

File E41599  
Project 11CA14939

June 3, 2011

REPORT

On

COMPONENT - FUSES, SUPPLEMENTAL

SCHURTER AG  
LUZERN, SWITZERLAND

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## DESCRIPTION

## PRODUCT COVERED:

USR, CNR - Component, Supplemental Fuse, Cat. Nos. SHF 6.3 x 32, and SHT 6.3 x 32. See Ratings below.

## GENERAL:

These are supplemental fuses intended for use where branch circuit protection is not required.

These are 6.35 by 32 mm ceramic tube cartridge fuses.

Fuses SHT 6.3 x 32 rated 0.5-10 A and fuses type SHF 6.3 x 32 rated 1.0-10A may be provided with optional push-on pigtail assemblies.

These fuses are not current limiting.

Products designated USR have been investigated using requirements contained in UL 248-1 the Standard for Low-Voltage Fuses - Part 1: General Requirements and UL248-14, the Standard for Supplemental Fuses.

Products designated CNR have been investigated using requirements contained in C22.2.1-00 the Standard for Low-Voltage Fuses - Part 1: General Requirements and CSA C22.2 No. 248.14-00, the Standard for Supplemental Fuses.

Cat. No. may include additional suffix numbers (order codes). See Nomenclature below.

## NOMENCLATURE BREAKDOWN:

Type SHF 6.3 x 32 and SHT 6.3 x 32 may have the following suffixes  
(Order Codes):

| Order Code<br>SHF 6.3 x 32 | Order Code<br>SHT 6.3 x 32 | Ampere Rating |
|----------------------------|----------------------------|---------------|
| 8020.5060.xx               | -                          | 0.160 A       |
| 8020.5061.xx               | -                          | 0.200 A       |
| 8020.5062.xx               | -                          | 0.250 A       |
| 8020.5063.xx               | -                          | 0.315 A       |
| 8020.5064.xx               | -                          | 0.400 A       |
| 8020.5065.xx               | 8020.5008.xx               | 0.500 A       |
| 8020.5066.xx               | 8020.5009.xx               | 0.630 A       |
| 8020.5067.xx               | 8020.5010.xx               | 0.800 A       |
| 8020.5068.xx               | 8020.5011.xx               | 1.000 A       |
| 8020.5069.xx               | 8020.5012.xx               | 1.250 A       |
| 8020.5070.xx               | 8020.5013.xx               | 1.600 A       |
| 8020.5071.xx               | 8020.5014.xx               | 2.000 A       |
| 8020.5072.xx               | 8020.5015.xx               | 2.500 A       |
| 8020.5073.xx               | 8020.5016.xx               | 3.150 A       |
| 8020.5074.xx               | 8020.5017.xx               | 4.000 A       |
| 8020.5075.xx               | 8020.5018.xx               | 5.000 A       |
| 8020.5076.xx               | 8020.5019.xx               | 6.300 A       |
| 8020.5077.xx               | 8020.5020.xx               | 8.000 A       |
| 8020.5078.xx               | 8020.5021.xx               | 10.000 A      |
| 8020.5079.xx               | 8020.5022.xx               | 12.000 A      |
| 8020.5080.xx               | 8020.5023.xx               | 16.000 A      |
| 8020.5081.xx               | 8020.5024.xx               | 20.000 A      |
| 8020.5082.xx               | 8020.5025.xx               | 25.000 A      |
| 8020.5083.xx               | 8020.5026.xx               | 32.000 A      |

## RATINGS:

These fuses have been evaluated for the following Interrupting Ratings:

| Cat. No.   | Ampere Rating | Interrupting Ratings |          |              |        |          |             |
|------------|---------------|----------------------|----------|--------------|--------|----------|-------------|
|            |               | AC                   |          |              | DC     |          |             |
|            |               | Volts                | Amps     | Power Factor | Volts  | Amps     | Time Const. |
| SHF 6.3x32 | 0.16-0.8 A    | 500 AC               | 1,500 A  | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,500 A  | 70-80%       | 500 DC | 1,500 A  | <1 ms       |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |
|            |               | 500 AC               | 50,000 A | 30-40%       | -      | -        | -           |
| SHF 6.3x32 | 1.0-1.6 A     | 500 AC               | 1,500 A  | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,500 A  | 70-80%       | 500 DC | 1,500 A  | <1 ms       |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |
| SHF 6.3x32 | 2.0-16A       | 500 AC               | 1,500 A  | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,500 A  | 70-80%       | 400 DC | 1,500 A  | <1 ms       |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |
| SHF 6.3x32 | 20-25A        | 440 AC               | 1,500    | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,500 A  | 70-80%       | -      | -        | -           |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |
| SHF 6.3x32 | 32A           | 440 AC               | 1,500    | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,500 A  | 70-80%       | -      | -        | -           |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |
| SHT 6.3x32 | 0.5-4 A       | 500 AC               | 1,500 A  | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,500 A  | 70-80%       | 400 DC | 1,500 A  | <1 ms       |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |
| SHT 6.3x32 | 5-8A          | 500 AC               | 1,500 A  | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 3,500 A  | 70-80%       | 400 DC | 1,000 A  | <1 ms       |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |

| Cat. No.   | Ampere Rating | Interrupting Ratings |          |              |        |          |             |
|------------|---------------|----------------------|----------|--------------|--------|----------|-------------|
|            |               | AC                   |          |              | DC     |          |             |
|            |               | Volts                | Amps     | Power Factor | Volts  | Amps     | Time Const. |
| SHT 6.3x32 | 10 A          | 500 AC               | 1,500 A  | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,500 A  | 70-80%       | 400 DC | 1,000 A  | <1 ms       |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |
| SHT 6.3x32 | 12.5-16 A     | 400 AC               | 1,500 A  | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,000 A  | 70-80%       | 400 DC | 1,000 A  | <1 ms       |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |
| SHT 6.3x32 | 20-32 A       | 400 AC               | 1,500 A  | 99-100%      | 63 DC  | 20,000 A | <1 ms       |
|            |               | 250 AC               | 1,000 A  | 70-80%       | -      | -        | -           |
|            |               | 125 AC               | 10,000 A | 70-80%       | -      | -        | -           |

## ELECTRICAL CHARACTERISTICS:

These fuses have the following clearing time characteristics:

| Type       | Ampere Ratings | Time Delay (Y/N) | Test Current (% of rating) | Clearing Time Limits |
|------------|----------------|------------------|----------------------------|----------------------|
| SHF 6.3x32 | 0.16-0.8 A     | N                | 150%                       | 1 hour minimum       |
|            |                |                  | 210%                       | 30 minutes maximum   |
|            |                |                  | 275%                       | 0.02-1.5 seconds     |
|            |                |                  | 400%                       | 0.008-0.4 second     |
|            |                |                  | 1000%                      | 0.02 seconds maximum |
| SHF 6.3x32 | 1.0-8.0 A      | N                | 150%                       | 1 hour minimum       |
|            |                |                  | 210%                       | 30 minutes maximum   |
|            |                |                  | 275%                       | 0.02-5 seconds       |
|            |                |                  | 400%                       | 0.008-1 second       |
|            |                |                  | 1000%                      | 0.05 seconds maximum |
| SHF 6.3x32 | 10-32 A        | N                | 100%                       | 4 hours minimum      |
|            |                |                  | 210%                       | 30 minutes maximum   |
|            |                |                  | 275%                       | 0.1-5 seconds        |
|            |                |                  | 400%                       | 0.02-1 second        |
|            |                |                  | 1000%                      | 0.05 seconds maximum |
| SHT 6.3x32 | 0.5-10.0 A     | N                | 150%                       | 1 hour minimum       |
|            |                |                  | 210%                       | 30 minutes maximum   |
|            |                |                  | 275%                       | 0.4-80 seconds       |
|            |                |                  | 400%                       | 0.095-5 second       |
|            |                |                  | 1000%                      | 0.01-0.30 seconds    |
| SHT 6.3x32 | 12.5-32 A      | N                | 210%                       | 30 minutes maximum   |
|            |                |                  | 275%                       | 0.4-80 seconds       |
|            |                |                  | 400%                       | 0.095-5 second       |
|            |                |                  | 1000%                      | 0.01-0.30 seconds    |

## FOLLOW-UP TESTS:

See Appendix A-D of File E41599, Vol. 2 and Vol. 4.

## MARKING:

\* Manufacturers name or trademark, and ampere rating Electrical ratings, Type or Cat. No. shall be marked on fuse or smallest package.

## TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Fuses covered by this Report are intended for supplementary overcurrent protection where branch circuit or equivalent applications are not involved.

Use - For use only in equipment where the acceptability of the combination has been determined by Underwriters Laboratories Inc.

## Conditions of Acceptability -

The above restrictions apply due to the following variations from the Standard for Supplemental Fuses, UL 248-14, Second Edition.

The above restrictions apply due to the following variations from the Standard for Supplemental Fuses, CSA C22.2 No. 248.14-00.

1. Interrupting ratings are less than required by UL 248-14.
2. At 100% of ampere rating, operating temperatures may exceed the 75°C max rise specified by UL 248. Consideration should be given to checking temperatures in end-use application with regard to thermal index of surrounding materials and components.
3. AC Interrupting ability tests were conducted with a power factor of 99-100%. DC Interrupting ability tests were conducted with a time constant of less than 1 ms.