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# FLIP CHIP TVS DIODES
# CHF1.5KE6.8
thru
# CHF1.5KE400CA
**Patented Flip Chip Series**

## FEATURES
- Unidirectional and Bidirectional
- Fully glass passivated
- 1500 watt (10/1000 µs)
- Eliminates wire bonding
- No overshoot
- NON Inductive Insertion

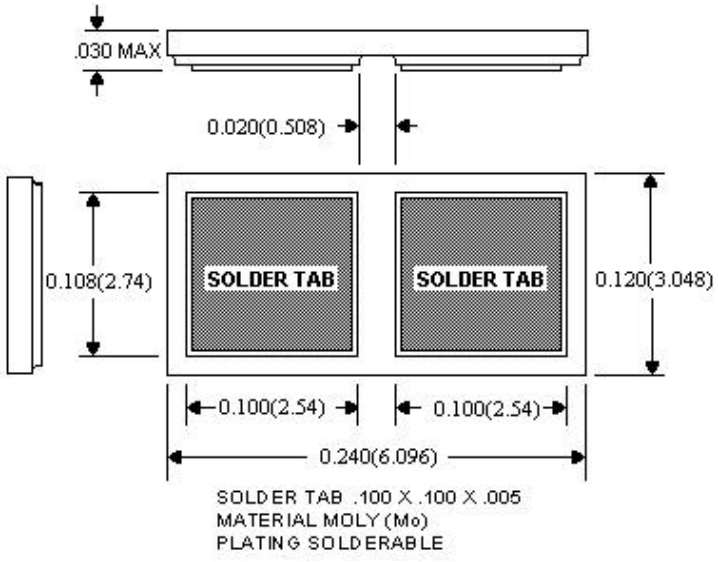
## MAXIMUM RATINGS MECHANICAL
- Max Junction Temperature: $175^0$C
- Storage Temperature: $-55^0$C to $+175^0$C
- Flip Chip Peak Pulse Power: 1500 Watts (10/1000 µs)
- Maximum non-repetitive peak power 1500 Watts (10/1000 µs)
- Total continuous power dissipation @ $T_{lead} = 75^0$C 2.5 W
- Turn-on time (theoretical) unidirectional $1X10^{-12}$
- Turn-on time (theoretical) bidirectional $1X10^{-9}$

## MECHANICAL
- Weight: 0.3 grams (approximate)
- Cathode mark on top side
- Metallization Cr - Ag – Au (Both Sides)

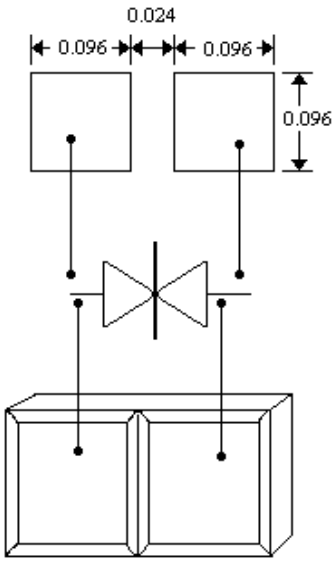
## PACKAGING
- Waffle package
- 50 pieces per pack (STANDARD)

## BIDIRECTIONAL ALL DIMENSIONS NOMINAL

### FLIP CHIP DIMENSIONS



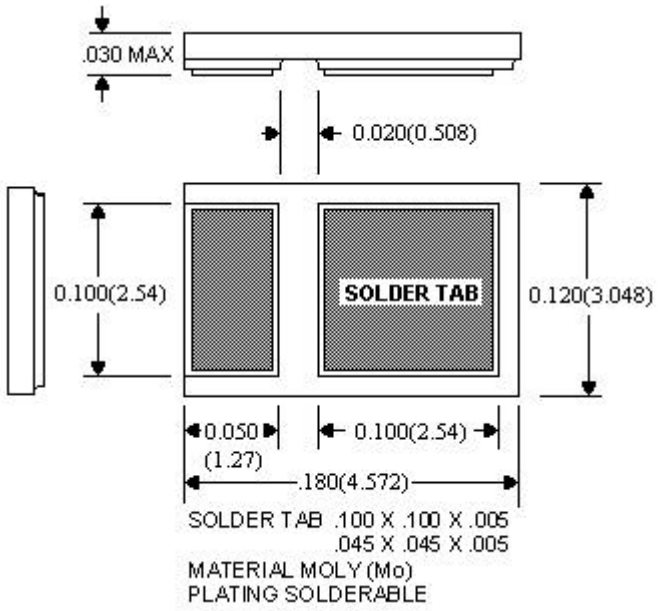

### PAD SIZE & CIRCUIT



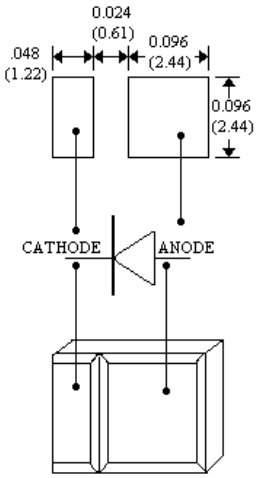



**ISO 9001 CERTIFIED**

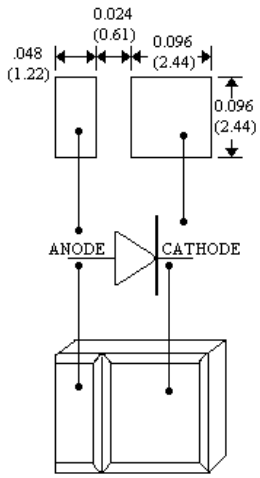
## UNIDIRECTIONAL ALL DIMENSIONS NOMINAL




## FLIP CHIP DIMENSIONS

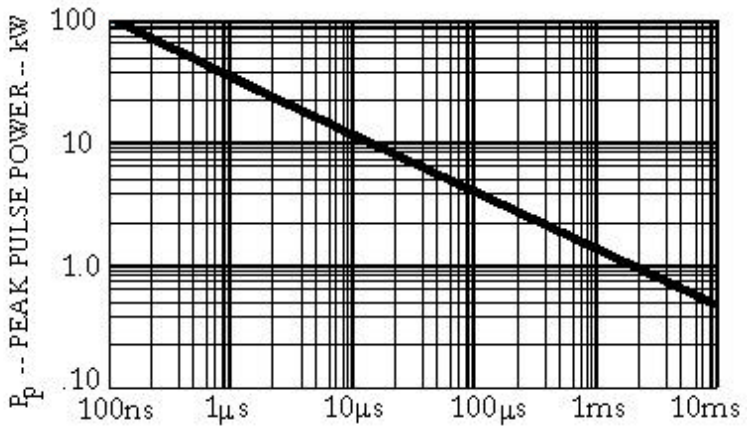



**$V_{BR}$ 30V and above**

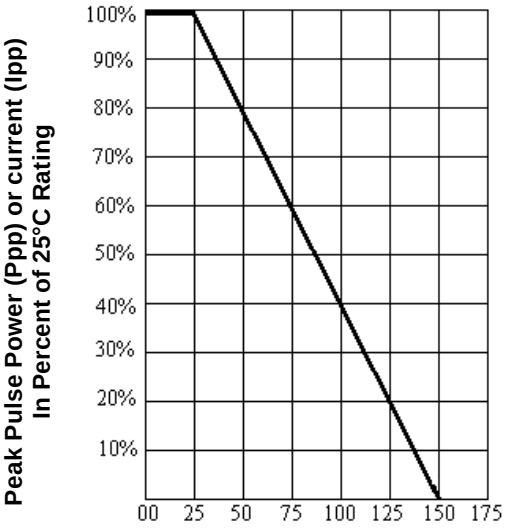



**$V_{BR}$ 30V and below**

## PEAK PULSE POWER Vs PULSE TIME




## POWER DERATING



## ELECTRICAL Characteristics @ 25$^0$C Unless otherwise specified

| Part Number | Rated Stand-off Voltage | Breakdown Voltage $V_{(BR)}$ @ $I_T$ | | Maximum Clamping @ $I_{PP}$ (1 Msec) | Maximum Reverse Leakage @ $V_{WM}$ | Rated Maximum Peak Pulse Current | Maximum Temperature Coefficient $V_Z$ |
|---|---|---|---|---|---|---|---|
| | $V_{WM}$ VOLTS | MIN | mA | $V_C$ VOLTS | $I_D$ µ A | $I_{PP}$ A | OF $V_{(BR)}$ %/°C |
| CHF1.5KE6.8 | 5.5 | 6.12 | 10 | 10.8 | 1000 | 139.0 | .057 |
| CHF1.5KE6.8A | 5.8 | 6.45 | 10 | 10.5 | 1000 | 143.0 | .057 |
| CHF1.5KE7.5 | 6.05 | 6.75 | 10 | 11.7 | 500 | 128.0 | .061 |
| CHF1.5KE7.5A | 6.40 | 7.13 | 10 | 11.3 | 500 | 132.0 | .061 |
| CHF1.5KE8.2 | 6.63 | 7.38 | 10 | 12.5 | 200 | 120.0 | .065 |
| CHFl.5KE8.2A | 7.02 | 7.79 | 10 | 12.1 | 200 | 124.0 | .065 |
| CHF1.5KE9.1 | 7.37 | 8.19 | 1 | 13.8 | 50 | 109.0 | .068 |
| CHF1.5KE9.1A | 7.78 | 8.65 | 1 | 13.4 | 50 | 112.0 | .068 |
| CHF1.5KE10 | 8.10 | 9.00 | 1 | 15.0 | 10 | 100.0 | .073 |
| CHF1.5KE10A | 8.55 | 9.50 | 1 | 14.5 | 10 | 103.0 | .073 |
| CHF1.5KE11 | 8.92 | 9.90 | 1 | 16.2 | 5 | 93.0 | .075 |
| CHF1.5KE11A | 9.40 | 10.50 | 1 | 15.6 | 5 | 96.0 | .075 |
| CHF1.5KE12 | 9.72 | 10.80 | 1 | 17.3 | 5 | 87.0 | .078 |
| CHF1.5KE12A | 10.20 | 11.40 | 1 | 16.7 | 5 | 90.0 | .078 |
| CHF1.5KE13 | 10.50 | 11.70 | 1 | 19.0 | 5 | 79.0 | .081 |
| CHF1.5KE13A | 11.10 | 12.40 | 1 | 18.2 | 5 | 82.0 | .081 |
| CHF1.5KE15 | 12.10 | 13.50 | 1 | 22.0 | 5 | 68.0 | .084 |
| CHF1.5KE15A | 12.80 | 14.30 | 1 | 21.2 | 5 | 71.0 | .084 |
| CHF1.5KE16 | 12.90 | 14.40 | 1 | 23.5 | 5 | 64.0 | .086 |
| CHF1.5KE16A | 13.60 | 15.20 | 1 | 22.5 | 5 | 67.0 | .086 |
| CHF1.5KE18 | 14.50 | 16.20 | 1 | 26.5 | 5 | 56.5 | .088 |
| CHF1.5KE18A | 15.30 | 17.10 | 1 | 25.2 | 5 | 59.5 | .088 |
| CHF1.5KE20 | 16.20 | 18.00 | 1 | 29.1 | 5 | 51.5 | .090 |
| CHF1.5KE20A | 17.10 | 19.00 | 1 | 27.7 | 5 | 54.0 | .0980 |
| CHF1.5KE22 | 17.80 | 19.80 | 1 | 31.9 | 5 | 47.0 | .092 |
| CHF1.5KE22A | 18.80 | 20.90 | 1 | 30.6 | 5 | 49.0 | .092 |
| CHF1.5KE24 | 19.40 | 21.60 | 1 | 34.7 | 5 | 43.0 | .094 |
| CHF1.5KE24A | 20.50 | 22.80 | 1 | 33.2 | 5 | 45.0 | .094 |
| CHF1.5KE27 | 21.80 | 24.30 | 1 | 39.1 | 5 | 38.5 | .096 |
| CHF1.5KE27A | 23.10 | 25.70 | 1 | 37.5 | 5 | 40.0 | .096 |
| CHF1.5KE30 | 24.30 | 27.00 | 1 | 43.5 | 5 | 34.5 | .097 |
| CHF1.5KE30A | 25.60 | 28.50 | 1 | 41.4 | 5 | 36.0 | .097 |
| CHF1.5KE33 | 26.80 | 29.70 | 1 | 47.7 | 5 | 31.5 | .098 |
| CHF1.5KE33A | 28.20 | 31.40 | 1 | 45.7 | 5 | 33.0 | .098 |
| CHF1.5KE36 | 29.10 | 32.40 | 1 | 52.0 | 5 | 29.0 | .099 |
| CHF1.5KE36A | 30.80 | 34.20 | 1 | 49.9 | 5 | 30.0 | .099 |
| CHF1.5KE39 | 31.60 | 35.10 | 1 | 56.4 | 5 | 26.5 | .100 |
| CHF1.5KE39A | 33.30 | 37.10 | 1 | 53.9 | 5 | 28.0 | .100 |
| CHF1.5KE43 | 34.80 | 38.70 | 1 | 61.9 | 5 | 24.0 | .101 |
| CHF1.5KE43A | 36.80 | 40.90 | 1 | 59.3 | 5 | 25.3 | .101 |
| CHF1.5KE47 | 38.10 | 42.30 | 1 | 67.8 | 5 | 22.2 | .101 |
| CHF1.5KE47A | 40.20 | 44.70 | 1 | 64.8 | 5 | 23.2 | .101 |
| CHF1.5KE51 | 41.30 | 45.90 | 1 | 73.5 | 5 | 20.4 | .102 |
| CHF1.5KE51A | 43.60 | 48.50 | 1 | 70.1 | 5 | 21.4 | .102 |
| CHF1.5KE56 | 45.40 | 50.40 | 1 | 80.5 | 5 | 18.6 | .103 |
| CHF1.5KE56A | 47.80 | 53.20 | 1 | 77.0 | 5 | 19.5 | .103 |
| CHF1.5KE62 | 50.20 | 55.80 | 1 | 89.0 | 5 | 16.9 | .104 |
| CHF1.5KE62A | 53.00 | 58.90 | 1 | 85.0 | 5 | 17.7 | .104 |
| CHF1.5KE68 | 55.10 | 61.20 | 1 | 98.0 | 5 | 15.3 | .104 |
| CHF1.5KE68A | 58.10 | 64.60 | 1 | 92.0 | 5 | 16.3 | .104 |
| CHF1.5KE75 | 60.70 | 67.50 | 1 | 108.0 | 5 | 13.9 | .105 |
| CHF1.5KE75A | 64.10 | 71.30 | 1 | 103.0 | 5 | 14.6 | .105 |
| CHF1.5KE82 | 66.40 | 73.80 | 1 | 118.0 | 5 | 12.7 | .105 |
| CHF1.5KE82A | 70.10 | 77.90 | 1 | 113.0 | 5 | 13.3 | .105 |
| CHF1.5KE91 | 73.70 | 81.90 | 1 | 131.0 | 5 | 11.4 | .106 |
| CHF1.5KE91A | 77.80 | 86.50 | 1 | 125.0 | 5 | 12.0 | .106 |
| CHF1.5KE100 | 81.00 | 90.00 | 1 | 144.0 | 5 | 10.4 | .106 |
| CHF1.5KE100A | 85.50 | 95.00 | 1 | 137.0 | 5 | 11.0 | .106 |
| CHF1.5KE110 | 89.20 | 99.00 | 1 | 158.0 | 5 | 9.5 | .107 |
| CHF1.5KE110A | 94.00 | 105.00 | 1 | 152.0 | 5 | 9.9 | .107 |
| CHF1.5KE120 | 97.20 | 108.00 | 1 | 173.0 | 5 | 8.7 | .107 |
| CHF1.5KE120A | 102 | 114.00 | 1 | 165.0 | 5 | 9.1 | .107 |
| CHF1.5KE130 | 105 | 117.00 | 1 | 187.0 | 5 | 8.0 | .107 |
| CHF1.5KE130A | 111 | 124.00 | 1 | 179.0 | 5 | 8.4 | .107 |
| CHF1.5KE150 | 121 | 135.00 | 1 | 215.0 | 5 | 7.0 | .108 |
| CHF1.5KE150A | 128 | 143.00 | 1 | 207.0 | 5 | 7.2 | .108 |
| CHF1.5KE160 | 130 | 144.00 | 1 | 230.0 | 5 | 6.5 | .108 |
| CHF1.5KE160A | 136 | 152.00 | 1 | 219.0 | 5 | 6.8 | .108 |
| CHF1.5KE170 | 138 | 153.00 | 1 | 244.0 | 5 | 6.2 | .108 |
| CHF1.5KE170A | 145 | 162.00 | 1 | 234.0 | 5 | 6.4 | .108 |
| CHF1.5KE180 | 146 | 162.00 | 1 | 258.0 | 5 | 5.8 | .108 |
| CHF1.5KE180A | 154 | 171.00 | 1 | 246.0 | 5 | 6.1 | .108 |
| CHF1.5KE200 | 162 | 180.00 | 1 | 287.0 | 5 | 5.2 | .108 |
| CHF1.5KE200A | 171 | 190.00 | 1 | 274.0 | 5 | 5.5 | .108 |
| CHF1.5KE220 | 175 | 198.00 | 1 | 344.0 | 5 | 4.3 | .110 |
| CHF1.5KE220A | 185 | 209.00 | 1 | 328.0 | 5 | 4.6 | .110 |
| CHF1.5KE250 | 202 | 225.00 | 1 | 360.0 | 5 | 5.0 | .110 |
| CHF1.5KE250A | 214 | 237.00 | 1 | 344.0 | 5 | 5.0 | .110 |
| CHF1.5K2300 | 243 | 270.00 | 1 | 430.0 | 5 | 5.0 | .111 |
| CHF1.5KE300A | 256 | 285.00 | 1 | 414.0 | 5 | 5.0 | .111 |
| CHF1.5KE350 | 284 | 315.00 | 1 | 504.0 | 5 | 4.0 | .111 |
| CHF1.5KE350A | 300 | 332.00 | 1 | 482.0 | 5 | 4.0 | .111 |
| CHF1.5KE400 | 324 | 360.00 | 1 | 574.0 | 5 | 4.0 | .111 |
| CHF1.5KE400A | 342 | 380.00 | 1 | 548.0 | 5 | 4.0 | .111 |

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