

● Part Numbering

Disc Type EMIFIL[®]

(Part Number)

DS	S	9	H	B3	2E	271	Q55	B
①	②	③	④	⑤	⑥	⑦	⑧	⑨

① Product ID

Product ID	
DS	Three-terminals Capacitor

② Structure

Code	Structure
N	No Ferrite Beads Type
S	Built-in Ferrite Beads Type
T	with Ferrite Beads Type

③ Style

Code	Style
6	Diameter 8.0mm Type
9	Diameter 9.5mm Type

④ Category

Code	Category
N	for General Use
H	for Heavy-duty

⑤ Temperature Characteristics

Code	Capacitance Change
B3	±10% (Temperature Range : -25°C to +85°C)
C5	±22% (Temperature Range : -25°C to +85°C)
D3	+20/-30% (Temperature Range : -25°C to +85°C)
E3	+20/-55% (Temperature Range : -25°C to +85°C)
E5	+22/-56% (Temperature Range : -25°C to +85°C)
F3	+30/-80% (Temperature Range : -25°C to +85°C)
Z8	+30/-85% (Temperature Range : -10°C to +60°C)

⑥ Rated Voltage

Code	Rated Voltage
1C	16V
1H	50V
2A	100V
2E	250V

⑦ Capacitance

Expressed by three figures. The unit is in pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

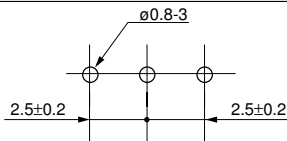
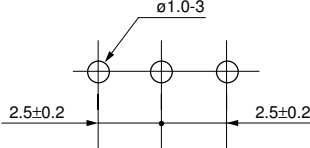
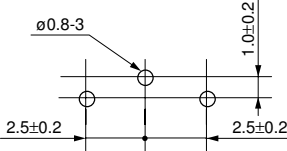
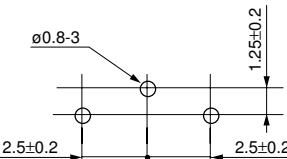
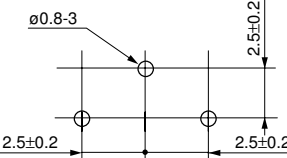
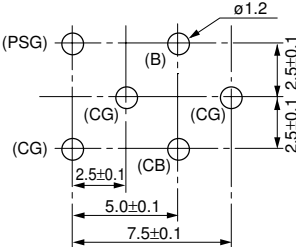
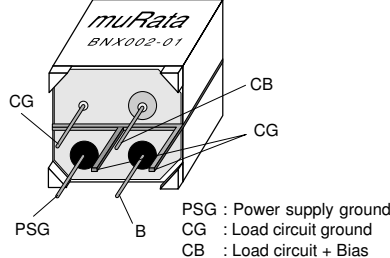
⑧ Lead Type/⑨ Packaging


Code	Lead Type	Lead Length* (in mm)	Packaging	Series
Q55B	Straight	25.0 min.	Bulk	All series
Q50B		4.0±0.5		DST9N/H
Q52B		6.0±1.0		DST9N
Q54B		4.0±0.5		DSN6/9, DSS6/9
Q56B		6.0±1.0		
T41B	Incrimp	4.0±0.5	Paper Reel (ø320mm)	DSS6N
T51B		25.0 min.		DSS9N/H, DST9N
Q91J	Straight	20.0±1.0		
Q92J		16.5±1.0		DSS9N/H
Q93J		18.5±1.0		
Q91A		20.0±1.0	Ammo Pack	DS□6, DSN9N/H
Q92A		16.5±1.0		All series except DSS9N/H
Q93A		18.5±1.0		
U21A	Incrimp	16.5±1.0		DSS6N
U31A		18.5±1.0		

*Lead Distance between Reference and Bottom Planes except Bulk.

1. Mounting Hole

Mounting holes should be designed as specified below.

Part number	Bulk type (in mm)	Taping type (in mm)
DSN6 DSS6 VFR3V VFS6V		
DSN9 DSN9H		
DST9 DST9H		
DSS9 DSS9H VFS9V		
BNX	<p>[Component Side]</p> 	<p>[TERMINAL LAYOUT (Bottom figure)]</p>  <p>PSG : Power supply ground CG : Load circuit ground CB : Load circuit + Bias</p>

Continued on the following page. 

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2. Using The Block Type EMIFIL® Effectively

(1) How to use effectively

This product effectively prevents undesired radiation and external noise from going out / entering the circuit by grounding the high frequency components which cause noise problems. Therefore, grounding conditions may affect the performance of the filter and attention should be paid to the following for effective use.

- Design maximized grounding area in the P. C. board, and grounding pattern for all the grounding terminals of the product to be connected. (Recommended to use our recommendation in this spec.)
- Minimize the distance between ground of the P.C. board and the ground plate of the product. (Recommended to use through-hole connection between grounding area both of component side and bottom side.)
- Insert the terminals into the holes on P. C. board completely.
- Don't connect PSG terminal with CG terminal directly. (See the item 1. TERMINAL LAYOUT)

(2) Self-heating

Though this product has a large rated current, localized self-heating may be caused depending on soldering conditions.

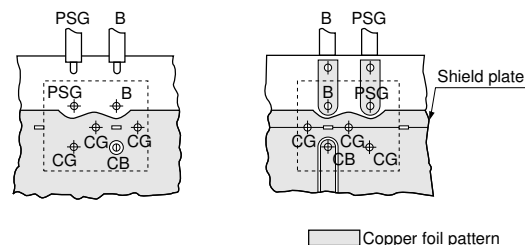
To avoid this, attention should be paid to the following:

- Use P. C. board with our recommendation on hole diameter / land pattern dimensions, mentioned in the right hand drawing, especially for 4 terminals which pass current.
- Solder the terminals to the P. C. board with solder-cover area at least 90%. Otherwise, excess self-heating at connection between terminals and P. C. board may lead to smoke and / or fire of the product even when operating at rated current.
- After installing this product in your product, please make sure of the self-heating with the rated current.

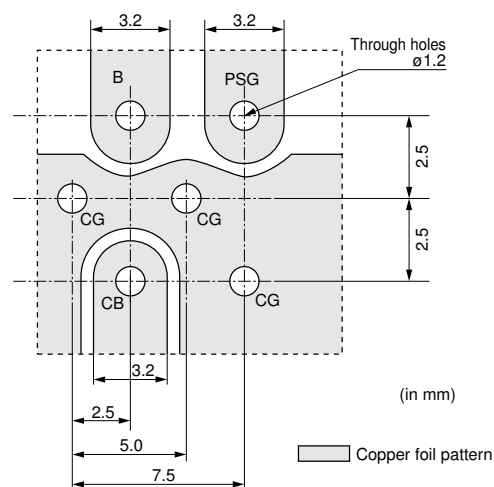
[P. C. BOARD PATTERNS]

Use a bilateral P.C. board. Insert the BNX into the P.C.board until the root of the terminal is secured. then solder.

(1) COMPONENT SIDE VIEW (2) BOTTOM VIEW



[Recommendation land pattern]



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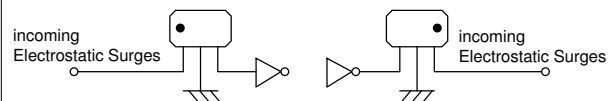
3. Using EMIGUARD® effectively

- (1) Terminal (with mark) should be connected to the line of incoming electrostatic surge. (There is polarity.) Otherwise, no effect in ESD suppression can be expected (VFR3V).
- (2) Products should be used at rated voltage or less and rated current or less.
- (3) Products should not be applied for the absorption of surges which have large energy (ex. induced lightning surges, switching surges) because it is designed for the absorption of electrostatic surges (VFR3V).
- (4) Electrostatic test should be done on the following conditions (VFR3V).

$$n \cdot [C / R \cdot V^2]^2 < 8.0 \times 10^5$$

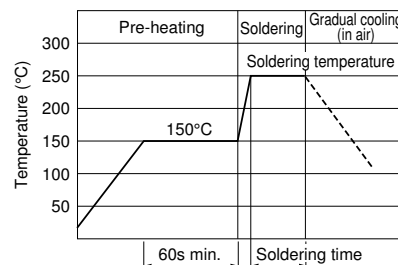
n : Times applies
 C : Charging Capacitance (pF)
 V : Testing Voltage (kV)
 R : Charging Resistance (Ω)

Example of input terminal Example of output terminal



4. Soldering

- (1) Solder : H60A, H63A solder (JIS Z 3238)
 In case of lead-free solder, use Sn-3.0Ag-0.5Cu solder.
- (2) Use Rosin-based flux. Do not use strong acidic flux with halide content exceeding 0.2wt% (chlorine conversion value).
- (3) Products and the leads should not be subjected to any mechanical stress during the soldering process, or while subjected to the equivalent high temperatures.
- (4) Standard flow soldering profile



Solder	Soldering temperature	Soldering time
Sn/Pb=60/40, Sn/Pb=63/37	240 to 260°C	5s max.
Sn-3.0AG-0.5CU solder	250 to 260°C	4s to 6s

5. Cleaning Conditions

Do not clean VFR3V, PLT09H and VFS6V series.
 Clean other parts in the following conditions.

- (1) Cleaning temperature should be limited to 60°C max. (40°C max for alcohol type cleaner.)
- (2) Ultrasonic cleaning should be comply with the following conditions, avoiding the resonance phenomenon at the mounted products and P.C.B.
 Power : 20 W / l max. Frequency : 28kHz to 40kHz
 Time : 5 min. max.
- (3) Cleaner

- a) Alcohol type cleaner
 Isopropyl alcohol (IPA)
- b) Aqueous agent (PLT series cannot be cleaned)
 PINE ALPHA ST-100S

- (4) There should be no residual flux or residual cleaner after cleaning.
 In the case of using aqueous agent, products should be dried completely after rinsing with de-ionized water in order to remove the cleaner.
- (5) Other cleaning : Please contact us.

Part Number	Minimum Order Quantity (order in sets only) (Pcs.)		
	Ammo Pack	ø320mm Paper reel	Bulk (Bag)
VFR3V Series	2000	—	250
DS□6/VFS6V Series	2000	—	250
DSN9/9H Series	2000	—	250
DST9/9H Series	1000 ^{*1}	1000 ^{*2}	200
DSS9/9H Series	—	800	200
VFS9V Series	—	800	200

Lead Type code		Lead length (H)
Straight Type	Incrimp Type	
Q91	-	20.0±1.0mm
Q92	U21	16.5±1.0mm
Q93	U31	18.5±1.0mm