



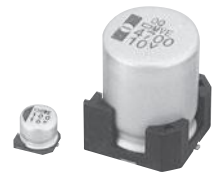
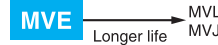
**THE DATASHEET OF  
EMVE500ADA101MHA0G**





## Alchip™-MVE Series Upgrade!

- Endurance : 1,000 to 2,000 hours at 105°C
- Case size range :  $\phi 4 \times 5.2L$  to  $\phi 18 \times 21.5L$
- Solvent resistant type except 100 to 450V<sub>dc</sub> (see PRECAUTIONS AND GUIDELINES)
- RoHS2 Compliant
- AEC-Q200 compliant : Please contact Chemi-Con for more details, test data, information.

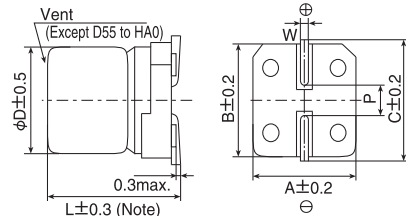


### ◆ SPECIFICATIONS

| Items   | Characteristics   |   |     |     |     |     |     |                                      |      |             |             |   |  |
|---|---|---|-----|-----|-----|-----|-----|--------------------------------------|------|-------------|-------------|---|--|
| <b>Category</b>   | -40 to +105°C   |   |     |     |     |     |     |                                      |      |             |             |   |  |
| <b>Temperature Range</b>                                      | -40 to +105°C   |   |     |     |     |     |     |                                      |      |             |             |   |  |
| <b>Rated Voltage Range</b>                                    | 6.3 to 450V <sub>dc</sub>   |   |     |     |     |     |     |                                      |      |             |             |   |  |
| <b>Capacitance Tolerance</b>                                  | ±20%(M) (at 20°C, 120Hz)  |   |     |     |     |     |     |                                      |      |             |             |   |  |
| <b>Leakage Current</b>  | Rated voltage (V <sub>dc</sub> )  | 6.3 to 100V                                       |     |     |     |     |     | 160 to 450V                          |      |             |             |   |  |
|   | D55 to JA0  | I=0.01CV or 3μA, whichever is greater (2 minutes) |     |     |     |     |     | —                                    |      |             |             |   |  |
|   | KE0 to MNO  | I=0.03CV or 4μA, whichever is greater (1 minute)  |     |     |     |     |     | I=0.04CV+100μA (1 minute)            |      |             |             |   |  |
|   | Where, I : Max. leakage current (μA), C : Nominal capacitance (μF), V : Rated voltage (V) (at 20°C)   |   |     |     |     |     |     |                                      |      |             |             |   |  |
| <b>Dissipation Factor (tan δ)</b>                             | See STANDARD RATINGS (at 20°C, 120Hz)   |   |     |     |     |     |     |                                      |      |             |             |   |  |
| <b>Low Temperature Characteristics (Max. Impedance Ratio)</b> | Rated voltage (V <sub>dc</sub> )  | 6.3V  | 10V | 16V | 25V | 35V | 50V | 63V                                  | 100V | 160 to 250V | 400 to 450V |   |  |
|   | D55 to JA0  | Z(-25°C)/Z(+20°C)                                 | 4   | 3   | 2   | 2   | 2   | 2                                    | 2    | 3           | —           | — |  |
|   |   | Z(-40°C)/Z(+20°C)                                 | 12  | 8   | 6   | 4   | 3   | 3                                    | 3    | 4           | —           | — |  |
|   | KE0 to MNO  | Z(-25°C)/Z(+20°C)                                 | 5   | 4   | 3   | 2   | 2   | 2                                    | 2    | 2           | 3           | 6 |  |
| Z(-40°C)/Z(+20°C)   |   | 10  | 8   | 6   | 4   | 3   | 3   | 3                                    | 3    | 6           | 10          |   |  |
|   | (at 120Hz)  |   |     |     |     |     |     |                                      |      |             |             |   |  |
| <b>Endurance</b>  | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for the specified period of time at 105°C.  |   |     |     |     |     |     |                                      |      |             |             |   |  |
|   | Size code   | D55 to F80  |     |     |     |     |     | HA0 to MNO                           |      |             |             |   |  |
|   | Time  | 1,000 hours                                       |     |     |     |     |     | 2,000 hours                          |      |             |             |   |  |
|   | Capacitance change  | ≤ ±30% of the initial value                       |     |     |     |     |     | ≤ ±20% of the initial value          |      |             |             |   |  |
|   | D.F. (tan δ)  | ≤300% of the initial specified value              |     |     |     |     |     | ≤200% of the initial specified value |      |             |             |   |  |
|   | Leakage current   | ≤The initial specified value                      |     |     |     |     |     | ≤The initial specified value         |      |             |             |   |  |
| <b>Shelf Life</b>   | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours (500 hours for B55 to F80 size) at 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to Item 4.1 of JIS C 5101-4. |   |     |     |     |     |     |                                      |      |             |             |   |  |
|   | Size code   | D55 to F80  |     |     |     |     |     | HA0 to MNO                           |      |             |             |   |  |
|   | Capacitance change  | ≤ ±25% of the initial value                       |     |     |     |     |     | ≤ ±20% of the initial value          |      |             |             |   |  |
|   | D.F. (tan δ)  | ≤200% of the initial specified value              |     |     |     |     |     | ≤200% of the initial specified value |      |             |             |   |  |
|   | Leakage current   | ≤The initial specified value                      |     |     |     |     |     | ≤The initial specified value         |      |             |             |   |  |

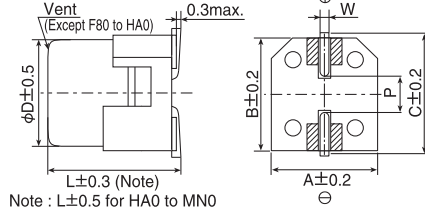
### ◆ DIMENSIONS [mm]

- Terminal Code : A
- Size code : D55 to MNO



Note : L±0.5 for HA0 to MNO

- Terminal Code : G (Vibration resistant structure)
- Size code : F80 to MNO



Note : L±0.5 for HA0 to MNO

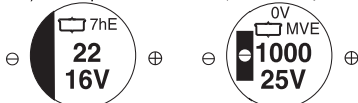
▨ : Dummy terminals

| Size code | D    | L    | A    | B    | C    | W          | P   |
|-----------|------|------|------|------|------|------------|-----|
| D55       | 4    | 5.2  | 4.3  | 4.3  | 5.1  | 0.5 to 0.8 | 1.0 |
| E55       | 5    | 5.2  | 5.3  | 5.3  | 5.9  | 0.5 to 0.8 | 1.4 |
| F55       | 6.3  | 5.2  | 6.6  | 6.6  | 7.2  | 0.5 to 0.8 | 1.9 |
| F80       | 6.3  | 7.7  | 6.6  | 6.6  | 7.2  | 0.5 to 0.8 | 1.9 |
| HA0       | 8    | 10.0 | 8.3  | 8.3  | 9.0  | 0.7 to 1.1 | 3.1 |
| JA0       | 10   | 10.0 | 10.3 | 10.3 | 11.0 | 0.7 to 1.1 | 4.5 |
| KE0       | 12.5 | 13.5 | 13.0 | 13.0 | 13.7 | 1.0 to 1.3 | 4.2 |
| KG5       | 12.5 | 16.0 | 13.0 | 13.0 | 13.7 | 1.0 to 1.3 | 4.2 |
| LH0       | 16   | 16.5 | 17.0 | 17.0 | 18.0 | 1.0 to 1.3 | 6.5 |
| LN0       | 16   | 21.5 | 17.0 | 17.0 | 18.0 | 1.0 to 1.3 | 6.5 |
| MH0       | 18   | 16.5 | 19.0 | 19.0 | 20.0 | 1.0 to 1.3 | 6.5 |
| MNO       | 18   | 21.5 | 19.0 | 19.0 | 20.0 | 1.0 to 1.3 | 6.5 |

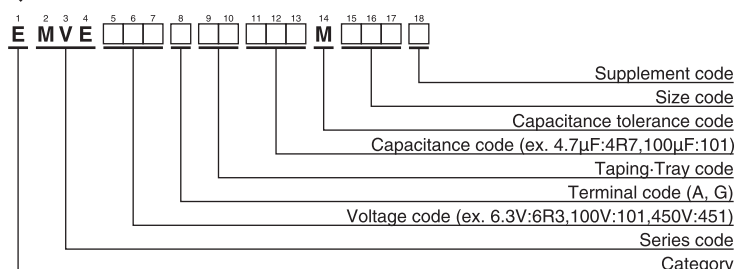
### ◆ MARKING

D55 to JA0  
Ex) 16V22μF

KE0 to MNO  
Ex) 25V1,000μF



### ◆ PART NUMBERING SYSTEM



### ◆ RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Multipliers

| Size code  | Capacitance(μF) | Frequency(Hz) |      |      |      |
|------------|-----------------|---------------|------|------|------|
|            |                 | 120           | 1k   | 10k  | 100k |
| D55 to JA0 | 1.0             | 1.00          | 1.50 | 1.75 | 1.80 |
|            | 2.2 to 10       | 1.00          | 1.30 | 1.40 | 1.50 |
|            | 22 to 1,500     | 1.00          | 1.05 | 1.08 | 1.08 |
| KE0 to MNO | 3.3 to 4.7      | 1.00          | 1.75 | 2.30 | 2.50 |
|            | 10 to 68        | 1.00          | 1.50 | 1.75 | 1.80 |
|            | 100 to 1,000    | 1.00          | 1.30 | 1.40 | 1.50 |
|            | 2,200 to 6,800  | 1.00          | 1.05 | 1.08 | 1.08 |

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.



Alchip™-MVE Series *Upgrade!*

### ◆STANDARD RATINGS

□ is not solvent resistant.

| WV (V <sub>dc</sub> ) | Cap (μF) | Size code | tan δ | Rated ripple current (mArms/105°C, 120Hz) | Part No.            | WV (V <sub>dc</sub> ) | Cap (μF) | Size code | tan δ | Rated ripple current (mArms/105°C, 120Hz) | Part No.            |                    |
|-----------------------|----------|-----------|-------|---|---------------------|-----------------------|----------|-----------|-------|---|---------------------|--------------------|
| 6.3                   | 22       | D55       | 0.30  | 22  | EMVE6R3ARA220MD55G  | 35                    | 330      | JA0       | 0.16  | 450                                       | EMVE350□RA331MJA0G  |                    |
|                       | 33       | E55       | 0.30  | 34  | EMVE6R3ARA330ME55G  |                       | 470      | KE0       | 0.22  | 520                                       | EMVE350□RA471MKE0S  |                    |
|                       | 47       | E55       | 0.30  | 38  | EMVE6R3ARA470ME55G  |                       | 470      | LH0       | 0.22  | 650                                       | EMVE350□RA471MLH0S  |                    |
|                       | 100      | F55       | 0.30  | 69  | EMVE6R3ARA101MF55G  |                       | 1,000    | LH0       | 0.22  | 750                                       | EMVE350□RA102MLH0S  |                    |
|                       | 220      | F80       | 0.45  | 120                                       | EMVE6R3□RA221MF80G  |                       | 1,000    | MH0       | 0.22  | 1,000                                     | EMVE350□RA102MMH0S  |                    |
|                       | 330      | HA0       | 0.40  | 290                                       | EMVE6R3□RA331MHA0G  |                       | 2,200    | MN0       | 0.24  | 1,450                                     | EMVE350□RA222MMN0S  |                    |
|                       | 470      | HA0       | 0.45  | 320                                       | EMVE6R3□RA471MHA0G  |                       | 50       | 1.0       | D55   | 0.12                                      | 8.0                 | EMVE500ARA1R0MD55G |
|                       | 680      | HA0       | 0.45  | 340                                       | EMVE6R3□RA681MHA0G  |                       |          | 2.2       | D55   | 0.12                                      | 12                  | EMVE500ARA2R2MD55G |
|                       | 1,000    | JA0       | 0.40  | 410                                       | EMVE6R3□RA102MJA0G  |                       |          | 3.3       | D55   | 0.12                                      | 15                  | EMVE500ARA3R3MD55G |
|                       | 1,500    | JA0       | 0.45  | 550                                       | EMVE6R3□RA152MJA0G  |                       |          | 4.7       | E55   | 0.12                                      | 20                  | EMVE500ARA4R7ME55G |
|                       | 2,200    | KE0       | 0.40  | 680                                       | EMVE6R3□RA222MKE0S  |                       |          | 10        | F55   | 0.12                                      | 32                  | EMVE500ARA100MF55G |
|                       | 2,200    | LH0       | 0.40  | 840                                       | EMVE6R3□RA222MLH0S  |                       |          | 33        | F80   | 0.14                                      | 65                  | EMVE500□RA330MF80G |
|                       | 3,300    | KG5       | 0.42  | 850                                       | EMVE6R3□RA332MKG5S  |                       |          | 47        | F80   | 0.14                                      | 80                  | EMVE500□RA470MF80G |
|                       | 3,300    | MH0       | 0.42  | 1,000                                     | EMVE6R3□RA332MMH0S  |                       |          | 100       | HA0   | 0.14                                      | 230                 | EMVE500□RA101MHA0G |
|                       | 4,700    | LN0       | 0.44  | 1,200                                     | EMVE6R3□RA472MLN0S  |                       |          | 220       | JA0   | 0.14                                      | 375                 | EMVE500□RA221MJA0G |
| 4,700                 | MH0      | 0.44      | 1,200 | EMVE6R3□RA472MMH0S                        | 330                 | KE0                   |          | 0.18      | 500   | EMVE500□RA331MKE0S                        |                     |                    |
| 6,800                 | LN0      | 0.48      | 1,200 | EMVE6R3□RA682MLN0S                        | 330                 | LH0                   |          | 0.18      | 600   | EMVE500□RA331MLH0S                        |                     |                    |
| 6,800                 | MN0      | 0.48      | 1,350 | EMVE6R3□RA682MMN0S                        | 470                 | LH0                   |          | 0.18      | 700   | EMVE500□RA471MLH0S                        |                     |                    |
|                       |          |           |       |   | 470                 | MH0                   |          | 0.18      | 750   | EMVE500□RA471MMH0S                        |                     |                    |
|                       |          |           |       |   | 1,000               | MN0                   |          | 0.18      | 1,200 | EMVE500□RA102MMN0S                        |                     |                    |
| 10                    | 22       | E55       | 0.24  | 30  | EMVE100ARA220ME55G  | 63                    |          | 1.0       | D55   | 0.12                                      | 8.0                 | EMVE630ARA1R0MD55G |
|                       | 33       | E55       | 0.24  | 34  | EMVE100ARA330ME55G  |                       | 2.2      | D55       | 0.12  | 12  | EMVE630ARA2R2MD55G  |                    |
|                       | 47       | F55       | 0.24  | 48  | EMVE100ARA470MF55G  |                       | 3.3      | E55       | 0.12  | 17  | EMVE630ARA3R3ME55G  |                    |
|                       | 100      | F55       | 0.30  | 69  | EMVE100ARA101MF55G  |                       | 4.7      | F55       | 0.12  | 22  | EMVE630ARA4R7MF55G  |                    |
|                       | 150      | F80       | 0.35  | 100                                       | EMVE100□RA151MF80G  |                       | 10       | F55       | 0.12  | 32  | EMVE630ARA100MF55G  |                    |
|                       | 220      | F80       | 0.35  | 120                                       | EMVE100□RA221MF80G  |                       | 22       | F80       | 0.12  | 58  | EMVE630□RA220MF80G  |                    |
|                       | 330      | HA0       | 0.35  | 290                                       | EMVE100□RA331MHA0G  |                       | 33       | HA0       | 0.12  | 140                                       | EMVE630□RA330MHA0G  |                    |
|                       | 470      | HA0       | 0.35  | 320                                       | EMVE100□RA471MHA0G  |                       | 47       | HA0       | 0.12  | 170                                       | EMVE630□RA470MHA0G  |                    |
|                       | 1,000    | JA0       | 0.35  | 410                                       | EMVE100□RA102MJA0G  |                       | 100      | JA0       | 0.12  | 310                                       | EMVE630□RA101MJA0G  |                    |
|                       | 2,200    | KG5       | 0.36  | 750                                       | EMVE100□RA222MKG5S  |                       | 220      | KE0       | 0.14  | 470                                       | EMVE630□RA221MKE0S  |                    |
|                       | 2,200    | LH0       | 0.36  | 850                                       | EMVE100□RA222MLH0S  |                       | 220      | LH0       | 0.14  | 560                                       | EMVE630□RA221MLH0S  |                    |
|                       | 3,300    | LH0       | 0.38  | 1,000                                     | EMVE100□RA332MLH0S  |                       | 330      | LH0       | 0.14  | 700                                       | EMVE630□RA331MLH0S  |                    |
|                       | 3,300    | MH0       | 0.38  | 1,100                                     | EMVE100□RA332MMH0S  |                       | 330      | MH0       | 0.14  | 750                                       | EMVE630□RA331MMH0S  |                    |
|                       | 4,700    | LN0       | 0.40  | 1,300                                     | EMVE100□RA472MLN0S  |                       | 470      | LN0       | 0.14  | 900                                       | EMVE630□RA471MLN0S  |                    |
|                       | 4,700    | MN0       | 0.40  | 1,350                                     | EMVE100□RA472MMN0S  |                       | 470      | MH0       | 0.14  | 900                                       | EMVE630□RA471MMH0S  |                    |
| 16                    | 10       | D55       | 0.20  | 17  | EMVE160ARA100MD55G  | 100                   | 22       | HA0       | 0.12  | 100                                       | EMVE101□RA220MHA0G  |                    |
|                       | 22       | E55       | 0.20  | 30  | EMVE160ARA220ME55G  |                       | 33       | JA0       | 0.12  | 150                                       | EMVE101□RA330MJA0G  |                    |
|                       | 33       | F55       | 0.20  | 45  | EMVE160ARA330MF55G  |                       | 47       | KE0       | 0.10  | 250                                       | EMVE101□RA470MKE0S  |                    |
|                       | 47       | F55       | 0.20  | 48  | EMVE160ARA470MF55G  |                       | 68       | KE0       | 0.10  | 300                                       | EMVE101□RA680MKE0S  |                    |
|                       | 100      | F55       | 0.26  | 69  | EMVE160ARA101MF55G  |                       | 100      | KE0       | 0.10  | 380                                       | EMVE101□RA101MKE0S  |                    |
|                       | 150      | F80       | 0.28  | 100                                       | EMVE160□RA151MF80G  |                       | 100      | LH0       | 0.10  | 450                                       | EMVE101□RA101MLH0S  |                    |
|                       | 220      | F80       | 0.28  | 120                                       | EMVE160□RA221MF80G  |                       | 220      | LN0       | 0.10  | 750                                       | EMVE101□RA221MLN0S  |                    |
|                       | 330      | HA0       | 0.28  | 290                                       | EMVE160□RA331MHA0G  |                       | 220      | MH0       | 0.10  | 750                                       | EMVE101□RA221MMH0S  |                    |
|                       | 470      | HA0       | 0.28  | 320                                       | EMVE160□RA471MHA0G  |                       | 330      | MN0       | 0.10  | 980                                       | EMVE101□RA331MMN0S  |                    |
|                       | 680      | JA0       | 0.28  | 470                                       | EMVE160□RA681MJA0G  |                       | 160      | 33        | KE0   | 0.15                                      | 95                  | EMVE161□RA330MKE0S |
|                       | 1,000    | KE0       | 0.30  | 550                                       | EMVE160□RA102MKE0S  |                       |          | 47        | LH0   | 0.15                                      | 260                 | EMVE161□RA470MLH0S |
|                       | 1,000    | LH0       | 0.30  | 650                                       | EMVE160□RA102MLH0S  |                       |          | 68        | LN0   | 0.15                                      | 320                 | EMVE161□RA680MLN0S |
|                       | 2,200    | LH0       | 0.32  | 950                                       | EMVE160□RA222MLH0S  |                       |          | 68        | MH0   | 0.15                                      | 320                 | EMVE161□RA680MMH0S |
|                       | 2,200    | MH0       | 0.32  | 1,000                                     | EMVE160□RA222MMH0S  |                       |          | 100       | LN0   | 0.15                                      | 380                 | EMVE161□RA101MLN0S |
|                       | 3,300    | LN0       | 0.34  | 1,200                                     | EMVE160□RA332MLN0S  |                       |          |           |       |   |                     |                    |
| 3,300                 | MH0      | 0.34      | 1,200 | EMVE160□RA332MMH0S                        | 200                 | 10                    | KE0      | 0.15      | 80    | EMVE201□RA100MKE0S                        |                     |                    |
| 10                    | E55      | 0.16      | 27    | EMVE250ARA100ME55G                        |                     | 22                    | KG5      | 0.15      | 110   | EMVE201□RA220MKG5S                        |                     |                    |
| 22                    | F55      | 0.16      | 44    | EMVE250ARA220MF55G                        |                     | 33                    | LH0      | 0.15      | 220   | EMVE201□RA330MLH0S                        |                     |                    |
| 33                    | F55      | 0.16      | 50    | EMVE250ARA330MF55G                        |                     | 47                    | LN0      | 0.15      | 270   | EMVE201□RA470MLN0S                        |                     |                    |
| 47                    | F55      | 0.16      | 60    | EMVE250ARA470MF55G                        |                     | 47                    | MH0      | 0.15      | 270   | EMVE201□RA470MMH0S                        |                     |                    |
| 100                   | F80      | 0.18      | 100   | EMVE250□RA101MF80G                        |                     | 68                    | MN0      | 0.15      | 330   | EMVE201□RA680MMN0S                        |                     |                    |
| 150                   | HA0      | 0.18      | 240   | EMVE250□RA151MHA0G                        | 250                 | 4.7                   | KE0      | 0.15      | 65    | EMVE251□RA47R7MKE0S                       |                     |                    |
| 220                   | HA0      | 0.18      | 320   | EMVE250□RA221MHA0G                        |                     | 10                    | KG5      | 0.15      | 105   | EMVE251□RA100MKG5S                        |                     |                    |
| 330                   | JA0      | 0.16      | 450   | EMVE250□RA331MJA0G                        |                     | 22                    | LH0      | 0.15      | 180   | EMVE251□RA220MLH0S                        |                     |                    |
| 470                   | JA0      | 0.18      | 490   | EMVE250□RA471MJA0G                        |                     | 33                    | LN0      | 0.15      | 230   | EMVE251□RA330MLN0S                        |                     |                    |
| 1,000                 | LH0      | 0.26      | 820   | EMVE250□RA102MLH0S                        |                     | 33                    | MH0      | 0.15      | 230   | EMVE251□RA330MMH0S                        |                     |                    |
| 1,000                 | MH0      | 0.26      | 880   | EMVE250□RA102MMH0S                        |                     | 47                    | MN0      | 0.15      | 280   | EMVE251□RA470MMN0S                        |                     |                    |
| 2,200                 | LN0      | 0.28      | 1,250 | EMVE250□RA222MLN0S                        | 400                 | 4.7                   | KG5      | 0.20      | 50    | EMVE401□RA47R7MKG5S                       |                     |                    |
| 2,200                 | MN0      | 0.28      | 1,300 | EMVE250□RA222MMN0S                        |                     | 10                    | LH0      | 0.20      | 85    | EMVE401□RA100MLH0S                        |                     |                    |
|                       |          |           |       |   |                     | 22                    | MN0      | 0.20      | 130   | EMVE401□RA220MMN0S                        |                     |                    |
| 35                    | 4.7      | D55       | 0.14  | 16  | EMVE350ARA47R7MD55G | 450                   | 3.3      | KE0       | 0.20  | 40  | EMVE451□RA3R3MKE0S  |                    |
|                       | 10       | E55       | 0.14  | 27  | EMVE350ARA100ME55G  |                       | 4.7      | KG5       | 0.20  | 50  | EMVE451□RA47R7MKG5S |                    |
|                       | 22       | F55       | 0.14  | 44  | EMVE350ARA220MF55G  |                       | 10       | LH0       | 0.20  | 85  | EMVE451□RA100MLH0S  |                    |
|                       | 47       | F80       | 0.16  | 80  | EMVE350□RA470MF80G  | 22                    | MN0      | 0.20      | 130   | EMVE451□RA220MMN0S                        |                     |                    |
|                       | 100      | F80       | 0.16  | 100                                       | EMVE350□RA101MF80G  |                       |          |           |       |   |                     |                    |
|                       | 150      | HA0       | 0.16  | 260                                       | EMVE350□RA151MHA0G  |                       |          |           |       |   |                     |                    |
| 220                   | JA0      | 0.16      | 375   | EMVE350□RA221MJA0G                        |                     |                       |          |           |       |   |                     |                    |

□ : Enter the appropriate terminal code.

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## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management