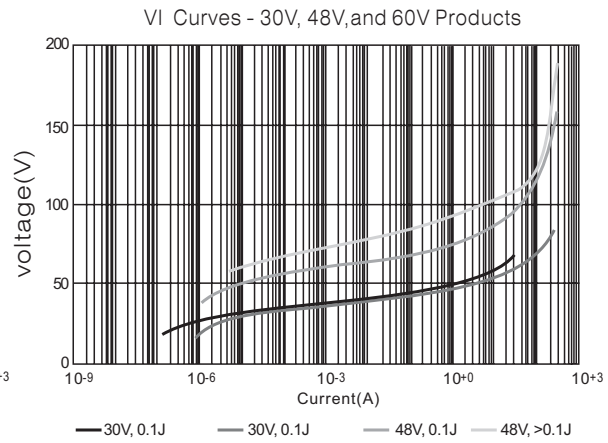
2012 PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV201209S3R3□M□	3.3	2.5	7	±20%	15	0.05	10	220
FPV201209S5R6□L□	5.6	4	11	±15%	24	0.05	10	140
FPV201209S8R0□L□	8	5.7	14	±15%	31	0.05	10	100
FPV201209S9R0□L□	9	6.4	15	±15%	33	0.05	10	90
FPV201209S110□L□	11	7.8	18	±15%	40	0.05	10	70
FPV201209S120□L□	12	8.5	20	±15%	44	0.05	10	60
FPV201209S140□K□	14	10	22	±10%	49	0.05	10	55
FPV201209S160□K□	16	11.3	24	±10%	53	0.05	10	50
FPV201209S180□K□	18	12.7	27	±10%	60	0.05	10	45
FPV201209S220□K□	22	15.6	32	±10%	71	0.05	10	40
FPV201209S240□K□	24	17	35	±10%	77	0.05	10	35
FPV201209S260□K□	26	18.4	38	±10%	84	0.05	10	30
FPV201209S300□K□	30	21.2	44	±10%	97	0.05	10	25

- I-V CURVES

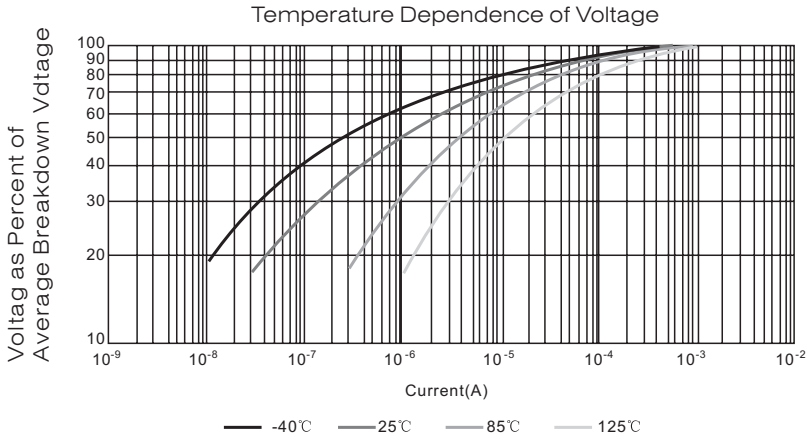




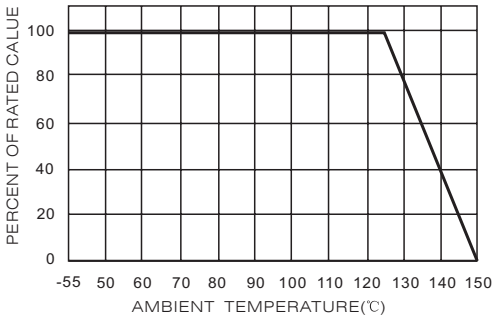


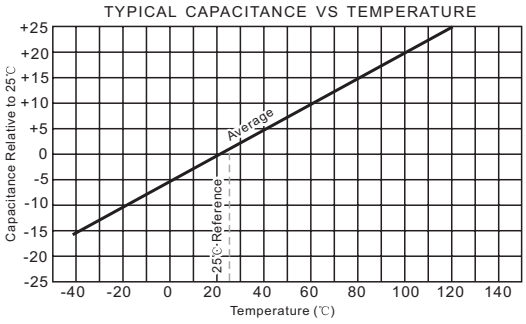


• VB VS. TEMPERATURE



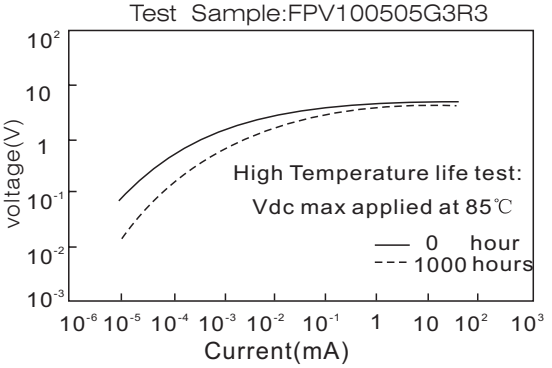
• ENERGY AND CAPACITANCE VS. TEMPERATURE



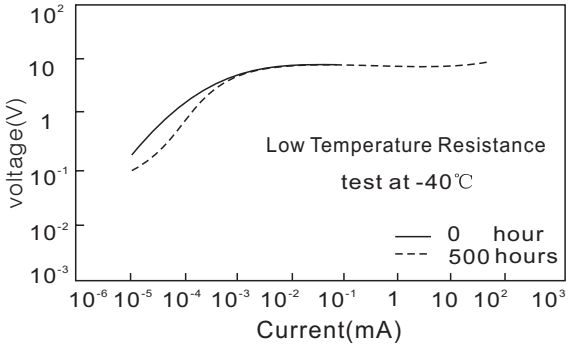


• RELIABILITY TEST DATA

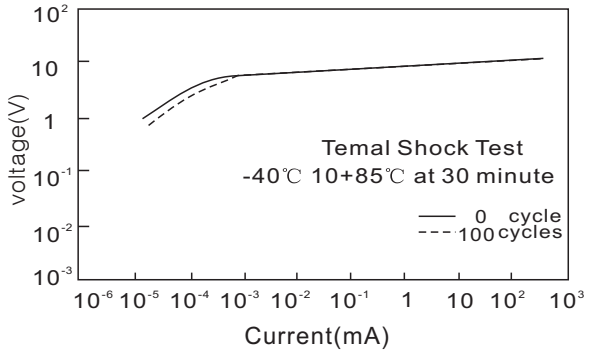
Heat resistance
(High-Temperature load)
Test Sample:FPV100505G3R3



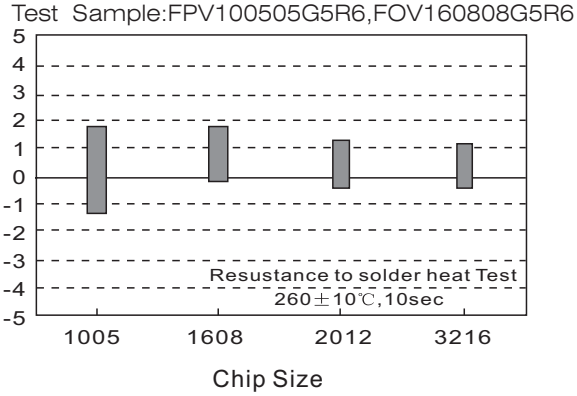
Low Temperature Resistance
Test Sample:FPV160808G5R5



Thermal Shock
(Temperature cycle)
Test Sample:FPV100505G5R6



Resistamce to Solder Heat
FPV20109G5R6, FPV321611G5R6
Test Sample:FPV100505G5R6,FOV160808G5R6



• 片式壓敏電阻排 MULTILAYER CHIP VARISTOR ARRAY

CVA ① | 3216 - 4 ② ③ | G ④ | 3R3 ⑤ | P ⑥ | M ⑦ | T ⑧

①

產品代號 Product Code	
CVA	風華叠層片式壓敏電阻排 Multilayer Chip Varistor Array

②

規格尺寸(L×W×T) (mm) Dimensions	
3216	3.2×1.6×0.9
2010	2.0×1.0×0.5

③

結構 Configuration	
2	2聯 2 Array
4	4聯 4Array

④

產品系列 Product Series	
S	高速型High speed type
G	通用型 General type

⑤

直流工作電壓 Working DC Voltage	
3R3	3.3V
180	18V

⑥

端頭 Termination	
P	電鍍 Plated
S	鉑/鈀/銀 Non-plated

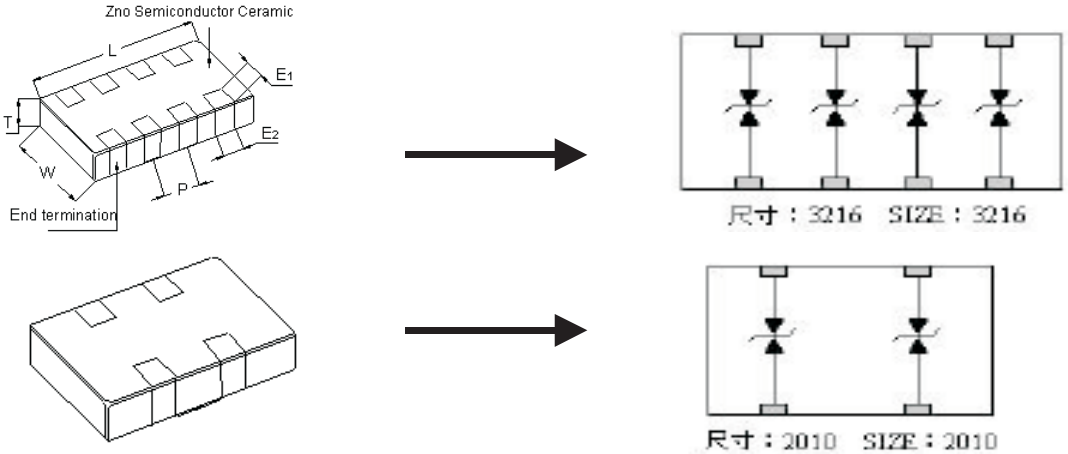
⑦

誤差 Tolerance	
K	±10%
L	±15%
M	±20%

⑧

包裝方式 Packaging Style	
T	編帶包裝 Tape & Reel
B	散裝 Bulk

• 外形尺寸及等效電路 SHAPE AND DIMENSIONS & EQUIVALENT CIRCUIT



unit：mm(inch)

Part No.	L	W	T	E_1	E_2	D
2010 (0804)	2.0±0.15 (0.079±0.008)	1.0±0.15 (0.039±0.006)	0.5±0.1 (0.035±0.008)	0.20+0.15/-0.1 (0.010+0.006/-0.004)	2.0±0.15 (0.079±0.006)	2.0±0.15 (0.079±0.006)
3216 (1206)	3.2±0.2 (0.126±0.008)	1.6±0.2 (0.063±0.008)	0.9±0.1 (0.035±0.008)	0.35±0.2 (0.014±0.008)	0.3±0.2 (0.012±0.008)	0.8±0.1 (0.031±0.004)

- **片式壓敏電阻排單片電性能**
  Multilayer Chip Varistor Array Electrical Characteristics Per Element
  所占空間更小
  Reduced component placement costs.
  减少PCB板面積
  Downsize PCB.
  用于多綫浪涌電壓抑制
  Use in multiple lines for transient voltage suppression.

PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
CVA2010-2G5R6□M□	5.6	4	8	±20%	19	0.1	30	225
CVA2010-2G9R0□L□	9	6.4	12	±15%	30	0.1	30	150
CVA2010-2G140□L□	14	10	18	±15%	35	0.1	30	125
CVA2010-2G180□L□	18	12.7	24	±15%	44	0.1	30	125
CVA2010-2S180□L□	≤18	≤12.7	N/A		60	0.05	20	<75
CVA3216-4G5R6□M□	5.6	4	8	±20%	19	0.1	30	225
CVA3216-4G9R0□L□	9	6.4	12	±15%	30	0.1	30	150
CVA3216-4G140□L□	14	10	18	±15%	35	0.1	30	125
CVA3216-4G180□L□	18	12.7	24	±15%	44	0.1	30	125
CVA3216-4S180□L□	≤18	≤12.7	N/A		60	0.05	20	<75

• 超低電容量片式壓敏電阻器
Ultra-low capacitance Chip Varistor

超低電容壓敏電阻器屬于FPV高速系列，其容量更低反應速度更快。
Ultra-low capacitance varistors are FPV high-speed series, its lower capacity and faster response.
數據、診斷I/O接口Data, Diagnostic I/O Ports
通用串行總綫(USB) Universal Serial Bus (USB)
視頻和音頻接口Video & Audio Ports
便携式手提設備 Portable/Hand-held products
移動通信.峰窩電話 Mobile commuications/Cellular Phones
計算機/DSP產品 computer/DSP Products
工業及醫學儀器 Industrial Instruments Induding Medical
液晶顯示器LCD Monitor

• 產品規格型號的表示方法 PART NUMBER IDENTIFICATION

FPV	160808	S	3R3	P	M	T	070
①	②	③	④	⑤	⑥	⑦	⑧

① 產品代號 Product Code

FPV	風華叠層片式壓敏電阻器 Multilayer Chip Varistor

② 規格尺寸(L×W×T) (mm) Dimensions

100505	1.0×0.5×0.5
160808	1.6×0.8×0.8

③ 產品系列 Product Series

S	高速型High speed type

④ 直流工作電壓 Working DC Voltage

3R3	3.3V
180	18V

⑤ 端頭 Termination

P	電鍍 Plated
S	鉑/鈀/銀 Non-plated Pt/Pd/Ag

⑥ 誤差 Tolerance

M	±20%

⑦ 包裝方式 Packaging Style

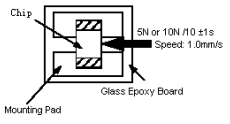
T	編帶包裝 Tape & Reel
B	散裝 Bulk

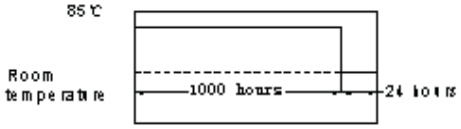
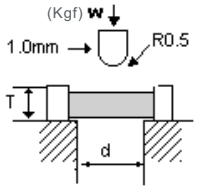
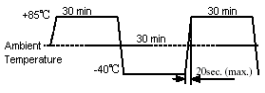
⑧ 電容量 Capacitance

070	7PF
150	15PF

PART Number	Working voltage		Varistor voltage @1mA DC		Maximum Clamping Voltage 8/20μs 1A	Energy Absorb 10/1000μs	Peak Current 8/20μs	Typical Capacitance @1MHz
	DC	AC						
	Volts	Volts	VB	ΔVB	Volts	Joules	Amps	pF
FPV100505S3R3□M□150	3.3	2.5	7	±20%	15	0.01	6	10.5~19.5
FPV100505S5R6□M□150	5.6	4	11	±20%	24	0.01	6	10.5~19.5
FPV100505S180□M□030	18	12.7	120	±20%	250	0.01	6	2.3~4.3
FPV100505S180□M□070	18	12.7	27	±20%	60	0.01	6	4.8~8.8
FPV160808S3R3□M□150	3.3	2.5	7	±20%	10	0.01	6	10.5~19.5
FPV160808S5R6□M□150	5.6	4	11	±20%	35	0.01	6	10.5~19.5
FPV160808S180□M□030	18	12.7	120	±20%	250	0.01	6	2.3~4.3
FPV160808S180□M□070	18	12.7	27	±20%	60	0.01	6	4.8~8.8

• 可靠性測試 RELIABILITY TESTING

序號 N0.	項目 Item	詳細説明Specified value				試驗方法Test methods
		1005	1608	2012	3216	
1	工作温度範圍 Operating temperature range	-55 to +125℃				
2	貯存温度範圍 Storage temperature range	-10 to +40℃				
3	可焊性 Solderability	至少90%端電極表面被焊錫覆蓋 At least 90% of terminal electrode is covered by new solder				預熱温度：100℃~150℃ preheating temperature:100℃~150℃ 預熱時間：1分鐘 Preheating time:60S 焊接温度：：230℃ ±10℃ Solder temperature: 230℃ ±10℃ 浸入時間：3秒 ±1秒 Duration:3S±1S 浸入松香助焊劑約3~5秒 Flux: immersion into methanol solution with colophony for 3 to 5 secretary.
4	耐焊性 Resistance to soldering	瓷體没有破裂之類的損傷 No damage such as crucks should be caused in chip element 至少75%端電極表面被焊錫覆蓋。 At least 75% of terminal electrode is covered by new solder. 壓敏電壓變化在 ±10%之内。 Varistor voltage change within±10%.				預熱温度：100℃~150℃ preheating temperature:100℃~150℃ 預熱時間：1分鐘 Preheating time:60S 焊接温度：：260℃ ±10℃ Solder temperature: 260℃ ±10℃ 浸入時間：10秒 ±1秒 Duration:10S±1S 浸入松香助焊劑約3~5秒 Flux: immersion into methanol solution with colophony for 3 to 5 secretary.
5	端電極强度 Adhesion of electrode	端電極没有破裂，也不會脱離瓷體 The termination and body should be no damage				施加力：1005、1608爲5N；2012、3216、3225、4532爲10N Applied force: 5N force for 1005 and 1608 series. 10N force for 2012、3216 、3225、4516、4532series. 保持時間: 10±1S Keep time ： 10±1S 
6	躍落 Drop	1、無可見機械損傷 No mechanical damage. 2、壓敏電壓變化率小于 ±5% Varistor voltage change within ±5%.				從高度爲1米的空中自由落到混凝土地板重復10次 Dropped 10 times on a concrete floor from a height of 1m.
7	耐低温 Loading at low temperature	1、無可見機械損傷 No mechanical damage. 2、壓敏電壓變化率小于 ±5% Varistor voltage change within ±5%.				温度：-40℃ ±2℃ Temperature:-40℃ ±2℃ 周期：500±24小時 Duration:500±24hrs

<table>
<tr><th rowspan="2">序號
N0.</th><th rowspan="2">項目
Item</th><th colspan="4">詳細說明Specified value</th><th rowspan="2">試驗方法Test methods</th></tr>
<tr><th>1005</th><th>1608</th><th>2012</th><th>3216</th></tr>
<tr><td>8</td><td>耐高温
Loading at high temperature</td><td colspan="4">1、無可見機械損傷
No mechanical damage.
2、壓敏電壓變化率小于 ±5%
Varistor voltage change within ±5%.</td><td>測試温度：85±2℃
Temperature: 85±2℃
測試時間：1000±24小時
Duration: 1000±24hrs
施加電壓：工作電壓
Applied voltage: Working voltage
 
</td></tr>
<tr><td>9</td><td>耐潮濕
Loading under Damp Heat</td><td colspan="4">1、無可見機械損傷
No mechanical damage.
2、壓敏電壓變化率小于 ±5%
Varistor voltage change within ±5%.</td><td>濕度：90~95% RH
Humidity:90 to 95% RH
温度：40±2℃
Temperature:40±2℃
測試時間：500±12小時
Duration: 500±12hrs
施加電壓：工作電壓
Applied voltage: Working voltage</td></tr>
<tr><td>10</td><td>抗壓强度
Resistance to pressure of substrate</td><td colspan="4">按右圖方式施加力，瓷體没有損傷
The body shall not be damaged by forces applied on the right.
<table><tr><td>d</td><td>0.8</td><td>1.3</td><td>1.3</td><td>2.0</td></tr><tr><td>w</td><td>1.0</td><td>1.0</td><td>1.0</td><td>4.0</td></tr></table></td><td> 
</td></tr>
<tr><td>11</td><td>振動
Vibration</td><td colspan="4">1、無可見機械損傷
No mechanical damage.
2、壓敏電壓變化率小于 ±5%
Varistor voltage change within ±5%.</td><td>頻率：10~55~10Hz
Frequency 10 to 55 to 10Hz
振幅：1.5mm
Amplitude:1.5mm
X、Y、Z方向的時間：每方向2小時
Directions:2hrs each in X,Y,Z direction</td></tr>
<tr><td>12</td><td>温度循環
Thermal shock</td><td colspan="4">1、無可見機械損傷
No mechanical damage.
2、壓敏電壓變化率小于 ±5%
Varistor voltage change within ±5%.</td><td>温度：-40℃，30±3分鐘
+80℃，30±3分鐘
Temperature:-40℃ for 30±3min
+80℃ for 30±3min
轉換時間：20秒(最大)
Transforming interval:max 20 sec
循環次數：32
Number of cycles:32
 
</td></tr>
</table>

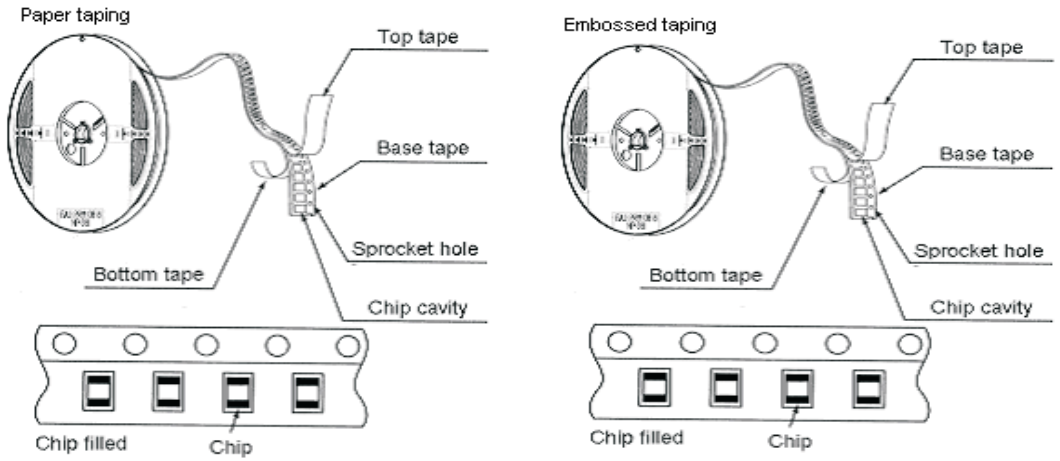
注：以上要求測試電性能的項目，應試驗后在標准條件下放置24小時后測試。

Note: When there are questions concerning, measurement shall be made after 24±2hrs of recovery under the standard condition.

• STANDAE QUANTITY

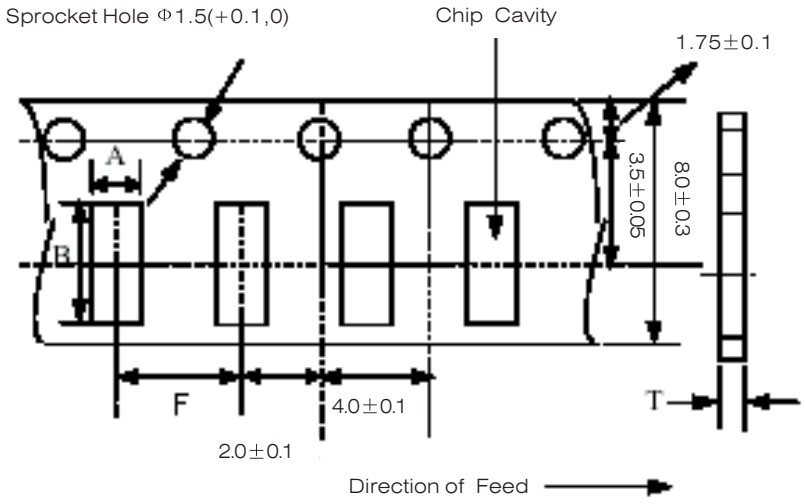
TYPE	100505	160808	201209	321611	322513	453215	1080
Quantity (PCS)	10000	4000	4000	3000	3000	3000	2500

• 編帶圖紙 TAPING DRAWINGS



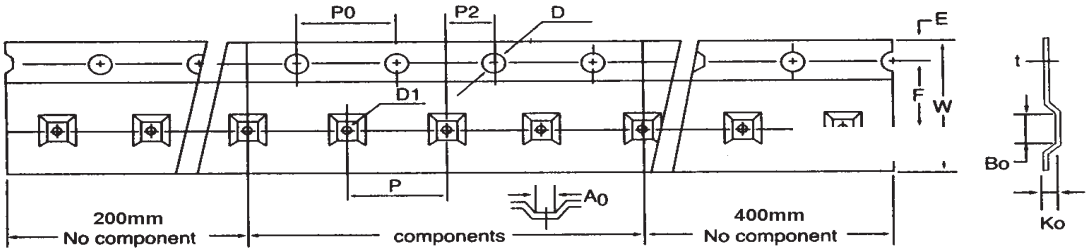
• 編帶尺寸TAPING DIMENSIONS (UNIT: mm)

· 紙載帶 Paper carrier



Part NO.	A	B	F	T
100505	0.65±0.1	1.15±0.1	2.0±0.05	0.8max
160808	1.0±0.2	1.8±0.2	4.0±0.2	1.1max
201209	1.5±0.2	2.3±0.2	4.0±0.2	1.1max

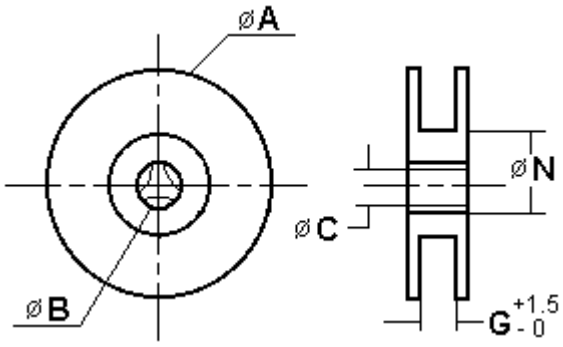
塑料膠帶 Embossed Carrier



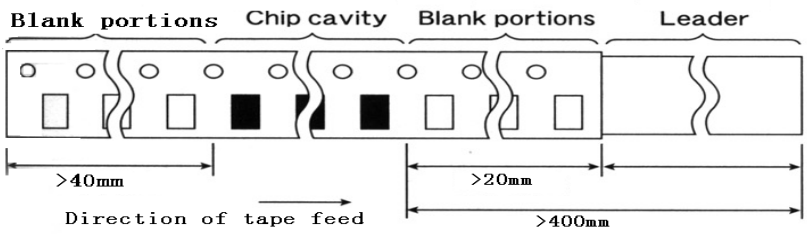
	1080	4532	3225	3216	2012
W	16.0+/-0.3	12.0+/-0.2	8.1+/-0.2	8.1+/-0.2	8.1+/-0.2
P	12+/-0.10	8.0+/-0.10	4.0+/-0.10	4.0+/-0.10	4.0+/-0.10
E	1.75+/-0.10	1.75+/-0.10	1.75+/-0.10	1.75+/-0.10	1.75+/-0.10
F	7.50+/-0.10	5.50+/-0.10	3.50+/-0.10	3.50+/-0.10	3.50+/-0.10
D	$1.50^{+0.1}_{-0}$	1.55+/-0.05	1.55+/-0.05	1.55+/-0.05	1.55+/-0.05
D1	$1.50^{+0.1}_{-0}$	$1.50^{+0.25}_{-0}$	$1.50^{+0.25}_{-0}$	$1.50^{+0.25}_{-0}$	$1.50^{+0.25}_{-0}$
P_0	4.0+/-0.10	4.0+/-0.10	4.0+/-0.10	4.0+/-0.10	4.0+/-0.10
$P_0$10	40.0+/-0.20	40.0+/-0.20	40.0+/-0.20	40.0+/-0.20	40.0+/-0.20
P2	2.0+/-0.1	2.0+/-0.05	2.0+/-0.05	2.0+/-0.05	2.0+/-0.05
A_0	8.4+/-0.10	3.66+/-0.10	2.80+/-0.10	1.90+/-0.10	1.52+/-0.10
B_0	10.5+/-0.10	4.95+/-0.10	3.50+/-0.10	3.51+/-0.10	2.41+/-0.10
t	0.3+/-0.05	0.23+/-0.10	0.23+/-0.10	0.23+/-0.10	0.23+/-0.10
Ko	1.9+/-0.10	1.74+/-0.10	1.55+/-0.10	1.27+/-0.10	1.35+/-0.10

- **卷盘尺寸**REEL DIMENSIONS (UNIT：mm)

	A	B	C	N	G
CF-8	178 ±2.0	22.0 ±2.0	12.5 ±1.5	57 ±2.0	8
CF-12	330 ±2.0	22.0 ±2.0	12.5 ±1.5	98 ±2.0	12
CF-16	330 ±2.0	22.0 ±2.0	12.5 ±1.5	110 ±2.0	16



- 導帶與空長度 LEADER AND BLANK PORTION



- 剥離力：沿箭頭方向要求0.1～0.7N
  PEELING OFF FORCE : 0.05 to 0.7N in the direction show below.