

APPROVED SHEET

Product : VARISTORS

Part No. : 5D / 7D / 10D / 14D / 20D Series

UL File No. : E197799

CSA File No. : 215101

VDE File No. : 4008621

CQC File No. : CQC04001010844-48

You Part No. : _____

| FOR CUSTOMER APPROVAL | | | APPROVAL | | |
|-----------------------|--|--|----------|-------|------------|
| PASS | | | APPROVAL | DRAFT | DATE |
| | | | | 孙露 | 2008-10-28 |



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5D HEL VARISTOR

| Style no. | Recognitions of Safety Agency Standards | | | Max. Continuous Applied Voltage | | Voltage at DC 1mA (25°C) | | Class Current (8/20 μsec) | Max. Voltage at Class Current | Max. Peak Current (8/20 μsec 1time) | Energy Surge Rating (10/1000 μsec) | Typical Capacitance Reference | Dimensions | | | | | |
|------------|---|---|---|---------------------------------|--------|--------------------------|---------|---------------------------|-------------------------------|-------------------------------------|------------------------------------|-------------------------------|------------|--------|-----------|-----------|-----------|-----------|
| | | | | AC (V) | DC (V) | Min (V) | Max (V) | | | | | | Ip (A) | Vc (V) | 1KHz (PF) | Dmax (mm) | Hmax (mm) | Lmin (mm) |
| HEL-5D180L | | | | 11 | 14 | 15 | 21 | 1 | 38 | 0.25 | 1.1 | 1,700 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.4 |
| HEL-5D220K | | | | 14 | 18 | 20 | 24 | 1 | 43 | 0.25 | 1.3 | 1,400 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.5 |
| HEL-5D270K | | | | 17 | 22 | 24 | 30 | 1 | 53 | 0.25 | 1.6 | 1,100 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.6 |
| HEL-5D330K | | | | 20 | 26 | 30 | 36 | 1 | 65 | 0.25 | 2.0 | 900 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.7 |
| HEL-5D390K | | | | 25 | 31 | 35 | 43 | 1 | 77 | 0.25 | 2.4 | 750 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.8 |
| HEL-5D470K | | | | 30 | 38 | 42 | 52 | 1 | 93 | 0.25 | 2.8 | 550 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.9 |
| HEL-5D560K | | | | 35 | 45 | 50 | 62 | 1 | 110 | 0.25 | 3.4 | 500 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.0 |
| HEL-5D680K | | | | 40 | 56 | 61 | 75 | 1 | 135 | 0.25 | 4.5 | 480 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.1 |
| HEL-5D820K | ☆ | ☆ | ☆ | 50 | 65 | 74 | 90 | 5 | 145 | 0.8 | 3.5 | 930 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.1 |
| HEL-5D101K | ☆ | ☆ | ☆ | 60 | 85 | 90 | 110 | 5 | 175 | 0.8 | 4.0 | 860 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.3 |
| HEL-5D121K | ☆ | ☆ | ☆ | 75 | 100 | 108 | 132 | 5 | 210 | 0.8 | 4.5 | 670 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.4 |
| HEL-5D151K | ☆ | ☆ | ☆ | 95 | 125 | 135 | 165 | 5 | 260 | 0.8 | 6.5 | 490 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.5 |
| HEL-5D181K | ☆ | ☆ | ☆ | 115 | 150 | 162 | 198 | 5 | 320 | 0.8 | 7.5 | 330 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.6 |
| HEL-5D201K | ☆ | ☆ | ☆ | 130 | 170 | 185 | 225 | 5 | 355 | 0.8 | 9.0 | 240 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.7 |
| HEL-5D221K | ☆ | ☆ | ☆ | 140 | 180 | 198 | 242 | 5 | 380 | 0.8 | 9.0 | 190 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.8 |
| HEL-5D241K | ☆ | ☆ | ☆ | 150 | 200 | 216 | 264 | 5 | 415 | 0.8 | 11 | 165 | 8.5 | 11 | 25 | 5.0 | 0.6 | 4.9 |
| HEL-5D271K | ☆ | ☆ | ☆ | 175 | 225 | 243 | 297 | 5 | 475 | 0.8 | 12 | 150 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.0 |
| HEL-5D301K | ☆ | ☆ | ☆ | 195 | 250 | 270 | 330 | 5 | 525 | 0.8 | 13 | 135 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.1 |
| HEL-5D331K | ☆ | ☆ | ☆ | 210 | 275 | 291 | 363 | 5 | 575 | 0.8 | 15 | 130 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.1 |
| HEL-5D361K | ☆ | ☆ | ☆ | 230 | 300 | 324 | 396 | 5 | 620 | 0.8 | 16 | 125 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.3 |
| HEL-5D391K | ☆ | ☆ | ☆ | 250 | 320 | 351 | 429 | 5 | 675 | 0.8 | 17 | 105 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.4 |
| HEL-5D431K | ☆ | ☆ | ☆ | 275 | 350 | 387 | 473 | 5 | 745 | 0.8 | 20 | 100 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.5 |
| HEL-5D471K | ☆ | ☆ | ☆ | 300 | 385 | 423 | 517 | 5 | 810 | 0.8 | 21 | 95 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.6 |
| HEL-5D511K | | | ☆ | 320 | 418 | 459 | 561 | 5 | 842 | 0.8 | 22 | 90 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.6 |
| HEL-5D561K | | | ☆ | 350 | 460 | 504 | 616 | 5 | 920 | 0.8 | 24 | 85 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.7 |
| HEL-5D621K | | | ☆ | 385 | 505 | 558 | 682 | 5 | 1025 | 0.8 | 26 | 80 | 8.5 | 11 | 25 | 5.0 | 0.6 | 5.8 |
| HEL-5D681K | | | ☆ | 420 | 560 | 612 | 748 | 5 | 1120 | 0.8 | 28 | 75 | 8.5 | 11 | 25 | 5.0 | 0.6 | 6.0 |

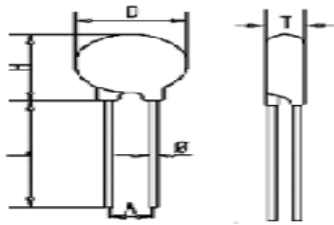
7D HEL VARISTOR

| Style no. | Recognitions of Safety Agency Standards | | | Max. Continuous Applied Voltage | | Voltage at DC 1mA (25°C) | | Class Current (8/20 μsec) | Max. Voltage at Class Current | Max. Peak Current (8/20 μsec 1time) | Energy Surge Rating (10/1000 μsec) | Typical Capacitance Reference | Dimensions | | | | | |
|------------|---|---|---|---------------------------------|--------|--------------------------|---------|---------------------------|-------------------------------|-------------------------------------|------------------------------------|-------------------------------|------------|--------|------|-----|-----------|-----------|
| | | | | AC (V) | DC (V) | Min (V) | Max (V) | | | | | | Ip (A) | Vc (V) | (KA) | (J) | 1KHz (PF) | Dmax (mm) |
| HEL-7D180L | | | | 11 | 14 | 15 | 21 | 2.5 | 38 | 0.5 | 1.1 | 3,500 | 10 | 13 | 25 | 5.0 | 0.6 | 4.4 |
| HEL-7D220K | | | | 14 | 18 | 20 | 24 | 2.5 | 43 | 0.5 | 1.3 | 2,800 | 10 | 13 | 25 | 5.0 | 0.6 | 4.5 |
| HEL-7D270K | | | | 17 | 22 | 24 | 30 | 2.5 | 53 | 0.5 | 1.6 | 2,200 | 10 | 13 | 25 | 5.0 | 0.6 | 4.6 |
| HEL-7D330K | | | | 20 | 26 | 30 | 36 | 2.5 | 65 | 0.5 | 2.0 | 1,800 | 10 | 13 | 25 | 5.0 | 0.6 | 4.7 |
| HEL-7D390K | | | | 25 | 31 | 35 | 43 | 2.5 | 77 | 0.5 | 2.4 | 1,450 | 10 | 13 | 25 | 5.0 | 0.6 | 4.8 |
| HEL-7D470K | | | | 30 | 38 | 42 | 52 | 2.5 | 93 | 0.5 | 2.8 | 1,150 | 10 | 13 | 25 | 5.0 | 0.6 | 4.9 |
| HEL-7D560K | | | | 35 | 45 | 50 | 62 | 2.5 | 110 | 0.5 | 3.4 | 1,050 | 10 | 13 | 25 | 5.0 | 0.6 | 5.0 |
| HEL-7D680K | | | | 40 | 56 | 61 | 75 | 2.5 | 135 | 0.5 | 4.5 | 970 | 10 | 13 | 25 | 5.0 | 0.6 | 5.1 |
| HEL-7D820K | ☆ | ☆ | ☆ | 50 | 65 | 74 | 90 | 10 | 135 | 1.75 | 7.0 | 930 | 10 | 13 | 25 | 5.0 | 0.6 | 4.0 |
| HEL-7D101K | ☆ | ☆ | ☆ | 60 | 85 | 90 | 110 | 10 | 165 | 1.75 | 8.5 | 860 | 10 | 13 | 25 | 5.0 | 0.6 | 4.1 |
| HEL-7D121K | ☆ | ☆ | ☆ | 75 | 100 | 108 | 132 | 10 | 200 | 1.75 | 10 | 670 | 10 | 13 | 25 | 5.0 | 0.6 | 4.3 |
| HEL-7D151K | ☆ | ☆ | ☆ | 95 | 125 | 135 | 165 | 10 | 250 | 1.75 | 13 | 490 | 10 | 13 | 25 | 5.0 | 0.6 | 4.4 |
| HEL-7D181K | ☆ | ☆ | ☆ | 115 | 150 | 162 | 198 | 10 | 300 | 1.75 | 15 | 330 | 10 | 13 | 25 | 5.0 | 0.6 | 4.5 |
| HEL-7D201K | ☆ | ☆ | ☆ | 130 | 170 | 185 | 225 | 10 | 340 | 1.75 | 18 | 240 | 10 | 13 | 25 | 5.0 | 0.6 | 4.6 |
| HEL-7D221K | ☆ | ☆ | ☆ | 140 | 180 | 198 | 242 | 10 | 360 | 1.75 | 19 | 190 | 10 | 13 | 25 | 5.0 | 0.6 | 4.7 |
| HEL-7D241K | ☆ | ☆ | ☆ | 150 | 200 | 216 | 264 | 10 | 395 | 1.75 | 21 | 165 | 10 | 13 | 25 | 5.0 | 0.6 | 4.8 |
| HEL-7D271K | ☆ | ☆ | ☆ | 175 | 225 | 243 | 297 | 10 | 455 | 1.75 | 24 | 150 | 10 | 13 | 25 | 5.0 | 0.6 | 4.9 |
| HEL-7D301K | ☆ | ☆ | ☆ | 195 | 250 | 270 | 330 | 10 | 505 | 1.75 | 26 | 135 | 10 | 13 | 25 | 5.0 | 0.6 | 5.0 |
| HEL-7D331K | ☆ | ☆ | ☆ | 210 | 275 | 291 | 363 | 10 | 550 | 1.75 | 29 | 130 | 10 | 13 | 25 | 5.0 | 0.6 | 5.1 |
| HEL-7D361K | ☆ | ☆ | ☆ | 230 | 300 | 324 | 396 | 10 | 595 | 1.75 | 32 | 125 | 10 | 13 | 25 | 5.0 | 0.6 | 5.2 |
| HEL-7D391K | ☆ | ☆ | ☆ | 250 | 320 | 351 | 429 | 10 | 650 | 1.75 | 35 | 105 | 10 | 13 | 25 | 5.0 | 0.6 | 5.3 |
| HEL-7D431K | ☆ | ☆ | ☆ | 275 | 350 | 387 | 473 | 10 | 710 | 1.75 | 40 | 100 | 10 | 13 | 25 | 5.0 | 0.6 | 5.4 |
| HEL-7D471K | ☆ | ☆ | ☆ | 300 | 385 | 423 | 517 | 10 | 775 | 1.75 | 42 | 90 | 10 | 13 | 25 | 5.0 | 0.6 | 5.5 |
| HEL-7D511K | ☆ | ☆ | ☆ | 320 | 418 | 459 | 561 | 10 | 842 | 1.75 | 43 | 80 | 10 | 13 | 25 | 5.0 | 0.6 | 5.6 |
| HEL-7D561K | ☆ | ☆ | ☆ | 350 | 460 | 504 | 616 | 10 | 920 | 1.75 | 46 | 75 | 10 | 13 | 25 | 5.0 | 0.6 | 5.7 |
| HEL-7D621K | ☆ | ☆ | ☆ | 385 | 505 | 558 | 682 | 10 | 1025 | 1.75 | 48 | 70 | 10 | 13 | 25 | 5.0 | 0.6 | 5.8 |
| HEL-7D681K | | | ☆ | 420 | 560 | 612 | 748 | 10 | 1120 | 1.75 | 50 | 66 | 10 | 13 | 25 | 5.0 | 0.6 | 6.0 |
| HEL-7D751K | | | ☆ | 460 | 615 | 657 | 825 | 10 | 1240 | 1.75 | 53 | 63 | 10 | 13 | 25 | 5.0 | 0.6 | 6.1 |
| HEL-7D781K | | | ☆ | 485 | 640 | 702 | 858 | 10 | 1290 | 1.75 | 55 | 60 | 10 | 13 | 25 | 5.0 | 0.6 | 6.2 |
| HEL-7D821K | | | ☆ | 510 | 670 | 738 | 902 | 10 | 1355 | 1.75 | 60 | 55 | 10 | 13 | 25 | 5.0 | 0.6 | 6.3 |

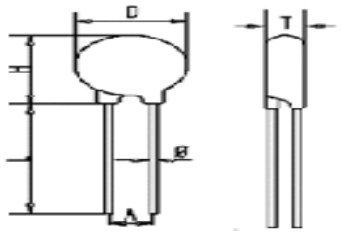
10D HEL VARISTOR

| Style no. | Recognitions of Safety Agency Standards | | | Max. Continuous Applied Voltage | | Voltage at DC 1mA (25°C) | | Class Current (8/20 μ sec) | Max. Voltage at Class Current | Max. Peak Current (8/20 μ sec 1time) | Energy Surge Rating (10/1000 μ sec) | Typical Capacitance Reference | Typical Capacitance Reference | | | | | |
|-------------|---|-----|-----|---------------------------------|--------|--------------------------|---------|--------------------------------|-------------------------------|--|---|-------------------------------|-------------------------------|--------------------|------|-----|-----------|-----------|
| | UL | CSA | VDE | AC (V) | DC (V) | Min (V) | Max (V) | | | | | | I _p (A) | V _c (V) | (KA) | (J) | 1KHz (PF) | Dmax (mm) |
| HEL-10D180L | | | | 11 | 14 | 15 | 21 | 5 | 38 | 1.0 | 2.3 | 7,500 | 13 | 16 | 25 | 7.5 | 0.8 | 4.4 |
| HEL-10D220K | | | | 14 | 18 | 20 | 24 | 5 | 43 | 1.0 | 2.6 | 6,000 | 13 | 16 | 25 | 7.5 | 0.8 | 4.5 |
| HEL-10D270K | | | | 17 | 22 | 24 | 30 | 5 | 53 | 1.0 | 3.9 | 4,800 | 13 | 16 | 25 | 7.5 | 0.8 | 4.6 |
| HEL-10D330K | | | | 20 | 26 | 30 | 36 | 5 | 65 | 1.0 | 4.8 | 4,200 | 13 | 16 | 25 | 7.5 | 0.8 | 4.7 |
| HEL-10D390K | | | | 25 | 31 | 35 | 43 | 5 | 77 | 1.0 | 5.6 | 3,700 | 13 | 16 | 25 | 7.5 | 0.8 | 4.8 |
| HEL-10D470K | | | | 30 | 38 | 42 | 52 | 5 | 93 | 1.0 | 6.8 | 3,300 | 13 | 16 | 25 | 7.5 | 0.8 | 4.9 |
| HEL-10D560K | | | | 35 | 45 | 50 | 62 | 5 | 110 | 1.0 | 8.1 | 2,900 | 13 | 16 | 25 | 7.5 | 0.8 | 5.0 |
| HEL-10D680K | | | | 40 | 56 | 61 | 75 | 5 | 135 | 1.0 | 10 | 2,500 | 13 | 16 | 25 | 7.5 | 0.8 | 5.1 |
| HEL-10D820K | ☆ | ☆ | ☆ | 50 | 65 | 74 | 90 | 25 | 135 | 3.5 | 13 | 2,100 | 13 | 16 | 25 | 7.5 | 0.8 | 4.0 |
| HEL-10D101K | ☆ | ☆ | ☆ | 60 | 85 | 90 | 110 | 25 | 165 | 3.5 | 17 | 1,700 | 13 | 16 | 25 | 7.5 | 0.8 | 4.1 |
| HEL-10D121K | ☆ | ☆ | ☆ | 75 | 100 | 108 | 132 | 25 | 200 | 3.5 | 20 | 1,500 | 13 | 16 | 25 | 7.5 | 0.8 | 4.3 |
| HEL-10D151K | ☆ | ☆ | ☆ | 95 | 125 | 135 | 165 | 25 | 250 | 3.5 | 25 | 1,300 | 13 | 16 | 25 | 7.5 | 0.8 | 4.4 |
| HEL-10D181K | ☆ | ☆ | ☆ | 115 | 150 | 162 | 198 | 25 | 300 | 3.5 | 32 | 470 | 13 | 16 | 25 | 7.5 | 0.8 | 4.5 |
| HEL-10D201K | ☆ | ☆ | ☆ | 130 | 170 | 185 | 225 | 25 | 340 | 3.5 | 35 | 430 | 13 | 16 | 25 | 7.5 | 0.8 | 4.6 |
| HEL-10D221K | ☆ | ☆ | ☆ | 140 | 180 | 198 | 242 | 25 | 360 | 3.5 | 39 | 390 | 13 | 16 | 25 | 7.5 | 0.8 | 4.7 |
| HEL-10D241K | ☆ | ☆ | ☆ | 150 | 200 | 216 | 264 | 25 | 395 | 3.5 | 42 | 360 | 13 | 16 | 25 | 7.5 | 0.8 | 4.8 |
| HEL-10D271K | ☆ | ☆ | ☆ | 175 | 225 | 243 | 297 | 25 | 455 | 3.5 | 49 | 330 | 13 | 16 | 25 | 7.5 | 0.8 | 4.9 |
| HEL-10D301K | ☆ | ☆ | ☆ | 195 | 250 | 270 | 330 | 25 | 505 | 3.5 | 54 | 290 | 13 | 16 | 25 | 7.5 | 0.8 | 5.0 |
| HEL-10D331K | ☆ | ☆ | ☆ | 210 | 275 | 291 | 363 | 25 | 550 | 3.5 | 58 | 280 | 13 | 16 | 25 | 7.5 | 0.8 | 5.1 |
| HEL-10D361K | ☆ | ☆ | ☆ | 230 | 300 | 324 | 396 | 25 | 595 | 3.5 | 65 | 260 | 13 | 16 | 25 | 7.5 | 0.8 | 5.2 |
| HEL-10D391K | ☆ | ☆ | ☆ | 250 | 320 | 351 | 429 | 25 | 650 | 3.5 | 70 | 240 | 13 | 16 | 25 | 7.5 | 0.8 | 5.3 |
| HEL-10D431K | ☆ | ☆ | ☆ | 275 | 350 | 387 | 473 | 25 | 710 | 3.5 | 80 | 220 | 13 | 16 | 25 | 7.5 | 0.8 | 5.4 |
| HEL-10D471K | ☆ | ☆ | ☆ | 300 | 385 | 423 | 517 | 25 | 775 | 3.5 | 85 | 190 | 13 | 16 | 25 | 7.5 | 0.8 | 5.5 |
| HEL-10D511K | ☆ | ☆ | ☆ | 320 | 418 | 459 | 561 | 25 | 842 | 3.5 | 92 | 180 | 13 | 16 | 25 | 7.5 | 0.8 | 5.6 |
| HEL-10D561K | ☆ | ☆ | ☆ | 350 | 460 | 504 | 616 | 25 | 920 | 3.5 | 92 | 180 | 13 | 16 | 25 | 7.5 | 0.8 | 5.7 |
| HEL-10D621K | ☆ | ☆ | ☆ | 385 | 505 | 558 | 682 | 25 | 1025 | 3.5 | 97 | 160 | 14 | 16 | 25 | 7.5 | 0.8 | 5.8 |
| HEL-10D681K | ☆ | ☆ | ☆ | 420 | 560 | 612 | 748 | 25 | 1120 | 3.5 | 100 | 140 | 14 | 16 | 25 | 7.5 | 0.8 | 6.0 |
| HEL-10D751K | ☆ | ☆ | ☆ | 460 | 615 | 657 | 825 | 25 | 1240 | 3.5 | 105 | 130 | 14 | 16 | 25 | 7.5 | 0.8 | 6.1 |
| HEL-10D781K | ☆ | ☆ | ☆ | 485 | 640 | 702 | 858 | 25 | 1290 | 3.5 | 105 | 130 | 14 | 16 | 25 | 7.5 | 0.8 | 6.2 |
| HEL-10D821K | ☆ | ☆ | ☆ | 510 | 670 | 738 | 902 | 25 | 1355 | 3.5 | 110 | 130 | 14 | 16 | 25 | 7.5 | 0.8 | 6.3 |
| HEL-10D911K | ☆ | ☆ | ☆ | 550 | 745 | 819 | 1001 | 25 | 1500 | 3.5 | 130 | 120 | 14 | 16 | 25 | 7.5 | 0.8 | 6.4 |
| HEL-10D951K | ☆ | ☆ | ☆ | 575 | 765 | 855 | 1045 | 25 | 1580 | 3.5 | 135 | 110 | 14 | 16 | 25 | 7.5 | 0.8 | 6.8 |
| HEL-10D102K | ☆ | ☆ | | 625 | 825 | 900 | 1100 | 25 | 1650 | 3.5 | 140 | 100 | 14 | 16 | 25 | 7.5 | 0.8 | 6.9 |
| HEL-10D112K | ☆ | ☆ | | 680 | 895 | 990 | 1210 | 25 | 1815 | 3.5 | 155 | 90 | 14 | 16 | 25 | 7.5 | 0.8 | 7.0 |
| HEL-10D122K | | | | 750 | 985 | 1080 | 1320 | 25 | 1900 | 3.5 | 165 | 80 | 14 | 16 | 25 | 7.5 | 0.8 | 7.1 |
| HEL-10D152K | | | | 850 | 1185 | 1350 | 1650 | 25 | 2310 | 3.5 | 200 | 75 | 14 | 16 | 25 | 7.5 | 0.8 | 7.5 |
| HEL-10D182K | ☆ | ☆ | | 1000 | 1330 | 1440 | 1760 | 25 | 2750 | 3.5 | 230 | 70 | 14 | 16 | 25 | 7.5 | 0.8 | 8.0 |

14D HEL VARISTOR

| Style no. | Recognitions of Safety Agency Standards | | | Max. Continuous Applied Voltage | | Voltage at DC 1mA (25°C) | | Class Current (8/20 µsec) | Max. Voltage at Class Current | Max. Peak Current (8/20 µsec 1time) | Energy Surge Rating (10/1000 µsec) | Typical Capacitance Reference |  | | | | | |
|-------------|---|-----|-----|---------------------------------|--------|--------------------------|---------|---------------------------|-------------------------------|-------------------------------------|------------------------------------|-------------------------------|--|--------|------|-----|-----------|-----------|
| | UL | CSA | VDE | AC (V) | DC (V) | Min (V) | Max (V) | | | | | | Ip (A) | Vc (V) | (KA) | (J) | 1KHz (PF) | Dmax (mm) |
| HEL-14D180L | | | | 11 | 14 | 15 | 21 | 10 | 38 | 2 | 5.2 | 18,000 | 17 | 20 | 25 | 7.5 | 0.8 | 4.4 |
| HEL-14D220K | | | | 14 | 18 | 20 | 24 | 10 | 43 | 2 | 6.3 | 15,000 | 17 | 20 | 25 | 7.5 | 0.8 | 4.5 |
| HEL-14D270K | | | | 17 | 22 | 24 | 30 | 10 | 53 | 2 | 7.8 | 10,000 | 17 | 20 | 25 | 7.5 | 0.8 | 4.6 |
| HEL-14D330K | | | | 20 | 26 | 30 | 36 | 10 | 65 | 2 | 9.5 | 8,500 | 17 | 20 | 25 | 7.5 | 0.8 | 4.7 |
| HEL-14D390K | | | | 25 | 31 | 35 | 43 | 10 | 77 | 2 | 11 | 7,500 | 17 | 20 | 25 | 7.5 | 0.8 | 4.8 |
| HEL-14D470K | | | | 30 | 38 | 42 | 52 | 10 | 93 | 2 | 13 | 6,500 | 17 | 20 | 25 | 7.5 | 0.8 | 4.9 |
| HEL-14D560K | | | | 35 | 45 | 50 | 62 | 10 | 110 | 2 | 16 | 5,600 | 17 | 20 | 25 | 7.5 | 0.8 | 5.0 |
| HEL-14D680K | | | | 40 | 56 | 61 | 75 | 10 | 135 | 2 | 20 | 4,700 | 17 | 20 | 25 | 7.5 | 0.8 | 5.1 |
| HEL-14D820K | ☆ | ☆ | ☆ | 50 | 65 | 74 | 90 | 50 | 135 | 6.5 | 28 | 3,900 | 17 | 20 | 25 | 7.5 | 0.8 | 4.0 |
| HEL-14D101K | ☆ | ☆ | ☆ | 60 | 85 | 90 | 110 | 50 | 165 | 6.5 | 35 | 3,400 | 17 | 20 | 25 | 7.5 | 0.8 | 4.1 |
| HEL-14D121K | ☆ | ☆ | ☆ | 75 | 100 | 108 | 132 | 50 | 200 | 6.5 | 42 | 3,100 | 17 | 20 | 25 | 7.5 | 0.8 | 4.3 |
| HEL-14D151K | ☆ | ☆ | ☆ | 95 | 125 | 135 | 165 | 50 | 250 | 6.5 | 53 | 3,000 | 17 | 20 | 25 | 7.5 | 0.8 | 4.4 |
| HEL-14D181K | ☆ | ☆ | ☆ | 115 | 150 | 162 | 198 | 50 | 300 | 6.5 | 65 | 1,030 | 17 | 20 | 25 | 7.5 | 0.8 | 4.5 |
| HEL-14D201K | ☆ | ☆ | ☆ | 130 | 170 | 185 | 225 | 50 | 340 | 6.5 | 70 | 970 | 17 | 20 | 25 | 7.5 | 0.8 | 4.6 |
| HEL-14D221K | ☆ | ☆ | ☆ | 140 | 180 | 198 | 242 | 50 | 360 | 6.5 | 78 | 840 | 17 | 20 | 25 | 7.5 | 0.8 | 4.7 |
| HEL-14D241K | ☆ | ☆ | ☆ | 150 | 200 | 216 | 264 | 50 | 395 | 6.5 | 84 | 710 | 17 | 20 | 25 | 7.5 | 0.8 | 4.8 |
| HEL-14D271K | ☆ | ☆ | ☆ | 175 | 225 | 243 | 297 | 50 | 455 | 6.5 | 99 | 650 | 17 | 20 | 25 | 7.5 | 0.8 | 4.9 |
| HEL-14D301K | ☆ | ☆ | ☆ | 195 | 250 | 270 | 330 | 50 | 505 | 6.5 | 108 | 600 | 17 | 20 | 25 | 7.5 | 0.8 | 5.0 |
| HEL-14D331K | ☆ | ☆ | ☆ | 210 | 275 | 291 | 363 | 50 | 550 | 6.5 | 115 | 550 | 17 | 20 | 25 | 7.5 | 0.8 | 5.1 |
| HEL-14D361K | ☆ | ☆ | ☆ | 230 | 300 | 324 | 396 | 50 | 595 | 6.5 | 130 | 500 | 17 | 20 | 25 | 7.5 | 0.8 | 5.2 |
| HEL-14D391K | ☆ | ☆ | ☆ | 250 | 320 | 351 | 429 | 50 | 650 | 6.5 | 140 | 480 | 17 | 20 | 25 | 7.5 | 0.8 | 5.3 |
| HEL-14D431K | ☆ | ☆ | ☆ | 275 | 350 | 387 | 473 | 50 | 710 | 6.5 | 155 | 440 | 17 | 20 | 25 | 7.5 | 0.8 | 5.4 |
| HEL-14D471K | ☆ | ☆ | ☆ | 300 | 385 | 423 | 517 | 50 | 775 | 6.5 | 175 | 420 | 17 | 20 | 25 | 7.5 | 0.8 | 5.5 |
| HEL-14D511K | ☆ | ☆ | ☆ | 320 | 418 | 459 | 561 | 50 | 842 | 6.5 | 190 | 390 | 17 | 20 | 25 | 7.5 | 0.8 | 5.6 |
| HEL-14D561K | ☆ | ☆ | ☆ | 350 | 460 | 504 | 616 | 50 | 920 | 6.5 | 192 | 360 | 17 | 20 | 25 | 7.5 | 0.8 | 5.7 |
| HEL-14D621K | ☆ | ☆ | ☆ | 385 | 505 | 558 | 682 | 50 | 1025 | 6.5 | 195 | 320 | 18 | 20 | 25 | 7.5 | 0.8 | 5.8 |
| HEL-14D681K | ☆ | ☆ | ☆ | 420 | 560 | 612 | 748 | 50 | 1120 | 6.5 | 200 | 290 | 18 | 20 | 25 | 7.5 | 0.8 | 6.0 |
| HEL-14D751K | ☆ | ☆ | ☆ | 460 | 615 | 657 | 825 | 50 | 1240 | 6.5 | 210 | 260 | 18 | 20 | 25 | 7.5 | 0.8 | 6.1 |
| HEL-14D781K | ☆ | ☆ | ☆ | 485 | 640 | 702 | 858 | 50 | 1290 | 6.5 | 225 | 230 | 18 | 20 | 25 | 7.5 | 0.8 | 6.2 |
| HEL-14D821K | ☆ | ☆ | ☆ | 510 | 670 | 738 | 902 | 50 | 1355 | 6.5 | 235 | 230 | 18 | 20 | 25 | 7.5 | 0.8 | 6.3 |
| HEL-14D911K | ☆ | ☆ | ☆ | 550 | 745 | 819 | 1001 | 50 | 1500 | 6.5 | 255 | 200 | 18 | 20 | 25 | 7.5 | 0.8 | 6.4 |
| HEL-14D951K | ☆ | ☆ | ☆ | 575 | 765 | 855 | 1045 | 50 | 1580 | 6.5 | 270 | 190 | 18 | 20 | 25 | 7.5 | 0.8 | 6.8 |
| HEL-14D102K | ☆ | ☆ | | 625 | 825 | 900 | 1100 | 50 | 1650 | 6.5 | 280 | 180 | 18 | 20 | 25 | 7.5 | 0.8 | 6.9 |
| HEL-14D112K | ☆ | ☆ | | 680 | 895 | 990 | 1210 | 50 | 1815 | 6.5 | 300 | 165 | 18 | 20 | 25 | 7.5 | 0.8 | 7.0 |
| HEL-14D122K | | | | 750 | 985 | 1080 | 1320 | 50 | 1815 | 6.5 | 310 | 150 | 18 | 20 | 25 | 7.5 | 0.8 | 7.0 |
| HEL-14D152K | | | | 850 | 1185 | 1350 | 1650 | 50 | 1990 | 6.5 | 335 | 145 | 18 | 20 | 25 | 7.5 | 0.8 | 7.1 |
| HEL-14D182K | ☆ | ☆ | | 1000 | 1330 | 1440 | 1760 | 50 | 2310 | 6.5 | 405 | 140 | 18 | 20 | 25 | 7.5 | 0.8 | 7.5 |

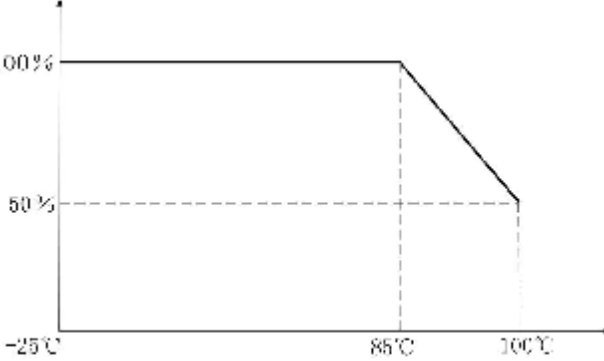
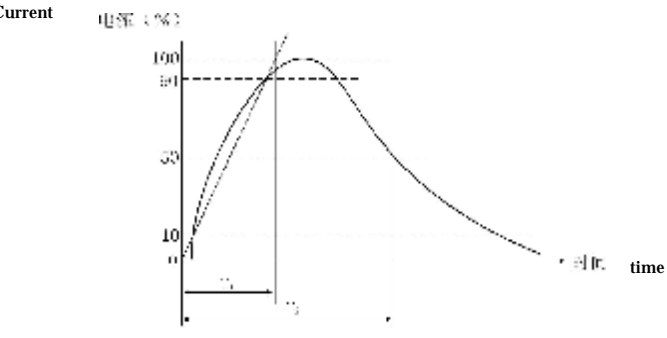
20D HEL VARISTOR

| Style no. | Recognitions of Safety Agency Standards | | | Max. Continuous Applied Voltage | | Voltage at DC 1mA (25°C) | | Class Current (8/20 μsec) | Max. Voltage at Class Current | Max. Peak Current (8/20 μsec 1time) | Energy Surge Rating (10/1000 μsec) | Typical Capacitance Reference |  | | | | | | |
|-------------|---|-----|-----|---------------------------------|--------|--------------------------|---------|---------------------------|-------------------------------|-------------------------------------|------------------------------------|-------------------------------|--|--------------------|------|-----|-----------|-----------------------|-----------------------|
| | UL | CSA | VDE | AC (V) | DC (V) | Min (V) | Max (V) | | | | | | I _p (A) | V _c (V) | (KA) | (J) | 1KHz (PF) | D _{max} (mm) | H _{max} (mm) |
| HEL-20D180L | | | | 11 | 14 | 15 | 21 | 20 | 38 | 3 | 13 | 39,000 | 23 | 26 | 25 | 10 | 1.0 | 4.4 | |
| HEL-20D220K | | | | 14 | 18 | 20 | 24 | 20 | 43 | 3 | 16 | 32,000 | 23 | 26 | 25 | 10 | 1.0 | 4.5 | |
| HEL-20D270K | | | | 17 | 22 | 24 | 30 | 20 | 53 | 3 | 19 | 22,000 | 23 | 26 | 25 | 10 | 1.0 | 4.6 | |
| HEL-20D330K | | | | 20 | 26 | 30 | 36 | 20 | 65 | 3 | 24 | 18,000 | 23 | 26 | 25 | 10 | 1.0 | 4.7 | |
| HEL-20D390K | | | | 25 | 31 | 35 | 43 | 20 | 77 | 3 | 28 | 16,000 | 23 | 26 | 25 | 10 | 1.0 | 4.8 | |
| HEL-20D470K | | | | 30 | 38 | 42 | 52 | 20 | 93 | 3 | 34 | 14,000 | 23 | 26 | 25 | 10 | 1.0 | 4.9 | |
| HEL-20D560K | | | | 35 | 45 | 50 | 62 | 20 | 110 | 3 | 41 | 12,000 | 23 | 26 | 25 | 10 | 1.0 | 5.0 | |
| HEL-20D680K | | | | 40 | 56 | 61 | 75 | 20 | 135 | 3 | 49 | 10,000 | 23 | 26 | 25 | 10 | 1.0 | 5.1 | |
| HEL-20D820K | ☆ | ☆ | ☆ | 50 | 65 | 74 | 90 | 100 | 135 | 10 | 56 | 5,800 | 23 | 26 | 25 | 10 | 1 | 4.0 | |
| HEL-20D101K | ☆ | ☆ | ☆ | 60 | 85 | 90 | 110 | 100 | 165 | 10 | 72 | 4,800 | 23 | 26 | 25 | 10 | 1 | 4.1 | |
| HEL-20D121K | ☆ | ☆ | ☆ | 75 | 100 | 108 | 132 | 100 | 200 | 10 | 88 | 3,800 | 23 | 26 | 25 | 10 | 1 | 4.3 | |
| HEL-20D151K | ☆ | ☆ | ☆ | 95 | 125 | 135 | 165 | 100 | 250 | 10 | 106 | 3,000 | 23 | 26 | 25 | 10 | 1 | 4.4 | |
| HEL-20D181K | ☆ | ☆ | ☆ | 115 | 150 | 162 | 198 | 100 | 300 | 10 | 130 | 2,600 | 23 | 26 | 25 | 10 | 1 | 4.5 | |
| HEL-20D201K | ☆ | ☆ | ☆ | 130 | 170 | 185 | 225 | 100 | 340 | 10 | 160 | 2,000 | 23 | 26 | 25 | 10 | 1 | 4.6 | |
| HEL-20D221K | ☆ | ☆ | ☆ | 140 | 180 | 198 | 242 | 100 | 360 | 10 | 180 | 1,800 | 23 | 26 | 25 | 10 | 1 | 4.7 | |
| HEL-20D241K | ☆ | ☆ | ☆ | 150 | 200 | 216 | 264 | 100 | 395 | 10 | 200 | 1,500 | 23 | 26 | 25 | 10 | 1 | 4.8 | |
| HEL-20D271K | ☆ | ☆ | ☆ | 175 | 225 | 243 | 297 | 100 | 455 | 10 | 210 | 1,400 | 23 | 26 | 25 | 10 | 1 | 4.9 | |
| HEL-20D301K | ☆ | ☆ | ☆ | 195 | 250 | 270 | 330 | 100 | 505 | 10 | 216 | 1,350 | 23 | 26 | 25 | 10 | 1 | 5.0 | |
| HEL-20D331K | ☆ | ☆ | ☆ | 210 | 275 | 291 | 363 | 100 | 550 | 10 | 228 | 1,300 | 23 | 26 | 25 | 10 | 1 | 5.1 | |
| HEL-20D361K | ☆ | ☆ | ☆ | 230 | 300 | 324 | 396 | 100 | 595 | 10 | 255 | 1,250 | 23 | 26 | 25 | 10 | 1 | 5.2 | |
| HEL-20D391K | ☆ | ☆ | ☆ | 250 | 320 | 351 | 429 | 100 | 650 | 10 | 275 | 1,180 | 23 | 26 | 25 | 10 | 1 | 5.3 | |
| HEL-20D431K | ☆ | ☆ | ☆ | 275 | 350 | 387 | 473 | 100 | 710 | 10 | 303 | 1,100 | 23 | 26 | 25 | 10 | 1 | 5.4 | |
| HEL-20D471K | ☆ | ☆ | ☆ | 300 | 385 | 423 | 517 | 100 | 775 | 10 | 350 | 1,050 | 23 | 26 | 25 | 10 | 1 | 5.5 | |
| HEL-20D511K | ☆ | ☆ | ☆ | 320 | 418 | 459 | 561 | 100 | 842 | 10 | 382 | 1,000 | 23 | 26 | 25 | 10 | 1 | 5.6 | |
| HEL-20D561K | ☆ | ☆ | ☆ | 350 | 460 | 504 | 616 | 100 | 920 | 10 | 385 | 970 | 24 | 27 | 25 | 10 | 1 | 5.7 | |
| HEL-20D621K | ☆ | ☆ | ☆ | 385 | 505 | 558 | 682 | 100 | 1025 | 10 | 390 | 950 | 24 | 27 | 25 | 10 | 1 | 5.8 | |
| HEL-20D681K | ☆ | ☆ | ☆ | 420 | 560 | 612 | 748 | 100 | 1120 | 10 | 400 | 900 | 24 | 27 | 25 | 10 | 1 | 6.0 | |
| HEL-20D751K | ☆ | ☆ | ☆ | 460 | 615 | 657 | 825 | 100 | 1240 | 10 | 420 | 850 | 24 | 27 | 25 | 10 | 1 | 6.1 | |
| HEL-20D781K | ☆ | ☆ | ☆ | 485 | 640 | 702 | 858 | 100 | 1290 | 10 | 445 | 750 | 24 | 27 | 25 | 10 | 1 | 6.2 | |
| HEL-20D821K | ☆ | ☆ | ☆ | 510 | 670 | 738 | 902 | 100 | 1355 | 10 | 460 | 700 | 24 | 27 | 25 | 10 | 1 | 6.3 | |
| HEL-20D911K | ☆ | ☆ | ☆ | 550 | 745 | 819 | 1001 | 100 | 1500 | 10 | 510 | 600 | 24 | 27 | 25 | 10 | 1 | 6.4 | |
| HEL-20D951K | ☆ | ☆ | ☆ | 575 | 765 | 855 | 1045 | 100 | 1580 | 10 | 535 | 550 | 24 | 27 | 25 | 10 | 1 | 6.8 | |
| HEL-20D102K | ☆ | ☆ | | 625 | 825 | 900 | 1100 | 100 | 1650 | 10 | 565 | 500 | 24 | 27 | 25 | 10 | 1 | 6.9 | |
| HEL-20D112K | ☆ | ☆ | | 680 | 895 | 990 | 1210 | 100 | 1815 | 10 | 620 | 450 | 24 | 27 | 25 | 10 | 1 | 7.0 | |
| HEL-20D122K | | | | 750 | 985 | 1080 | 1320 | 100 | 1990 | 10 | 675 | 400 | 24 | 27 | 25 | 10 | 1 | 7.1 | |
| HEL-20D152K | | | | 850 | 1185 | 1350 | 1650 | 100 | 2310 | 10 | 810 | 350 | 24 | 27 | 25 | 10 | 1 | 7.5 | |
| HEL-20D182K | ☆ | ☆ | | 1000 | 1330 | 1440 | 1760 | 100 | 2750 | 10 | 930 | 300 | 24 | 27 | 25 | 10 | 1 | 8.0 | |

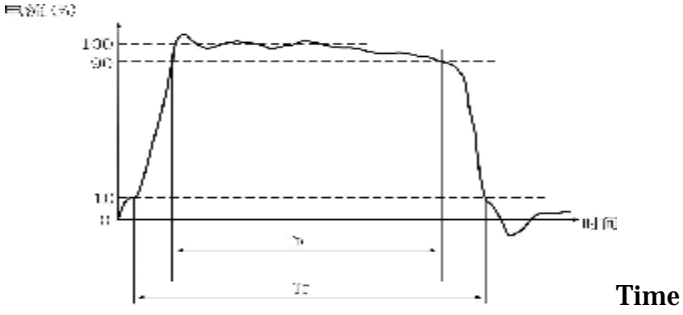
Note : Recognitions to safety agency standards UL File No.E197799 CSA File No.215101

PERFORMANCE CHARACTERISTIC

1.1 HEL VARISTORS ELECTRICAL CHARACTERISTICS

| Technical term | Test Methods Description | Specifications |
|-------------------------------------|--|--|
| Varistors Voltage | The voltage between two terminals with the specified measuring current 1mA DC applied is called V _{1mA} ,The measurement shall be made as fast as possible to avoid heat affection. | The usual tolerance on varistors voltage is $\pm 10\%$. |
| Maximum Continuous AC or DC Voltage |  <p style="text-align: center;">最大允许使用电压率曲线</p> <p style="text-align: center;">Maximum Allowable Voltage Derating Curve</p> | Maximum Continuous AC Voltage 0.62multility Varistor voltage |
| Leakage Current | The current passing through the varistors at the maximum continuous DC voltage. | $\leq 20\mu\text{A}$ |
| Clamping Voltage | <p>The peak voltage at class current (Standard surge current waveform is 8/20μs). The class current is a peak value of current which is 1/10 of the maximum peak current for 100 impulses at per minute for 8/20μs.</p>  | See specification tables. |

1.2 HEL VARISTORS ELECTRICAL CHARACTERISTICS





| | | |
|---|--|---|
| <p>Energy</p> | <p>The maximum energy within the varistors voltage change of $\pm 10\%$ when one impulse of 2ms or 10/1000μS is applied.</p> <p>For the 2mS waveform :</p> $J = 2 \cdot I_p \cdot V_c \cdot 10^{-3}$ <p>For the 10/1000μS waveform :</p> $J = 1391 \cdot I_p \cdot V_c \cdot 10^{-6}$ <p>Where J -- Energy absorbed in joules. I_p -- Maximum let-through current in amps. V_c -- Measured clamping voltage in volts.</p> <p>Current</p>  | <p>$\Delta V_{1mA} / V_{1mA} \leq 10\%$.</p> |
| <p>Maximum Peak current</p> | <p>The maximum current within the varistors voltage change of $\pm 10\%$ with the standard impulse current (8/20μS) applied one time.</p> | <p>$\Delta V_{1mA} / V_{1mA} \leq 10\%$.</p> |
| <p>Varistors voltage Temperature Coefficient</p> | $\frac{V_{1mA} (85^\circ\text{C}) - V_{1mA} (25^\circ\text{C})}{V_{1mA} (25^\circ\text{C})} \times \frac{1}{60} \times 100\%$ | <p>$\leq -0.05 \%/^\circ\text{C}$.</p> |
| <p>Capacitance</p> | <p>Typical value measured at 1Vrms and test frequency of 1kHz</p> | <p>See specification tables.</p> |

Standard test condition Temperature : 15 $^\circ$ C-35 $^\circ$ C; Relative humidity : 45%-75%; Air pressure : 86 Pa~106kPa .

2. HEL VARISTORS TECHNOLOGIC & MECHANICAL CHARACTERISTICS

| Technical term | Test Methods Description | Specifications | | | | | | | | |
|-------------------------------|---|---|-----|-----|-----|------------|---|----|----|-------------------|
| Solderability | After dipping the terminals to a depth of 3.5-0.5 mm from the body in a soldering bath of temperature $235^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 2 ± 0.5 seconds, the terminal shall be visually examined. | Approximately 95% of the terminals shall be covered with solder uniformly. | | | | | | | | |
| Resistance to Soldering heat | After each lead shall be dipped into a solder bath having a temperature $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$, to a point 2.0 to 2.5mm from the body of the unit. Using shielding Board($t=1.5\text{mm}$), be held there for specified time (5D series: 5 ± 1 seconds and other series: 10 s), and then be stored at room temperature and humidity for 1 to 2 hours. The change of $V_{1\text{mA}}$ and mechanical damages are examined. | No outstanding damage. $\Delta V_{1\text{mA}} / V_{1\text{mA}} \leq \pm 5\%$. | | | | | | | | |
| Solvent resistance of marking | Solvent: alcohol Rubbing material: cotton wool Recovery: 4hours. Thereafter, visual examination and the change of $V_{1\text{mA}}$ shall be examined. | Legible marking. | | | | | | | | |
| Component Solvent resistance | Solvent: $70 \pm 5\%$ and F113+ $30 \pm 5\%$ strang third mellow mixture, Solvent temperature: $23 \pm 5^{\circ}\text{C}$, 5 ± 0.5 Min. Recovery: 4hours. Thereafter, visual examination and the change of $V_{1\text{mA}}$ shall be examined. | No outstanding damage. $\Delta V_{1\text{mA}} / V_{1\text{mA}} \leq \pm 5\%$. | | | | | | | | |
| Robustness of Terminations | After gradually applying the force specified below and keeping the unit fixed for ten seconds. The terminal shall be visually examined for any damage. <table style="margin-left: 40px; border: none;"> <tr> <td>Lead diameter (mm) :</td> <td>0.6</td> <td>0.8</td> <td>1.0</td> </tr> <tr> <td>Force (N):</td> <td>1</td> <td>10</td> <td>20</td> </tr> </table> | Lead diameter (mm) : | 0.6 | 0.8 | 1.0 | Force (N): | 1 | 10 | 20 | No visible damage |
| Lead diameter (mm) : | 0.6 | 0.8 | 1.0 | | | | | | | |
| Force (N): | 1 | 10 | 20 | | | | | | | |
| Shock(or bump) | Pulse shape half sine acceleration: 490 m/s^2 . Pulse duration: 11ms. Thereafter, visual examination and the change of $V_{1\text{mA}}$ shall be examined. | No visible damage. $\Delta V_{1\text{mA}} / V_{1\text{mA}} \leq \pm 5\%$. | | | | | | | | |
| vibration | Frequency range: 10Hz--55Hz. Amplitude: 0.75mm or 98 m/s^2 whichever is the less severe. Total duration: 6 hours . Thereafter, visual examination and the change of $V_{1\text{mA}}$ shall be examined. | No visible damage. $\Delta V_{1\text{mA}} / V_{1\text{mA}} \leq \pm 5\%$. | | | | | | | | |

3.1 HEL VARISTORS SECURITY AND ENVIRONMENTAL TEST

| Technical term | Test Methods Description | | Specifications | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|--|--|----------------------------------|----------|-------------|--------|-----------|---------------------------|----------|-----|------------|-----------|-----|---------------------------|--------|-----|------------|--------|---|-----|-----|------------|------|----------|------|-----|------------|------|---|
| Safety Agency Approvals | Agency | Agency File Number | See Specification Tables. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| |  | UL1449 File No. E197799 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| |  | CSA C22.2 File No. 215101 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| |  | VDE File No. 40008621 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| |  | CQC File No. 04001010844-48 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Surge Life | <p>The change of ΔV_{1mA} shall be measured. After the impulse listed below is applied 10,000 times. Continuously with the interval of ten seconds at room temperature.</p> <table border="1" data-bbox="481 857 1086 1285"> <thead> <tr> <th></th> <th>18v--68v</th> <th>8A</th> </tr> </thead> <tbody> <tr> <td rowspan="2">5D</td> <td>82v--680v</td> <td>22A</td> </tr> <tr> <td>18v--68v</td> <td>22A</td> </tr> <tr> <td rowspan="2">7D</td> <td>82v--820v</td> <td>80A</td> </tr> <tr> <td>18v--68v</td> <td>35A</td> </tr> <tr> <td rowspan="2">10D</td> <td>82v--1800v</td> <td>120A</td> </tr> <tr> <td>18v--68v</td> <td>75A</td> </tr> <tr> <td rowspan="2">14D</td> <td>82v--1800v</td> <td>200A</td> </tr> <tr> <td>18v--68v</td> <td>120A</td> </tr> <tr> <td rowspan="2">20D</td> <td>82v--1800v</td> <td>250A</td> </tr> </tbody> </table> | | | 18v--68v | 8A | 5D | 82v--680v | 22A | 18v--68v | 22A | 7D | 82v--820v | 80A | 18v--68v | 35A | 10D | 82v--1800v | 120A | 18v--68v | 75A | 14D | 82v--1800v | 200A | 18v--68v | 120A | 20D | 82v--1800v | 250A | No visible damage. $\Delta V_{1mA} / V_{1mA} \leq \pm 10\%$. |
| | 18v--68v | 8A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5D | 82v--680v | 22A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18v--68v | 22A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7D | 82v--820v | 80A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18v--68v | 35A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10D | 82v--1800v | 120A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18v--68v | 75A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14D | 82v--1800v | 200A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 18v--68v | 120A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20D | 82v--1800v | 250A | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Temperature Cycle | <p>Condition the specimen to each temperature from step 1 to step 4 in this order for the period shown in the table of specifications. The change of V_{1mA} and mechanical damage shall be examined after 24 ± 2 hours</p> <table border="1" data-bbox="505 1597 1093 1912"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Period</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>$-40 \pm 3^\circ\text{C}$</td> <td>30 Min</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>15 Min</td> </tr> <tr> <td>3</td> <td>$+85 \pm 2^\circ\text{C}$</td> <td>30 Min</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>15 Min</td> </tr> </tbody> </table> <p>5 Cycles</p> | | Step | Temperature | Period | 1 | $-40 \pm 3^\circ\text{C}$ | 30 Min | 2 | Room Temp. | 15 Min | 3 | $+85 \pm 2^\circ\text{C}$ | 30 Min | 4 | Room Temp. | 15 Min | No visible damage. $\Delta V_{1mA} / V_{1mA} \leq \pm 10\%$. | | | | | | | | | | |
| Step | Temperature | Period | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | $-40 \pm 3^\circ\text{C}$ | 30 Min | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Room Temp. | 15 Min | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | $+85 \pm 2^\circ\text{C}$ | 30 Min | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Room Temp. | 15 Min | | | | | | | | | | | | | | | | | | | | | | | | | | | |

3.2 HEL VARISTORS SECURITY AND ENVIRONMENTAL TEST

| | | |
|--|---|--|
| <p>Damp Heat /Humidity(Steady State)</p> | <p>The varistor shall be divided into two groups The first group shall be subjected to this test without voltage applied, The second group shall be Applied a DC voltage . Ambient condition.: 40℃±2℃, 90~95%RH Period: 1000 ±24hours Then stored at room temperature and normal humidity for 1 to 4 hours. Thereafter, the change of V_{1mA} and the insulation resistance shall be examined.</p> | <p>No visible damage. ΔV_{1mA} /V_{1mA}≤±10%. The insulation resistance≥ 10,000MΩ.</p> |
| <p>Endurance at upper category temperature</p> | <p>The specimen shall be applied continuously the Max. AC allowable voltage at 1000 Hours and 85℃±2℃ The specimen shall be applied in cycles of 90Min on and 30Min off throughout the test . Then stored at room temperature and normal humidity for 4±0.5 hours. Thereafter, the change of V_{1mA} and the voltage at class current ,the insulation resistance and mechanical damage shall be examined.</p> | <p>No visible damage. ΔV_{1mA} /V_{1mA}≤±10%. The change of the voltage at class current ≤±20%. The insulation resistance≥ 10,000MΩ.</p> |
| <p>Climatic Category</p> | <p>Dry heat : +85℃±2℃, 16hours ; Damp heat, cyclic :IEC68-2-30 Test Db, 55℃, First cycle 24 hours ; Cold : -40℃±3℃, 2 hours ; (Low air pressure test not applicable) Damp heat, cyclic, Test Db, remaining cycles. Then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of V_{1mA} and the insulation resistance shall be examined.</p> | <p>No visible damage. ΔV_{1mA} /V_{1mA}≤±10%. The insulation resistance≥ 10,000MΩ.</p> |



Zinc Oxide Varistor Current Information

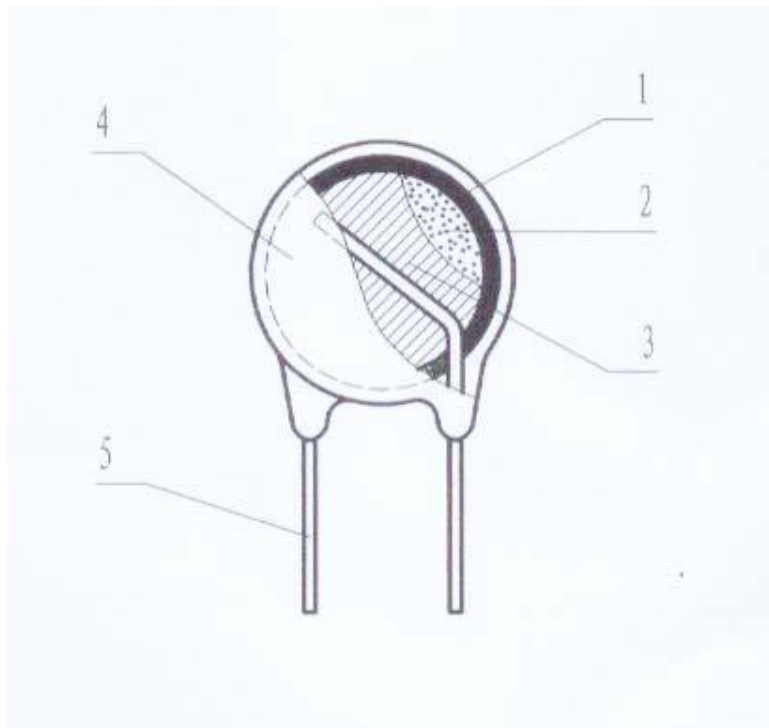
Package
Standard Bulk Pack Quantity

Dimension of the Carton: 42×27×32cm³

| Varistor Model Size | Varistor Voltage Model | Normal Lead Length | | Lead Cutting | |
|---------------------|------------------------|--------------------------|----------------------------|--------------------------|----------------------------|
| | | Quantities/Carton (Kpcs) | Quantities/InnerBox (Kpcs) | Quantities/Carton (Kpcs) | Quantities/InnerBox (Kpcs) |
| 5mm | 180K-821K | 24 | 4 | 30 | 5 |
| 7mm | 180K-271K | 24 | 4 | 30 | 5 |
| | 301K-561K | 18 | 3 | 30 | 5 |
| | 621K-821K | 12 | 2 | 24 | 4 |
| 10mm | 180K-561K | 9 | 2 | 12 | 2 |
| | 681K-821K | 6 | 1.5 | 12 | 2 |
| 14mm | 180K-781K | 6 | 1 | 9 | 1.5 |
| | 821K-182K | 3 | 1 | | |
| 20mm | 180K-821K | 3 | 1 | 6 | 1 |
| | 911K-122K | 1.5 | 0.5 | | |

Material Safety Data Sheet (MSDS)

1. Composition/ ingredients



| No. | Component | Chemical Ingredient | Proportion |
|-----|--------------|-----------------------------------|------------|
| 1 | Ceramic Disc | Zn,Mn,Sb,Co,Ni... Oxide | 65%-81% |
| 2 | Electrode | Ag | 0.1%-1.7% |
| 3 | Solder | 97.5Sn,2.0Ag,0.5Cu | 0.8-7.8% |
| 4 | Coating | Epoxy Resin | 6.5%-22% |
| 5 | Crimped Lead | CP Wire (Tinned Copper Weld Wire) | 4%-68% |

2. Physical and Chemical Properties

| | |
|--------------------------|--------------------------|
| Appearance: | |
| Substance's state: Solid | Colour:Blue Odour:- |
| Boiling point/range | - |
| Melting point/range | - |
| Density | 4-6 g/cm ³ |
| Decomposing temperature | - |
| Self-ignite temperature | - |
| Vapour pressure | - |
| Solubility in water | Not dissolve with water |
| Exploding boundary | - |

Material Safety Data Sheet (MSDS)

3. Storage

Storage:1.Store in the temperature-40-125

2.Store in the enviroment with the humidity<75%RH

3.Far from the straight sunlight, rain, steam, oil and the eroded gas.

4.avoid the pressing and shaking.

5.far from the hot fountain.

6.The store district should have enough usable extinguishers.

4. Disposal considerations

Wastes dealing measure:

1. Should dispart the product for three parts: coating, lead and noumenon.

2. Mix and dissolve the coating parts and combustibile solvent, and then cremate with the chemical incinerator.

3. The lead part is mostly with metals,sort and callback.

4. Noumenon part is metal oxide,should deal with the common wastes.

5. Stability And Reactivity

| | |
|--|--|
| Stability: | stabile in normal state |
| The possible and harmful reaction in special state: | - |
| The state that should be avoided: | Sunlight shines straightly or to be heated, spark, damp. |
| Harmful decomposition substances: | Powder,CO. |
| The substance that should be avoided: | Alkali,strong oxidizer,and water. |

Material Safety Data Sheet (MSDS)

6. Fire-Fighting Measures

| |
|--|
| <p>Fire extinguishing method:Foam fire extinguisher,Dry powder extinguisher,concealed by sand and soil,concealed by waterish clothes.</p> |
| <p>The special hazardous material that may be produced when extinguishing:Epoxy resin will split in the fire and produce CO, CO₂,and the organic chips.</p> |
| <p>The special protective clothing for the fire fighters:safety dress and air breather.</p> |
| <p>Accidental release measures:It may produce a large amount of dust while releasing in volume, escaper should cover the mouth and nose with wet cloth.</p> |
| <p>Environmental protected:Pay attention to ventilating and remove the entire fire fountainhead.</p> |
| <p>Methods of cleaning up: Separate the hazard district, avoid someone coming in.</p> |



Test Report

No. CANEC0802349701

Date: 17 May 2008

Page 1 of 4

SHAN TOU HONG ZHI ELECTRONIC LTD
NO.6 PUJIANG ROAD,SHANTOU,GUANGDONG
CHINA

The following sample(s) was/were submitted and identified on behalf of the clients as :

Varistor

SGS Job No. : 11023702 - GZ
 Date of Sample Received : 13 May 2008
 Testing Period : 13 May 2008 - 17 May 2008

Test Requested : Selected test(s) as requested by client.
 Test Method : Please refer to next page(s).
 Test Results : Please refer to next page(s).
 Conclusion : Based on the performed tests on submitted sample(s), the results **comply with the RoHS Directive 2002/95/EC and its subsequent amendments.**

Signed for and on behalf of
SGS-CSTC Ltd.

Huang Fang, Sunny
Sr. Engineer

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Guangzhou Environmental Chemical Laboratory

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Test Report

No. CANEC0802349701

Date: 17 May 2008

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Test Results:

ID for specimen 1 : CAN08-023497.001
 Description for specimen 1 : Blue body w/ black printing (mixed)

RoHS Directive 2002/95/EC

| Test Item(s) | Unit | Test Method (Reference) | Result | MDL | Limit |
|---|-------|---|--------|-----|-------|
| Cadmium (Cd) | mg/kg | IEC 62321/2nd CDV (111/95/CDV), ICP-OES | N.D. | 2 | 100 |
| Lead (Pb) | mg/kg | IEC 62321/2nd CDV (111/95/CDV), ICP-OES | 15 | 2 | 1000 |
| Mercury (Hg) | mg/kg | IEC 62321/2nd CDV (111/95/CDV), ICP-OES | N.D. | 2 | 1000 |
| Hexavalent Chromium (CrVI) by alkaline extraction | mg/kg | IEC 62321/2nd CDV (111/95/CDV), UV-Vis | N.D. | 2 | 1000 |
| Sum of PBBs | mg/kg | - | N.D. | - | 1000 |
| Monobromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Dibromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Tribromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Tetrabromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Pentabromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Hexabromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Heptabromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Octabromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Nonabromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Decabromobiphenyl | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Sum of PBDEs(Mono to Nona) (Note 4) | mg/kg | - | N.D. | - | 1000 |
| Monobromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Dibromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Tribromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Tetrabromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Pentabromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Hexabromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Heptabromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Octabromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Nonabromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Decabromodiphenyl ether | mg/kg | IEC 62321/2nd CDV (111/95/CDV), GC-MS | N.D. | 5 | |
| Sum of PBDEs(Mono to Deca) | mg/kg | - | N.D. | - | - |

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. Sum of Mono to NonaBDE & according to 2005/717/EC DecaBDE is exempt.
5. " " = Not regulated

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Test Report

No. CANEC0802349701

Date: 17 May 2008

Page 3 of 4

ID for specimen 2 : CAN08-023497.002
 Description for specimen 2 : Silvery metal pin

RoHS Directive 2002/95/EC

| Test Item(s) | Unit | Test Method (Reference) | Result | MDL | Limit |
|--|-------|---|----------|-----|-------|
| Cadmium (Cd) | mg/kg | IEC 62321/2nd CDV (111/95/CDV), ICP-OES | N.D. | 2 | 100 |
| Lead (Pb) | mg/kg | IEC 62321/2nd CDV (111/95/CDV), ICP-OES | N.D. | 2 | 1000 |
| Mercury (Hg) | mg/kg | IEC 62321/2nd CDV (111/95/CDV), ICP-OES | N.D. | 2 | 1000 |
| Hexavalent Chromium (CrVI) by boiling water extraction | - | IEC 62321/2nd CDV (111/95/CDV), UV-Vis | Negative | ◇ | # |

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. ◇ = Spot-Test:

Negative = Absence of CrVI coating, Positive = Presence of CrVI coating;
 (The tested sample should be further verified by boiling-water-extraction method if the spot test result is negative or cannot be confirmed.)

Boiling-water-extraction:

Negative = Absence of CrVI coating
 Positive = Presence of CrVI coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm² sample surface area.

5. # = Positive indicates the presence of CrVI on the tested areas.
 Negative indicates the absence of CrVI on the tested areas.
6. "-" = Not regulated

Remark : As requested by client, the testing of specimen 1 was conducted as whole / part sample, for the sample can't be disjointed.

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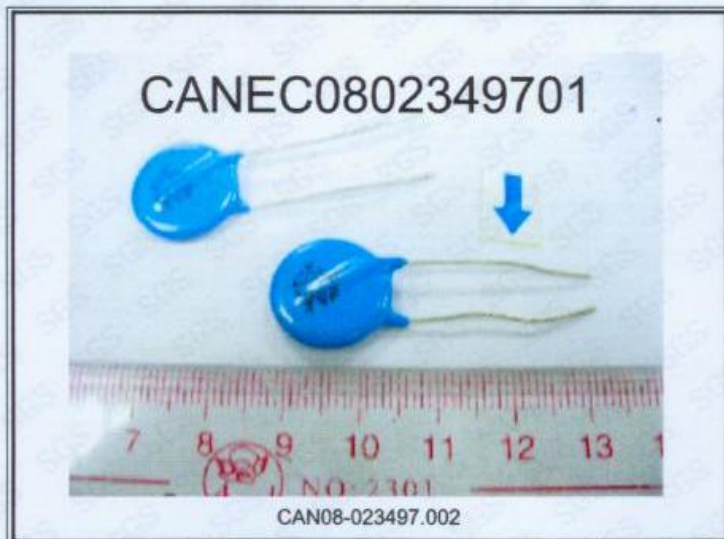
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Sample photo:



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GZCM 2126265

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产品认证证书

证书编号: CQC04001010844

申 请 人: 汕头市鸿志电子有限公司
商 标: HEL
型 号 / 名 称: 14D(820K~162K) (压敏电压:82-1600V~; 允
许偏差: K=±10%; 气候类别:40/085/21)
氧化锌压敏电阻器
标 准: GB/T 10193-1997、GB/T 10194-1997
生产厂/地址: 汕头市鸿志电子有限公司
广东省汕头市龙湖区浦江路6号3-4楼
生产厂编号: V004315
认 证 模 式: 第五种认证模式

主 任:

李怀林



中国质量认证中心

中国·北京·朝阳区芳草地西街15号 100020

<http://www.cqc.com.cn>

A 0011909



产品认证证书

证书编号: CQC04001010845

申 请 人: 汕头市鸿志电子有限公司
商 标: HEL
型 号 / 名 称: 5D(820K~561K) (压敏电压:82-560V~; 允许
偏差: ±10%; 气候类别:40/085/21)
氧化锌压敏电阻器
标 准: GB/T 10193-1997、GB/T 10194-1997
生产厂/地址: 汕头市鸿志电子有限公司
广东省汕头市龙湖区浦江路6号3-4楼
生产厂编号: V004315
认 证 模 式: 第五种认证模式

主 任:

李怀林



中国质量认证中心

中国·北京·朝阳区芳草地西街15号 100020

<http://www.cqc.com.cn>

A 0011906



产品认证证书

证书编号: CQC04001010848

申请人: 汕头市鸿志电子有限公司

商 标: HEL

型号/名称: 20D(820K~182K) (压敏电压:82-1800V~; 允许偏差: K=±10%; 气候类别:40/085/21)
氧化锌压敏电阻器

标 准: GB/T 10193-1997、GB/T 10194-1997

生产厂/地址: 汕头市鸿志电子有限公司
广东省汕头市龙湖区浦江路6号3-4楼

生产厂编号: V004315

认证模式: 第五种认证模式

主 任:

李怀林



中国质量认证中心

中国·北京·朝阳区芳草地西街15号 100020

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A 0011910



产品认证证书

证书编号: CQC04001010846

申 请 人: 汕头市鸿志电子有限公司
商 标: HEL
型号/名称: 10D(820K~162K) (压敏电压:82-1600V~; 允
许偏差: K=±10%气候类别:40/085/21)
氧化锌压敏电阻器
标 准: GB/T 10193-1997、GB/T 10194-1997
生产厂/地址: 汕头市鸿志电子有限公司
广东省汕头市龙湖区浦江路6号3-4楼
生产厂编号: V004315
认 证 模 式: 第五种认证模式

主 任:

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产品认证证书

证书编号: CQC04001010847

申请人: 汕头市鸿志电子有限公司

商 标: HEL

型号/名称: 7D(820K~511K)压敏电压:82-510V~; 允许偏差: ±10%; 气候类别:40/085/21)
氧化锌压敏电阻器

标 准: GB/T 16193-1997、GB/T 10194-1997

生产厂/地址: 汕头市鸿志电子有限公司
广东省汕头市龙湖区浦江路6号3-4楼

生产厂编号: V004316

认证模式: 第五种认证模式

主任: 李怀林



中国质量认证中心

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A 0011907



XUHT2.E197799

Transient Voltage Surge Suppressors - Component

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Transient Voltage Surge Suppressors - Component

Guide Information

HONGZHI ENTERPRISES LTD.
6 LONGHU PUJIANG W RD
SHANTOU
GUANGDONG 515041, CHINA

E197799

Varistors, Cat. No. HEL05D followed by 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471; Cat. No. HEL07D followed by 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621; Cat. No. HEL10D followed by 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621, 681, 751, 821, 911, 102, 112, 182; Cat. No. HEL14D followed by 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621, 681, 751, 821, 911, 102, 112, 182; Cat. No. HEL20D followed by 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621, 681, 751, 821, 911, 102, 112, 182.

Model HEL-34S followed by 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621, 681, 751, 781, 821, 911, 951, 102, 122, 142, 162, 182, followed by K.

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Longhu Fujiang,
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Shangtou
Guangdong
CHINA

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is authorized to use for their product

Varistor
Varistor

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CECC 4201/A1, 1988
IEC 61051-1:1991
IEC 61051-2:1991
IEC 61051-2-2:1991

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Zertifizierungsstelle
Certification

Schüppa

Aktenzeichen: 5000238-4795-0001 / 25376

File ref.:

Ausweis-Nr. 40008621

Blatt 1

Lizenz-Nr.

Page

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Aktenzeichen / File ref.
5000238-4790-0001 / 25376 / F330 / BKA

Datum / Date
2003-12-01

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This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 40008621.

Varistor Varistor

| Typ(en) / Type(s) | Typstrom Class current | Max. Spitzenstrom Max. peak current | Max. Dauerspannung Max. continuous voltage |
|-----------------------------------|---------------------------|--|---|
| | 8/20 μ s | 1 time 8/20 μ s | |
| HEL-5D561K bis/to HEL-5D681K | 5 A | 400 A | AC 350 - 420 V DC 460 - 560 V |
| HEL-7D820K bis/to HEL-7D271K | 10 A | 1200 A | AC 50 - 175 V DC 65 - 225 V |
| HEL-7D331K bis/to HEL-7D751K | 10 A | 1200 A | AC 210 - 460 V DC 275 - 615 V |
| HEL-7D821K | 10 A | 1200 A | AC 510 V/DC 670 V |
| HEL-10D820K bis/to HEL-10D271K | 25 A | 2500 A | AC 50 - 175 V DC 65 - 225 V |
| HEL-10D331K bis/to HEL-10D751K | 25 A | 2500 A | AC 210 - 460 V DC 275 - 615 V |
| HEL-10D821K bis/to HEL-10D951K | 25 A | 2500 A | AC 510 - 670 V DC 575 - 765 V |
| HEL-14D820K bis/to HEL-14D271K | 50 A | 4000 A | AC 50 - 175 V DC 65 - 225 V |
| HEL-14D331K bis/to HEL-14D751K | 50 A | 4000 A | AC 210 - 460 V DC 275 - 615 V |
| HEL-14D821K bis/to HEL-14D951K | 50 A | 4000 A | AC 510 - 670 V DC 575 - 765 V |

Fortsetzung siehe Blatt 3 /
continued on page 3

VDE Testing and Certification Institute * Institut VDE d'Essais et de Certification

Metzgerstrasse 23, D-62083 Offenbach



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VDE Prüf- und Zertifizierungsinstitut Gutachten mit Fertigungsüberwachung

Ausweis-Nr. / Blatt /
Licence No. page
40008621 3

Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Licence holder
Hongzhi Enterprises Ltd., Longhu Pujiang Road No. 6, Shangtou, Guangdong, CHINA

Aktenzeichen / File ref.
5000238-4790-0001 / 25376 / F330 / BKA

Datum / Date
2003-12-01

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 40008621.
This supplement is only valid in conjunction with page 1 of the Certificate of Conformity with factory surveillance No. 40008621.

| Typen / Types: | Typstrom Class current | Max. Spitzenstrom Max. peak current | Max. Dauerspannung Max. continuous voltage |
|--|--|--|---|
| | 8/20 μ s | 1 time 8/20 μ s | |
| HEL-20D820K bis/to HEL-20D271K | 100 A | 6500 A | AC 50 - 175 V DC 85 - 225 V |
| HEL-20D331K bis/to HEL-20D751K | 100 A | 6500 A | AC 210 - 460 V DC 275 - 615 V |
| HEL-20D821K bis/to HEL-20D951K | 100 A | 6500 A | AC 510 - 670 V DC 575 - 765 V |
| Spannungsprüfung Voltage test | AC 2500 V | | |
| Klimakategorie Climatic category | 10/050/04 | | |
| Betriebstemperatur Operating temperature | -10°C bis/to +70°C (siehe Derating Kurve) (see derating curve) | | |
| Temperaturbeiwert der Spannung Temperature coefficient of voltage | max. -0,05% /k | | |
| Referenzspannung Voltage at reference current | I = 0,1 mA; I = 1,0 mA siehe Anlage Nr. 1 see Appendix No. 1 | | |
| Spannung bei Typstrom Voltage at class current | 8/20 μ s siehe Anlage Nr. 1 see Appendix No. 1 | | |

Fortsetzung siehe Blatt 4 /
continued on page 4

VDE Testing and Certification Institute * Institut VDE d'Essais et de Certification

Muster-Nr. 25, D-62360 Offenbach

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认证注册证书

本证书证实以下机构

汕头市鸿志电子有限公司

广东省汕头市浦红路6号

已通过中鉴认证有限责任公司的认证，其质量管理体系符合以下国际质量管理体系标准的要求：

ISO9001:2000

特此准予注册。任何时候，与认证有关的规则和条件均须被遵守
认证范围：

陶瓷电容、薄膜电容、NTC热敏电阻及压敏电阻的生产和服务

(涉及本证书范围和 GB/T19001-2000-ISO9001:2000 标准要求的适用性问题，可以通过向该组织咨询而得到进一步的澄清)

证书首次签发日期

2006年6月7日

证书更新日期

有效日期

2009年6月6日

证书编号：UKAS2006Q0333



中鉴认证有限责任公司



通过UKAS
UKAS认可提供
国际认可证书
和标准，请向
颁发证书的
机构。



0158

在认证有效期内，请向中鉴认证有限公司。

第一次符合标志
(贴花)

第二次符合标志
(贴花)

第三次符合标志
(贴花)

证书时效及适用性可向获证组织查询，或电话：020-87389002 网址：WWW.GZCC.CN 向认证机构查询。

Certificate of Compliance

Certificate: 1309525

Master Contract: 215101


Project: 1309525


Date Issued: July 4, 2002

Issued to: Hongzhi Enterprises Ltd.
1 Floor West
C1 Ind Building Da Bei Shan 2 Rd
Long Hu Industrial Zone
Shantou, Guangdong
CHINA
Attention: Mr. Sheng Lin

The products listed below are eligible to bear the CSA Mark shown



Issued by: 
Oliver Fall

Authorized by: 
Ray Fadavi, P.Eng., MBA
Operations Manager

PRODUCTS

CLASS 2221 01 - AUDIO AND VIDEO EQUIPMENT - Accessories and Parts for Electronic Equipment

Metal oxide varistors, for across-the-line use on systems up to 250V ac, catalogue numbers HEL05D, HEL07D, HEL10D, HEL14D, HEL20D:

HEL05D-: 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471 (5 mm dia.)

HEL07D-: 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621 (7 mm dia.)

HEL10D-: 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621, 681, 751, 821, 911, 102, 112, 182 (10 mm dia.)

HEL14D-: 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621, 681, 751, 821, 911, 102, 112, 182 (14 mm dia.)

HEL20D-: 820, 101, 121, 151, 181, 201, 221, 241, 271, 301, 331, 361, 391, 431, 471, 511, 561, 621, 681, 751, 821, 911, 102, 112, 182 (20 mm dia.)

Notes:

1. These varistors are Certified for use only as components of other Certified products where the suitability of the combination is to be determined by CSA International.
2. Fuse protection may be required in combustible enclosure, where the varistor is surge rated 6000A or less.
3. Values following catalogue numbers represent DC Varistor Voltage Rating coded as follows:
The first 2 digits represent the value and the last digit is the base 10 multiplier.

APPLICABLE REQUIREMENTS

CSA-C22.2 No. 1-98 - Audio, Video and Similar Electronic Equipment General Instruction No. 2
(Including Amendment 1)



中鉴认证有限责任公司

环境管理体系认证证书

NO: 00706E20186R0M

兹 证 明

汕头市鸿志电子有限公司

广东省汕头市浦江路 6 号

邮编: 515041

建立的环境管理体系符合标准:

GB/T24001-2004 idt ISO14001:2004

通过认证范围如下:

位于广东省汕头市浦江路 6 号的汕头市鸿志电子有限公司的陶瓷电容、薄膜电容、NTC 热敏电阻及压敏电阻的生产服务所涉及的活动及覆盖场所

颁证日期: 2006 年 6 月 28 日

本证书有效期自 2006 年 6 月 28 日始 (第 6-16-26 个月监督审核合格) 至 2009 年 6 月 27 日

第一次监督合格标志
(贴花)

第二次监督合格标志
(贴花)

第三次监督合格标志
(贴花)

公司代表 (签名)



认可注册号: CNAB007-E

证书时效及适用性可向获证组织查询, 或电话: 020-87369002 网址: WWW.GZCC.ORG.CN 向认证机构查询。