



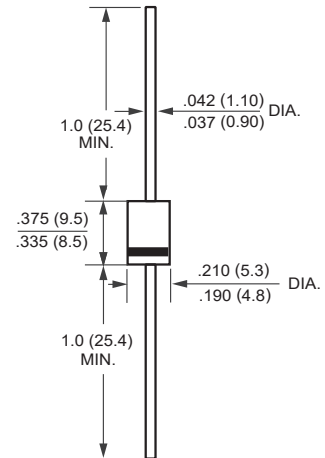
**DO-27/DO-201AE**

### Features

- ✧ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ✧ 1500W surge capability at 10 x 1000 us waveform
- ✧ Excellent clamping capability
- ✧ Low Dynamic impedance
- ✧ Fast response time: Typically less than 1.0ps from 0 volts to VBR for unidirectional and 5.0 ns for bidirectional
- ✧ Typical  $I_R$  less than 1uA above 10V
- ✧ High temperature soldering guaranteed: 260°C / 10 seconds / .375", (9.5mm) lead length / 5lbs., (2.3kg) tension

### Mechanical Data

- ✧ Case: Molded plastic
- ✧ Polarity: Color band denotes cathode except bipolar



Dimensions in inches and (millimeters)

### Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.

Single phase, half wave, 60 Hz, resistive or inductive load.

For capacitive load, derate current by 20%

| Type Number                                                                                                 | Symbol         | Value        | Units |
|-------------------------------------------------------------------------------------------------------------|----------------|--------------|-------|
| Peak Power Dissipation at $T_A=25^\circ\text{C}$ , $T_p=1\text{ms}$ (Note 1)                                | $P_{PK}$       | Minimum 1500 | Watts |
| Steady State Power Dissipation at $T_L=75^\circ\text{C}$<br>Lead Lengths .375", 9.5mm (Note 2)              | $P_D$          | 6.5          | Watts |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 3) | $I_{FSM}$      | 200          | Amps  |
| Maximum Instantaneous Forward Voltage at 50.0A for Unidirectional Only (Note 4)                             | $V_F$          | 3.5 / 5.0    | Volts |
| Operating and Storage Temperature Range                                                                     | $T_J, T_{STG}$ | -55 to + 175 | °C    |

- Notes:
1. Non-repetitive Current Pulse Per Fig. 3 and Derated above  $T_A=25^\circ\text{C}$  Per Fig. 2.
  2. Mounted on Copper Pad Area of 0.6 x 0.6" (16 x 16 mm) Per Fig. 4.
  3. 8.3ms Single Half Sine-wave or Equivalent Square Wave, Duty Cycle=4 Pulses Per Minutes Maximum.
  4.  $V_F=3.5\text{V}$  for Devices of  $V_{BR} \leq 200\text{V}$  and  $V_F=5.0\text{V}$  Max. for Devices  $V_{BR}>200\text{V}$ .

Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types 1.5KE6.8 through Types 1.5KE440.
2. Electrical Characteristics Apply in Both Directions.



ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| 1.5KE SERIES |            | Breakdown voltage VBR @ IT |         |         | Maximum Reverse Leakage IR(uA) @VRWM | Working Peak Reverse Voltage VRWM (Volts) | Maximum Reverse Surge Current Ipp(A) @10x1000us sinewave | Maximum Clamping Voltage Vc (Volts) @Ipp |
|--------------|------------|----------------------------|---------|---------|--------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------------|
| Uni-polar    | Bi-polar   | Min (V)                    | Max (V) | IT (mA) |                                      |                                           |                                                          |                                          |
| 1.5KE6.8     | 1.5KE6.8C  | 6.12                       | 7.48    | 10      | 1000                                 | 5.5                                       | 139                                                      | 10.8                                     |
| 1.5KE6.8A    | 1.5KE6.8CA | 6.46                       | 7.14    | 10      | 1000                                 | 5.8                                       | 143                                                      | 10.5                                     |
| 1.5KE7.5     | 1.5KE7.5C  | 6.75                       | 8.25    | 10      | 500                                  | 6.1                                       | 128                                                      | 11.7                                     |
| 1.5KE7.5     | 1.5KE7.5CA | 7.13                       | 7.88    | 10      | 500                                  | 6.4                                       | 133                                                      | 11.3                                     |
| 1.5KE8.2     | 1.5KE8.2C  | 7.38                       | 9.02    | 10      | 200                                  | 6.6                                       | 120                                                      | 12.5                                     |
| 1.5KE8.2A    | 1.5KE8.2CA | 7.79                       | 8.61    | 10      | 200                                  | 7.0                                       | 124                                                      | 12.1                                     |
| 1.5KE9.1     | 1.5KE9.1C  | 8.19                       | 10.01   | 1       | 50                                   | 7.4                                       | 109                                                      | 13.8                                     |
| 1.5KE9.1A    | 1.5KE9.1CA | 8.65                       | 9.56    | 1       | 50                                   | 7.8                                       | 112                                                      | 13.4                                     |
| 1.5KE10      | 1.5KE10C   | 9.00                       | 11.00   | 1       | 10                                   | 8.1                                       | 100                                                      | 15.0                                     |
| 1.5KE10A     | 1.5KE10CA  | 9.50                       | 10.50   | 1       | 10                                   | 8.6                                       | 103                                                      | 14.5                                     |
| 1.5KE11      | 1.5KE11C   | 9.90                       | 12.10   | 1       | 5                                    | 8.9                                       | 92.6                                                     | 16.2                                     |
| 1.5KE11A     | 1.5KE11CA  | 10.45                      | 11.55   | 1       | 5                                    | 9.4                                       | 96.2                                                     | 15.6                                     |
| 1.5KE12      | 1.5KE12C   | 10.80                      | 13.20   | 1       | 5                                    | 9.7                                       | 86.7                                                     | 17.3                                     |
| 1.5KE12A     | 1.5KE12CA  | 11.40                      | 12.60   | 1       | 5                                    | 10.2                                      | 89.8                                                     | 16.7                                     |
| 1.5KE13      | 1.5KE13C   | 11.70                      | 14.30   | 1       | 5                                    | 10.5                                      | 78.9                                                     | 19.0                                     |
| 1.5KE13A     | 1.5KE13CA  | 12.35                      | 13.65   | 1       | 5                                    | 11.1                                      | 82.4                                                     | 18.2                                     |
| 1.5KE15      | 1.5KE15C   | 13.50                      | 16.50   | 1       | 5                                    | 12.1                                      | 68.2                                                     | 22.0                                     |
| 1.5KE15A     | 1.5KE15CA  | 14.25                      | 15.75   | 1       | 5                                    | 12.8                                      | 70.8                                                     | 21.2                                     |
| 1.5KE16      | 1.5KE16C   | 14.40                      | 17.60   | 1       | 5                                    | 12.9                                      | 63.8                                                     | 23.5                                     |
| 1.5KE16A     | 1.5KE16CA  | 15.20                      | 16.80   | 1       | 5                                    | 13.6                                      | 66.7                                                     | 22.5                                     |
| 1.5KE18      | 1.5KE18C   | 16.20                      | 19.80   | 1       | 5                                    | 14.5                                      | 56.6                                                     | 26.5                                     |
| 1.5KE18A     | 1.5KE18CA  | 17.10                      | 18.90   | 1       | 5                                    | 15.3                                      | 59.5                                                     | 25.2                                     |
| 1.5KE20      | 1.5KE20C   | 18.00                      | 22.00   | 1       | 5                                    | 16.2                                      | 51.5                                                     | 29.1                                     |
| 1.5KE20A     | 1.5KE20CA  | 19.00                      | 21.00   | 1       | 5                                    | 17.1                                      | 54.2                                                     | 27.7                                     |
| 1.5KE22      | 1.5KE22C   | 19.80                      | 24.20   | 1       | 5                                    | 17.8                                      | 47.0                                                     | 31.9                                     |
| 1.5KE22A     | 1.5KE22CA  | 20.90                      | 23.10   | 1       | 5                                    | 18.8                                      | 49.0                                                     | 30.6                                     |
| 1.5KE24      | 1.5KE24C   | 21.60                      | 26.40   | 1       | 5                                    | 19.4                                      | 43.2                                                     | 34.7                                     |
| 1.5KE24A     | 1.5KE24CA  | 22.80                      | 25.20   | 1       | 5                                    | 20.5                                      | 45.2                                                     | 33.2                                     |
| 1.5KE27      | 1.5KE27C   | 24.30                      | 29.70   | 1       | 5                                    | 21.8                                      | 38.4                                                     | 39.1                                     |
| 1.5KE27A     | 1.5KE27CA  | 25.65                      | 28.35   | 1       | 5                                    | 23.1                                      | 40.0                                                     | 37.5                                     |
| 1.5KE30      | 1.5KE30C   | 27.00                      | 33.00   | 1       | 5                                    | 24.3                                      | 34.5                                                     | 43.5                                     |
| 1.5KE30A     | 1.5KE30CA  | 28.50                      | 31.50   | 1       | 5                                    | 25.6                                      | 36.2                                                     | 41.4                                     |
| 1.5KE33      | 1.5KE33C   | 29.70                      | 36.30   | 1       | 5                                    | 26.8                                      | 31.4                                                     | 47.7                                     |
| 1.5KE33A     | 1.5KE33CA  | 31.35                      | 34.65   | 1       | 5                                    | 28.2                                      | 32.8                                                     | 45.7                                     |
| 1.5KE36      | 1.5KE36C   | 32.40                      | 39.60   | 1       | 5                                    | 29.1                                      | 28.8                                                     | 52.0                                     |
| 1.5KE36A     | 1.5KE36CA  | 34.20                      | 37.80   | 1       | 5                                    | 30.8                                      | 30.1                                                     | 49.9                                     |
| 1.5KE39      | 1.5KE39C   | 35.10                      | 42.90   | 1       | 5                                    | 31.6                                      | 26.6                                                     | 56.4                                     |
| 1.5KE39A     | 1.5KE39CA  | 37.05                      | 40.95   | 1       | 5                                    | 33.3                                      | 27.8                                                     | 53.9                                     |
| 1.5KE43      | 1.5KE43C   | 38.70                      | 47.30   | 1       | 5                                    | 34.8                                      | 24.2                                                     | 61.9                                     |
| 1.5KE43A     | 1.5KE43CA  | 40.85                      | 45.15   | 1       | 5                                    | 36.8                                      | 25.3                                                     | 59.3                                     |
| 1.5KE47      | 1.5KE47C   | 42.30                      | 51.70   | 1       | 5                                    | 38.1                                      | 22.1                                                     | 67.8                                     |
| 1.5KE47A     | 1.5KE47CA  | 44.65                      | 49.35   | 1       | 5                                    | 40.2                                      | 23.1                                                     | 64.8                                     |
| 1.5KE51      | 1.5KE51C   | 45.90                      | 56.10   | 1       | 5                                    | 41.3                                      | 20.4                                                     | 73.5                                     |
| 1.5KE51A     | 1.5KE51CA  | 48.45                      | 53.55   | 1       | 5                                    | 43.6                                      | 21.4                                                     | 70.1                                     |
| 1.5KE56      | 1.5KE56C   | 50.40                      | 61.60   | 1       | 5                                    | 45.4                                      | 18.6                                                     | 80.5                                     |
| 1.5KE56A     | 1.5KE56CA  | 53.20                      | 58.80   | 1       | 5                                    | 47.8                                      | 19.5                                                     | 77.0                                     |
| 1.5KE62      | 1.5KE62C   | 55.80                      | 68.20   | 1       | 5                                    | 50.2                                      | 16.9                                                     | 89.0                                     |
| 1.5KE62A     | 1.5KE62CA  | 58.90                      | 65.10   | 1       | 5                                    | 53.0                                      | 17.6                                                     | 85.0                                     |
| 1.5KE68      | 1.5KE62C   | 61.20                      | 74.80   | 1       | 5                                    | 55.1                                      | 15.3                                                     | 98.0                                     |
| 1.5KE68A     | 1.5KE62CA  | 64.60                      | 71.40   | 1       | 5                                    | 58.1                                      | 16.3                                                     | 92.0                                     |
| 1.5KE75      | 1.5KE75C   | 67.50                      | 82.50   | 1       | 5                                    | 60.7                                      | 13.9                                                     | 108                                      |
| 1.5KE75A     | 1.5KE75CA  | 71.25                      | 78.75   | 1       | 5                                    | 64.1                                      | 14.6                                                     | 103                                      |
| 1.5KE82      | 1.5KE82C   | 73.80                      | 90.20   | 1       | 5                                    | 66.4                                      | 12.7                                                     | 118                                      |
| 1.5KE82A     | 1.5KE82CA  | 77.90                      | 86.10   | 1       | 5                                    | 70.1                                      | 13.3                                                     | 113                                      |
| 1.5KE91      | 1.5KE91C   | 81.90                      | 100.10  | 1       | 5                                    | 73.7                                      | 11.5                                                     | 131                                      |
| 1.5KE91A     | 1.5KE91CA  | 86.45                      | 95.55   | 1       | 5                                    | 77.8                                      | 12.0                                                     | 125                                      |
| 1.5KE100     | 1.5KE100C  | 90.00                      | 110.00  | 1       | 5                                    | 81.0                                      | 10.4                                                     | 144                                      |
| 1.5KE100A    | 1.5KE100CA | 95.00                      | 105.0   | 1       | 5                                    | 85.5                                      | 10.9                                                     | 137                                      |



ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| 1.5KE SERIES |            | Breakdown voltage VBR @ IT |         |         | Maximum Reverse Leakage IR(uA) @VRWM | Working Peak Reverse Voltage VRWM (Volts) | Maximum Reverse Surge Current Ipp(A) @10x1000us sinewave | Maximum Clamping Voltage Vc (Volts) @Ipp |
|--------------|------------|----------------------------|---------|---------|--------------------------------------|-------------------------------------------|----------------------------------------------------------|------------------------------------------|
| Uni-polar    | Bi-polar   | Min (V)                    | Max (V) | IT (mA) |                                      |                                           |                                                          |                                          |
| 1.5KE110     | 1.5KE110C  | 99.00                      | 121.0   | 1       | 5                                    | 89.2                                      | 9.49                                                     | 158                                      |
| 1.5KE110A    | 1.5KE110CA | 104.5                      | 115.5   | 1       | 5                                    | 94.0                                      | 9.87                                                     | 152                                      |
| 1.5KE120     | 1.5KE120C  | 108.0                      | 132.0   | 1       | 5                                    | 97.2                                      | 8.67                                                     | 173                                      |
| 1.5KE120A    | 1.5KE120CA | 114.0                      | 126.0   | 1       | 5                                    | 102                                       | 9.09                                                     | 165                                      |
| 1.5KE130     | 1.5KE130C  | 117.0                      | 143.0   | 1       | 5                                    | 105                                       | 8.02                                                     | 187                                      |
| 1.5KE130A    | 1.5KE130CA | 123.5                      | 136.5   | 1       | 5                                    | 111                                       | 8.38                                                     | 179                                      |
| 1.5KE150     | 1.5KE150C  | 135.0                      | 165.0   | 1       | 5                                    | 121                                       | 6.98                                                     | 215                                      |
| 1.5KE150A    | 1.5KE150CA | 142.5                      | 157.5   | 1       | 5                                    | 128                                       | 7.25                                                     | 207                                      |
| 1.5KE160     | 1.5KE160C  | 144.0                      | 176.0   | 1       | 5                                    | 130                                       | 6.52                                                     | 230                                      |
| 1.5KE160A    | 1.5KE160CA | 152.0                      | 168.0   | 1       | 5                                    | 136                                       | 6.85                                                     | 219                                      |
| 1.5KE170     | 1.5KE170C  | 153.0                      | 187.0   | 1       | 5                                    | 138                                       | 6.15                                                     | 244                                      |
| 1.5KE170A    | 1.5KE170CA | 161.5                      | 178.5   | 1       | 5                                    | 145                                       | 6.41                                                     | 234                                      |
| 1.5KE180     | 1.5KE180C  | 162.0                      | 198.0   | 1       | 5                                    | 146                                       | 5.81                                                     | 258                                      |
| 1.5KE180A    | 1.5KE180CA | 171.0                      | 189.0   | 1       | 5                                    | 154                                       | 6.10                                                     | 246                                      |
| 1.5KE200     | 1.5KE200C  | 180.0                      | 220.0   | 1       | 5                                    | 162                                       | 5.23                                                     | 287                                      |
| 1.5KE200A    | 1.5KE200CA | 190.0                      | 210.0   | 1       | 5                                    | 171                                       | 5.47                                                     | 274                                      |
| 1.5KE220     | 1.5KE220C  | 198.0                      | 242.0   | 1       | 5                                    | 175                                       | 4.36                                                     | 344                                      |
| 1.5KE220A    | 1.5KE220CA | 209.0                      | 231.0   | 1       | 5                                    | 185                                       | 4.57                                                     | 328                                      |
| 1.5KE250     | 1.5KE250C  | 225.0                      | 275.0   | 1       | 5                                    | 202                                       | 4.17                                                     | 360                                      |
| 1.5KE250A    | 1.5KE250CA | 237.5                      | 262.5   | 1       | 5                                    | 214                                       | 4.36                                                     | 344                                      |
| 1.5KE300     | 1.5KE300C  | 270.0                      | 330.0   | 1       | 5                                    | 243                                       | 3.49                                                     | 430                                      |
| 1.5KE300A    | 1.5KE300CA | 285.0                      | 315.0   | 1       | 5                                    | 256                                       | 3.62                                                     | 414                                      |
| 1.5KE350     | 1.5KE350C  | 315.0                      | 385.0   | 1       | 5                                    | 284                                       | 2.98                                                     | 504                                      |
| 1.5KE350A    | 1.5KE350CA | 332.5                      | 367.5   | 1       | 5                                    | 299                                       | 3.11                                                     | 482                                      |
| 1.5KE380     | 1.5KE380C  | 342.0                      | 418.0   | 1       | 5                                    | 309                                       | 2.74                                                     | 547                                      |
| 1.5KE380A    | 1.5KE380CA | 361.0                      | 399.0   | 1       | 5                                    | 325                                       | 2.86                                                     | 524                                      |
| 1.5KE400     | 1.5KE400C  | 360.0                      | 440.0   | 1       | 5                                    | 325                                       | 2.60                                                     | 576                                      |
| 1.5KE400A    | 1.5KE400CA | 380.0                      | 420.0   | 1       | 5                                    | 342                                       | 2.72                                                     | 552                                      |
| 1.5KE440     | 1.5KE440C  | 396.0                      | 484.0   | 1       | 5                                    | 357                                       | 2.37                                                     | 634                                      |
| 1.5KE440A    | 1.5KE440CA | 418.0                      | 462.0   | 1       | 5                                    | 376                                       | 2.47                                                     | 607                                      |
| 1.5KE500     | 1.5KE500C  | 450.0                      | 550.0   | 1       | 5                                    | 406                                       | 2.08                                                     | 720                                      |
| 1.5KE500A    | 1.5KE500CA | 475.0                      | 525.0   | 1       | 5                                    | 428                                       | 2.17                                                     | 690                                      |
| 1.5KE520     | 1.5KE520C  | 468.0                      | 572.0   | 1       | 5                                    | 422                                       | 2.00                                                     | 749                                      |
| 1.5KE520A    | 1.5KE520CA | 494.0                      | 546.0   | 1       | 5                                    | 445                                       | 2.09                                                     | 718                                      |
| 1.5KE550     | 1.5KE550C  | 495.0                      | 605.0   | 1       | 5                                    | 447                                       | 1.89                                                     | 792                                      |
| 1.5KE550A    | 1.5KE550CA | 522.5                      | 577.5   | 1       | 5                                    | 470                                       | 1.98                                                     | 759                                      |
| 1.5KE600     | 1.5KE600C  | 540.0                      | 660.0   | 1       | 5                                    | 487                                       | 1.74                                                     | 864                                      |
| 1.5KE600A    | 1.5KE600CA | 570.0                      | 630.0   | 1       | 5                                    | 513                                       | 1.81                                                     | 828                                      |

**Note:**

1. Suffix 'A ' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device.
2. Add suffix 'C' or ' CA ' after part number to specify Bi-directional devices.
3. For Bi-Directional devices having VR of 10 volts and under, the IR limit is double .
4. For Uni-directional devices VF max=3.5v at IF=25 A 300us square wave pulse.



### RATINGS AND CHARACTERISTIC CURVES (1.5KE SERIES)

FIG.1- PEAK PULSE POWER RATING CURVE

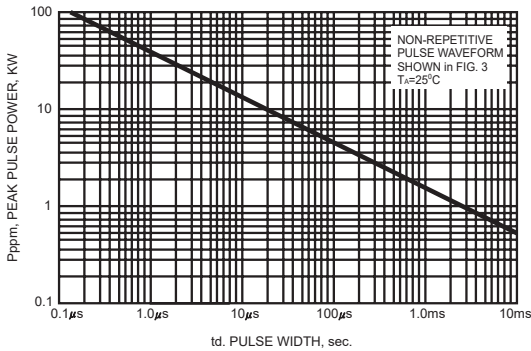


FIG.2- PULSE DERATING CURVE

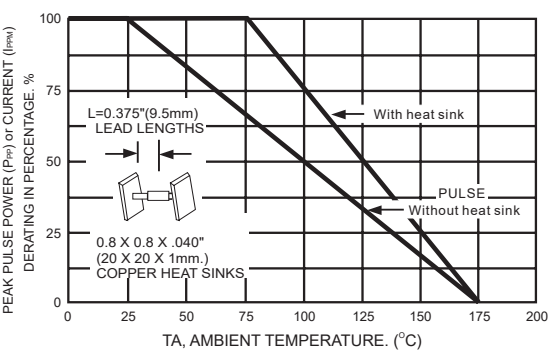


FIG.3- CLAMPING POWER PULSE WAVEFORM

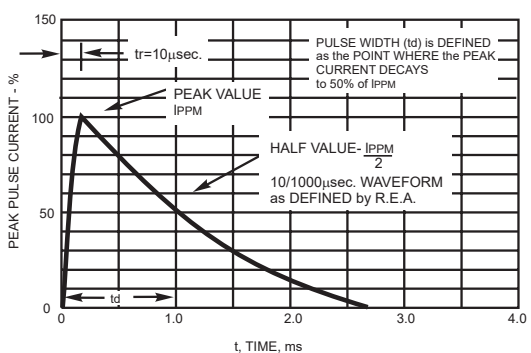


FIG.4- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

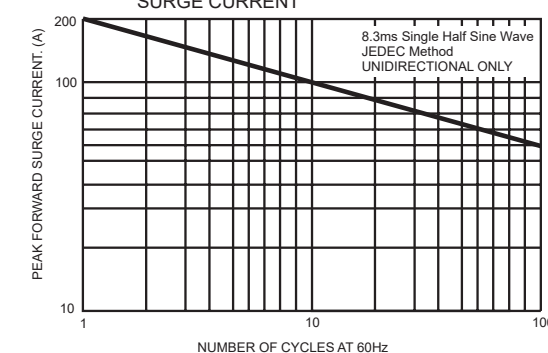
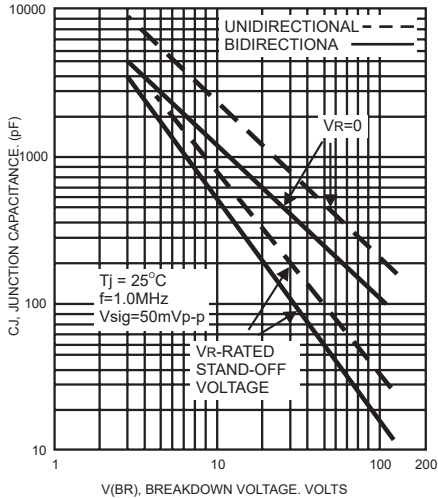


FIG.5- TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL



| PACKAGE | SPQ/PCS   | CARTON SPQ/PCS | CARTON SIZE/CM | CARTON GW/KG | CARTON NW/KG |
|---------|-----------|----------------|----------------|--------------|--------------|
| DO-27   | 1250/AMMO | 12500          | 40X26.5X30     | 14.00        | 12.00        |