

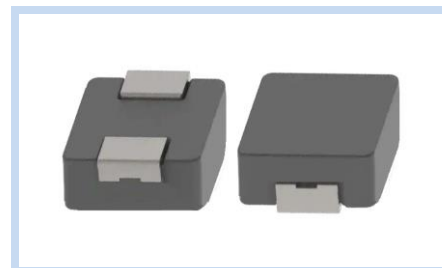
# Molded Power Inductor High Current AEC-Q200

PIM-0650MA1 series

**MERITEK**

## FEATURE

- High Current, Low DCR, High Efficiency
- Minimized acoustic and leakage flux noise.
- Shielded and compact construction design
- AEC-Q200 Compliant
- Application: Note PC Power System, incl. IMVP-6, DC/DC Converter



## ELECTRICAL CHARACTERISTICS

| Item           | Inductance (μH) | Tolerance (%) | DCR Typ. (mΩ) | DCR Max. (mΩ) | I <sub>SAT</sub> Typ. (A) | I <sub>RMS</sub> Typ. (A) |
|----------------|-----------------|---------------|---------------|---------------|---------------------------|---------------------------|
| PIMR33M0650MA1 | 0.33            | ±20%          | 2.5           | 3.0           | 32.0                      | 25.0                      |
| PIMR47M0650MA1 | 0.47            | ±20%          | 3.5           | 3.9           | 30.0                      | 22.0                      |
| PIMR56M0650MA1 | 0.56            | ±20%          | 3.6           | 4.2           | 27.0                      | 20.0                      |
| PIMR68M0650MA1 | 0.68            | ±20%          | 4.0           | 4.5           | 24.0                      | 18.0                      |
| PIMR82M0650MA1 | 0.82            | ±20%          | 4.6           | 4.9           | 22.0                      | 15.0                      |
| PIM1R0M0650MA1 | 1.0             | ±20%          | 6.1           | 6.5           | 20.0                      | 15.0                      |
| PIM1R5M0650MA1 | 1.5             | ±20%          | 8.6           | 9.0           | 16.5                      | 12.0                      |
| PIM2R2M0650MA1 | 2.2             | ±20%          | 11.2          | 12.0          | 14.0                      | 10.0                      |
| PIM3R3M0650MA1 | 3.3             | ±20%          | 19.0          | 20.9          | 12.0                      | 8.0                       |
| PIM4R7M0650MA1 | 4.7             | ±20%          | 28.0          | 30.8          | 10.0                      | 6.5                       |
| PIM5R6M0650MA1 | 5.6             | ±20%          | 43.5          | 49.0          | 9.0                       | 6.0                       |
| PIM6R8M0650MA1 | 6.8             | ±20%          | 46.0          | 51.5          | 8.5                       | 5.5                       |
| PIM8R2M0650MA1 | 8.2             | ±20%          | 56.0          | 63.0          | 8.0                       | 5.0                       |
| PIM100M0650MA1 | 10              | ±20%          | 60.0          | 69.0          | 7.5                       | 4.0                       |
| PIM150M0650MA1 | 15              | ±20%          | 81.0          | 92.0          | 6.0                       | 3.5                       |
| PIM220M0650MA1 | 22              | ±20%          | 140           | 170           | 5.5                       | 2.5                       |
| PIM330M0650MA1 | 33              | ±20%          | 173           | 200           | 3.5                       | 2.0                       |

Note:

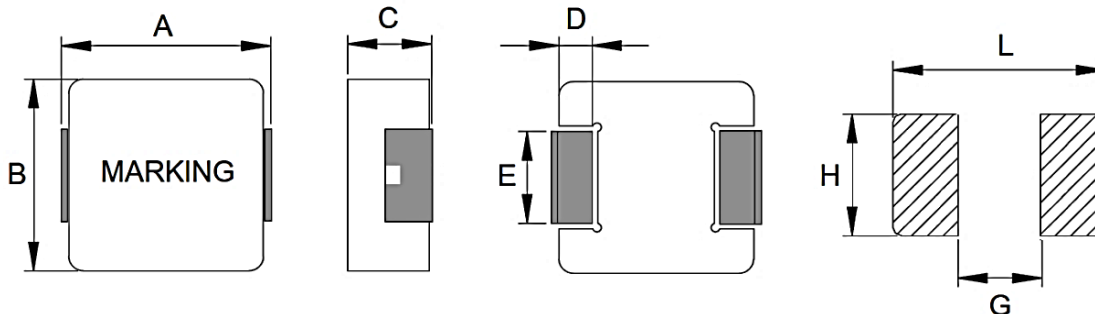
1. Inductance test under 100KHz, 1.0V
2. All test data referenced to 25°C ambient
3. I<sub>SAT</sub> based on inductance drop ( $\Delta L/L_0: \leq 30\%$ ) approximately
4. I<sub>RMS</sub> based on temperature rise ( $\Delta T: 40^\circ\text{C}$ ) approximately
5. Operating temperature: -55°C ~ +125°C (Including Self-temperature rise)

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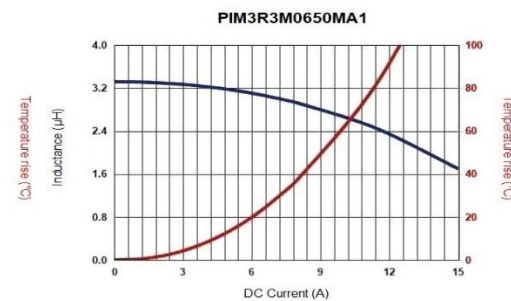
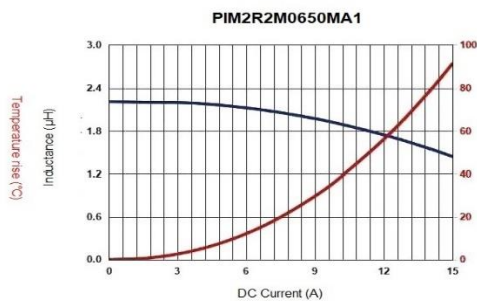
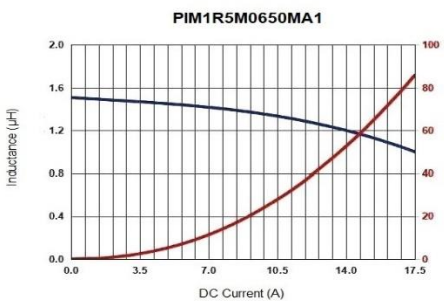
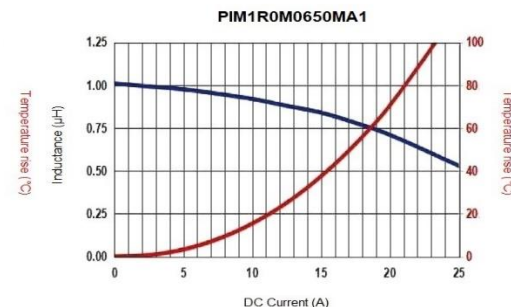
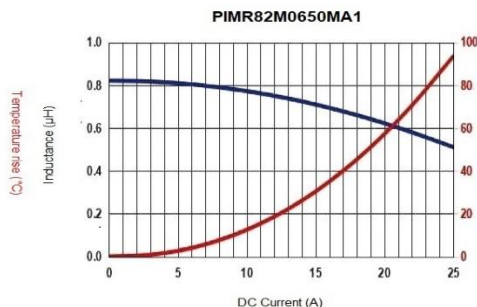
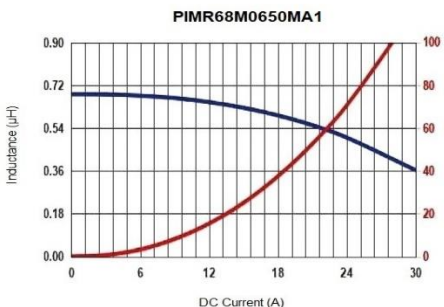
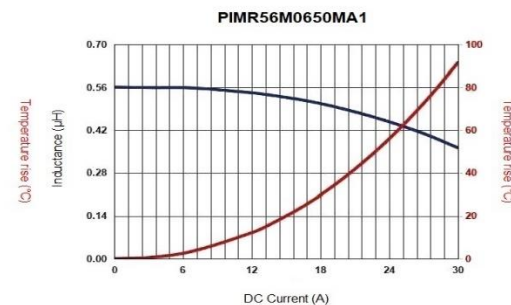
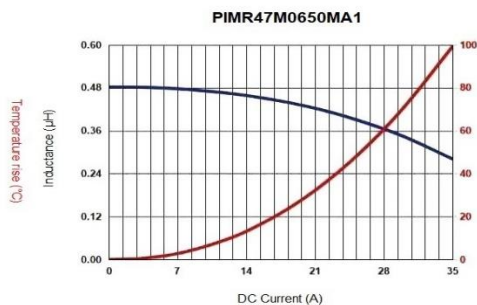
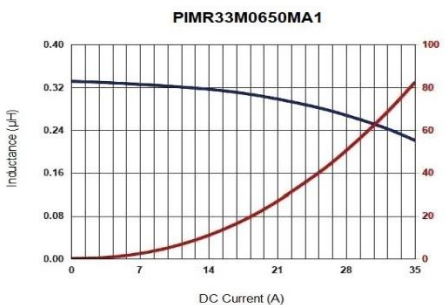
## DIMENSIONS



(Unit: mm)

| Size Code | A        | B        | C       | D        | E        | L   | G   | H   |
|-----------|----------|----------|---------|----------|----------|-----|-----|-----|
| 0650      | 7.3±0.30 | 6.6±0.30 | 4.8±0.2 | 1.8±0.30 | 3.0±0.30 | 8.4 | 2.5 | 3.5 |

## CHARACTERISTIC CURVES

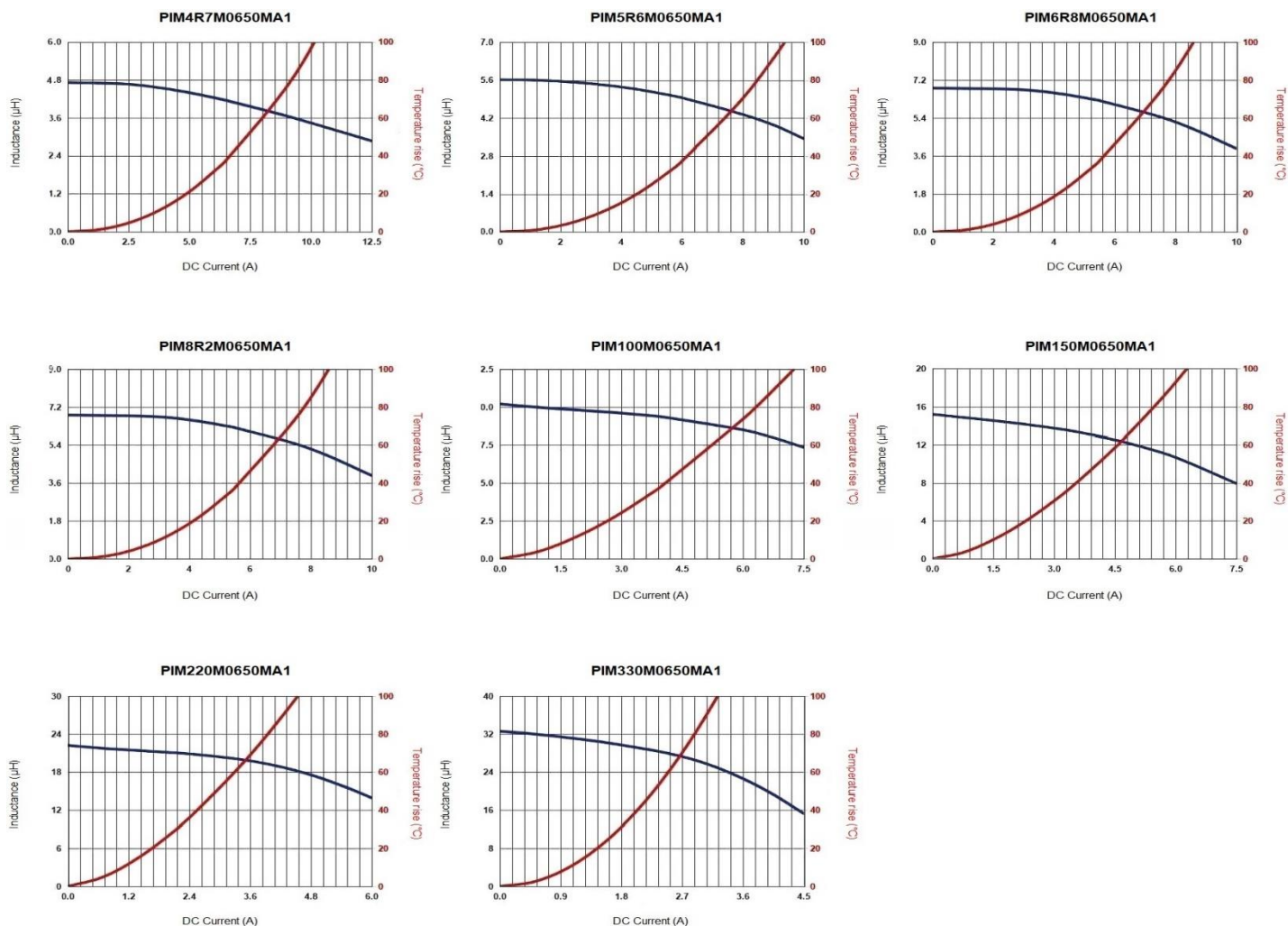


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PIM-0650MA1 series

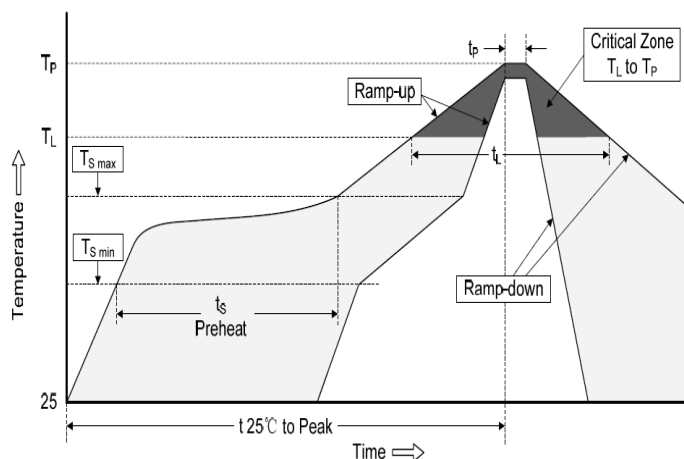
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## CHARACTERISTIC CURVES



## RECOMMENDED SOLDERING PROFILES

| Reflow Condition                                     |                               |                 |
|--|-------------------------------|-----------------|
| Pre Heat   | Temp. Min $T_{s(min)}$        | 150°C           |
|  | Temp. Max $T_{s(max)}$        | 200°C           |
|  | Time (min. to max.) ( $t_s$ ) | 60~120 seconds  |
| Average ramp up rate $T_{s(max)}$ to $T_L$           |                               | 3°C/second max. |
| Average ramp up rate $T_L$ to peak                   |                               | 3°C/second max. |
| Reflow   | Temp. ( $T_L$ )               | 217°C           |
|  | Time (min. to max.) ( $t_L$ ) | 60~150 seconds  |
| Peak Temperature ( $T_P$ )                           |                               | 245°C           |
| Time within 5°C of actual peak Temperature ( $t_p$ ) |                               | 10 seconds      |
| Ramp-down Rate                                       |                               | 6°C/second max. |
| Reflow Times   |                               | 3 times max.    |



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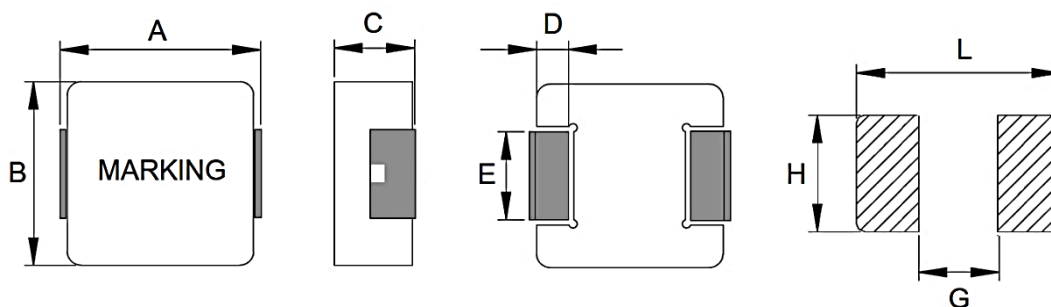
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## PART NUMBERING SYSTEM

**PIM** (1)    **1R0** (2)    **M** (3)    **0650** (4)    **MA1** (5)

| No  | item         | Code | Description                                      |                                       |
|-----|--------------|------|--|---------------------------------------|
| (1) | Product Code | PIM  | Power Inductor Series, Molded Surface Mount Type |                                       |
| (2) | Inductance   | 1R0  | 1R0: 1.0μH                                       | R47: 0.47μH, 2R2: 2.2μH, 100: 10μH    |
| (3) | Tolerance    | M    | M: ±20%  | N: ±30%                               |
| (4) | Size Code    | 0650 | 0650: 7.3x4.8mm                                  | Width x Height (mm)                   |
| (5) | Series Code  | MA1  | High Current AEC-Q200                            | Internal control or project reference |

## DIMENSIONS – PIM-MA1 series



(Unit: mm)

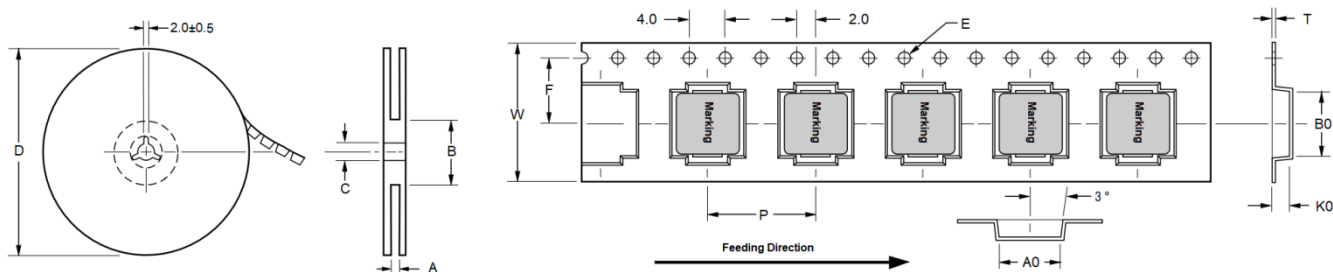
| Size Code | A         | B         | C       | D        | E         | L    | G    | H    |
|-----------|-----------|-----------|---------|----------|-----------|------|------|------|
| 0612      | 7.0±0.30  | 6.6±0.30  | 1.0±0.2 | 1.8±0.30 | 2.5±0.30  | 7.7  | 2.5  | 3.0  |
| 0615      | 7.0±0.30  | 6.6±0.30  | 1.3±0.2 | 1.8±0.30 | 3.0±0.30  | 7.7  | 2.5  | 3.5  |
| 0618      | 7.0±0.30  | 6.6±0.30  | 1.6±0.2 | 1.8±0.30 | 3.0±0.30  | 7.7  | 2.5  | 3.5  |
| 0620      | 7.0±0.30  | 6.6±0.30  | 1.8±0.2 | 1.8±0.30 | 3.0±0.30  | 7.7  | 2.5  | 3.5  |
| 0624      | 7.3±0.30  | 6.6±0.30  | 2.2±0.2 | 1.8±0.30 | 3.0±0.30  | 7.7  | 2.5  | 3.5  |
| 0630      | 7.3±0.30  | 6.6±0.30  | 2.8±0.2 | 1.8±0.30 | 3.0±0.30  | 8.4  | 2.5  | 3.5  |
| 0640      | 7.3±0.30  | 6.6±0.30  | 3.8±0.2 | 1.8±0.30 | 3.0±0.30  | 8.4  | 2.5  | 3.5  |
| 0650      | 7.3±0.30  | 6.6±0.30  | 4.8±0.2 | 1.8±0.30 | 3.0±0.30  | 8.4  | 2.5  | 3.5  |
| 8030      | 8.8±0.40  | 8.4±0.30  | 2.8±0.2 | 1.6±0.30 | 5.0±0.30  | 9.6  | 4.5  | 5.5  |
| 8040      | 8.8±0.40  | 8.4±0.30  | 3.8±0.2 | 1.6±0.30 | 5.0±0.30  | 9.6  | 4.5  | 5.5  |
| 1020      | 11.0±0.50 | 10.0±0.30 | 1.8±0.2 | 2.3±0.30 | 3.0±0.30  | 12.5 | 5.4  | 3.5  |
| 1030      | 11.0±0.50 | 10.0±0.30 | 2.8±0.2 | 2.3±0.30 | 3.0±0.30  | 13.6 | 5.4  | 3.5  |
| 1040      | 11.0±0.50 | 10.0±0.30 | 3.8±0.2 | 2.3±0.30 | 3.0±0.30  | 13.6 | 5.4  | 3.5  |
| 1050      | 11.0±0.50 | 10.0±0.30 | 4.8±0.2 | 2.3±0.30 | 3.0±0.30  | 13.6 | 5.4  | 3.5  |
| 1235      | 13.5±0.50 | 12.5±0.30 | 3.3±0.2 | 2.3±0.30 | 4.7±0.30  | 14.2 | 8.0  | 5.0  |
| 1250      | 13.5±0.50 | 12.5±0.30 | 4.8±0.2 | 2.3±0.30 | 4.7±0.30  | 14.2 | 8.0  | 5.0  |
| 1260      | 13.5±0.50 | 12.5±0.30 | 5.7±0.2 | 2.3±0.30 | 4.7±0.30  | 14.2 | 8.0  | 5.0  |
| 1265      | 13.5±0.50 | 12.5±0.30 | 6.2±0.3 | 2.3±0.30 | 4.7±0.30  | 14.2 | 8.0  | 5.0  |
| 1770      | 18.0 max  | 16.9±0.30 | 6.7±0.3 | 2.1±0.30 | 11.9±0.30 | 18.5 | 12.2 | 12.5 |

# Molded Power Inductor High Current AEC-Q200

PIM-0650MA1 series

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## PACKAGING DIMENSION – PIM-MA1 series



| Size Code | Reel Dimension (mm) |           |           |     | Tape Dimensions (mm) |           |           |           |            |            |            |            | Qty<br>13" |
|-----------|---------------------|-----------|-----------|-----|----------------------|-----------|-----------|-----------|------------|------------|------------|------------|------------|
|           | A<br>+2/-0          | B<br>±2.0 | C<br>±0.5 | D   | W<br>±0.3            | F<br>±0.1 | P<br>±0.1 | E<br>±0.1 | A0<br>±0.1 | B0<br>±0.1 | K0<br>±0.1 | T<br>±0.05 |            |
| 0612      | 16.4                | 100       | 13.5      | 330 | 16.0                 | 7.5       | 12.0      | 1.5       | 7.0        | 7.7        | 1.5        | 0.35       | 3000       |
| 0615      | 16.4                | 100       | 13.5      | 330 | 16.0                 | 7.5       | 12.0      | 1.5       | 7.0        | 7.7        | 1.8        | 0.35       | 2000       |
| 0618      | 16.4                | 100       | 13.5      | 330 | 16.0                 | 7.5       | 12.0      | 1.5       | 7.0        | 7.7        | 2.1        | 0.35       | 2000       |
| 0620      | 16.4                | 100       | 13.5      | 330 | 16.0                 | 7.5       | 12.0      | 1.5       | 7.0        | 7.7        | 2.3        | 0.35       | 1500       |
| 0624      | 16.4                | 100       | 13.5      | 330 | 16.0                 | 7.5       | 12.0      | 1.5       | 7.0        | 7.7        | 2.7        | 0.35       | 1500       |
| 0630      | 16.4                | 100       | 13.5      | 330 | 16.0                 | 7.5       | 12.0      | 1.5       | 7.0        | 7.7        | 3.3        | 0.35       | 1000       |
| 0640      | 16.4                | 100       | 13.5      | 330 | 16.0                 | 7.5       | 12.0      | 1.5       | 7.0        | 7.7        | 4.3        | 0.35       | 1000       |
| 0650      | 16.4                | 100       | 13.5      | 330 | 16.0                 | 7.5       | 12.0      | 1.5       | 7.0        | 7.7        | 5.3        | 0.35       | 800        |
| 8030      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 8.9        | 10.1       | 3.3        | 0.35       | 1000       |
| 8040      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 8.9        | 10.1       | 4.5        | 0.35       | 800        |
| 1020      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 8.9        | 10.1       | 2.3        | 0.35       | 500        |
| 1030      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 8.9        | 10.1       | 3.3        | 0.35       | 500        |
| 1040      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 10.4       | 11.6       | 4.5        | 0.35       | 500        |
| 1050      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 10.4       | 11.6       | 5.3        | 0.35       | 500        |
| 1235      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 12.9       | 14.1       | 4.0        | 0.35       | 500        |
| 1250      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 12.9       | 14.1       | 5.5        | 0.35       | 500        |
| 1260      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 12.9       | 14.1       | 6.5        | 0.35       | 500        |
| 1265      | 24.4                | 100       | 13.5      | 330 | 24.0                 | 11.5      | 16.0      | 1.5       | 13.0       | 14.2       | 7.0        | 0.35       | 500        |
| 1770      | 32.4                | 100       | 13.5      | 330 | 32.0                 | 14.2      | 24.0      | 1.5       | 17.5       | 18.5       | 7.5        | 0.50       | 200        |

\*Specifications subject to change without notice.