

The high surge type S series of Metal Oxide Varistor (MOV) are radial lead varistors (also known as Voltage Dependent Resistors or VDRs) that are designed to be used continuously across AC line primary or DC circuit for transient voltage and surge suppression.

Operating Temperature -40°C~+85°C

■ **RECOGNITION** : made for RFE by UL shop Joyin



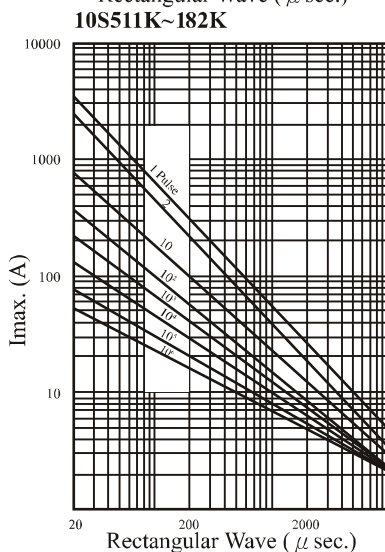
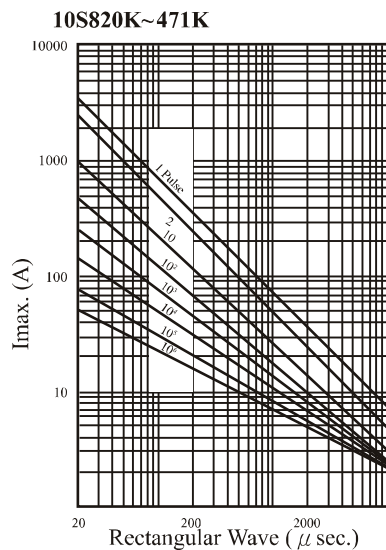
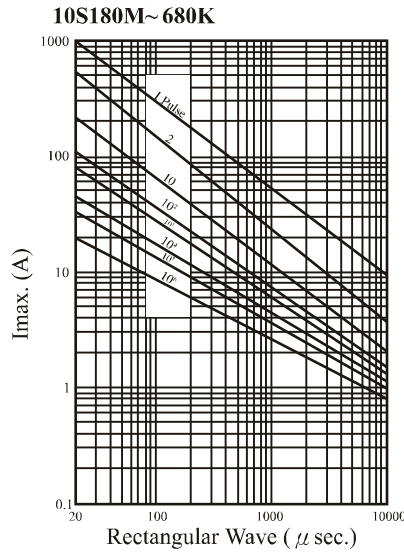
| Agency | File Number                            | Monogram |
|--------|----------------------------------------|----------|
| UL/cUL | E325508                                |          |
| VDE    | Certificate No. 005937                 |          |
| CQC    | CQC07001019159<br>/9161/9162/9163/9164 |          |

### CHARACTERISTICS & RATINGS

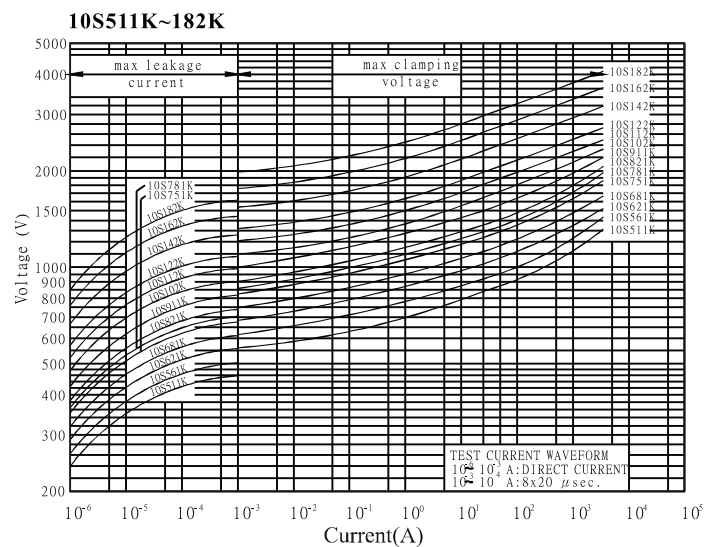
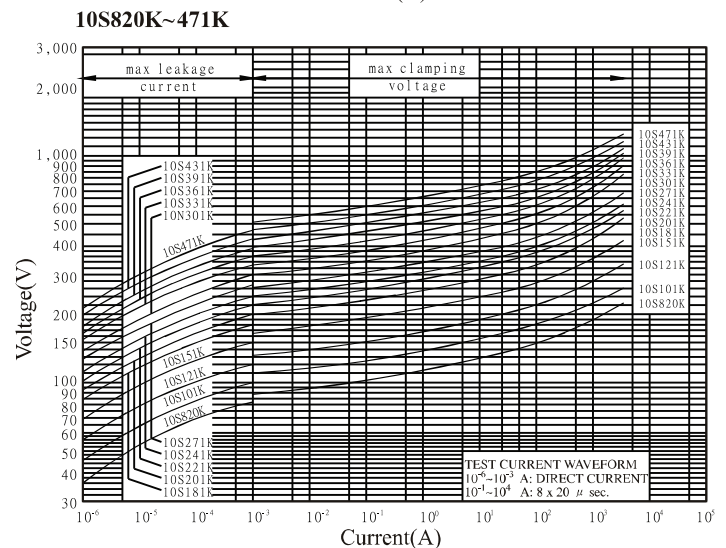
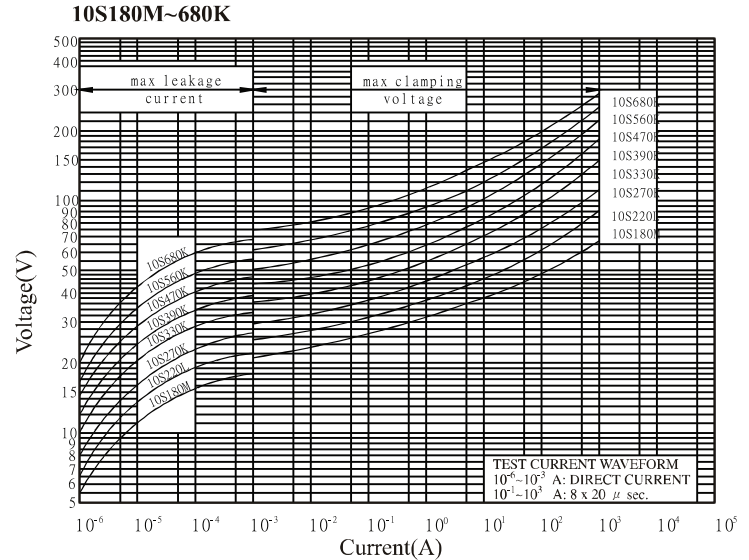
| Part Number     | Varistor Voltage at 0.1mA |           | Maximum Allowable Voltage |        | Maximum Clamping Voltage |        | Withstanding Surge Current (8/20μs) | Nominal Discharge Current (8/20μs) | Rated Wattage | Energy (10/1000μs) |
|-----------------|---------------------------|-----------|---------------------------|--------|--------------------------|--------|-------------------------------------|------------------------------------|---------------|--------------------|
|                 | DC (V)                    | Tolerance | AC rms (V)                | DC (V) | V@ic (V)                 | ic (A) | 1 Time (A)                          | In (KA)                            | (W)           | (J)                |
| JVR10S180M87*** | 18                        | 20%       | 11                        | 14     | 36                       | 5      | 1000                                | 0.75                               | 0.05          | 2.6                |
| JVR10S220L87*** | 22                        | 15%       | 14                        | 18     | 43                       |        |                                     |                                    |               | 3.2                |
| JVR10S270K87*** | 27                        | 10%       | 17                        | 22     | 53                       |        |                                     |                                    |               | 3.9                |
| JVR10S330K87*** | 33                        |           | 20                        | 26     | 65                       |        |                                     |                                    |               | 4.8                |
| JVR10S390K87*** | 39                        |           | 25                        | 31     | 77                       |        |                                     |                                    |               | 5.6                |
| JVR10S470K87*** | 47                        |           | 30                        | 38     | 93                       |        |                                     |                                    |               | 6.8                |
| JVR10S560K87*** | 56                        |           | 35                        | 45     | 110                      |        |                                     |                                    |               | 8.1                |
| JVR10S680K87*** | 68                        |           | 40                        | 56     | 135                      |        |                                     |                                    |               | 9.8                |
| JVR10S820K87*** | 82                        |           | 50                        | 65     | 135                      | 25     | 3500                                | 3                                  | 0.4           | 14                 |
| JVR10S101K87*** | 100                       |           | 60                        | 85     | 165                      |        |                                     |                                    |               | 18                 |
| JVR10S121K87*** | 120                       |           | 75                        | 100    | 200                      |        |                                     |                                    |               | 22                 |
| JVR10S151K87*** | 150                       |           | 95                        | 125    | 250                      |        |                                     |                                    |               | 25                 |
| JVR10S181K87*** | 180                       |           | 115                       | 150    | 300                      |        |                                     |                                    |               | 32                 |
| JVR10S201K87*** | 200                       |           | 130                       | 170    | 340                      |        |                                     |                                    |               | 35                 |
| JVR10S221K87*** | 220                       |           | 140                       | 180    | 360                      |        |                                     |                                    |               | 39                 |
| JVR10S241K87*** | 240                       |           | 150                       | 200    | 395                      |        |                                     |                                    |               | 42                 |
| JVR10S271K87*** | 270                       |           | 175                       | 225    | 455                      |        |                                     |                                    |               | 49                 |
| JVR10S301K87*** | 300                       |           | 195                       | 250    | 505                      |        |                                     |                                    |               | 52                 |
| JVR10S331K87*** | 330                       |           | 210                       | 275    | 550                      |        |                                     |                                    |               | 58                 |
| JVR10S361K87*** | 360                       |           | 230                       | 300    | 595                      |        |                                     |                                    |               | 65                 |
| JVR10S391K87*** | 390                       |           | 250                       | 320    | 650                      |        |                                     |                                    |               | 70                 |
| JVR10S431K87*** | 430                       |           | 275                       | 350    | 710                      |        |                                     |                                    |               | 80                 |
| JVR10S471K87*** | 470                       |           | 300                       | 385    | 775                      |        |                                     |                                    |               | 85                 |
| JVR10S511K87*** | 510                       |           | 320                       | 418    | 842                      |        |                                     |                                    |               | 92                 |
| JVR10S561K87*** | 560                       |           | 350                       | 460    | 920                      |        |                                     |                                    |               | 102                |
| JVR10S621K87*** | 620                       |           | 385                       | 505    | 1025                     |        |                                     |                                    |               | 107                |
| JVR10S681K87*** | 680                       |           | 420                       | 560    | 1120                     |        |                                     |                                    |               | 112                |
| JVR10S751K87*** | 750                       |           | 460                       | 615    | 1240                     |        |                                     |                                    |               | 115                |
| JVR10S781K87*** | 780                       |           | 485                       | 640    | 1290                     |        |                                     |                                    |               | 116                |
| JVR10S821K87*** | 820                       |           | 510                       | 670    | 1355                     |        |                                     |                                    |               | 118                |
| JVR10S911K87*** | 910                       |           | 550                       | 745    | 1500                     |        |                                     |                                    |               | 127                |
| JVR10S102K87*** | 1000                      |           | 625                       | 825    | 1650                     |        |                                     |                                    |               | 140                |
| JVR10S112K87*** | 1100                      |           | 680                       | 895    | 1815                     |        |                                     |                                    |               | 155                |
| JVR10S122K87*** | 1200                      |           | 720                       | 975    | 1980                     | 25     | 3500                                | 1.5                                | 0.4           | 168                |
| JVR10S142K87*** | 1400                      |           | 825                       | 1135   | 2310                     |        |                                     |                                    |               | 195                |
| JVR10S162K87*** | 1600                      |           | 920                       | 1300   | 2640                     |        |                                     |                                    |               | 222                |
| JVR10S182K87*** | 1800                      |           | 1000                      | 1465   | 2970                     |        |                                     |                                    |               | 247                |

\*\*\* Replace with Lead & Packaging code

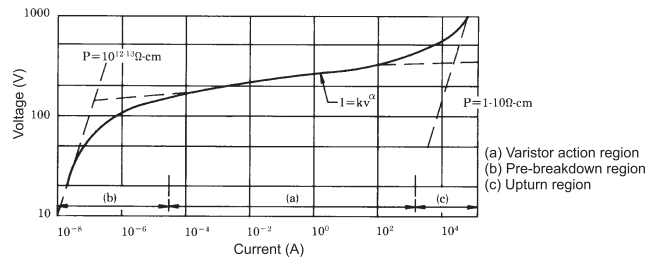
### 10mm PULSE LIFETIME RATINGS



### 10mm V-I CHARACTERISTIC CURVE

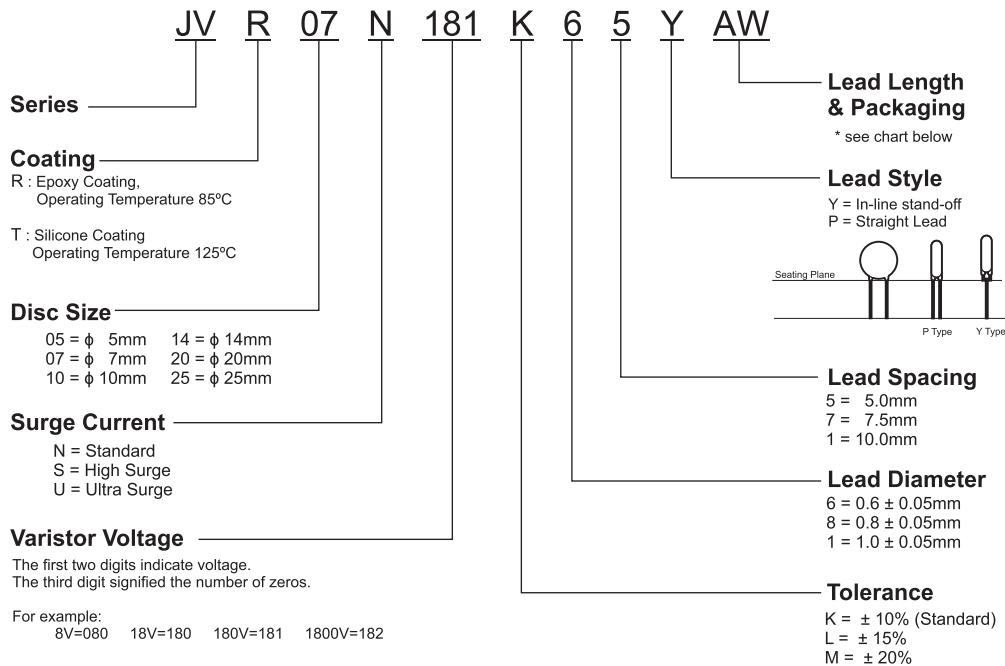


### CURRENT - VOLTAGE CHARACTERISTICS

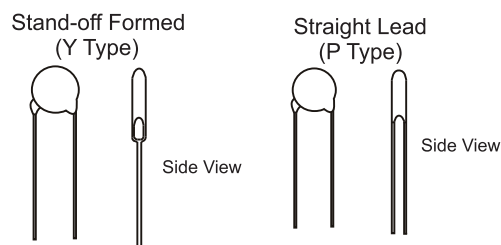


Operating & Storage Temperature Range : -40°C to +85°C  
Temperature Coefficient of Voltage : 0~0.05% / °C max.

### PART NUMBER EXAMPLE



### LEAD LENGTH & PACKAGING

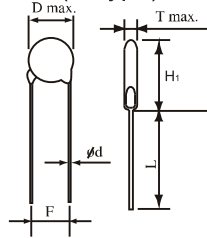


| Lead Type    | Code | Dimension             | Package |
|--------------|------|-----------------------|---------|
| Y Type Leads | 50   | L = 5 $\pm$ 1mm       | Bulk    |
|              | U4   | L = 24mm min.         | Bulk    |
|              | AW   | H <sub>0</sub> = 16mm | Ammo    |
|              | RW   | H <sub>0</sub> = 16mm | Reel    |
| P Type Leads | 50   | L = 5 $\pm$ 1mm       | Bulk    |
|              | U5   | L = 25mm min.         | Bulk    |
|              | AY   | H <sub>0</sub> = 20mm | Ammo    |
|              | RY   | H <sub>0</sub> = 20mm | Reel    |

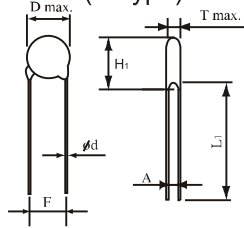
\* H<sub>0</sub> see the drawing on page 5

### LEAD STYLES & DIMENSIONS (mm)

Stand-off Formed  
(Y Type)



Straight Lead  
(P Type)



| Diameter | 5mm  | 7mm  | 10mm   | 14mm   | 20mm   |
|----------|------|------|--------|--------|--------|
| D max.   | 7.5  | 9.0  | 12.5   | 16.5   | 23.0   |
| d ± 0.05 | 0.6  | 0.6  | 0.8    | 0.8    | 1.0    |
| F ± 1.0  | 5.0  | 5.0  | 7.5    | 7.5    | 10.0   |
| H max.   | 11.0 | 13.0 | 18/*19 | 22/*23 | 28/*29 |
| L1 max.  | 25.0 | 25.0 | 25.0   | 25.0   | 25.0   |
| L min.   | 24.0 | 24.0 | 24.0   | 24.0   | 24.0   |

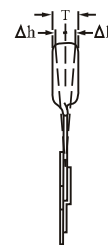
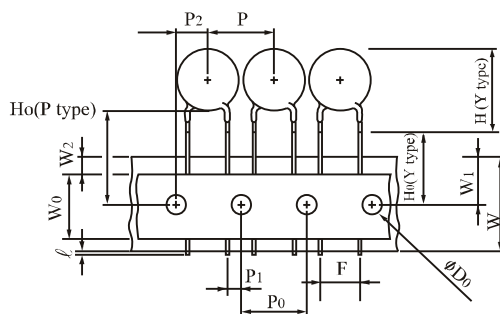
\* Just for 182K

Table of T & H1 max, A ± 0.8

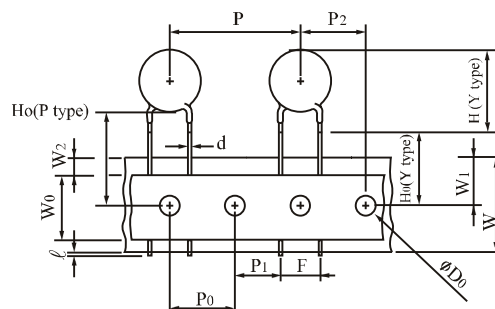
| Diameter | 5mm |     |      | 7mm |     |      | 10mm |     |      | 14mm |      |      | 20mm |      |      |
|----------|-----|-----|------|-----|-----|------|------|-----|------|------|------|------|------|------|------|
| Value    | T   | A   | H1   | T   | A   | H1   | T    | A   | H1   | T    | A    | H1   | T    | A    | H1   |
| 180M     | 4.5 | 0.8 | 10.5 | 4.5 | 0.8 | 12   | 4.9  | 0.8 | 15.5 | 5    | 0.9  | 19.5 | —    | —    | —    |
| 220M/L   | 4.5 | 0.9 | 10.5 | 4.5 | 0.9 | 12   | 4.9  | 0.9 | 15.5 | 5    | 1    | 19.5 | 5.3  | 1    | 26.5 |
| 270M/K   | 4.7 | 0.9 | 10.5 | 4.7 | 0.9 | 12   | 5.1  | 0.9 | 15.5 | 5.2  | 1.1  | 19.5 | 5.4  | 1.1  | 26.5 |
| 330M/K   | 4.7 | 1   | 10.5 | 4.7 | 1   | 12   | 5.1  | 1   | 15.5 | 5.2  | 1.2  | 19.5 | 5.4  | 1.2  | 26.5 |
| 390L/K   | 4.7 | 1.2 | 10.5 | 4.7 | 1.2 | 12   | 5.1  | 1.2 | 15.5 | 5.2  | 1.4  | 19.5 | 5.4  | 1.4  | 26.5 |
| 470L/K   | 5   | 1.2 | 10.5 | 5   | 1.2 | 12   | 5.5  | 1.2 | 15.5 | 5.6  | 1.4  | 19.5 | 5.6  | 1.4  | 26.5 |
| 560L/K   | 5   | 1.4 | 10.5 | 5   | 1.4 | 12   | 5.5  | 1.4 | 15.5 | 5.6  | 1.6  | 19.5 | 5.6  | 1.6  | 26.5 |
| 680L/K   | 5.5 | 1.7 | 10.5 | 5.5 | 1.7 | 12   | 6    | 1.7 | 15.5 | 6.1  | 1.9  | 19.5 | 6.1  | 1.9  | 26.5 |
| 820K     | 3.8 | 0.8 | 10.5 | 3.8 | 0.8 | 12   | 4.3  | 0.8 | 15.5 | 4.4  | 1    | 19.5 | 5    | 1.1  | 26.5 |
| 101K     | 3.9 | 0.8 | 10.5 | 3.9 | 0.8 | 12   | 4.4  | 0.8 | 15.5 | 4.5  | 1    | 19.5 | 5.1  | 1.2  | 26.5 |
| 121K     | 4.1 | 0.9 | 10.5 | 4.1 | 0.9 | 12   | 4.5  | 0.9 | 15.5 | 4.6  | 1.1  | 19.5 | 5.3  | 1.3  | 26.5 |
| 151K     | 4.5 | 1.2 | 10.5 | 4.5 | 1.2 | 12   | 4.9  | 1.2 | 15.5 | 5.1  | 1.4  | 19.5 | 5.6  | 1.6  | 26.5 |
| 181K     | 4.1 | 1   | 10.5 | 4.1 | 1   | 12   | 4.5  | 1   | 15.5 | 4.7  | 1.2  | 19.5 | 5.2  | 1.4  | 26.5 |
| 201K     | 4.2 | 1   | 10.5 | 4.2 | 1   | 12   | 4.6  | 1   | 15.5 | 4.8  | 1.2  | 19.5 | 5.3  | 1.47 | 26.5 |
| 221K     | 4.3 | 1.1 | 10.5 | 4.3 | 1.1 | 12   | 4.7  | 1.1 | 15.5 | 4.9  | 1.3  | 19.5 | 5.4  | 1.5  | 26.5 |
| 241K     | 4.4 | 1.1 | 10.5 | 4.4 | 1.3 | 12   | 4.8  | 1.3 | 15.5 | 5    | 1.5  | 19.5 | 5.5  | 1.7  | 26.5 |
| 271K     | 4.6 | 1.3 | 10.5 | 4.6 | 1.4 | 12   | 5    | 1.4 | 15.5 | 5.2  | 1.5  | 19.5 | 5.7  | 1.9  | 26.5 |
| 301K     | 4.8 | 1.3 | 10.5 | 4.8 | 1.5 | 12   | 5.2  | 1.6 | 15.5 | 5.4  | 1.7  | 19.5 | 5.9  | 2.1  | 26.5 |
| 331K     | 4.9 | 1.3 | 10.5 | 4.9 | 1.5 | 12   | 5.3  | 1.6 | 15.5 | 5.5  | 1.7  | 19.5 | 6    | 2.1  | 26.5 |
| 361K     | 5.1 | 1.8 | 10.5 | 5.1 | 1.9 | 12   | 5.5  | 1.9 | 15.5 | 5.7  | 2.1  | 19.5 | 6.2  | 2.3  | 26.5 |
| 391K     | 5.3 | 2   | 11   | 5.3 | 2   | 12.5 | 5.7  | 2.2 | 16   | 5.9  | 2.2  | 20   | 6.4  | 2.4  | 26.5 |
| 431K     | 6.1 | 2.1 | 11   | 6.1 | 2   | 12.5 | 6.5  | 2.5 | 16   | 6.7  | 2.5  | 20   | 7.2  | 2.7  | 26.5 |
| 471K     | 6.4 | 2.2 | 11   | 6.4 | 2.3 | 12.5 | 6.8  | 2.6 | 16   | 7    | 2.7  | 20   | 7.5  | 2.9  | 27   |
| 511K     | 6.6 | 2.5 | 11.5 | 6.6 | 2.5 | 13   | 7    | 3.1 | 16.5 | 7.2  | 3.1  | 20.5 | 7.7  | 3.3  | 27   |
| 561K     | 6.9 | 2.8 | 11.5 | 6.9 | 2.8 | 13   | 7.3  | 3.4 | 16.5 | 7.5  | 3.4  | 20.5 | 8    | 3.6  | 27   |
| 621K     | 7.2 | 3.1 | 11.5 | 7.2 | 3.1 | 13   | 7.6  | 4   | 16.5 | 7.8  | 3.8  | 20.5 | 8.3  | 4.1  | 27   |
| 681K     | 7.5 | 3.4 | 11.5 | 7.5 | 3.4 | 13   | 8    | 4.4 | 16.5 | 8.2  | 4.1  | 20.5 | 8.7  | 4.4  | 27   |
| 751K     | 7.9 | 3.7 | 11.5 | 7.9 | 3.7 | 13   | 8.4  | 4.4 | 16.5 | 8.6  | 4.3  | 20.5 | 9.1  | 4.5  | 27   |
| 781K     | —   | —   | —    | 8.1 | 3.9 | 13   | 8.6  | 4.6 | 16.5 | 8.8  | 4.6  | 20.5 | 9.3  | 4.8  | 27   |
| 821K     | —   | —   | —    | 8.3 | 4.1 | 13   | 8.8  | 4.6 | 16.5 | 9    | 4.6  | 20.5 | 9.5  | 4.8  | 27   |
| 911K     | —   | —   | —    | —   | —   | —    | 9.4  | 5.4 | 16.5 | 9.6  | 5.4  | 20.5 | 10.1 | 5.7  | 27   |
| 102K     | —   | —   | —    | —   | —   | —    | 9.9  | 5.4 | 16.5 | 10.1 | 5.6  | 20.5 | 10.7 | 5.8  | 27   |
| 112K     | —   | —   | —    | —   | —   | —    | 10.5 | 5.7 | 16.5 | 10.7 | 6.1  | 20.5 | 11.2 | 6.3  | 27   |
| 122K     | —   | —   | —    | —   | —   | —    | 10.9 | 6.3 | 17   | 10.9 | 6.7  | 21   | 11.3 | 6.9  | 27.5 |
| 142K     | —   | —   | —    | —   | —   | —    | 11.9 | 7.4 | 17.5 | 11.9 | 7.8  | 21.5 | 12.8 | 8    | 28   |
| 162K     | —   | —   | —    | —   | —   | —    | 13.1 | 8.6 | 18   | 13.1 | 9    | 22   | 13.7 | 9.2  | 28.5 |
| 182K     | —   | —   | —    | —   | —   | —    | 14.3 | 9.8 | 18.5 | 14.3 | 10.2 | 22.5 | 14.7 | 10.4 | 29   |

### ■ TAPING SPECIFICATIONS

1/2" pitch



1.0" pitch

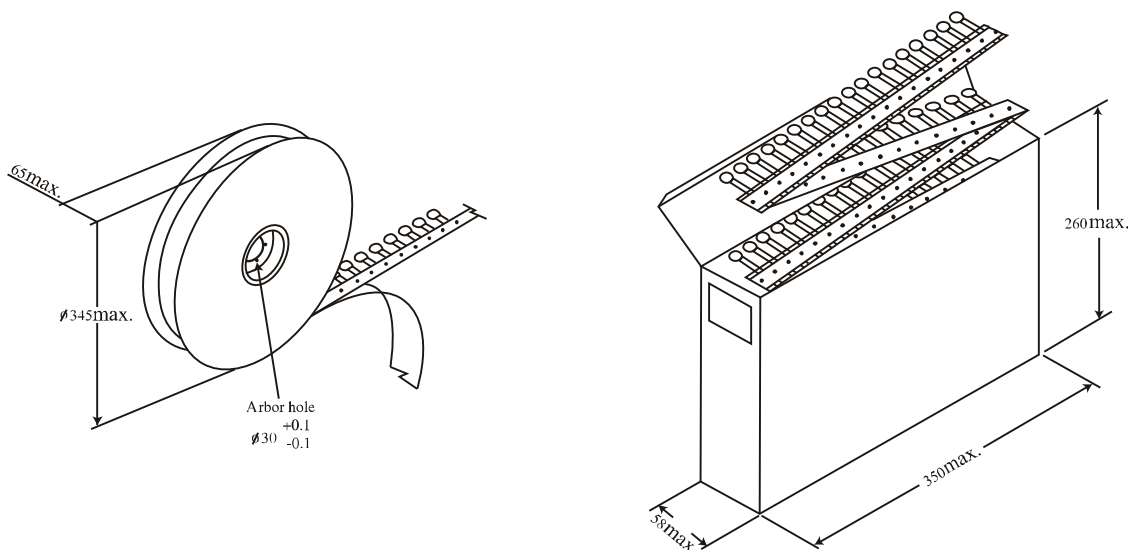


| Symbols                 | Item                                   | 5 / 7 mm                                | 10 / 14mm                               | 20mm                                  |
|-------------------------|----------------------------------------|-----------------------------------------|-----------------------------------------|---------------------------------------|
|                         | Cut out length                         | 1.1 mm max.                             | 1.1 mm max.                             |                                       |
| H (Y Type)              | Height of Top                          | See H Max. Table on page 4              |                                         |                                       |
| H <sub>0</sub> (Y Type) | Height to seating plane                | 16.0 ± 0.5mm (*±1.0mm)                  | 16.0 ± 0.5mm (*±1.0mm)                  |                                       |
| H <sub>0</sub> (P Type) | Height of component from hole center   | 16.0 ~ 21.0 mm                          | 16.0 ~ 21.0 mm                          |                                       |
| Δ h                     | Front to back deviation                | 0 ± 2.0 mm                              | 0 ± 2.0 mm                              |                                       |
| W                       | Carrier tape width                     | 18.0 <sup>+1.0</sup> <sub>-0.5</sub> mm | 18.0 <sup>+1.0</sup> <sub>-0.5</sub> mm |                                       |
| W <sub>0</sub>          | Hold down tape width                   | 10.0mm                                  | 10.0mm                                  |                                       |
| W <sub>1</sub>          | Sprocket hole position                 | 9.0 <sup>+0.75</sup> <sub>-0.5</sub> mm | 9.0 <sup>+0.75</sup> <sub>-0.5</sub> mm |                                       |
| W <sub>2</sub>          | Adhesive tape position                 | 3.0 mm max.                             | 3.0 mm max.                             |                                       |
| F                       | Component head spacing                 | 5.0 <sup>+0.8</sup> <sub>-0.2</sub> mm  | 7.5 <sup>+0.8</sup> <sub>-0.2</sub> mm  | 10 <sup>+0.8</sup> <sub>-0.2</sub> mm |
| P                       | Pitch of component                     | 12.7 ± 1.0 mm                           | 25.4 ± 1.0 mm                           |                                       |
| P <sub>0</sub>          | Sprocket hole pitch                    | 12.7 ± 0.3 mm                           | 12.7 ± 0.3 mm                           |                                       |
| P <sub>1</sub>          | Lead length from hole center to lead   | 3.85 ± 0.7 mm                           | 8.95 ± 0.7 mm                           | 7.7 ± 0.7 mm                          |
| P <sub>2</sub>          | Length from hole center to disk center | 6.35 ± 1.3 mm                           | 12.7 ± 1.3 mm                           |                                       |
| D <sub>0</sub>          | Sprocket hole diameter                 | 4.0 ± 0.2 mm                            | 4.0 ± 0.2 mm                            |                                       |
| d                       | Lead wire diameter                     | 0.6 ± 0.05 mm                           | 0.8 ± 0.05 mm                           | 1.0 ± 0.05 mm                         |
| T                       | Disk thickness                         | See Table of T Max. on page 4           |                                         |                                       |
| t <sub>1</sub>          | Total thickness tape                   | 0.7 ± 0.05 mm                           | 0.7 ± 0.05 mm                           |                                       |
| t <sub>2</sub>          | Total thickness                        | 1.6 mm max.                             | 1.8 mm max.                             |                                       |

\* for manual line

### PACKAGING

in mm



### Quantity per Packing Unit

in Pcs

| Series<br>Part No. | 5mm        |      |      | 7mm        |      |      | 10mm       |      |      | 14mm       |      |      | 20mm       |      |      |
|--------------------|------------|------|------|------------|------|------|------------|------|------|------------|------|------|------------|------|------|
|                    | Bulk (box) | Reel | Ammo | Bulk (box) | Reel | Ammo | Bulk (box) | Reel | Ammo | Bulk (box) | Reel | Ammo | Bulk (box) | Reel | Ammo |
| 180M ~ 470K        | 5000       | 1500 | 1500 | 5000       | 1500 | 1500 | 2500       | 1000 | 500  | 1500       | 750  | 500  | 750        | 500  | 500  |
| 560K ~ 680K        | 5000       | 1500 | 1000 | 5000       | 1500 | 1000 | 2500       | 1000 | 500  | 1500       | 750  | 500  | 750        | 500  | 500  |
| 820K ~ 391K        | 5000       | 1500 | 1500 | 5000       | 1500 | 1500 | 2500       | 1000 | 500  | 1500       | 750  | 500  | 750        | 500  | 500  |
| 431K ~ 471K        | 5000       | 1500 | 1000 | 5000       | 1000 | 1000 | 2000       | 750  | 500  | 1500       | 750  | 500  | 750        | 500  | 500  |
| 511K ~ 821K        | 4000       | 1000 | 1000 | 4000       | 1000 | 1000 | 1500       | 500  | 500  | 750        | 500  | 500  | 450        | 500  | 500  |
| 911K ~ 122K        | ---        | ---  | ---  | ---        | ---  | ---  | 1500       | 500  | 350  | 750        | 500  | 350  | 450        | ---  | ---  |
| 142K ~ 182K        | ---        | ---  | ---  | ---        | ---  | ---  | 750        | ---  | ---  | 450        | ---  | ---  | 300        | ---  | ---  |

| Packaging        | Bulk (box)  | Reel               | Reel (14mm, 20mm) | Ammo (5mm, 7mm) | Ammo (10mm, 14mm) | Ammo (20mm) |
|------------------|-------------|--------------------|-------------------|-----------------|-------------------|-------------|
| Box size (mm)    | 290*155*110 | 350*350*105        | 346*346*72        | 335*245*43      | 347*246*50        | 348*255*60  |
| Carton size (mm) | 328*310*250 | 370*370*590        | 370*370*468       | 515*354*258     | 515*364*246       | 535*365*275 |
| One carton with  | 4 boxes     | 5 boxes (10 reels) | 6 boxes (6 reels) | 10 boxes        | 8 boxes           | 8 boxes     |