

# Fuse Systems

## DIAZED fuse systems, 5SA, 5SB, 5SC, 5SD

### Overview

The DIAZED fuse system is one of the oldest fuse systems in the world. It was developed by Siemens as far back as 1906. It is still the standard fuse system in many countries to this day. It is particularly widely used in the harsh environments of industrial applications.

The series is available with rated voltages from 500 A to 750 V.

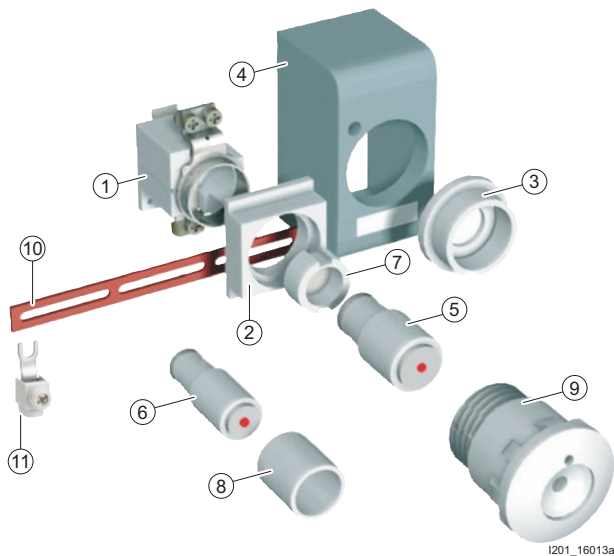
All DIAZED bases must be fed from the bottom to ensure an insulated threaded ring when the fuse link is being removed. Reliable contact of the fuse links is only ensured when used together with DIAZED screw adapters.

The terminals of the DIAZED bases are available in different versions and designs to support the various installation methods.

The high-performing EZR bus-mounting system for screw fixing is an outstanding feature. The busbars, which are particularly suited for bus-mounting bases, have a load capacity of up to 150 A with lateral infeed.

DIAZED stands for **D**iametral gestuftes **z**weiteiliges Sicherungssystem mit **E**disongewinde (diametral two-step fuse system with Edison screw).

### Benefits



DIAZED fuse systems are a result of a well-designed modular system which enables the components to be combined in any way to meet the various requirements and to facilitate different installation methods.

- ① DIAZED bases
- ② DIAZED covers
- ③ DIAZED cover rings
- ④ DIAZED caps
- ⑤ DIAZED fuse links, DII
- ⑥ DIAZED fuse links, NDz
- ⑦ DIAZED screw adapters
- ⑧ DIAZED adapter sleeves
- ⑨ DIAZED screw caps
- ⑩ Busbars, oblong hole, single-phase
- ⑪ Terminal, fork-type terminal, non-insulated

### Technical specifications

|                                       |                                 | 5SA, 5SB, 5SC, 5SD                                |  |
|---------------------------------------|---------------------------------|---------------------------------------------------|--|
| <b>Standards</b>                      |                                 | IEC 60269-3; DIN VDE 0635; DIN VDE 0636-3; CEE 16 |  |
| <b>Operational class</b>              | Acc. to IEC 60269; DIN VDE 0636 | gG                                                |  |
| <b>Characteristic</b>                 | Acc. to DIN VDE 0635            | Slow and quick                                    |  |
| <b>Rated voltage <math>U_n</math></b> | V AC                            | 500, 690, 750                                     |  |
|                                       | V DC                            | 500, 600, 750                                     |  |
| <b>Rated current <math>I_n</math></b> | A                               | 2 ... 100                                         |  |
| <b>Rated breaking capacity</b>        | kA AC                           | 50, 40 at E16                                     |  |
|                                       | kA DC                           | 8, 1.6 at E16                                     |  |
| <b>Mounting position</b>              |                                 | Any, but preferably vertical                      |  |
| <b>Non-interchangeability</b>         |                                 | Using screw adapter or adapter sleeves            |  |
| <b>Degree of protection</b>           | Acc. to IEC 60529               | IP20, with connected conductors                   |  |
| <b>Resistance to climate</b>          | °C                              | Up to 45, at 95 % rel. humidity                   |  |
| <b>Ambient temperature</b>            | °C                              | -5 ... +40, humidity 90 % at 20                   |  |

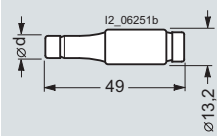
  

|                                 |                 | Terminal version |      |     |     |      |      |     |     |
|---------------------------------|-----------------|------------------|------|-----|-----|------|------|-----|-----|
|                                 |                 | B                |      | K   |     | S    |      | R   |     |
| Size                            |                 | DII              | DIII | NDz | DII | DIII | DIII | DIV | DII |
| <b>Conductor cross-sections</b> |                 |                  |      |     |     |      |      |     |     |
| • Rigid, min.                   | mm <sup>2</sup> | 1.5              | 2.5  | 1.0 | 1.5 | 2.5  | 2.5  | 10  | 1.5 |
| • Rigid, max.                   | mm <sup>2</sup> | 10               | 25   | 6   | 10  | 25   | 25   | 50  | 35  |
| • Flexible, with end sleeve     | mm <sup>2</sup> | 10               | 25   | 6   | 10  | 25   | 25   | 50  | 35  |
| <b>Tightening torques</b>       |                 |                  |      |     |     |      |      |     |     |
| • Screw M4                      | Nm              | 1.2              |      |     |     |      |      |     | --  |
| • Screw M5                      | Nm              | 2.0              |      |     |     |      |      |     | --  |
| • Screw M6                      | Nm              | 2.5              |      |     |     |      |      |     | 4   |
| • Screw M8                      | Nm              | 3.5              |      |     |     |      |      |     | --  |

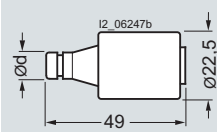
## Dimensional drawings

## DIAZED fuse links

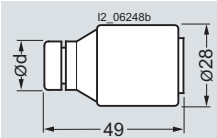
5SA1, 5SA2



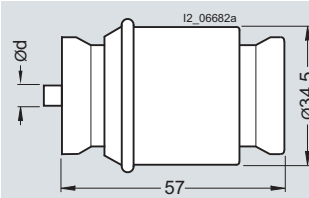
5SB1, 5SB2



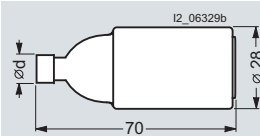
5SB3, 5SB4



5SC1, 5SC2



5SD6, 5SD8



| Size/thread        | TNDz/E16, NDz/E16 |   |   |    |    |    |    |
|--------------------|-------------------|---|---|----|----|----|----|
| Rated current in A | 2                 | 4 | 6 | 10 | 16 | 20 | 25 |
| Dimension d        | 6                 | 6 | 6 | 8  | 10 | 12 | 14 |

| Size/thread        | DII/E27 |   |   |    |    |    |    |
|--------------------|---------|---|---|----|----|----|----|
| Rated current in A | 2       | 4 | 6 | 10 | 16 | 20 | 25 |
| Dimension d        | 6       | 6 | 6 | 8  | 10 | 12 | 14 |

| Size/thread        | DIII/E33 |    |    |    |
|--------------------|----------|----|----|----|
| Rated current in A | 32       | 35 | 50 | 63 |
| Dimension d        | 16       | 16 | 18 | 20 |

| Size/thread        | DIV/R1¼" |     |
|--------------------|----------|-----|
| Rated current in A | 80       | 100 |
| Dimension d        | 5        | 7   |

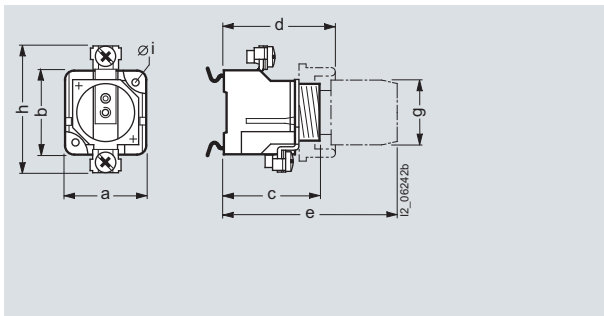
| Size/thread        | DIII/E33 |   |   |    |    |    |    |    |    |    |
|--------------------|----------|---|---|----|----|----|----|----|----|----|
| Rated current in A | 2        | 4 | 6 | 10 | 16 | 20 | 25 | 35 | 50 | 63 |
| Dimension d        | 6        | 6 | 6 | 8  | 10 | 12 | 14 | 16 | 18 | 20 |

# Fuse Systems

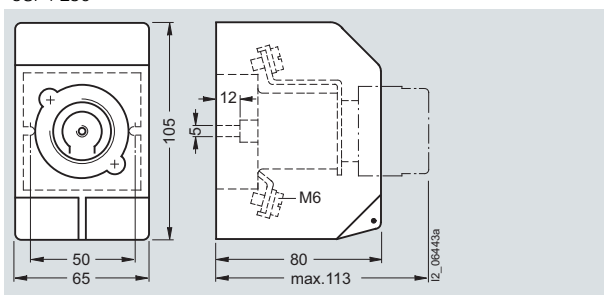
## DIAZED fuse systems, 5SA, 5SB, 5SC, 5SD

### DIAZED fuse bases made of ceramic

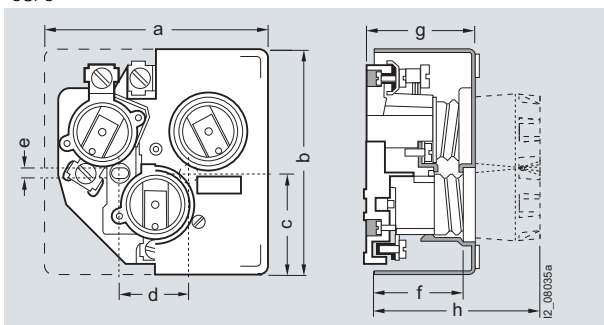
5SF1



5SF4 230



5SF5

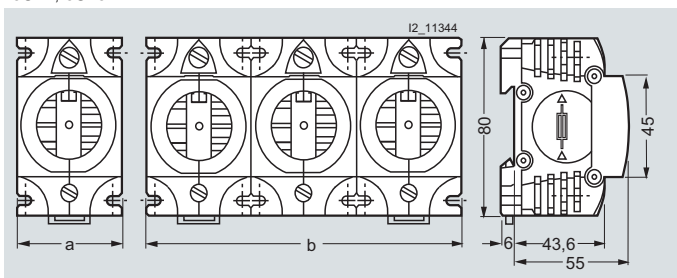


| Version   | Connection type | Dimensions |    |      |    |     |    |     |     |
|-----------|-----------------|------------|----|------|----|-----|----|-----|-----|
| Type      |                 | a          | b  | c    | d  | e   | Øg | h   | Øi  |
| NDz/25 A  |                 |            |    |      |    |     |    |     |     |
| 5SF1 012  | KK              | 29         | 49 | 44.6 | 55 | 75  | 32 | 49  | --  |
| 5SF1 01   | KK              | 29         | 49 | 44.6 | 55 | 75  | 32 | 49  | 4.2 |
| DII/25 A  |                 |            |    |      |    |     |    |     |     |
| 5SF1 005  | BB              | 38.4       | 41 | 46.6 | 53 | 83  | 34 | 63  | --  |
| 5SF1 024  | BB              | 38.4       | 41 | 46.6 | 53 | 83  | 34 | 63  | 4.3 |
| DIII/63 A |                 |            |    |      |    |     |    |     |     |
| 5SF1 205  | BS              | 45.5       | 46 | 47   | 54 | 83  | 43 | 78  | --  |
| 5SF1 215  | SS              | 45.5       | 46 | 47   | 54 | 83  | 43 | 78  | --  |
| 5SF1 224  | BS              | 45.5       | 46 | 47   | 54 | 83  | 43 | 78  | 4.3 |
| 5SF1 214  | SS              | 45.5       | 46 | 47   | 54 | 83  | 43 | 78  | 4.3 |
| DIV/100 A |                 |            |    |      |    |     |    |     |     |
| 5SF1 401  | Flat terminal   | 68         | 68 | --   | 79 | 110 | 65 | 116 | 6.5 |

| Version       | Connection type | Dimensions |     |    |    |     |    |    |    |
|---------------|-----------------|------------|-----|----|----|-----|----|----|----|
| Type          |                 | a          | b   | c  | d  | e   | f  | g  | h  |
| DII/3 × 25 A  |                 |            |     |    |    |     |    |    |    |
| 5SF5 067      | BB              | 106        | 106 | 48 | -- | --  | 45 | 52 | 86 |
| 5SF5 066      | KB              | 106        | 106 | 48 | 32 | 5.2 | 45 | 52 | 86 |
| DIII/3 × 63 A |                 |            |     |    |    |     |    |    |    |
| 5SF5 237      | BB              | 127        | 130 | 54 | -- | --  | 45 | 52 | 85 |
| 5SF5 236      | KB              | 127        | 130 | 54 | 32 | 5.2 | 45 | 52 | 85 |

### DIAZED fuse bases made of molded plastic

5SF1, 5SF5

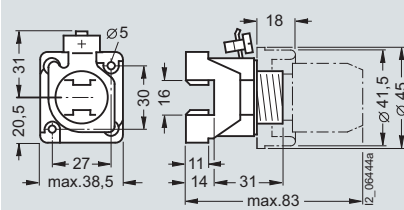


| Type     | Dimensions |     |
|----------|------------|-----|
|          | a          | b   |
| 5SF1 060 | 40         | --  |
| 5SF1 260 | 50         | --  |
| 5SF5 068 | --         | 120 |
| 5SF5 268 | --         | 150 |

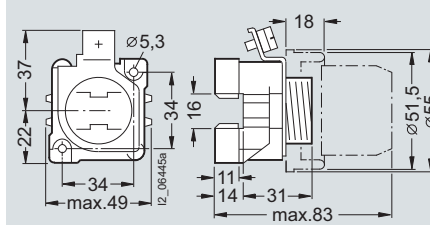
DIAZED fuse systems,  
5SA, 5SB, 5SC, 5SD

## DIAZED EZR bus-mounting bases

5SF6 005



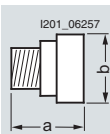
5SF6 205



## DIAZED screw caps/cover rings made of molded plastic/ceramic

## Screw caps

5SH1



## Cover rings

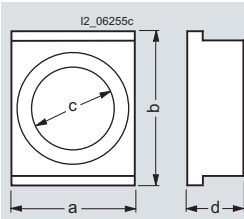
5SH3



| Size/thread | Screw caps |                 |    | Cover rings |      |      |
|-------------|------------|-----------------|----|-------------|------|------|
|             | Type       | Dimensions<br>a | Øb | Type        | a    | Øb   |
| NDz/E16     | 5SH1 112   | 36              | 24 |             |      |      |
|             | 5SH1 221   | 42              | 33 | 5SH3 401    | 17.5 | 39.5 |
|             | 5SH1 12    | 45.5            | 34 | 5SH3 32     | 17.5 | 41.5 |
| DII/E27     | 5SH1 22    | 43              | 39 |             |      |      |
|             | 5SH1 231   | 42              | 40 | 5SH3 411    | 17.5 | 49.5 |
|             | 5SH1 13    | 45.5            | 43 | 5SH3 34     | 19   | 51.5 |
|             | 5SH1 23    | 47              | 45 |             |      |      |
|             | 5SH1 161   | 48              | 48 |             |      |      |
| DIV/R1¼"    | 5SH1 170   | 68              | 43 |             |      |      |
|             | 5SH1 141   | 53              | 65 |             |      |      |

## DIAZED cover made of molded plastic

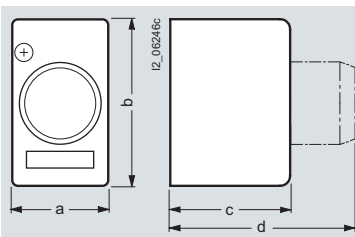
5SH2



| Size/thread | Type     | Dimensions |    |      |      |
|-------------|----------|------------|----|------|------|
|             |          | a          | b  | Øc   | d    |
| DII/E27     | 5SH2 032 | 41         | 51 | 27.5 | 19   |
| DIII/E33    | 5SH2 232 | 52         | 51 | 34.5 | 18.5 |

## DIAZED caps made of molded plastic

5SH2



| Size/thread | Type    | Dimensions       |                  |                  |                  |
|-------------|---------|------------------|------------------|------------------|------------------|
|             |         | a <sub>max</sub> | b <sub>max</sub> | c <sub>max</sub> | d <sub>max</sub> |
| NDz/E16     | 5SH2 01 | 33               | 68               | 51.7             | 75               |
| DII/E27     | 5SH2 02 | 43               | 74.7             | 53.6             | 83               |
| DIII/E33    | 5SH2 22 | 51               | 90.5             | 53.6             | 83               |

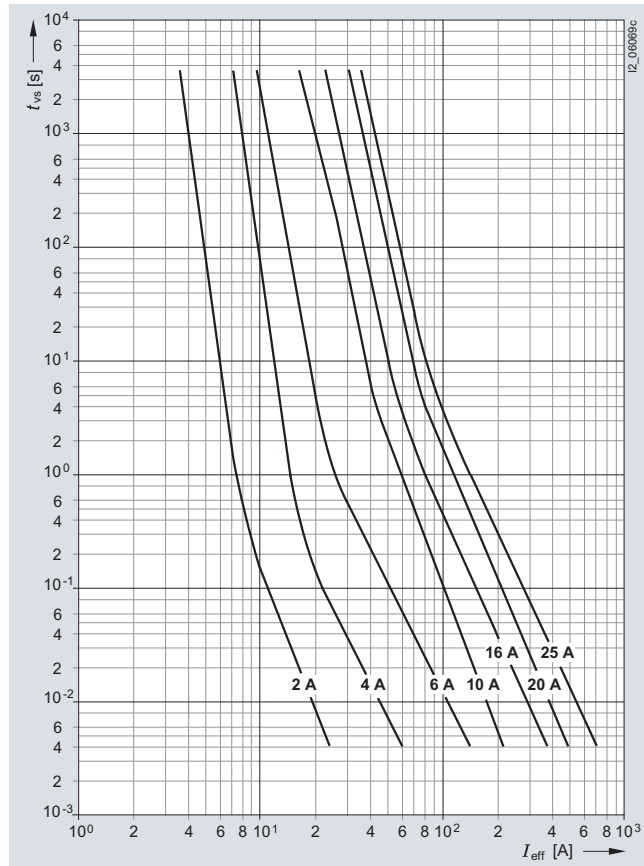
## DIAZED fuse systems, 5SA, 5SB, 5SC, 5SD

### Characteristic curves

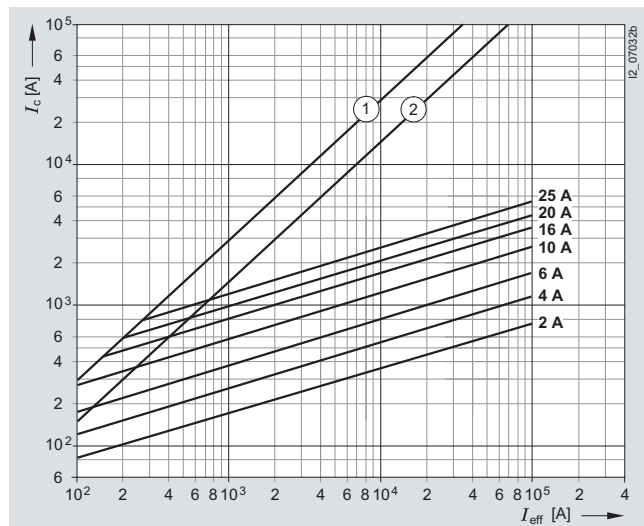
#### Series 5SA2

Size: E16  
Characteristic: slow  
Rated voltage: 500 V AC/500 V DC  
Rated current: 2 ... 25 A

#### Time/current characteristics diagram

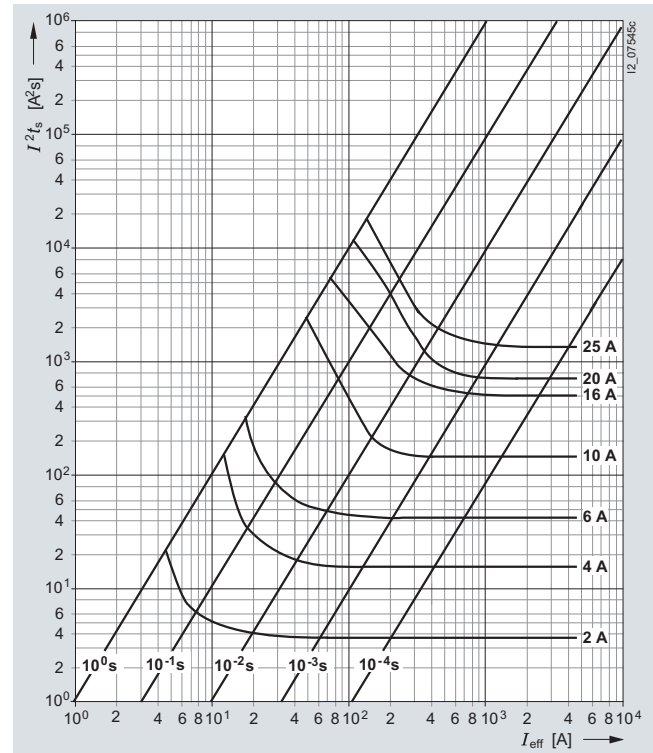


#### Current limitation diagram



- ① Peak short-circuit current with largest DC component  
② Peak short-circuit current without DC component

#### Melting $I^2t$ values diagram

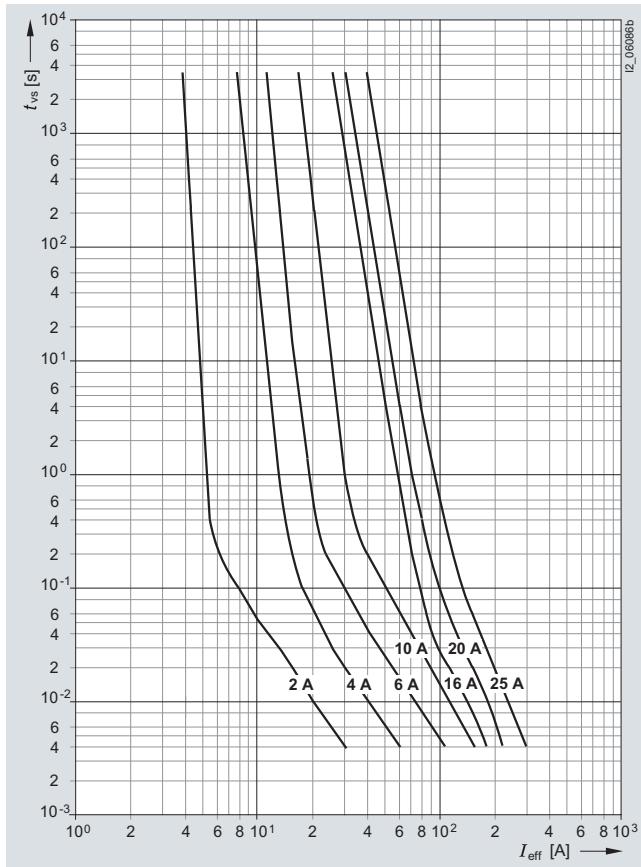
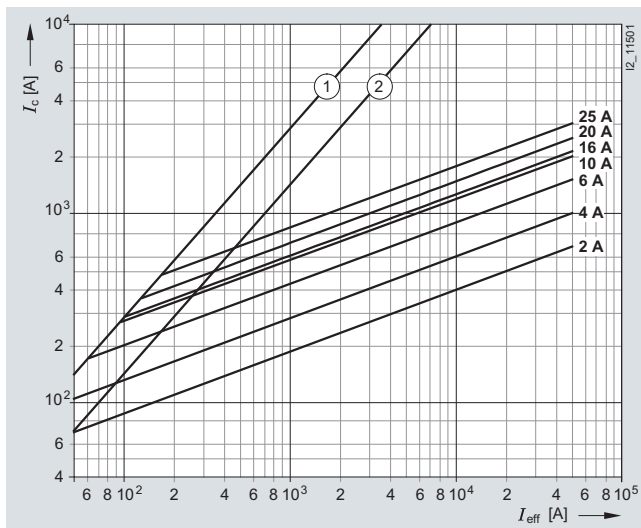


| Type    | $I_n$<br>A | $P_v$<br>W | $\Delta\theta$<br>K | $I^2t_s$<br>1 ms<br>A <sup>2</sup> s | 4 ms<br>A <sup>2</sup> s |
|---------|------------|------------|---------------------|--------------------------------------|--------------------------|
| 5SA2 11 | 2          | 0.85       | 15                  | 1.2                                  | 2.3                      |
| 5SA2 21 | 4          | 1.3        | 17                  | 8.5                                  | 13                       |
| 5SA2 31 | 6          | 1.9        | 14                  | 40                                   | 80                       |
| 5SA2 51 | 10         | 1.4        | 17                  | 200                                  | 190                      |
| 5SA2 61 | 16         | 2.4        | 30                  | 290                                  | 550                      |
| 5SA2 71 | 20         | 2.6        | 36                  | 470                                  | 1990                     |
| 5SA2 81 | 25         | 3.4        | 34                  | 1000                                 | 2090                     |

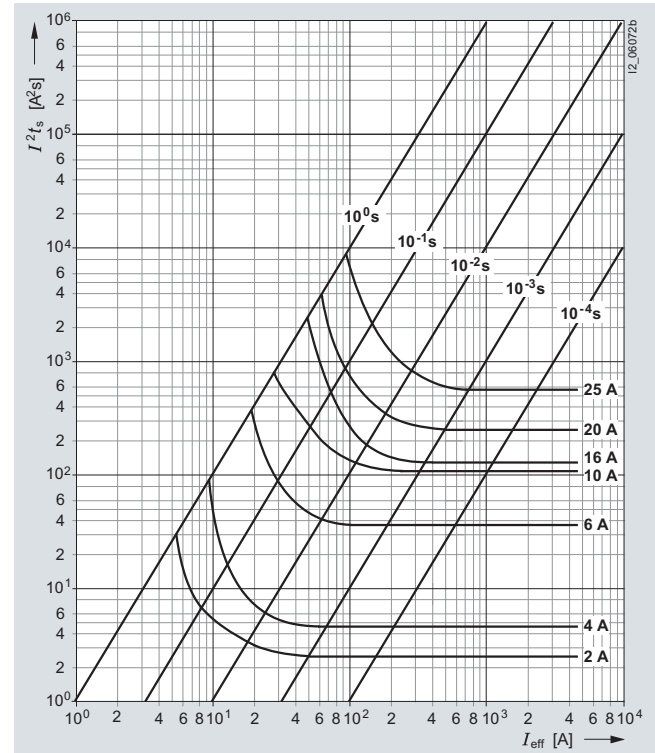
| Type    | $I^2t_a$<br>230 V AC<br>A <sup>2</sup> s | 320 V AC<br>A <sup>2</sup> s | 500 V AC<br>A <sup>2</sup> s |
|---------|------------------------------------------|------------------------------|------------------------------|
| 5SA2 11 | 6.6                                      | 7.8                          | 0.7                          |
| 5SA2 21 | 22                                       | 26                           | 34                           |
| 5SA2 31 | 66                                       | 76                           | 100                          |
| 5SA2 51 | 240                                      | 270                          | 340                          |
| 5SA2 61 | 890                                      | 950                          | 1090                         |
| 5SA2 71 | 1200                                     | 1350                         | 1620                         |
| 5SA2 81 | 2400                                     | 2600                         | 3450                         |

**Series 5SA1**

Size: E16  
 Characteristic: quick  
 Rated voltage: 500 V AC/500 V DC  
 Rated current: 2 ... 25 A

**Time/current characteristics diagram****Current limitation diagram**

- ① Peak short-circuit current with largest DC component  
 ② Peak short-circuit current without DC component

**Melting  $I^2t$  values diagram**

| Type    | $I_n$<br>A | $P_v$<br>W |
|---------|------------|------------|
| 5SA1 11 | 2          | 1.5        |
| 5SA1 21 | 4          | 1.9        |
| 5SA1 31 | 6          | 2.7        |
| 5SA1 51 | 10         | 3.4        |
| 5SA1 61 | 16         | 3.7        |
| 5SA1 71 | 20         | 4.4        |
| 5SA1 81 | 25         | 4.9        |

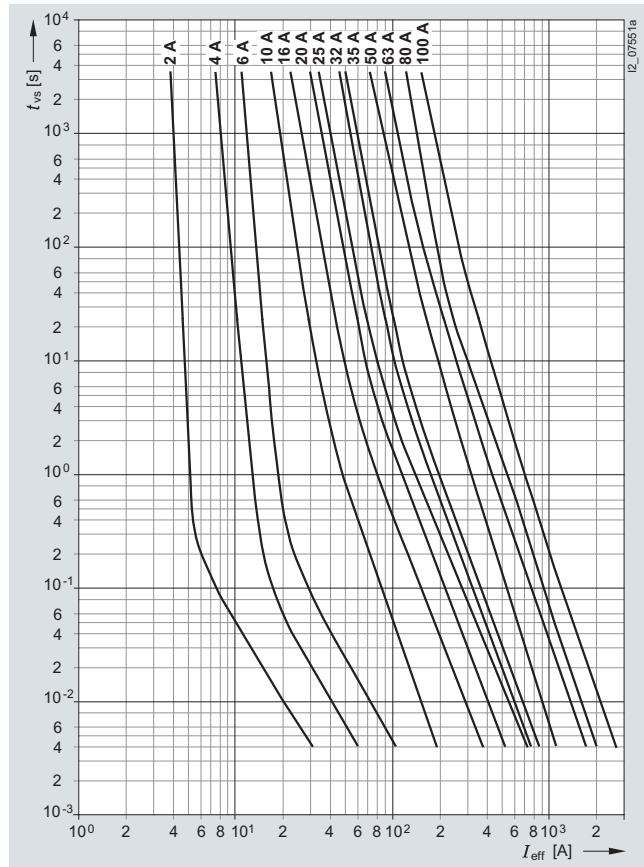
# Fuse Systems

## DIAZED fuse systems, 5SA, 5SB, 5SC, 5SD

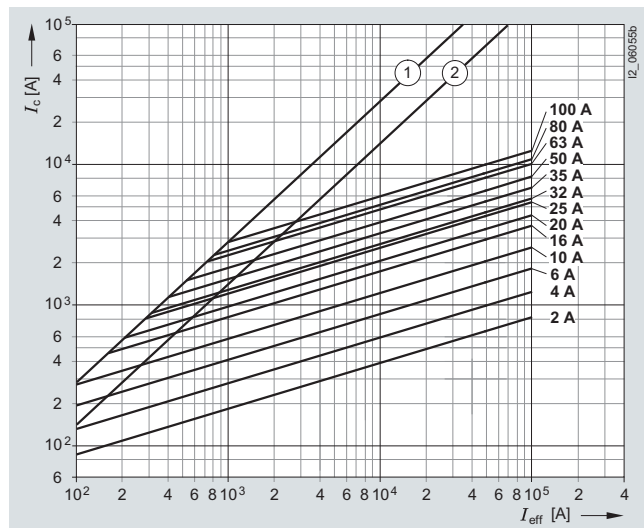
### Series 5SB2, 5SB4, 5SC2

Size: DII, DIII, DIV  
Operational class: gG  
Rated voltage: 500 V AC/500 V DC  
Rated current: 2 ... 100 A

#### Time/current characteristics diagram

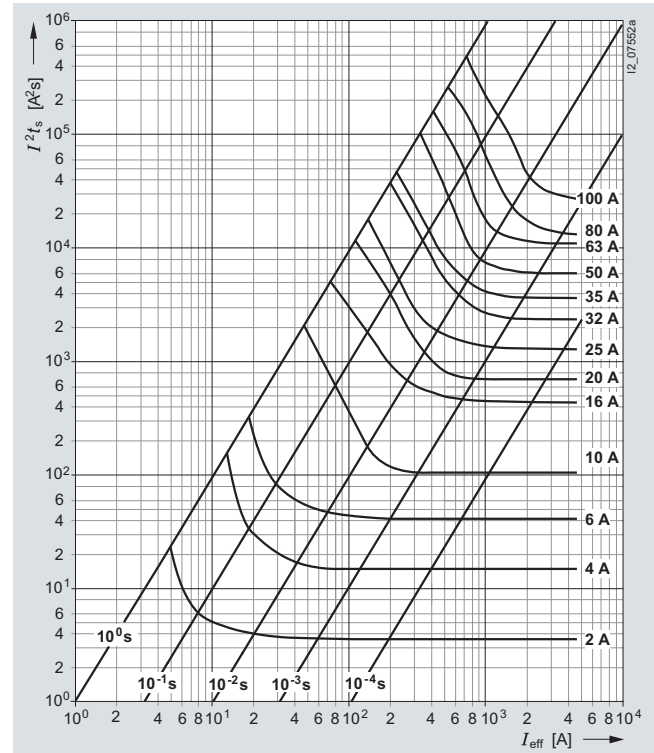


#### Current limitation diagram



- ① Peak short-circuit current with largest DC component  
② Peak short-circuit current without DC component

#### Melting $I^2t$ values diagram



| Type     | $I_n$ | $P_v$ | $\Delta\theta$ | $I^2t_s$                 |                          |
|----------|-------|-------|----------------|--------------------------|--------------------------|
|          | A     | W     | K              | 1 ms<br>A <sup>2</sup> s | 4 ms<br>A <sup>2</sup> s |
| 5SB2 11  | 2     | 2.6   | 15             | 3.7                      | 3.9                      |
| 5SB2 21  | 4     | 2.0   | 13             | 15                       | 16                       |
| 5SB2 31  | 6     | 2.2   | 14             | 42                       | 45                       |
| 5SB2 51  | 10    | 1.6   | 20             | 120                      | 140                      |
| 5SB2 61  | 16    | 2.4   | 23             | 500                      | 580                      |
| 5SB2 71  | 20    | 2.6   | 26             | 750                      | 1100                     |
| 5SB2 81  | 25    | 3.4   | 38             | 1600                     | 2000                     |
| 5SB4 010 | 32    | 3.6   | 23             | 2300                     | 2500                     |
| 5SB4 11  | 35    | 3.7   | 25             | 3450                     | 3000                     |
| 5SB4 21  | 50    | 5.7   | 41             | 6500                     | 5200                     |
| 5SB4 31  | 63    | 6.9   | 48             | 11000                    | 12000                    |
| 5SC2 11  | 80    | 7.5   | 33             | 14600                    | 16400                    |
| 5SC2 21  | 100   | 8.8   | 46             | 28600                    | 30000                    |

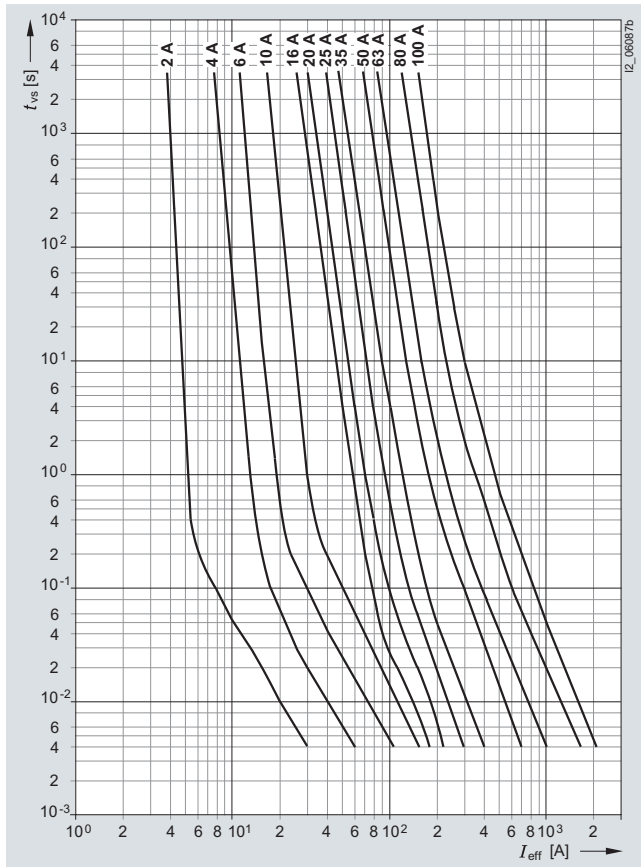
| Type     | $I^2t_a$                     |                              |                              |
|----------|------------------------------|------------------------------|------------------------------|
|          | 230 V AC<br>A <sup>2</sup> s | 320 V AC<br>A <sup>2</sup> s | 500 V AC<br>A <sup>2</sup> s |
| 5SB2 11  | 6.6                          | 8.8                          | 10.7                         |
| 5SB2 21  | 22                           | 28                           | 34                           |
| 5SB2 31  | 66                           | 85                           | 100                          |
| 5SB2 51  | 240                          | 300                          | 340                          |
| 5SB2 61  | 890                          | 1060                         | 1090                         |
| 5SB2 71  | 1200                         | 1450                         | 1620                         |
| 5SB2 81  | 2400                         | 3150                         | 3450                         |
| 5SB4 010 | 3450                         | 4150                         | 4850                         |
| 5SB4 11  | 5200                         | 6200                         | 7200                         |
| 5SB4 21  | 9750                         | 12350                        | 14500                        |
| 5SB4 31  | 16500                        | 22200                        | 26500                        |
| 5SC2 11  | 23000                        | 28500                        | 32500                        |
| 5SC2 21  | 44000                        | 56000                        | 65000                        |

# DIAZED fuse systems, 5SA, 5SB, 5SC, 5SD

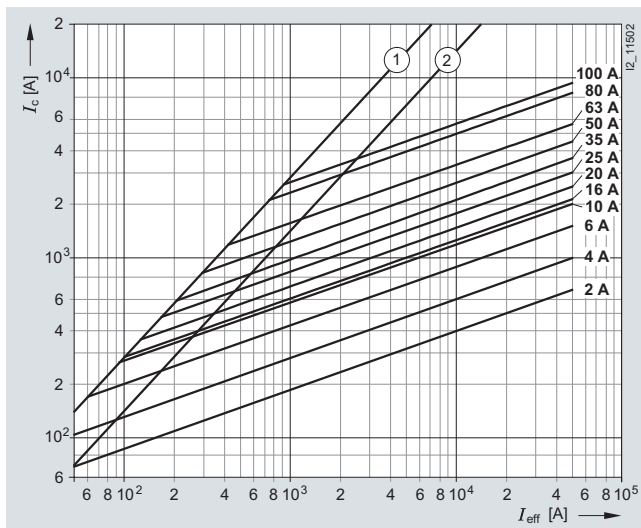
## Series 5SB1, 5SB3, 5SC1

Size: DII, DIII, DIV  
 Operational class: quick  
 Rated voltage: 500 V AC/500 V DC  
 Rated current: 2 ... 100 A

### Time/current characteristics diagram

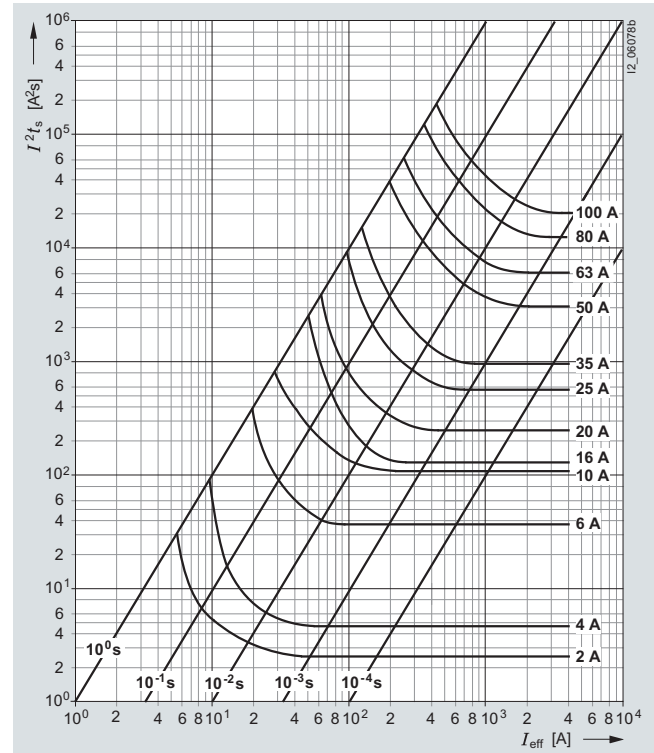


### Current limitation diagram



- ① Peak short-circuit current with largest DC component  
 ② Peak short-circuit current without DC component

### Melting $I^2t$ values diagram



| Type             | $I_n$<br>A | $P_v$<br>W | $\Delta\theta$<br>K | $I^2t_s$<br>4 ms<br>A <sup>2</sup> s | $I^2t_a$<br>500 V AC<br>A <sup>2</sup> s |
|------------------|------------|------------|---------------------|--------------------------------------|------------------------------------------|
| 5SB1 11          | 2          | 1.5        | 3                   | 2.5                                  | 5                                        |
| 5SB1 21          | 4          | 1.9        | 13                  | 15.6                                 | 31.2                                     |
| 5SB1 31          | 6          | 2.7        | 18                  | 36                                   | 72                                       |
| 5SB1 41, 5SB1 51 | 10         | 3.4        | 23                  | 102                                  | 204                                      |
| 5SB1 61          | 16         | 3.7        | 24                  | 130                                  | 260                                      |
| 5SB1 71          | 20         | 4.4        | 31                  | 185                                  | 370                                      |
| 5SB1 81          | 25         | 4.9        | 34                  | 250                                  | 500                                      |
| 5SB3 11          | 35         | 8.3        | 39                  | 640                                  | 1280                                     |
| 5SB3 21          | 50         | 9.9        | 49                  | 1960                                 | 3920                                     |
| 5SB3 31          | 63         | 12.8       | 63                  | 3880                                 | 7760                                     |
| 5SC1 11          | 80         | 12.7       | 45                  | 10890                                | 21780                                    |
| 5SC1 21          | 100        | 15.4       | 55                  | 17400                                | 34800                                    |

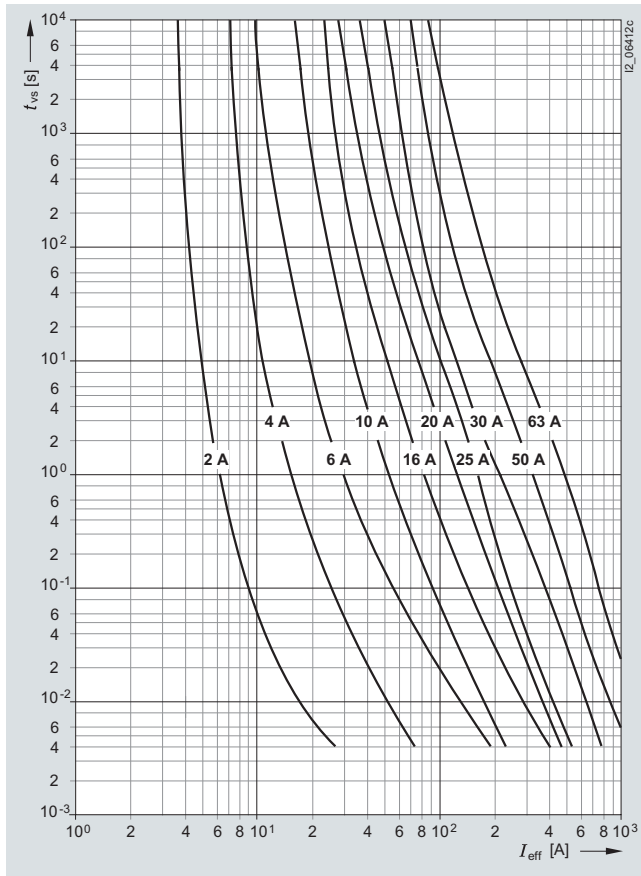
# Fuse Systems

## DIAZED fuse systems, 5SA, 5SB, 5SC, 5SD

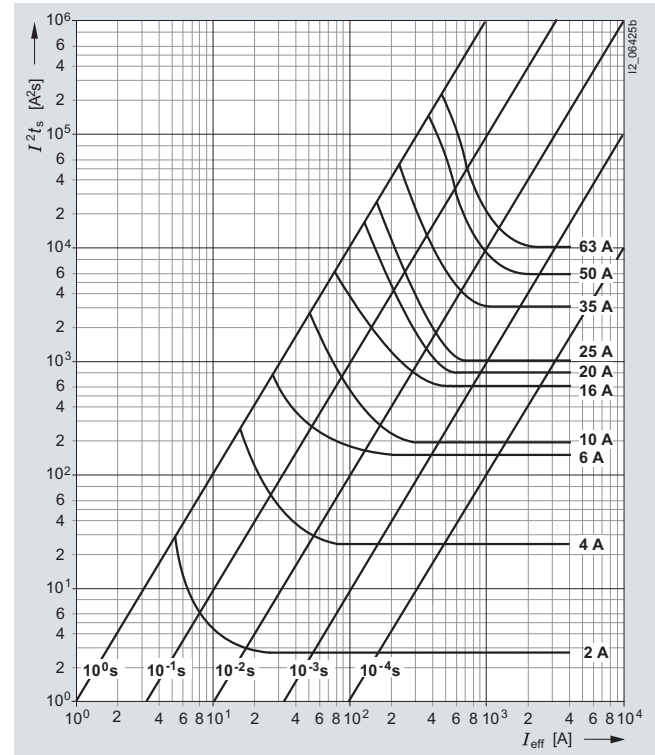
### Series 5SD8

Size: DIII  
Operational class: gG  
Rated voltage: 690 V AC/600 V DC  
Rated current: 2 ... 63 A

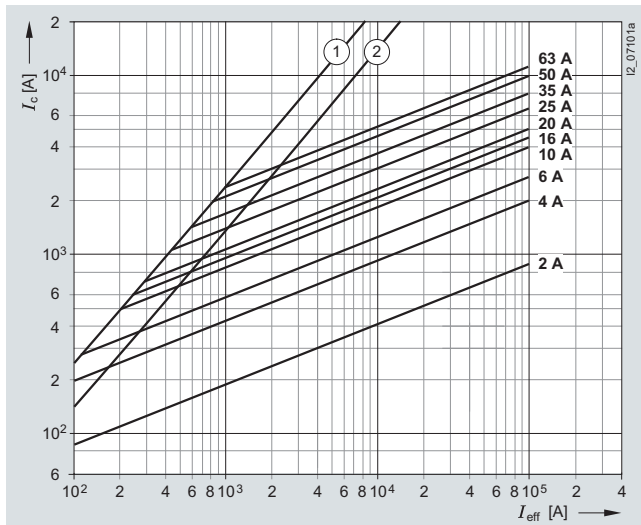
#### Time/current characteristics diagram



#### Melting $I^2t$ values diagram



#### Current limitation diagram

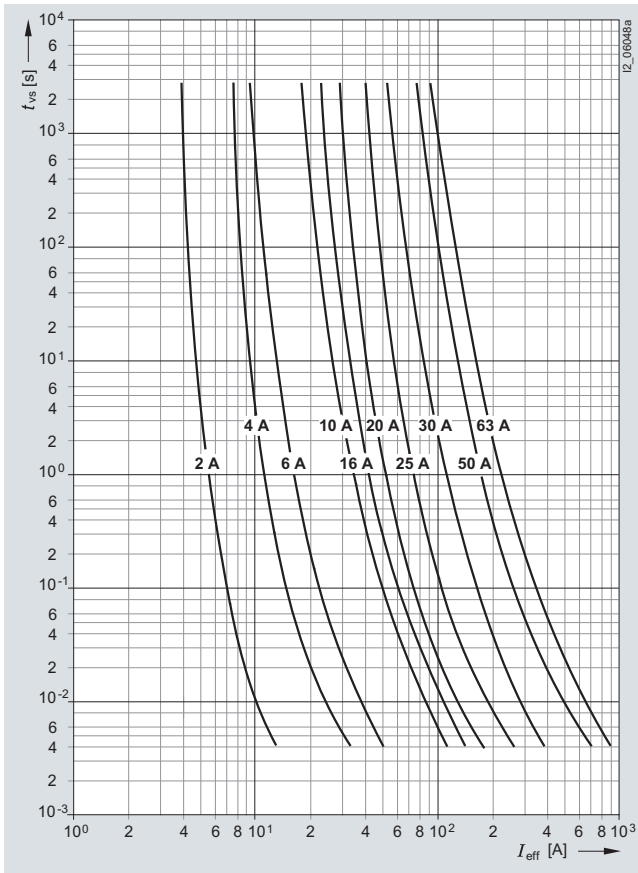
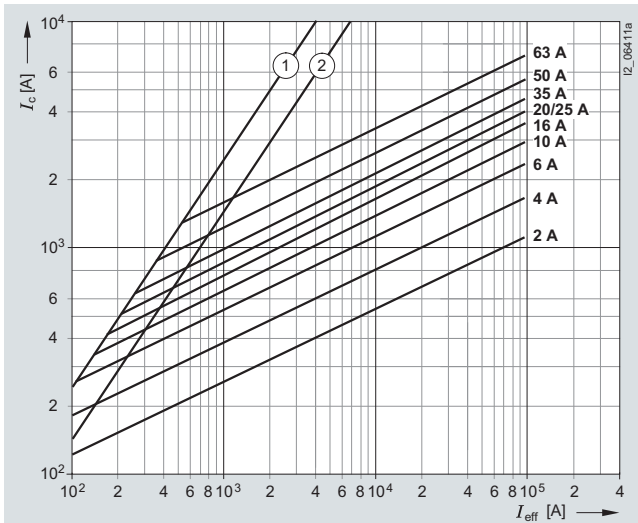


- ① Peak short-circuit current with largest DC component
- ② Peak short-circuit current without DC component

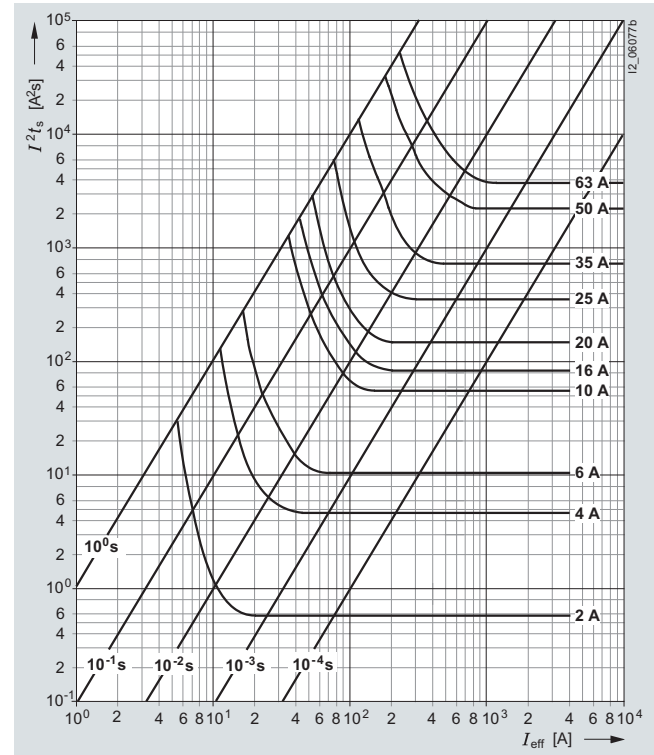
| Type     | $I_n$<br>A | $P_v$<br>W | $I^2t_s$<br>4 ms<br>A <sup>2</sup> s | $I^2t_a$<br>242 V AC<br>A <sup>2</sup> s |
|----------|------------|------------|--------------------------------------|------------------------------------------|
| 5SD8 002 | 2          | 1          | 4.4                                  | 7                                        |
| 5SD8 004 | 4          | 1.2        | 40                                   | 62                                       |
| 5SD8 006 | 6          | 1.6        | 88                                   | 140                                      |
| 5SD8 010 | 10         | 1.4        | 240                                  | 380                                      |
| 5SD8 016 | 16         | 1.8        | 380                                  | 600                                      |
| 5SD8 020 | 20         | 2          | 750                                  | 1200                                     |
| 5SD8 025 | 25         | 2.3        | 2000                                 | 3200                                     |
| 5SD8 035 | 35         | 3.1        | 3300                                 | 5100                                     |
| 5SD8 050 | 50         | 4.6        | 7000                                 | 11000                                    |
| 5SD8 063 | 63         | 5.5        | 9500                                 | 15000                                    |

**Series 5SD6**

Size: DIII  
 Operational class: quick (railway network protection)  
 Rated voltage: 750 V AC/750 V DC  
 Rated current: 2 ... 63 A

**Time/current characteristics diagram****Current limitation diagram**

- ① Peak short-circuit current with largest DC component  
 ② Peak short-circuit current without DC component

**Melting  $I^2t$  values diagram**

| Type    | $I_n$<br>A | $P_v$<br>W | $I^2t_s$<br>4 ms<br>A <sup>2</sup> s | $I^2t_a$<br>500 V AC<br>A <sup>2</sup> s |
|---------|------------|------------|--------------------------------------|------------------------------------------|
| 5SD6 01 | 2          | 2.8        | 0.7                                  | 2                                        |
| 5SD6 02 | 4          | 4          | 4.5                                  | 13                                       |
| 5SD6 03 | 6          | 4.8        | 10                                   | 29                                       |
| 5SD6 04 | 10         | 4.8        | 50                                   | 135                                      |
| 5SD6 05 | 16         | 5.9        | 78                                   | 220                                      |
| 5SD6 06 | 20         | 6.3        | 125                                  | 380                                      |
| 5SD6 07 | 25         | 8.3        | 265                                  | 800                                      |
| 5SD6 08 | 35         | 13         | 550                                  | 1600                                     |
| 5SD6 10 | 50         | 16.5       | 1800                                 | 5500                                     |
| 5SD6 11 | 63         | 18         | 3100                                 | 9600                                     |