

## Polypropylene Film Capacitors

For Snubber, IGBT & Power Semiconductor Power Circuits

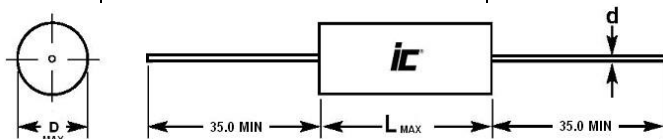
### FEATURES

High dvdt - Good Pulse Current -  
Stable with Temperature and Frequency

### APPLICATIONS

Inverters/Converters - Power Semiconductor Circuits -  
Induction Heating - Switching Power Supplies

|                                                                     |                                                                                |           |      |             |                                 |                                                                  |      |      |      |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------|------|-------------|---------------------------------|------------------------------------------------------------------|------|------|------|
| Operating Temperature Range                                         | -55°C to +85°C                                                                 |           |      |             |                                 |                                                                  |      |      |      |
| Capacitance Tolerance                                               | ±10% at 1 kHz, 25°C<br>+5% optional                                            |           |      |             |                                 |                                                                  |      |      |      |
| Surge Voltage(SVDC)                                                 | WVDC                                                                           | 700       | 850  | 1000        | 1200                            | 1500                                                             | 2000 | 2500 | 3000 |
|                                                                     | SVDC                                                                           | 1000      | 1200 | 1400        | 1600                            | 2000                                                             | 2400 | 3000 | 3500 |
| AC voltage (50/60 Hz)                                               | WVDC                                                                           | 700       | 850  | 1000        | 1200                            | 1500                                                             | 2000 | 2500 | 3000 |
|                                                                     | VAC                                                                            | 420       | 450  | 480         | 500                             | 575                                                              | 630  | 700  | 750  |
| Dissipation Factor (MAX)<br>25°C                                    | Frequency (kHz)                                                                | C≤0.047uF |      | 0.047>C≥1uF |                                 | C>1uF                                                            |      |      |      |
|                                                                     | 1                                                                              | 0.06%     |      | 0.05%       |                                 | 0.06%                                                            |      |      |      |
|                                                                     |                                                                                |           |      |             |                                 |                                                                  |      |      |      |
| Insulation Resistance @25°C (<70% RH)for 1 minute at 100VDC applied | 30000 MΩxμF<br>(not to exceed 30GΩ)                                            |           |      |             |                                 |                                                                  |      |      |      |
| Self Inductance                                                     | <1 nano-Henry per mm of lead spacing                                           |           |      |             |                                 |                                                                  |      |      |      |
| Capacitance Drift Factor                                            | <0.5% after 2 years at 40°C                                                    |           |      |             |                                 |                                                                  |      |      |      |
| Life Expectancy                                                     | 30000 hours @VAC, 70°C<br>100000 hours @VDC, 70°C                              |           |      |             |                                 |                                                                  |      |      |      |
|                                                                     | Capacitance Change                                                             |           |      |             | ≤3% of initially measured value |                                                                  |      |      |      |
| Failure Quota                                                       | 300/ billion component hours                                                   |           |      |             |                                 |                                                                  |      |      |      |
| Damp Heat test                                                      | 56 days at 40°C with 90 to 95%RH, +40°C and no voltage applied                 |           |      |             |                                 |                                                                  |      |      |      |
|                                                                     | Capacitance Change                                                             |           |      |             | ≤2% of initially measured value |                                                                  |      |      |      |
|                                                                     | Dissipation Factor                                                             |           |      |             | ≤0.001 at 1kHz and 25°C         |                                                                  |      |      |      |
|                                                                     | Insulation Resistance                                                          |           |      |             | ≥50% of maximum specified value |                                                                  |      |      |      |
| Self Inductance                                                     | <1 nano-Henry per mm of body length and lead length                            |           |      |             |                                 |                                                                  |      |      |      |
| Capacitance Drift Factor                                            | <1.0% after 2 years at 40°C                                                    |           |      |             |                                 |                                                                  |      |      |      |
| Capacitance Temperature Coefficient                                 | -200 ppm/°C, ±100ppm/°C                                                        |           |      |             |                                 |                                                                  |      |      |      |
| Dielectric Strength                                                 | Terminal to Terminal                                                           |           |      |             |                                 | Terminal to case                                                 |      |      |      |
|                                                                     | 160% of rated VDC or 200% VDC applied for 2 Seconds and 25°C                   |           |      |             |                                 | 3kVAC, 50/60Hz applied between the leads and case for 60 seconds |      |      |      |
| Dielectric                                                          | Polypropylene                                                                  |           |      |             |                                 |                                                                  |      |      |      |
| Construction                                                        | Double Metallized film with internal series connections                        |           |      |             |                                 |                                                                  |      |      |      |
| Coating                                                             | Flame Retardant polyester tape wrap (UL 501) with epoxy resin end fill(UL94V0) |           |      |             |                                 |                                                                  |      |      |      |
| Leads                                                               | Lead free tinned copper leads                                                  |           |      |             |                                 |                                                                  |      |      |      |



|        |       |     |     |     |     |     |     |
|--------|-------|-----|-----|-----|-----|-----|-----|
| L MAX  | 29    | 34  | 34  | 46  | 46  | 55  | 59  |
| D      | ≤17.5 | ≤18 | >18 | ≤25 | >25 | all | all |
| d±0.05 | 0.8   | 0.8 | 1.0 | 1.0 | 1.2 | 1.2 | 1.2 |

# PPA

High Voltage, High dvdt Axial Lead

| WVDC | Capacitance (μF) | IC PART NUMBER | dv/dt (v/μ sec.) | Maximum RMS Ripple Current (A) 100 kHz, +70°C | Typical ESR (mΩ) 100 kHz, +25°C | Dims DxL (mm) |
|------|------------------|----------------|------------------|-----------------------------------------------|---------------------------------|---------------|
| 700  | 0.1              | 104PPA700KG    | 950              | 3.5                                           | 13                              | 12x29         |
| 700  | 0.15             | 154PPA700KG    | 950              | 4.5                                           | 9.4                             | 13.5x29       |
| 700  | 0.22             | 224PPA700KG    | 950              | 6                                             | 7.1                             | 15.5x29       |
| 700  | 0.22             | 224PPA700KJ    | 700              | 5.5                                           | 8                               | 13.5x34       |
| 700  | 0.33             | 334PPA700KG    | 950              | 7                                             | 5.4                             | 17.5x29       |
| 700  | 0.33             | 334PPA700K     | 700              | 7                                             | 6                               | 15.5x34       |
| 700  | 0.47             | 474PPA700K     | 700              | 8                                             | 4.7                             | 18x34         |
| 700  | 0.68             | 684PPA700KD22  | 700              | 10.5                                          | 3.9                             | 21.5x34       |
| 700  | 0.68             | 684PPA700K     | 475              | 10                                            | 4.4                             | 18x46         |
| 700  | 1                | 105PPA700KD26  | 700              | 12.5                                          | 3.2                             | 26x34         |
| 700  | 1                | 105PPA700K     | 475              | 10.5                                          | 3.9                             | 21x46         |
| 700  | 1.5              | 155PPA700K     | 475              | 14                                            | 3.3                             | 25.5x46       |
| 700  | 2                | 205PPA700KN    | 475              | 14                                            | 3                               | 29x46         |
| 700  | 2.2              | 225PPA700K     | 475              | 14                                            | 2.9                             | 30x46         |
| 700  | 2.2              | 225PPA700KD27  | 350              | 14                                            | 3.8                             | 27x55         |
| 700  | 2.2              | 225PPA700KS    | 300              | 14                                            | 4.2                             | 25.5x59       |
| 700  | 2.5              | 255PPA700KN    | 475              | 14                                            | 2.8                             | 32x46         |
| 700  | 2.5              | 255PPA700KR    | 350              | 14                                            | 3.5                             | 29x55         |
| 700  | 2.5              | 255PPA700KS    | 300              | 14                                            | 3.9                             | 27.5x59       |
| 700  | 3                | 305PPA700KN    | 475              | 14                                            | 2.6                             | 35x46         |
| 700  | 3                | 305PPA700KR    | 350              | 14                                            | 3.2                             | 31x55         |
| 700  | 3                | 305PPA700KS    | 300              | 14                                            | 3.6                             | 29.5x59       |
| 700  | 3.3              | 335PPA700K     | 475              | 14                                            | 2.5                             | 36x46         |
| 700  | 3.3              | 335PPA700KD32  | 350              | 14                                            | 3.1                             | 32x55         |
| 700  | 3.3              | 335PPA700KS    | 300              | 14                                            | 3.5                             | 30.5x59       |
| 700  | 4                | 405PPA700KR    | 350              | 14                                            | 2.8                             | 34.5x59       |
| 700  | 4                | 405PPA700KS    | 300              | 14                                            | 3.1                             | 33x59         |
| 700  | 4.7              | 475PPA700K     | 350              | 14                                            | 2.6                             | 37.5x55       |
| 700  | 4.7              | 475PPA700KS    | 300              | 14                                            | 2.9                             | 35.5x59       |
| 700  | 5.6              | 565PPA700K     | 350              | 14                                            | 2.3                             | 41x55         |
| 700  | 5.6              | 565PPA700KS    | 300              | 14                                            | 2.6                             | 38.5x59       |
| 700  | 6.8              | 685PPA700KS    | 300              | 14                                            | 2.4                             | 42x59         |
| 850  | 0.068            | 683PPA850KG    | 1200             | 3.5                                           | 13.9                            | 11.5x29       |
| 850  | 0.1              | 104PPA850K     | 1200             | 4.5                                           | 10.4                            | 13x29         |
| 850  | 0.1              | 104PPA850KD11  | 900              | 4                                             | 11.5                            | 11x34         |
| 850  | 0.15             | 154PPA850KD15  | 1200             | 5.5                                           | 7.6                             | 15x29         |
| 850  | 0.15             | 154PPA850K     | 900              | 5                                             | 8.6                             | 13x34         |
| 850  | 0.22             | 224PPA850KG    | 1200             | 7                                             | 6.1                             | 17.5x29       |
| 850  | 0.22             | 224PPA850K     | 900              | 6.5                                           | 6.6                             | 15x34         |
| 850  | 0.33             | 334PPA850K     | 900              | 8.5                                           | 4.8                             | 18x34         |
| 850  | 0.47             | 474PPA850K     | 900              | 10.5                                          | 4                               | 21.5x34       |
| 850  | 0.47             | 474PPA850KD18  | 600              | 9.5                                           | 5                               | 18x46         |
| 850  | 0.68             | 684PPA850KD26  | 900              | 10.5                                          | 3.2                             | 25.5x34       |
| 850  | 0.68             | 684PPA850K     | 600              | 10.5                                          | 4.1                             | 21x46         |
| 850  | 1                | 105PPA850K     | 600              | 14                                            | 3.3                             | 25x46         |
| 850  | 1.5              | 155PPA850K     | 600              | 14                                            | 2.8                             | 29.5x46       |
| 850  | 2                | 205PPA850KD34  | 600              | 14                                            | 2.4                             | 33.5x46       |
| 850  | 2                | 205PPA850K     | 425              | 14                                            | 3                               | 29x55         |
| 850  | 2                | 205PPA850KS    | 275              | 14                                            | 3.4                             | 28x59         |
| 850  | 2.2              | 225PPA850KD35  | 600              | 14                                            | 2.3                             | 35x46         |
| 850  | 2.2              | 225PPA850K     | 425              | 14                                            | 2.8                             | 30.5x55       |
| 850  | 2.2              | 225PPA850KS    | 375              | 14                                            | 3.2                             | 29.5x59       |
| 850  | 2.5              | 255PPA850KN    | 600              | 14                                            | 2.6                             | 36.5x46       |
| 850  | 2.5              | 255PPA850K     | 425              | 14                                            | 2.2                             | 32x55         |
| 850  | 2.5              | 255PPA850KS    | 375              | 14                                            | 2.5                             | 31x59         |
| 850  | 3                | 305PPA850KR    | 425              | 14                                            | 2.5                             | 36x55         |
| 850  | 3                | 305PPA850KS    | 375              | 14                                            | 2.8                             | 34x59         |
| 850  | 3.3              | 335PPA850K     | 425              | 14                                            | 2.4                             | 37x55         |

| WVDC | Capacitance (μF) | IC PART NUMBER | dv/dt (v/μ sec.) | Maximum RMS Ripple Current (A) 100 kHz, +70°C | Typical ESR (mΩ) 100 kHz, +25°C | Dims DxL (mm) |
|------|------------------|----------------|------------------|-----------------------------------------------|---------------------------------|---------------|
| 850  | 3.3              | 335PPA850KS    | 375              | 14                                            | 2.7                             | 35x59         |
| 850  | 4                | 405PPA850KR    | 425              | 14                                            | 2.3                             | 40.5x55       |
| 850  | 4                | 405PPA850KS    | 375              | 14                                            | 2.6                             | 38.5x59       |
| 850  | 4.7              | 475PPA850KS    | 375              | 14                                            | 2.4                             | 41.5x59       |
| 1000 | 0.068            | 683PPA102KG    | 1400             | 3.5                                           | 13.6                            | 12.5x29       |
| 1000 | 0.1              | 104PPA102KG    | 1400             | 4.5                                           | 10.2                            | 14.5x29       |
| 1000 | 0.1              | 104PPA102KJ    | 1050             | 4.5                                           | 11                              | 12.5x34       |
| 1000 | 0.15             | 154PPA102KG    | 1400             | 6                                             | 7.3                             | 17x29         |
| 1000 | 0.15             | 154PPA102K     | 1050             | 6                                             | 8.2                             | 14.5x34       |
| 1000 | 0.22             | 224PPA102K     | 1050             | 7.5                                           | 5.9                             | 17.5x34       |
| 1000 | 0.33             | 334PPA102K     | 1050             | 9.5                                           | 4.5                             | 20.5x34       |
| 1000 | 0.33             | 334PPA102KD17  | 680              | 9                                             | 5.9                             | 17x46         |
| 1000 | 0.47             | 474PPA102K     | 1050             | 10.5                                          | 3.8                             | 24x34         |
| 1000 | 0.47             | 474PPA102KD20  | 680              | 10.5                                          | 4.7                             | 20x46         |
| 1000 | 0.68             | 684PPA102K     | 680              | 10.5                                          | 4                               | 23.5x46       |
| 1000 | 1                | 105PPA102K     | 680              | 14                                            | 3.2                             | 28x46         |
| 1000 | 1.5              | 155PPA102KD34  | 680              | 14                                            | 2.6                             | 33.5x46       |
| 1000 | 1.5              | 155PPA102K     | 475              | 14                                            | 3.2                             | 29.5x55       |
| 1000 | 1.5              | 155PPA102KS    | 425              | 14                                            | 3.6                             | 28x59         |
| 1000 | 2                | 205PPA102KR    | 475              | 14                                            | 2.9                             | 33.5x55       |
| 1000 | 2                | 205PPA102KS    | 425              | 14                                            | 3.2                             | 31.5x59       |
| 1000 | 2.2              | 225PPA102K     | 475              | 14                                            | 2.7                             | 35x55         |
| 1000 | 2.2              | 225PPA102KS    | 425              | 14                                            | 3                               | 33x59         |
| 1000 | 3                | 305PPA102KR    | 475              | 14                                            | 2.4                             | 40.5x55       |
| 1000 | 3                | 305PPA102KS    | 425              | 14                                            | 2.6                             | 38x59         |
| 1000 | 3.3              | 335PPA102KS    | 425              | 14                                            | 2.5                             | 40x59         |
| 1200 | 0.047            | 473PPA122K     | 1600             | 3                                             | 17                              | 12x29         |
| 1200 | 0.047            | 473PPA122KD11  | 1200             | 3                                             | 19                              | 10.5x34       |
| 1200 | 0.068            | 683PPA122K     | 1600             | 4                                             | 12.8                            | 13.5x29       |
| 1200 | 0.068            | 683PPA122KD12  | 1200             | 3.5                                           | 14.3                            | 12x34         |
| 1200 | 0.1              | 104PPA122KG    | 1600             | 5                                             | 9.7                             | 16x29         |
| 1200 | 0.1              | 104PPA122K     | 1200             | 5                                             | 10.7                            | 14x34         |
| 1200 | 0.15             | 154PPA122K     | 1200             | 6.5                                           | 7.7                             | 17x34         |
| 1200 | 0.15             | 154PPA122KD14  | 780              | 6                                             | 10                              | 14x46         |
| 1200 | 0.22             | 224PPA122K     | 1200             | 9                                             | 5.4                             | 19.5x34       |
| 1200 | 0.22             | 224PPA122KD16  | 780              | 9                                             | 7.6                             | 16x46         |
| 1200 | 0.33             | 334PPA122KD23  | 1200             | 10.5                                          | 4.5                             | 23x34         |
| 1200 | 0.33             | 334PPA122K     | 780              | 9.5                                           | 5.4                             | 19x46         |
| 1200 | 0.47             | 474PPA122K     | 780              | 10.5                                          | 4.8                             | 22x46         |
| 1200 | 0.68             | 684PPA122K     | 780              | 13.5                                          | 3.9                             | 26.5x46       |
| 1200 | 1                | 105PPA122K     | 780              | 14                                            | 3.4                             | 32x46         |
| 1200 | 1                | 105PPA122KR    | 550              | 14                                            | 4                               | 27x55         |
| 1200 | 1                | 105PPA122KS    | 350              | 14                                            | 4.5                             | 25.5x59       |
| 1200 | 1.2              | 125PPA122KD35  | 780              | 14                                            | 3                               | 34.5x46       |
| 1200 | 1.2              | 125PPA122K     | 550              | 14                                            | 3.4                             | 29.5x55       |
| 1200 | 1.2              | 125PPA122KS    | 500              | 14                                            | 3.8                             | 28x59         |
| 1200 | 1.5              | 155PPA122KD37  | 780              | 14                                            | 2.7                             | 37x46         |
| 1200 | 1.5              | 155PPA122K     | 550              | 14                                            | 3                               | 33x55         |
| 1200 | 1.5              | 155PPA122KS    | 500              | 14                                            | 3.4                             | 31x59         |
| 1200 | 2                | 205PPA122KR    | 550              | 14                                            | 2.6                             | 37.5x55       |
| 1200 | 2                | 205PPA122K     | 400              | 12                                            | 2.6                             | 39x55         |
| 1200 | 2                | 205PPA122KS    | 500              | 14                                            | 2.9                             | 35.5x59       |
| 1200 | 2.2              | 225PPA122K     | 550              | 14                                            | 2.5                             | 39x55         |
| 1200 | 2.2              | 225PPA122KS    | 500              | 14                                            | 2.8                             | 37x59         |
| 1200 | 2.5              | 255PPA122KR    | 550              | 14                                            | 2.3                             | 41x55         |
| 1200 | 2.5              | 255PPA122KS    | 500              | 14                                            | 2.6                             | 39x59         |
| 1200 | 3                | 305PPA122KS    | 500              | 14                                            | 2.4                             | 42x59         |
| 1500 | 0.033            | 333PPA152KG    | 2000             | 3                                             | 22                              | 12.5x29       |

# PPA

High Voltage, High dvdt Axial Lead

| WVDC | Capacitance (μF) | IC PART NUMBER | dv/dt (v/μ sec.) | Maximum RMS Ripple Current (A) 100 kHz, +70°C | Typical ESR (mΩ) 100 kHz, +25°C | Dims DxL (mm) |
|------|------------------|----------------|------------------|-----------------------------------------------|---------------------------------|---------------|
| 1500 | 0.047            | 473PPA152KG    | 2000             | 3.5                                           | 16.5                            | 14x29         |
| 1500 | 0.068            | 683PPA152KG    | 2000             | 4.5                                           | 12.4                            | 16x29         |
| 1500 | 0.068            | 683PPA152K     | 1500             | 4                                             | 13.8                            | 13.5x34       |
| 1500 | 0.1              | 104PPA152K     | 1500             | 5.5                                           | 9.6                             | 16x34         |
| 1500 | 0.15             | 154PPA152K     | 1500             | 7                                             | 7.2                             | 19.5x34       |
| 1500 | 0.22             | 224PPA152K     | 1500             | 9.5                                           | 5.3                             | 23x34         |
| 1500 | 0.22             | 224PPA152KD19  | 980              | 9                                             | 7                               | 19x46         |
| 1500 | 0.33             | 334PPA152K     | 980              | 10.5                                          | 5.3                             | 23x46         |
| 1500 | 0.47             | 474PPA152K     | 980              | 13.5                                          | 4.3                             | 27x46         |
| 1500 | 0.68             | 684PPA152K     | 980              | 14                                            | 3.7                             | 31.5x46       |
| 1500 | 1                | 105PPA152KD37  | 980              | 14                                            | 3.2                             | 37x46         |
| 1500 | 1                | 105PPA152K     | 675              | 14                                            | 3.7                             | 31.5x55       |
| 1500 | 1                | 105PPA152KS    | 625              | 14                                            | 4.2                             | 30.5x59       |
| 1500 | 1.2              | 125PPA152K     | 675              | 14                                            | 3.4                             | 35.5x55       |
| 1500 | 1.2              | 125PPA152KS    | 625              | 14                                            | 3.7                             | 33.5x59       |
| 1500 | 1.5              | 155PPA152K     | 675              | 14                                            | 2.9                             | 40x55         |
| 1500 | 1.5              | 155PPA152KS    | 625              | 14                                            | 3.2                             | 37x59         |
| 1500 | 2                | 205PPA152KS    | 625              | 14                                            | 2.8                             | 42x59         |
| 2000 | 0.015            | 153PPA202KG    | 2750             | 2                                             | 37.5                            | 11x29         |
| 2000 | 0.022            | 223PPA202KG    | 2750             | 2.5                                           | 27.5                            | 12.5x29       |
| 2000 | 0.022            | 223PPA202K     | 2000             | 2.5                                           | 33.5                            | 11x34         |
| 2000 | 0.033            | 333PPA202KG    | 2750             | 3.5                                           | 20.7                            | 14.5x29       |
| 2000 | 0.033            | 333PPA202K     | 2000             | 3.5                                           | 23.8                            | 13x34         |
| 2000 | 0.047            | 473PPA202KG    | 2750             | 4.5                                           | 15                              | 16.5x29       |
| 2000 | 0.047            | 473PPA202K     | 2000             | 4.5                                           | 16.8                            | 13x34         |
| 2000 | 0.068            | 683PPA202K     | 2000             | 5.5                                           | 11.8                            | 17x34         |
| 2000 | 0.1              | 104PPA202K     | 2000             | 7.5                                           | 8.4                             | 20x34         |
| 2000 | 0.15             | 154PPA202KD24  | 2000             | 9                                             | 6.6                             | 24x34         |
| 2000 | 0.15             | 154PPA202K     | 1250             | 9                                             | 8.3                             | 19.5x46       |
| 2000 | 0.22             | 224PPA202K     | 1250             | 10                                            | 6                               | 23x46         |
| 2000 | 0.33             | 334PPA202K     | 1250             | 12.5                                          | 4.7                             | 27.5x46       |
| 2000 | 0.47             | 474PPA202K     | 1250             | 14                                            | 3.9                             | 32.5x46       |
| 2000 | 0.47             | 474PPA202KR    | 875              | 13                                            | 5.4                             | 27x55         |
| 2000 | 0.47             | 474PPA202KS    | 800              | 12.5                                          | 6                               | 26x59         |
| 2000 | 0.56             | 564PPA202KD35  | 1250             | 14                                            | 3.6                             | 35x46         |
| 2000 | 0.56             | 564PPA202K     | 875              | 14                                            | 4.5                             | 29.5x55       |
| 2000 | 0.56             | 564PPA202KS    | 800              | 14                                            | 5                               | 28.5x59       |
| 2000 | 0.68             | 684PPA202K     | 875              | 14                                            | 4                               | 32x55         |
| 2000 | 0.68             | 684PPA202KS    | 800              | 14                                            | 4.5                             | 31x59         |
| 2000 | 1                | 105PPA202K     | 875              | 14                                            | 3.3                             | 39x55         |
| 2000 | 1                | 105PPA202KS    | 800              | 14                                            | 3.7                             | 37x59         |
| 2000 | 1.2              | 125PPA202KS    | 800              | 14                                            | 3.4                             | 40.5x59       |
| 2500 | 0.01             | 103PPA252KG    | 3900             | 1.5                                           | 52                              | 11.5x29       |

| WVDC | Capacitance (μF) | IC PART NUMBER | dv/dt (v/μ sec.) | Maximum RMS Ripple Current (A) 100 kHz, +70°C | Typical ESR (mΩ) 100 kHz, +25°C | Dims DxL (mm) |
|------|------------------|----------------|------------------|-----------------------------------------------|---------------------------------|---------------|
| 2500 | 0.015            | 153PPA252KG    | 2650             | 2.5                                           | 37                              | 13.5x29       |
| 2500 | 0.022            | 223PPA252KG    | 3900             | 3                                             | 27                              | 15.5x29       |
| 2500 | 0.022            | 223PPA252KJ    | 2600             | 2.5                                           | 31                              | 13x34         |
| 2500 | 0.033            | 333PPA252KG    | 3900             | 4                                             | 20                              | 18x29         |
| 2500 | 0.033            | 333PPA252K     | 2600             | 4                                             | 23                              | 15x34         |
| 2500 | 0.047            | 473PPA252K     | 2600             | 5                                             | 16.5                            | 17x34         |
| 2500 | 0.068            | 683PPA252K     | 2600             | 6.5                                           | 11.5                            | 20.5x34       |
| 2500 | 0.1              | 104PPA252K     | 2600             | 8.5                                           | 8                               | 24.5x34       |
| 2500 | 0.1              | 104PPA252KD20  | 1650             | 8                                             | 11.5                            | 19.5x46       |
| 2500 | 0.15             | 154PPA252K     | 1650             | 9                                             | 8                               | 23.5x46       |
| 2500 | 0.22             | 224PPA252K     | 1650             | 11.5                                          | 5.9                             | 27.5x46       |
| 2500 | 0.33             | 334PPA252K     | 1650             | 14                                            | 4.5                             | 33.5x46       |
| 2500 | 0.33             | 334PPA252KD29  | 1050             | 13.5                                          | 5.4                             | 28.5x55       |
| 2500 | 0.33             | 334PPA252KS    | 925              | 13                                            | 6                               | 27.5x59       |
| 2500 | 0.47             | 474PPA252K     | 1050             | 14                                            | 4.4                             | 33.5x55       |
| 2500 | 0.47             | 474PPA252KS    | 925              | 14                                            | 4.9                             | 32x59         |
| 2500 | 0.56             | 564PPA252K     | 1050             | 14                                            | 4                               | 36.5x55       |
| 2500 | 0.56             | 564PPA252KS    | 925              | 14                                            | 4.5                             | 34.5x59       |
| 2500 | 0.68             | 684PPA252K     | 1050             | 14                                            | 3.7                             | 40x55         |
| 2500 | 0.68             | 684PPA252KS    | 925              | 14                                            | 4.1                             | 38x59         |
| 2500 | 0.82             | 824PPA252K     | 925              | 14                                            | 3.8                             | 41.5x59       |
| 3000 | 0.0047           | 472PPA302KG    | 5250             | 1                                             | 88                              | 11x29         |
| 3000 | 0.0068           | 682PPA302KG    | 5250             | 1.5                                           | 65                              | 12.5x29       |
| 3000 | 0.0068           | 682PPA302K     | 3500             | 1.5                                           | 77                              | 10.5x34       |
| 3000 | 0.01             | 103PPA302KG    | 5250             | 2                                             | 46                              | 14.5x29       |
| 3000 | 0.01             | 103PPA302K     | 3500             | 2                                             | 54.5                            | 12x34         |
| 3000 | 0.015            | 153PPA302KG    | 5250             | 3                                             | 33.5                            | 16.5x29       |
| 3000 | 0.015            | 153PPA302K     | 3500             | 3                                             | 38.5                            | 14x34         |
| 3000 | 0.022            | 223PPA302K     | 3500             | 4                                             | 27                              | 16x34         |
| 3000 | 0.033            | 333PPA302K     | 3500             | 5                                             | 19                              | 19x34         |
| 3000 | 0.047            | 473PPA302KD23  | 3500             | 6.5                                           | 14                              | 22.5x34       |
| 3000 | 0.047            | 473PPA302K     | 2000             | 6                                             | 17.8                            | 18x46         |
| 3000 | 0.068            | 683PPA302K     | 2000             | 8                                             | 12.8                            | 21x46         |
| 3000 | 0.1              | 104PPA302K     | 2000             | 11                                            | 9.4                             | 25x46         |
| 3000 | 0.15             | 154PPA302K     | 2000             | 12                                            | 6.8                             | 30x46         |
| 3000 | 0.22             | 224PPA302K     | 2000             | 14                                            | 5.2                             | 36x46         |
| 3000 | 0.22             | 224PPA302KD31  | 1450             | 14                                            | 5.9                             | 30.5x55       |
| 3000 | 0.22             | 224PPA302KS    | 1275             | 14                                            | 6.5                             | 29x59         |
| 3000 | 0.33             | 334PPA302K     | 1450             | 14                                            | 4.9                             | 37x55         |
| 3000 | 0.33             | 334PPA302KS    | 1275             | 14                                            | 5.4                             | 35x59         |
| 3000 | 0.39             | 394PPA302K     | 1450             | 14                                            | 4.4                             | 40x55         |
| 3000 | 0.39             | 394PPA302KS    | 1275             | 14                                            | 4.9                             | 37.5x59       |
| 3000 | 0.47             | 474PPA302KS    | 1275             | 14                                            | 4.5                             | 41x59         |