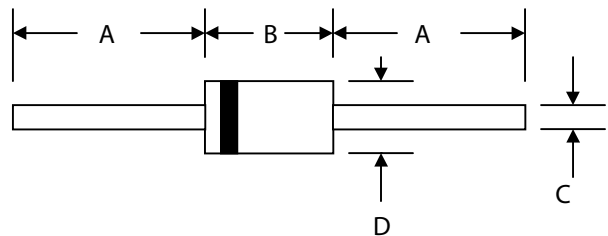


P4KE SERIES

400W TRANSIENT VOLTAGE SUPPRESSORS

Features

- Glass Passivated Die Construction
- 400W Peak Pulse Power Dissipation
- 6.8V – 440V Standoff Voltage
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Case Material has UL Flammability Classification Rating 94V-0



Mechanical Data

- Case: JEDEC DO-41 Low Profile Molded Plastic
- Terminals: Axial Leads, Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band or Cathode Notch
- Marking:
Unidirectional – Device Code and Cathode Band
Bidirectional – Device Code Only
- Weight: 0.34 grams (approx.)

| DO-41 | | |
|----------------------|------|-------|
| Dim | Min | Max |
| A | 25.4 | — |
| B | 4.06 | 5.21 |
| C | 0.71 | 0.864 |
| D | 2.00 | 2.72 |
| All Dimensions in mm | | |

"C" Suffix Designates Bi-directional Devices
 "A" Suffix Designates 5% Tolerance Devices
 No Suffix Designates 10% Tolerance Devices

Maximum Ratings and Electrical Characteristics @ $T_A=25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|----------------|-------------|------------------|
| Peak Pulse Power Dissipation at $T_A = 25^\circ\text{C}$ (Note 1, 2, 5) Figure 3 | P_{PPM} | 400 Minimum | W |
| Peak Forward Surge Current (Note 3) | I_{FSM} | 40 | A |
| Peak Pulse Current on 10/1000 μs Waveform (Note 1) Figure 1 | I_{PPM} | See Table 1 | A |
| Steady State Power Dissipation (Note 2, 4) | $P_{M(AV)}$ | 1.0 | W |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +175 | $^\circ\text{C}$ |

- Note:
1. Non-repetitive current pulse, per Figure 1 and derated above $T_A = 25^\circ\text{C}$ per Figure 4.
 2. Mounted on 40mm² copper pad.
 3. 8.3ms single half sine-wave duty cycle = 4 pulses per minutes maximum.
 4. Lead temperature at $75^\circ\text{C} = T_L$.
 5. Peak pulse power waveform is 10/1000 μs .

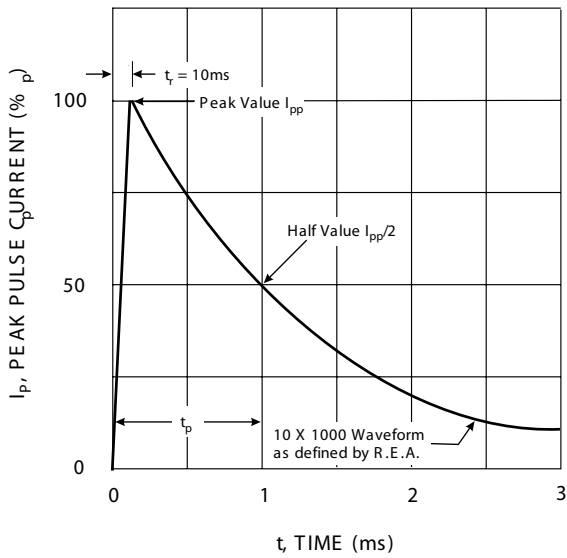


Fig. 1 Pulse Waveform

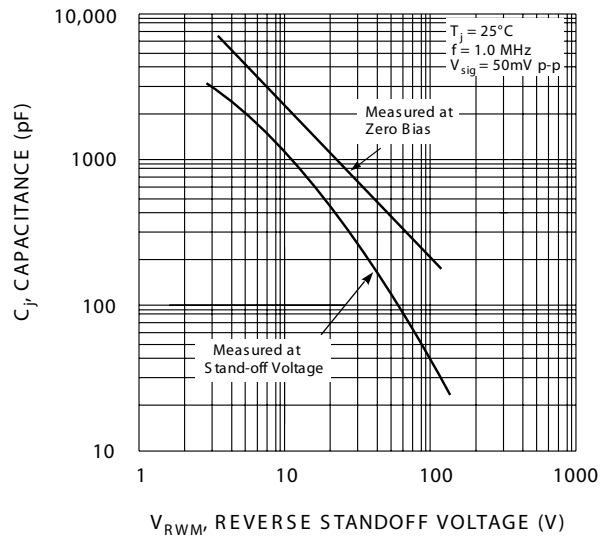


Fig. 2 Typical Junction Capacitance

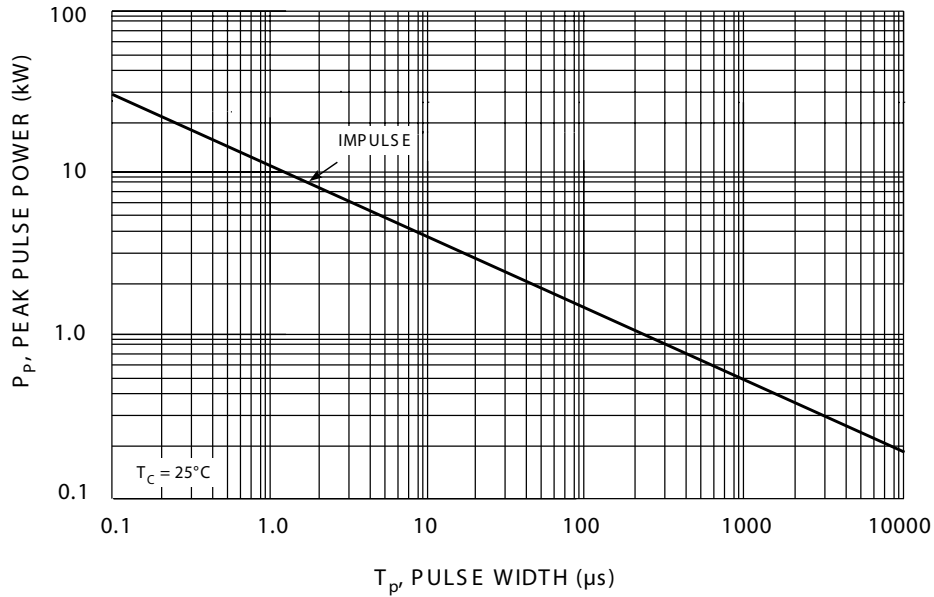


Fig. 3 Pulse Rating Curve

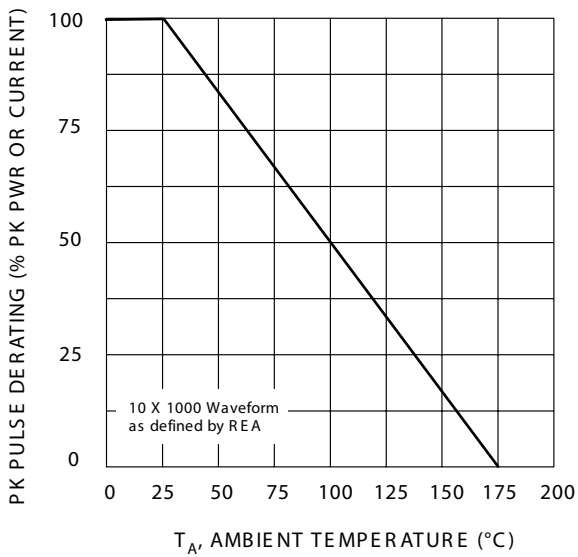


Fig. 4 Pulse Derating Curve

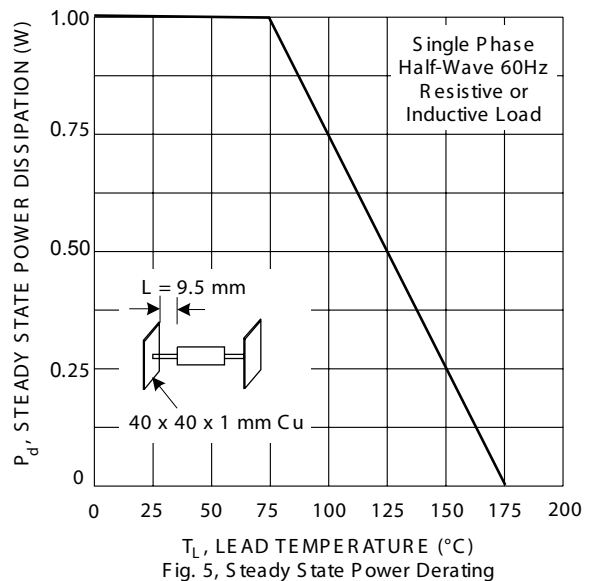


Fig. 5 Steady State Power Derating



UNI-DIRECTIONAL 400 WATT AXIAL LEAD TVS

| UNI-DIRECTIONAL PART NUMBER | REVERSE STAND-OFF VOLTAGE VRWM (V) | BREAKDOWN VOLTAGE VBR (V) MIN. @ IT | BREAKDOWN VOLTAGE VBR (V) MAX. @ IT | TEST CURRENT IT (mA) | MAXIMUM CLAMPING VOLTAGE @ Ipp Vc (V) | PEAK PULSE CURRENT Ipp (A) | REVERSE LEAKAGE @ VRWM IR (uA) |
|-----------------------------|------------------------------------|-------------------------------------|-------------------------------------|----------------------|---------------------------------------|----------------------------|--------------------------------|
| P4KE6.8 | 5.50 | 6.12 | 7.48 | 10 | 10.8 | 38.00 | 1000 |
| P4KE6.8A | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 40.00 | 1000 |
| P4KE7.5 | 6.05 | 6.75 | 8.25 | 10 | 11.7 | 36.00 | 500 |
| P4KE7.5A | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 37.00 | 500 |
| P4KE8.2 | 6.63 | 7.38 | 9.02 | 10 | 12.5 | 33.00 | 200 |
| P4KE8.2A | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 35.00 | 200 |
| P4KE9.1 | 7.37 | 8.19 | 10.00 | 1 | 13.8 | 30.00 | 50 |
| P4KE9.1A | 7.78 | 8.65 | 9.50 | 1 | 13.4 | 31.00 | 50 |
| P4KE10 | 8.10 | 9.00 | 11.00 | 1 | 15.0 | 28.00 | 10 |
| P4KE10A | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 29.00 | 10 |
| P4KE11 | 8.92 | 9.90 | 12.10 | 1 | 16.2 | 26.00 | 5 |
| P4KE11A | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 27.00 | 5 |
| P4KE12 | 9.72 | 10.80 | 13.20 | 1 | 17.3 | 24.00 | 5 |
| P4KE12A | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 25.00 | 5 |
| P4KE13 | 10.50 | 11.70 | 14.30 | 1 | 19.0 | 22.00 | 5 |
| P4KE13A | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 23.00 | 5 |
| P4KE15 | 12.10 | 13.50 | 16.50 | 1 | 22.0 | 19.00 | 5 |
| P4KE15A | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 20.00 | 5 |
| P4KE16 | 12.90 | 14.40 | 17.60 | 1 | 23.5 | 18.00 | 5 |
| P4KE16A | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 19.00 | 5 |
| P4KE18 | 14.50 | 16.20 | 19.80 | 1 | 26.5 | 16.00 | 5 |
| P4KE18A | 15.30 | 17.10 | 18.90 | 1 | 25.2 | 17.00 | 5 |
| P4KE20 | 16.20 | 18.00 | 22.00 | 1 | 29.1 | 14.00 | 5 |
| P4KE20A | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 15.00 | 5 |
| P4KE22 | 17.80 | 19.80 | 24.20 | 1 | 31.9 | 13.00 | 5 |
| P4KE22A | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 14.00 | 5 |
| P4KE24 | 19.40 | 21.60 | 26.40 | 1 | 34.7 | 12.00 | 5 |
| P4KE24A | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 13.00 | 5 |
| P4KE27 | 21.80 | 24.30 | 29.70 | 1 | 39.1 | 11.00 | 5 |
| P4KE27A | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 11.20 | 5 |
| P4KE30 | 24.30 | 27.00 | 33.00 | 1 | 43.5 | 10.00 | 5 |
| P4KE30A | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 10.00 | 5 |
| P4KE33 | 26.80 | 29.70 | 36.30 | 1 | 47.7 | 9.00 | 5 |
| P4KE33A | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 9.00 | 5 |
| P4KE36 | 29.10 | 32.40 | 39.60 | 1 | 52.0 | 8.00 | 5 |
| P4KE36A | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 8.40 | 5 |
| P4KE39 | 31.60 | 35.10 | 42.90 | 1 | 56.4 | 7.40 | 5 |
| P4KE39A | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 7.80 | 5 |
| P4KE43 | 34.80 | 38.70 | 47.30 | 1 | 61.9 | 6.80 | 5 |
| P4KE43A | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 7.10 | 5 |
| P4KE47 | 38.10 | 42.30 | 51.70 | 1 | 67.8 | 6.20 | 5 |
| P4KE47A | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 5.00 | 5 |
| P4KE51 | 41.30 | 45.90 | 56.10 | 1 | 73.5 | 5.70 | 5 |
| P4KE51A | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 6.00 | 5 |
| P4KE56 | 45.60 | 50.40 | 61.60 | 1 | 80.5 | 5.20 | 5 |
| P4KE56A | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 5.50 | 5 |
| P4KE62 | 50.20 | 55.80 | 68.20 | 1 | 89.0 | 4.70 | 5 |
| P4KE62A | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 5.00 | 5 |
| P4KE68 | 55.10 | 61.20 | 74.80 | 1 | 98.0 | 4.30 | 5 |
| P4KE68A | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 4.60 | 5 |
| P4KE75 | 60.70 | 67.50 | 82.50 | 1 | 108.0 | 3.90 | 5 |
| P4KE75A | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 4.10 | 5 |
| P4KE82 | 66.40 | 73.30 | 90.20 | 1 | 118.0 | 3.60 | 5 |
| P4KE82A | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 3.70 | 5 |
| P4KE91 | 73.70 | 81.90 | 100.00 | 1 | 131.0 | 3.20 | 5 |
| P4KE91A | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 3.40 | 5 |
| P4KE100 | 81.00 | 90.00 | 110.00 | 1 | 144.0 | 2.90 | 5 |
| P4KE100A | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 3.10 | 5 |
| P4KE110 | 89.20 | 99.00 | 121.00 | 1 | 158.0 | 2.70 | 5 |
| P4KE110A | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 2.80 | 5 |
| P4KE120 | 97.20 | 108.00 | 132.00 | 1 | 173.0 | 2.40 | 5 |
| P4KE120A | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 2.50 | 5 |
| P4KE130 | 105.00 | 117.00 | 143.00 | 1 | 187.0 | 2.20 | 5 |
| P4KE130A | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 2.30 | 5 |
| P4KE150 | 121.00 | 135.00 | 165.00 | 1 | 215.0 | 2.00 | 5 |
| P4KE150A | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 2.00 | 5 |
| P4KE160 | 130.00 | 144.00 | 176.00 | 1 | 230.0 | 1.80 | 5 |
| P4KE160A | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 1.90 | 5 |
| P4KE170 | 138.00 | 153.00 | 187.00 | 1 | 244.0 | 1.70 | 5 |
| P4KE170A | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 1.80 | 5 |
| P4KE180 | 146.00 | 162.00 | 198.00 | 1 | 258.0 | 1.60 | 5 |
| P4KE180A | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 1.70 | 5 |
| P4KE200 | 162.00 | 180.00 | 220.00 | 1 | 287.0 | 1.50 | 5 |
| P4KE200A | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 1.50 | 5 |
| P4KE220 | 175.00 | 198.00 | 242.00 | 1 | 344.0 | 1.20 | 5 |
| P4KE220A | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 1.20 | 5 |
| P4KE250 | 202.00 | 225.00 | 275.00 | 1 | 360.0 | 1.10 | 5 |
| P4KE250A | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 1.20 | 5 |
| P4KE300 | 243.00 | 270.00 | 330.00 | 1 | 430.0 | 0.90 | 5 |
| P4KE300A | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 1.00 | 5 |
| P4KE350 | 284.00 | 315.00 | 385.00 | 1 | 504.0 | 0.80 | 5 |
| P4KE350A | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 0.80 | 5 |
| P4KE400 | 324.00 | 360.00 | 440.00 | 1 | 574.0 | 0.70 | 5 |
| P4KE400A | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 0.70 | 5 |
| P4KE440 | 356.00 | 396.00 | 484.00 | 1 | 631.0 | 1.00 | 5 |
| P4KE440A | 376.00 | 418.00 | 462.00 | 1 | 600.0 | 1.00 | 5 |



BI-DIRECTIONAL 400 WATT AXIAL LEAD TVS

| BI-DIRECTIONAL PART NUMBER | REVERSE STAND-OFF VOLTAGE VRWM (V) | BREAKDOWN VOLTAGE VBR (V) MIN. @ IT | BREAKDOWN VOLTAGE VBR (V) MAX. @ IT | TEST CURRENT IT (mA) | MAXIMUM CLAMPING VOLTAGE @ Ipp Vc (V) | PEAK PULSE CURRENT Ipp (A) | REVERSE LEAKAGE @ VRWM IR (uA) |
|----------------------------|------------------------------------|-------------------------------------|-------------------------------------|----------------------|---------------------------------------|----------------------------|--------------------------------|
| P4KE6.8C | 5.50 | 6.12 | 7.48 | 10 | 10.8 | 38.00 | 2000 |
| P4KE6.8CA | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 40.00 | 2000 |
| P4KE7.5C | 6.05 | 6.75 | 8.25 | 10 | 11.7 | 36.00 | 1000 |
| P4KE7.5CA | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 37.00 | 1000 |
| P4KE8.2C | 6.63 | 7.38 | 9.02 | 10 | 12.5 | 33.00 | 400 |
| P4KE8.2CA | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 35.00 | 400 |
| P4KE9.1C | 7.37 | 8.19 | 10.00 | 1 | 13.8 | 30.00 | 10 |
| P4KE9.1CA | 7.78 | 8.65 | 9.50 | 1 | 13.4 | 31.00 | 10 |
| P4KE10C | 8.10 | 9.00 | 11.00 | 1 | 15.0 | 28.00 | 20 |
| P4KE10CA | 8.55 | 9.50 | 10.50 | 1 | 14.5 | 29.00 | 20 |
| P4KE11C | 8.92 | 9.90 | 12.10 | 1 | 16.2 | 26.00 | 10 |
| P4KE11CA | 9.40 | 10.50 | 11.60 | 1 | 15.6 | 27.00 | 10 |
| P4KE12C | 9.72 | 10.80 | 13.20 | 1 | 17.3 | 24.00 | 5 |
| P4KE12CA | 10.20 | 11.40 | 12.60 | 1 | 16.7 | 25.00 | 5 |
| P4KE13C | 10.50 | 11.70 | 14.30 | 1 | 19.0 | 22.00 | 5 |
| P4KE13CA | 11.10 | 12.40 | 13.70 | 1 | 18.2 | 23.00 | 5 |
| P4KE15C | 12.10 | 13.50 | 16.50 | 1 | 22.0 | 19.00 | 5 |
| P4KE15CA | 12.80 | 14.30 | 15.80 | 1 | 21.2 | 20.00 | 5 |
| P4KE16C | 12.90 | 14.40 | 17.60 | 1 | 23.5 | 18.00 | 5 |
| P4KE16CA | 13.60 | 15.20 | 16.80 | 1 | 22.5 | 19.00 | 5 |
| P4KE18C | 14.50 | 16.20 | 19.80 | 1 | 26.5 | 16.00 | 5 |
| P4KE18CA | 15.30 | 17.10 | 18.90 | 1 | 25.2 | 17.00 | 5 |
| P4KE20C | 16.20 | 18.00 | 22.00 | 1 | 29.1 | 14.00 | 5 |
| P4KE20CA | 17.10 | 19.00 | 21.00 | 1 | 27.7 | 15.00 | 5 |
| P4KE22C | 17.80 | 19.80 | 24.20 | 1 | 31.9 | 13.00 | 5 |
| P4KE22CA | 18.80 | 20.90 | 23.10 | 1 | 30.6 | 14.00 | 5 |
| P4KE24C | 19.40 | 21.60 | 26.40 | 1 | 34.7 | 12.00 | 5 |
| P4KE24CA | 20.50 | 22.80 | 25.20 | 1 | 33.2 | 13.00 | 5 |
| P4KE27C | 21.80 | 24.30 | 29.70 | 1 | 39.1 | 11.00 | 5 |
| P4KE27CA | 23.10 | 25.70 | 28.40 | 1 | 37.5 | 11.20 | 5 |
| P4KE30C | 24.30 | 27.00 | 33.00 | 1 | 43.5 | 10.00 | 5 |
| P4KE30CA | 25.60 | 28.50 | 31.50 | 1 | 41.4 | 10.00 | 5 |
| P4KE33C | 26.80 | 29.70 | 36.30 | 1 | 47.7 | 9.00 | 5 |
| P4KE33CA | 28.20 | 31.40 | 34.70 | 1 | 45.7 | 9.00 | 5 |
| P4KE36C | 29.10 | 32.40 | 39.60 | 1 | 52.0 | 8.00 | 5 |
| P4KE36CA | 30.80 | 34.20 | 37.80 | 1 | 49.9 | 8.40 | 5 |
| P4KE39C | 31.60 | 35.10 | 42.90 | 1 | 56.4 | 7.40 | 5 |
| P4KE39CA | 33.30 | 37.10 | 41.00 | 1 | 53.9 | 7.80 | 5 |
| P4KE43C | 34.80 | 38.70 | 47.30 | 1 | 61.9 | 6.80 | 5 |
| P4KE43CA | 36.80 | 40.90 | 45.20 | 1 | 59.3 | 7.10 | 5 |
| P4KE47C | 38.10 | 42.30 | 51.70 | 1 | 67.8 | 6.20 | 5 |
| P4KE47CA | 40.20 | 44.70 | 49.40 | 1 | 64.8 | 5.00 | 5 |
| P4KE51C | 41.30 | 45.90 | 56.10 | 1 | 73.5 | 5.70 | 5 |
| P4KE51CA | 43.60 | 48.50 | 53.60 | 1 | 70.1 | 6.00 | 5 |
| P4KE56C | 45.60 | 50.40 | 61.60 | 1 | 80.5 | 5.20 | 5 |
| P4KE56CA | 47.80 | 53.20 | 58.80 | 1 | 77.0 | 5.50 | 5 |
| P4KE62C | 50.20 | 55.80 | 68.20 | 1 | 89.0 | 4.70 | 5 |
| P4KE62CA | 53.00 | 58.90 | 65.10 | 1 | 85.0 | 5.00 | 5 |
| P4KE68C | 55.10 | 61.20 | 74.80 | 1 | 98.0 | 4.30 | 5 |
| P4KE68CA | 58.10 | 64.60 | 71.40 | 1 | 92.0 | 4.60 | 5 |
| P4KE75C | 60.70 | 67.50 | 82.50 | 1 | 108.0 | 3.90 | 5 |
| P4KE75CA | 64.10 | 71.30 | 78.80 | 1 | 103.0 | 4.10 | 5 |
| P4KE82C | 66.40 | 73.80 | 90.20 | 1 | 118.0 | 3.60 | 5 |
| P4KE82CA | 70.10 | 77.90 | 86.10 | 1 | 113.0 | 3.70 | 5 |
| P4KE91C | 73.70 | 81.90 | 100.00 | 1 | 131.0 | 3.20 | 5 |
| P4KE91CA | 77.80 | 86.50 | 95.50 | 1 | 125.0 | 3.40 | 5 |
| P4KE100C | 81.00 | 90.00 | 110.00 | 1 | 144.0 | 2.90 | 5 |
| P4KE100CA | 85.50 | 95.00 | 105.00 | 1 | 137.0 | 3.10 | 5 |
| P4KE110C | 89.20 | 99.00 | 121.00 | 1 | 158.0 | 2.70 | 5 |
| P4KE110CA | 94.00 | 105.00 | 116.00 | 1 | 152.0 | 2.80 | 5 |
| P4KE120C | 97.20 | 108.00 | 132.00 | 1 | 173.0 | 2.40 | 5 |
| P4KE120CA | 102.00 | 114.00 | 126.00 | 1 | 165.0 | 2.50 | 5 |
| P4KE130C | 105.00 | 117.00 | 143.00 | 1 | 187.0 | 2.20 | 5 |
| P4KE130CA | 111.00 | 124.00 | 137.00 | 1 | 179.0 | 2.30 | 5 |
| P4KE150C | 121.00 | 135.00 | 165.00 | 1 | 215.0 | 2.00 | 5 |
| P4KE150CA | 128.00 | 143.00 | 158.00 | 1 | 207.0 | 2.00 | 5 |
| P4KE160C | 130.00 | 144.00 | 176.00 | 1 | 230.0 | 1.80 | 5 |
| P4KE160CA | 136.00 | 152.00 | 168.00 | 1 | 219.0 | 1.90 | 5 |
| P4KE170C | 138.00 | 153.00 | 187.00 | 1 | 244.0 | 1.70 | 5 |
| P4KE170CA | 145.00 | 162.00 | 179.00 | 1 | 234.0 | 1.80 | 5 |
| P4KE180C | 146.00 | 162.00 | 198.00 | 1 | 258.0 | 1.60 | 5 |
| P4KE180CA | 154.00 | 171.00 | 189.00 | 1 | 246.0 | 1.70 | 5 |
| P4KE200C | 162.00 | 180.00 | 220.00 | 1 | 287.0 | 1.50 | 5 |
| P4KE200CA | 171.00 | 190.00 | 210.00 | 1 | 274.0 | 1.53 | 5 |
| P4KE220C | 175.00 | 198.00 | 242.00 | 1 | 344.0 | 1.16 | 5 |
| P4KE220CA | 185.00 | 209.00 | 231.00 | 1 | 328.0 | 1.22 | 5 |
| P4KE250C | 202.00 | 225.00 | 275.00 | 1 | 360.0 | 1.11 | 5 |
| P4KE250CA | 214.00 | 237.00 | 263.00 | 1 | 344.0 | 1.16 | 5 |
| P4KE300C | 243.00 | 270.00 | 330.00 | 1 | 430.0 | 0.93 | 5 |
| P4KE300CA | 256.00 | 285.00 | 315.00 | 1 | 414.0 | 0.97 | 5 |
| P4KE350C | 284.00 | 315.00 | 385.00 | 1 | 504.0 | 0.79 | 5 |
| P4KE350CA | 300.00 | 332.00 | 368.00 | 1 | 482.0 | 0.83 | 5 |
| P4KE400C | 324.00 | 360.00 | 440.00 | 1 | 574.0 | 0.70 | 5 |
| P4KE400CA | 342.00 | 380.00 | 420.00 | 1 | 548.0 | 0.73 | 5 |
| P4KE440C | 356.00 | 396.00 | 484.00 | 1 | 631.0 | 0.95 | 5 |
| P4KE440CA | 376.00 | 418.00 | 462.00 | 1 | 600.0 | 1.00 | 5 |