

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** VCUG080030H1RP  
**Manufacturer:** KYOCERA AVX  
**Package:** -  
**Availability:** Please confirm with sales

### Product Page:

<https://antrexco.com/product/details/kyocera-avx/vcug080030h1rp.html>

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Supplier verification and packaging condition review

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### Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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# UltraGuard® Series

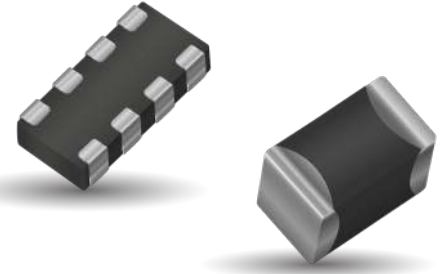
## ESD Protection for Low Leakage Requirements



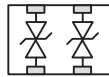
### GENERAL DESCRIPTION

Faster semiconductor clock speeds and an increasing reliance on batteries as power sources have resulted in the need for varistors that exhibit very low leakage current. The UltraGuard® (UG) Series of KYOCERA AVX Transient Voltage Suppressors address this problem.

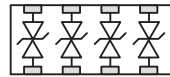
The UG® Series is the ideal transient protection solution for high clock speed integrated circuit application, battery-operated device, backlit display, medical/instrument application, low voltage power conversion circuits and power supervisory chip sets. In addition, UltraGuard® has low leakage characteristics that are also suitable for optic circuits like LDD, SerDes, and laser diodes.



**Discrete Chips**  
0402, 0603,  
and 0805



**2-Element Arrays**  
(0405 and 0508)



**4-Element Arrays**  
(0612)

### GENERAL CHARACTERISTICS

- Operating Temperature: -55°C to +125°C
- Working Voltage: 3.0Vdc - 32Vdc
- Case Size: 0402-1206  
0405 2xArray, 0508 2xArray  
0612 4xArray
- Leakage: 1µA Max
- Energy: 0.02-1.2J
- Peak Current: 80-200A
- Typ Cap: 30-5000pF

### FEATURES

- Bi-Directional protection
- Ultra low leakage 1µA max
- Multi-strike capability
- Single, 2 and 4 element components
- Compact footprint
- EMI/RFI filtering

### APPLICATIONS

- Battery operated devices
- High clock speed IC
- Low voltage power conversion
- Power supervisory chip sets
- Optic circuits (LDD, SerDes)
- Laser diodes
- Any circuit with low leakage requirements

### HOW TO ORDER

|                                             |                                                       |                                                                                        |                                                                                                                                                                               |                                                            |                                                                             |                                                                                                                                                               |                                                                  |
|---------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>VC</b><br>T<br><b>Surface Mount Chip</b> | <b>UG</b><br>T<br><b>Series</b><br>Low Leakage Series | <b>04</b><br>T<br><b>Case Size</b><br>04 = 0402<br>06 = 0603<br>08 = 0805<br>12 = 1206 | <b>0180</b><br>T<br><b>Maximum Working Voltage</b><br>0030 = 3.0VDC<br>0050 = 5.0VDC<br>0075 = 7.5VDC<br>0100 = 10.0VDC<br>0150 = 15.0VDC<br>0180 = 18.0VDC<br>0320 = 32.0VDC | <b>L</b><br>T<br><b>Capacitance</b><br>L = Low<br>H = High | <b>1</b><br>T<br><b>No. of Elements</b>                                     | <b>W</b><br>T<br><b>Packaging (pieces per reel)</b><br>D = 1,000 (7" reel)<br>R = 4,000 (7" reel)<br>T = 10,000 (13" reel)<br>W = 10,000 (7" reel, 0402 only) | <b>P</b><br>T<br><b>Termination Finish</b><br>P = Ni/Sn (Plated) |
| <b>MG</b><br>T<br><b>Array</b>              | <b>UG</b><br>T<br><b>Series</b><br>Low Leakage Series | <b>06</b><br>T<br><b>Case Size</b><br>04 = 0405<br>05 = 0508<br>06 = 0612              | <b>0150</b><br>T<br><b>Maximum Working Voltage</b><br>0030 = 3.0VDC<br>0050 = 5.0VDC<br>0075 = 7.5VDC<br>0100 = 10.0VDC<br>0150 = 15.0VDC                                     | <b>L</b><br>T<br><b>Capacitance</b><br>L = Low<br>H = High | <b>4</b><br>T<br><b>No. of Elements</b><br>2 = 2 Elements<br>4 = 4 Elements | <b>W</b><br>T<br><b>Packaging (pieces per reel)</b><br>D = 1,000 (7" reel)<br>R = 4,000 (7" reel)<br>T = 10,000 (13" reel)                                    | <b>P</b><br>T<br><b>Termination Finish</b><br>P = Ni/Sn (Plated) |

# UltraGuard® Series

## ESD Protection for Low Leakage Requirements



| Part Number     | VW  | VW  | VB (Min) | VC | IVC | IL | ET   | IP  | Cap  | Freq | Case | Elements |
|-----------------|-----|-----|----------|----|-----|----|------|-----|------|------|------|----------|
| MGUG040030L2 __ | 3.0 | 2.3 | 6.8      | 18 | 1   | 1  | 0.05 | 15  | 300  | M    | 0405 | 2        |
| MGUG050030L2 __ | 3.0 | 2.3 | 17.2     | 32 | 1   | 1  | 0.1  | 30  | 425  | M    | 0508 | 2        |
| MGUG060030L4 __ | 3.0 | 2.3 | 17.2     | 32 | 1   | 1  | 0.1  | 30  | 425  | M    | 0612 | 4        |
| VCUG040030L1 __ | 3.0 | 2.3 | 6.8      | 18 | 1   | 1  | 0.05 | 20  | 175  | M    | 0402 | 1        |
| VCUG060030L1 __ | 3.0 | 2.3 | 6.8      | 18 | 1   | 1  | 0.1  | 30  | 750  | K    | 0603 | 1        |
| VCUG080030H1 __ | 3.0 | 2.3 | 6.8      | 18 | 1   | 1  | 0.3  | 120 | 3000 | K    | 0805 | 1        |
| VCUG080030L1 __ | 3.0 | 2.3 | 6.8      | 18 | 1   | 1  | 0.1  | 40  | 1100 | K    | 0805 | 1        |
| VCUG120030H1 __ | 3.0 | 2.3 | 6.8      | 18 | 1   | 1  | 0.4  | 150 | 3000 | K    | 1206 | 1        |
| VCUG120030L1 __ | 3.0 | 2.3 | 6.8      | 18 | 1   | 1  | 0.1  | 40  | 1200 | K    | 1206 | 1        |
| MGUG040050L2 __ | 5.0 | 3.5 | 20       | 50 | 1   | 1  | 0.02 | 15  | 40   | M    | 0405 | 2        |
| MGUG050050L2 __ | 5.0 | 3.5 | 17.2     | 32 | 1   | 1  | 0.1  | 30  | 425  | M    | 0508 | 2        |
| MGUG060050L4 __ | 5.0 | 3.5 | 17.2     | 32 | 1   | 1  | 0.1  | 30  | 425  | M    | 0612 | 4        |
| VCUG040050L1 __ | 5.0 | 3.5 | 10.8     | 22 | 1   | 1  | 0.05 | 20  | 175  | M    | 0402 | 1        |
| VCUG060050L1 __ | 5.0 | 3.5 | 10.8     | 22 | 1   | 1  | 0.1  | 30  | 550  | K    | 0603 | 1        |
| VCUG080050L1 __ | 5.0 | 3.5 | 10.8     | 22 | 1   | 1  | 0.1  | 40  | 750  | K    | 0805 | 1        |
| VCUG120050H1 __ | 5.0 | 3.5 | 16.3     | 32 | 1   | 1  | 0.4  | 150 | 1050 | K    | 1206 | 1        |
| VCUG120050L1 __ | 5.0 | 3.5 | 16.3     | 32 | 1   | 1  | 0.1  | 40  | 600  | K    | 1206 | 1        |
| MGUG040075L2 __ | 7.5 | 5.3 | 20       | 50 | 1   | 1  | 0.02 | 15  | 40   | M    | 0405 | 2        |
| MGUG050075L2 __ | 7.5 | 5.3 | 17.2     | 32 | 1   | 1  | 0.1  | 30  | 425  | M    | 0508 | 2        |
| MGUG060075L4 __ | 7.5 | 5.3 | 17.2     | 32 | 1   | 1  | 0.1  | 30  | 425  | M    | 0612 | 4        |
| VCUG040075L1 __ | 7.5 | 5.3 | 16.3     | 32 | 1   | 1  | 0.05 | 20  | 85   | M    | 0402 | 1        |
| VCUG060075L1 __ | 7.5 | 5.3 | 16.3     | 32 | 1   | 1  | 0.1  | 30  | 350  | K    | 0603 | 1        |
| VCUG080075H1 __ | 7.5 | 5.3 | 16.3     | 32 | 1   | 1  | 0.3  | 120 | 900  | K    | 0805 | 1        |
| VCUG080075L1 __ | 7.5 | 5.3 | 16.3     | 32 | 1   | 1  | 0.1  | 40  | 325  | K    | 0805 | 1        |
| VCUG120075H1 __ | 7.5 | 5.3 | 16.3     | 32 | 1   | 1  | 0.4  | 150 | 1050 | K    | 1206 | 1        |
| VCUG120075L1 __ | 7.5 | 5.3 | 16.3     | 32 | 1   | 1  | 0.1  | 40  | 600  | K    | 1206 | 1        |
| MGUG040100L2 __ | 10  | 7.1 | 20       | 50 | 1   | 1  | 0.02 | 15  | 40   | M    | 0405 | 2        |
| MGUG050100L2 __ | 10  | 7.1 | 23       | 42 | 1   | 1  | 0.1  | 30  | 225  | M    | 0508 | 2        |
| MGUG060100L4 __ | 10  | 7.1 | 23       | 42 | 1   | 1  | 0.1  | 15  | 120  | M    | 0612 | 4        |
| VCUG040100L1 __ | 10  | 7.1 | 23       | 42 | 1   | 1  | 0.05 | 20  | 65   | M    | 0402 | 1        |
| VCUG060100L1 __ | 10  | 7.1 | 23       | 42 | 1   | 1  | 0.1  | 30  | 150  | K    | 0603 | 1        |
| VCUG080100H1 __ | 10  | 7.1 | 23       | 42 | 1   | 1  | 0.3  | 100 | 550  | K    | 0805 | 1        |
| VCUG080100L1 __ | 10  | 7.1 | 23       | 42 | 1   | 1  | 0.1  | 30  | 225  | K    | 0805 | 1        |
| VCUG120100H1 __ | 10  | 7.1 | 23       | 42 | 1   | 1  | 0.4  | 150 | 900  | K    | 1206 | 1        |
| VCUG120100L1 __ | 10  | 7.1 | 23       | 42 | 1   | 1  | 0.1  | 30  | 350  | K    | 1206 | 1        |
| MGUG040150L2 __ | 15  | 11  | 20       | 50 | 1   | 1  | 0.02 | 15  | 50   | M    | 0405 | 2        |
| MGUG050150L2 __ | 15  | 11  | 20       | 50 | 1   | 1  | 0.1  | 20  | 50   | M    | 0508 | 2        |
| MGUG060150L4 __ | 15  | 11  | 20       | 50 | 1   | 1  | 0.05 | 20  | 75   | M    | 0612 | 4        |
| VCUG040150L1 __ | 15  | 11  | 25       | 50 | 1   | 1  | 0.02 | 15  | 40   | M    | 0402 | 1        |
| VCUG060150L1 __ | 15  | 11  | 31.1     | 60 | 1   | 1  | 0.1  | 30  | 155  | K    | 0603 | 1        |
| VCUG080150H1 __ | 15  | 11  | 31.1     | 60 | 1   | 1  | 0.3  | 100 | 250  | K    | 0805 | 1        |
| VCUG080150L1 __ | 15  | 11  | 31.1     | 60 | 1   | 1  | 0.1  | 30  | 120  | K    | 0805 | 1        |
| VCUG120150H1 __ | 15  | 11  | 31.1     | 60 | 1   | 1  | 0.4  | 120 | 500  | K    | 1206 | 1        |
| VCUG040180L1 __ | 18  | 14  | 28       | 55 | 1   | 1  | 0.05 | 10  | 30   | M    | 0402 | 1        |
| VCUG080320L1 __ | 32  | 22  | 42.3     | 77 | 1   | 1  | 0.1  | 40  | 50   | M    | 0805 | 1        |

└ Termination Finish Code  
└ Packaging Code

$V_{CIR}$  (DC) DC Circuit Voltage (V)  
 $V_{CIR}$  (AC) AC Circuit Voltage (V)  
 Cap Req Standard or Low  
 $I_L$  Maximum Leakage Current at the Circuit Voltage ( $\mu A$ )  
 Cap Typical Capacitance (pF) @ frequency specified and 0.5 Vrms  
 Freq Frequency at which capacitance is measured (K = 1kHz, M = 1MHz)

UltraGuard® Series

ESD Protection for Low Leakage Requirements



PHYSICAL DIMENSIONS

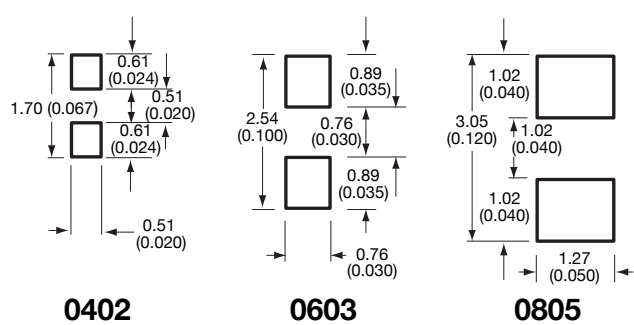
mm (inches)

|                 | 0402 Discrete             | 0603 Discrete             | 0805 Discrete             |
|-----------------|---------------------------|---------------------------|---------------------------|
| Length          | 1.00 ±0.10 (0.040 ±0.004) | 1.60 ±0.15 (0.063 ±0.006) | 2.01 ±0.20 (0.079 ±0.008) |
| Width           | 0.50 ±0.10 (0.020 ±0.004) | 0.80 ±0.15 (0.032 ±0.006) | 1.25 ±0.20 (0.049 ±0.008) |
| Thickness       | 0.60 Max. (0.024 Max.)    | 0.90 Max. (0.035 Max.)    | 1.02 Max. (0.040 Max.)    |
| Term Band Width | 0.25 ±0.15 (0.010 ±0.006) | 0.35 ±0.15 (0.014 ±0.006) | 0.71 Max. (0.028 Max.)    |

|                 | 0405 Array                | 0508 Array                | 0612 Array                |
|-----------------|---------------------------|---------------------------|---------------------------|
| Length          | 1.00 ±0.15 (0.039 ±0.006) | 1.25 ±0.20 (0.049 ±0.008) | 1.60 ±0.20 (0.063 ±0.008) |
| Width           | 1.37 ±0.15 (0.054 ±0.006) | 2.01 ±0.20 (0.079 ±0.008) | 3.20 ±0.20 (0.126 ±0.008) |
| Thickness       | 0.66 Max. (0.026 Max.)    | 1.02 Max. (0.040 Max.)    | 1.22 Max. (0.048 Max.)    |
| Term Band Width | 0.36 ±0.10 (0.014 ±0.004) | 0.41 ±0.10 (0.016 ±0.004) | 0.41 ±0.10 (0.016 ±0.004) |

SOLDER PAD DIMENSIONS

mm (inches)



0612 4-Element Array

| A               | B               | C               | D               | E               |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.89<br>(0.035) | 1.65<br>(0.065) | 2.54<br>(0.100) | 0.46<br>(0.018) | 0.76<br>(0.030) |

2-Element Arrays

|      | A               | B               | C               | D               | E               |
|------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0405 | 0.46<br>(0.018) | 0.74<br>(0.029) | 1.20<br>(0.047) | 0.38<br>(0.015) | 0.64<br>(0.025) |
| 0508 | 0.89<br>(0.035) | 1.27<br>(0.050) | 2.16<br>(0.085) | 0.46<br>(0.018) | 0.76<br>(0.030) |

