

# SMD-/ CHIP- SICHERUNGEN

SMD-/ CHIP-FUSES



Die Bezeichnung der SMD-Bauformen (surface mounted device dt.: Oberflächenmontiertes Bauteil) besteht fast immer aus vier Ziffern. Die ersten beiden geben die Gehäusegröße zwischen den beiden Anschlüssen, die letzten beiden die Größe des Bauteils an einer Anschlussseite an. Die Einheit ist dabei häufig  $\frac{1}{100}$  Zoll (1 inch = 25,4 mm) an. Alternativ geben einige Hersteller die Abmessungen stattdessen in Einheiten von  $\frac{1}{10}$  mm an. Diejenige Seite, an welcher sich die metallenen Anschlusskappen befinden, ist meist die kürzere Seite.

The name of the SMD designs (surface mounted device) designs almost always consists of four digits. The first two indicate the size of the housing between the two terminals, the last two indicate the size of the component on one connection side. The unit is often  $\frac{1}{100}$  inch (1 inch = 25,4 mm). Alternatively, some manufacturers instead specify the dimensions in units of  $\frac{1}{10}$  mm. The side on which the metal connection caps are located is usually the shorter side.

Zoll Code / Imperial Code	Länge / Length [inch]	Breite / Width [inch]	Metrischer Code / Metric Code	Länge / Length [mm]	Breite / Width [mm]
<b>01005</b>	0,01	0,008	<b>0402M</b>	0,4	0,2
<b>0201</b>	0,02	0,01	<b>0603M</b>	0,6	0,3
<b>0402</b>	0,04	0,02	<b>1005M</b>	1,0	0,5
<b>0603</b>	0,06	0,03	<b>1608M</b>	1,6	0,8
<b>0805</b>	0,08	0,05	<b>2012M</b>	2,0	1,2
<b>1020</b>	0,1	0,2	<b>2550M</b>	2,5	5,0
<b>1206</b>	0,12	0,06	<b>3216M</b>	3,2	1,6
<b>1210</b>	0,12	0,10	<b>3225M</b>	3,2	2,5
<b>1218</b>	0,12	0,18	<b>3146M</b>	3,1	4,6
<b>1225</b>	0,12	0,25	<b>3164M</b>	3,1	6,4
<b>1411</b>	0,14	0,11	<b>3528M</b>	3,5	2,8
<b>1808</b>	0,18	0,08	<b>4520M</b>	4,5	2,0
<b>1812</b>	0,18	0,12	<b>4532M</b>	4,5	3,2
<b>2010</b>	0,20	0,10	<b>5025M</b>	5,0	2,5
<b>2220</b>	0,22	0,20	<b>5750M</b>	5,7	5,0
<b>2312</b>	0,23	0,12	<b>6032M</b>	6,0	3,2
<b>2410</b>	0,24	0,10	<b>6125M</b>	6,1	2,5
<b>2512</b>	0,25	0,12	<b>6330M</b>	6,3	3,0
<b>2917</b>	0,29	0,17	<b>7343M</b>	7,3	4,3
<b>2924</b>	0,29	0,24	<b>7361M</b>	7,3	6,1
<b>4012</b>	0,40	0,12	<b>10032M</b>	10,0	3,2
<b>4818</b>	0,48	0,18	<b>12045M</b>	12,0	4,5

**6,1 x 2,5 mm**

F - flink  
quick acting



**Spannung**  
Voltage **86 V / 125 V**

**Strom**  
Current **250 mA – 15 A**

**Ausschaltvermögen**  
Breaking capacity **50 A – 10 kA**



**EOL – Restbestände vorhanden**  
/  
**EOL - Remaining stocks available**

**Ersetzt durch / Replaced by:**  
**220.000L**

Norm gemäß / Standard according to: UL 248-14

Aufbau / Construction: Keramikgehäuse / Ceramic body

**Bauform / Type: 2410 (6125M)**

Anschluss / Connection: Palladium beschichtete Messingkappen / Palladium plated brass caps (Bleifrei / Lead free)

Betriebstemperatur / Operating temperature: -55°C bis / to 125°C (De-rating beachten / consider De-rating)

Lötbarkeit / Solderability: MIL-STD-202G, Method 208H  
Reflow: 150°C ≤ T ≤ 200°C (T<sub>min</sub> zu / to T<sub>max</sub> = 60-120s)  
Max. 260°C (max. 30s)  
Wave: Max. 260°C (max. 10s)

Verpackungsmöglichkeit / Packing options: 1.000 Stk. = gegurtet auf Rolle / 1.000 pcs. = taped & reeled

**Bemessungswerte / Ratings:**

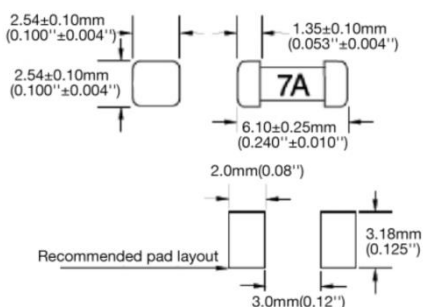
Art. No.	I <sub>N</sub>	U <sub>N</sub> [V] DC / AC, DC	U <sub>d</sub> [mV]	I <sub>BC</sub> [A]	I <sup>2</sup> t <sub>melt</sub> [A <sup>2</sup> s]
220.014	250 mA	86 / 125	300		0,01
220.017	375 mA	86 / 125	270		0,03
220.019	500 mA	86 / 125	260		0,06
220.022	750 mA	86 / 125	190	<b>CSA, cUL:</b>	0,07
220.024	1 A	86 / 125	140	50 A @	0,14
220.026	1,25 A	86 / 125	140	125 V AC	0,24
220.027	1,5 A	86 / 125	140		0,41
220.030	2 A	86 / 125	130	<b>cUL:</b>	0,80
220.032	2,5 A	86 / 125	130	10 kA @	1,40
220.034	3 A	86 / 125	130	86 V DC	2,40
220.037	3,5 A	86 / 125	130		3,30
220.038	4 A	86 / 125	130	300 A @	4,40
220.039	5 A	86 / 125	120	125 V DC	7,80
220.041	6,3 A	86 / 125	120		14
220.042	7 A	86 / 125	110		19
220.015	8 A	86 / 125	110	<b>cUL:</b>	25
220.043	10 A	86 / 125	110	50A@ 125 VAC	44
220.044	12 A	86 / 125	100	10kA@ 86 VDC	69
220.045	15 A	86s	100	<b>cUR:</b> 10 kA@86 VDC	124

**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
250 mA	0
15 A	5 s

2 · I<sub>N</sub> | t<sub>min</sub>  
| t<sub>max</sub>

**Maße / Dimensions:**



**6,1 x 2,5 mm**

F - flink  
quick acting



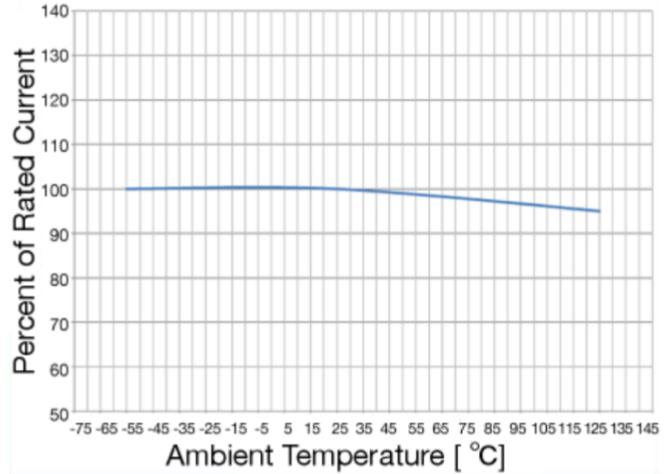
**Spannung**  
Voltage **86 V / 125 V**

**Strom**  
Current **250 mA – 15 A**

**Ausschaltvermögen**  
Breaking capacity **50 A – 10 kA**

**Strom-Zeit Charakteristik / Time-current characteristics:**

**De-rating:**



**6,1 x 2,5 mm**

F - flink  
quick acting



**Spannung AC 350 V**

**Strom**

**250 mA - 15 A**

**Ausschaltvermögen 50 A –**

**Voltage DC 60 V / 72 V**

**Current**

**Breaking capacity 150 A**



Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

rechteckig / rectangular  
Keramikkörper / Ceramicbody

**Bauform / Type: 2410 (6125M)**

Kontaktkappen / Contact caps:

Messing, versilbert / Brass, silver plated

Schock / Shock resistance:

MIL-STD-202G, Method 213B, Test Condition I

Vibration / Vibration resistance:

MIL-STD-202G, Method 201A

Wärmebeständigkeit beim Löten /

MIL-STD-202G, Method 210F,

Soldering heat resistance:

Test Condition C / D (top/bottom)

Temperaturtest / Thermal shock:

MIL-STD-202G, Method 107G, Test Condition B

Lötbarkeit / Solderability:

MIL-STD-202G, Method 208H

Isolationswiderstand / Insulation resistance:

MIL-STD-202G, Method 302H, Test Condition A  
(After Opening) min. 10.000 Ohms @500VDC

Temperaturbereich / Operating temperature:

-55°C - +125°C

Verpackungsmöglichkeiten / Packing options:

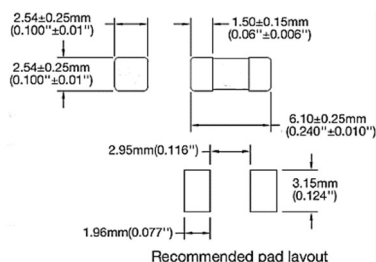
5.000 St. pro Rolle / 5.000 pcs. per reel

### Bemessungswerte / Ratings:

Art. No.	$I_N$	$U_N$ (AC/DC) [V]	$U_{d\_max}$ [mV]	$P_{d\_max}$ [W]	$I_{BC}$ - (AC / DC) [A]	$I^2t$ [A <sup>2</sup> s]
220.014-H	250 mA	350 / 72	530	0,13	50 / 100	0,02
220.017-H	375 mA	350 / 72	480	0,18	50 / 100	0,04
220.019-H	500 mA	350 / 72	470	0,24	50 / 100	0,08
220.020-H	630 mA	350 / 72	410	0,26	50 / 100	0,15
220.022-H	750 mA	350 / 72	380	0,29	50 / 100	0,26
220.024-H	1 A	350 / 72	280	0,28	50 / 100	0,54
220.026-H	1,25 A	350 / 72	250	0,31	50 / 100	0,22
220.027-H	1,5 A	350 / 72	250	0,38	50 / 100	0,29
220.030-H	2 A	350 / 72	240	0,48	50 / 100	0,68
220.032-H	2,5 A	350 / 72	240	0,60	50 / 100	1,13
220.034-H	3 A	350 / 72	220	0,66	50 / 100	1,80
220.037-H	3,5 A	350 / 60	220	0,77	50 / 150	2,20
220.038-H	4 A	350 / 60	220	0,88	50 / 150	3,50
220.039-H	5 A	350 / 60	200	1,00	50 / 150	5,50
220.041-H	6,3 A	350 / 60	190	1,20	50 / 100	8,30
220.042-H	7 A	350 / 60	175	1,23	50 / 100	10,8
220.015-H	8 A	350 / 60	170	1,36	50 / 100	14,1
220.043-H	10 A	350 / 60	150	1,50	50 / 100	25,7
220.044-H	12 A	350 / 60	140	1,68	50 / 100	38,9
220.045-H	15 A	350 / 60	130	1,95	50 / 100	103,5

### $I_N$ - t Verhalten / $I_N$ - t characteristics:

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:	
	$t_{min}$	$t_{max}$
1 · $I_N$	$t_{min}$	4 h
	$t_{max}$	-
2 · $I_N$	$t_{min}$	0
	$t_{max}$	5 s



**6,1 x 2,5 mm**

F - flink  
quick acting



**Spannung AC 350 V**

**Strom**

**250 mA - 15 A**

**Ausschaltvermögen**

**50 A –**

*Voltage*

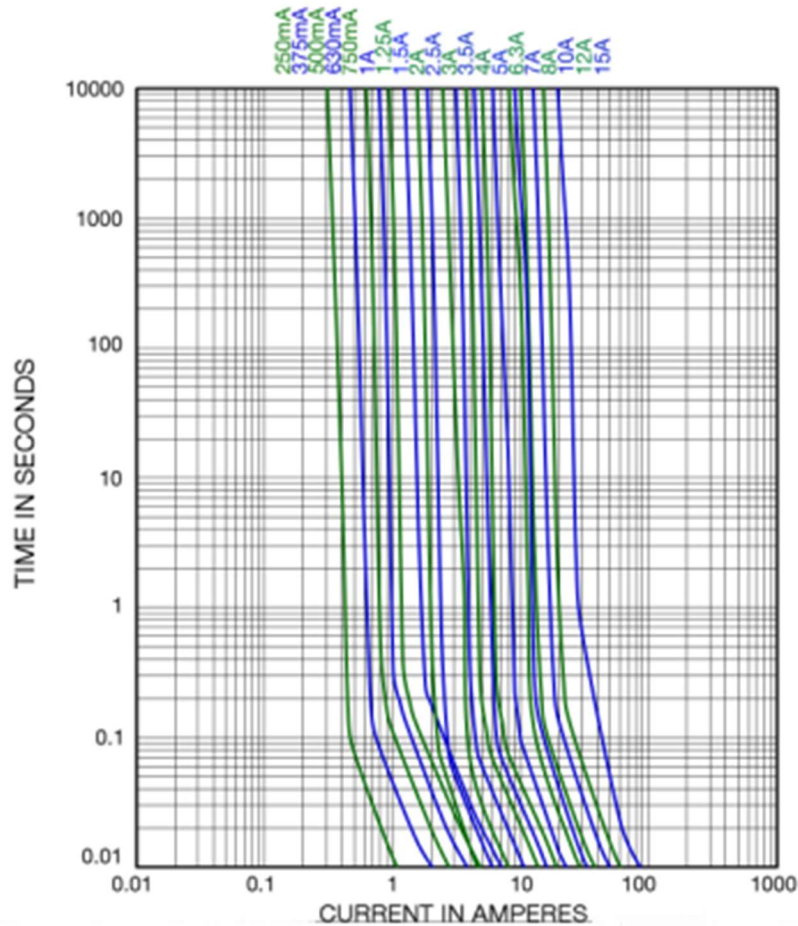
**DC 60 V / 72 V**

*Current*

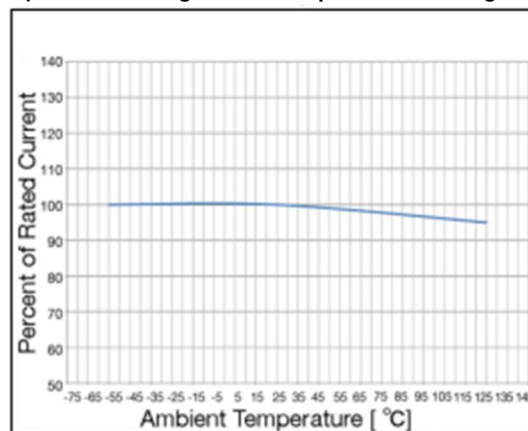
*Breaking capacity*

**150 A**

**Strom-Zeit-Kennlinie / Time Current Characteristics:**



**Temperatur Derating Kurve / Temperature Derating Curve:**



**6,1 x 2,5 mm**

F - flink  
quick acting



**Spannung**  
*Voltage* **125 V**

**Strom**  
*Current* **250 mA - 20 A**

**Ausschaltvermögen**  
*Breaking capacity* **50 A /  
300 A /  
10.000 A**



Norm gemäß / *Standard according to:*

Werknorm

Aufbau / *Construction:*

rechteckig / rectangular  
Keramikkörper / Ceramicbody

**Bauform / Type: 2410 (6125M)**

Kontaktkappen / *Contact caps:*

Messing, versilbert / Brass, silver plated

Schock / *Schock resistance:*  
Vibration / *Vibration resistance:*  
Wärmebeständigkeit beim Löten /  
*Soldering heat resistance:*  
Temperaturtest / *Thermal shock:*  
Lötbarkeit / *Solderability:*  
Isolationswiderstand / *Insulation resistance:*

MIL-STD-202G, Method 213B, Test Condition 1  
MIL-STD-202G, Method 201A  
MIL-STD-202, Method 210,  
Test Condition B  
MIL-STD-202, Method 107  
J-STD-002  
MIL-STD-202G, Method 302, Test Condition A  
(After Opening) min. 10.000 Ohms

Temperaturbereich / *Operating temperature:*

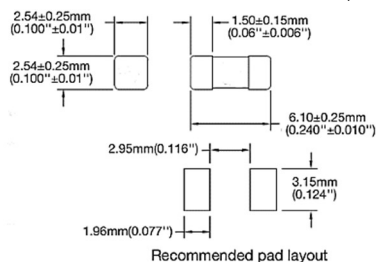
-55°C - +125°C

Verpackungsmöglichkeiten / *Packing options:*

1.000 St. pro Rolle / *1.000 pcs. per reel*  
5.000 St. pro Rolle / *5.000 pcs. per reel*

### Bemessungswerte / Ratings:

Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	U <sub>d_max</sub> [mV]	P <sub>d_max</sub> [W]	I <sub>BC</sub> - (AC / DC) [A]	I <sup>2</sup> t [A <sup>2</sup> s]
220.014L	250 mA	125	530	0,13		0,02
220.017L	375 mA	125	480	0,18		0,04
220.019L	500 mA	125	470	0,24		0,08
220.020L	630 mA	125	410	0,26		0,15
220.022L	750 mA	125	380	0,29		0,26
220.024L	1 A	125	280	0,28	50 A @ 125V AC	0,54
220.026L	1,25 A	125	250	0,31		0,22
220.027L	1,5 A	125	250	0,38		0,29
220.030L	2 A	125	240	0,48	300 A @ 125V DC	0,68
220.032L	2,5 A	125	240	0,60		1,13
220.034L	3 A	125	220	0,66		1,80
220.037L	3,5 A	125	220	0,77	10.000 A @ 86V DC	2,20
220.038L	4 A	125	220	0,88		3,50
220.039L	5 A	125	200	1,00		5,50
220.041L	6,3 A	125	190	1,20		8,30
220.042L	7 A	125	175	1,23		10,8
220.015L	8 A	125	170	1,36		14,1
220.043L	10 A	125	150	1,50		25,7
220.044L	12 A	125	140	1,68	50 / 300	38,9
220.045L	15 A	125	130	1,95	50 / 300	103,5
220.046L	20 A	125	130	2,60	50 / 300	128,0



### I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:

Bemessungsstrom-Faktor / <i>Rated current factor</i>	Schmelzzeit / <i>Melting time:</i>	
	t <sub>min</sub>	t <sub>max</sub>
1 · I <sub>N</sub>	4 h	-
2 · I <sub>N</sub>	0	5 s

**6,1 x 2,5 mm**

F - flink  
quick acting

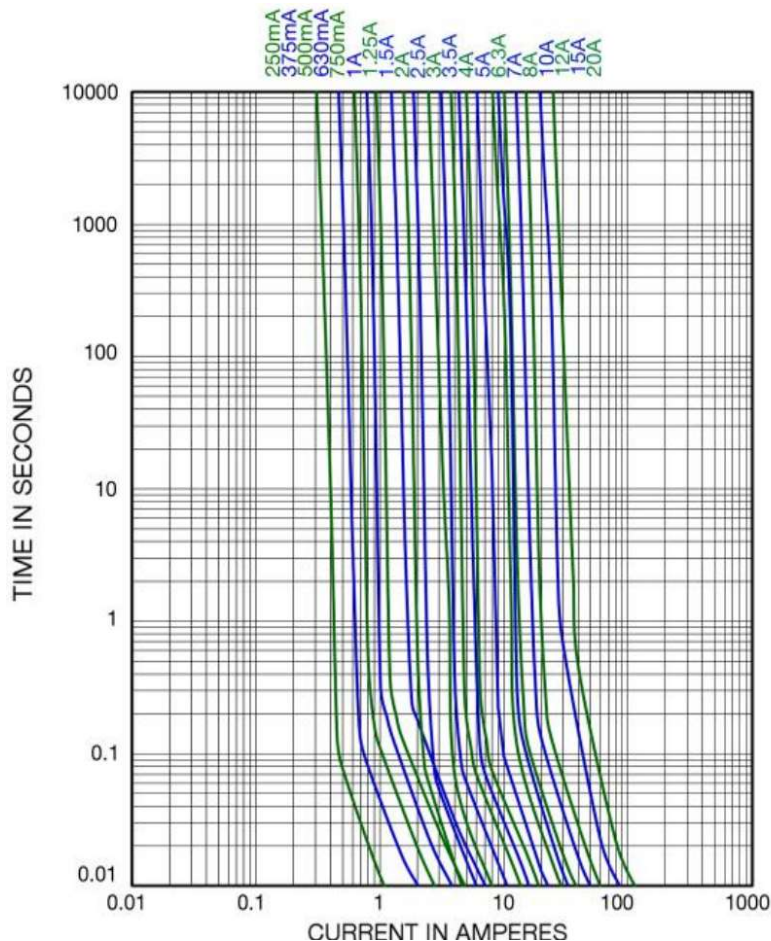


**Spannung** 125 V  
*Voltage*

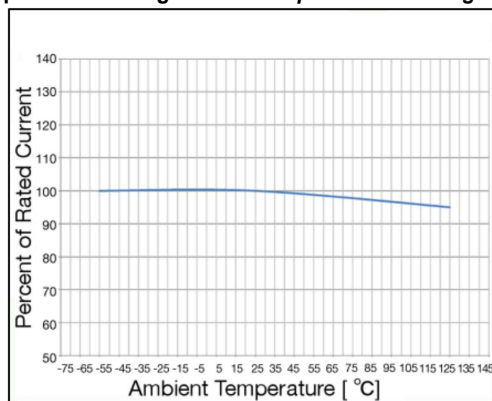
**Strom** 250 mA - 20 A  
*Current*

**Ausschaltvermögen** 50 A / 300 A / 10.000 A  
*Breaking capacity*

**Strom-Zeit-Kennlinie / Time Current Characteristics:**



**Temperatur Derating Kurve / Temperature Derating Curve:**





**6,1 x 2,5 mm**

F - flink  
quick acting



**Spannung AC: 250 V**

**Strom**

**Ausschaltvermögen**

*Voltage*

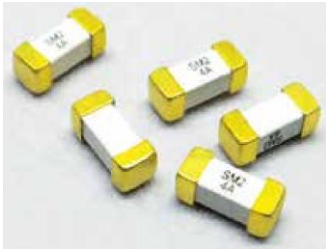
**DC: 125 V**

*Current*

**1 A – 5 A**

*Breaking capacity*

**50 A**



Norm gemäß / *Standard according to:*

UL 248-14; IEC 60127-4

Aufbau / *Construction:*

Keramikgehäuse / *Ceramic body*

**Bauform / Type: 2410 (6125M)**

Anschluss / *Connection:*

Messing, vergoldet / *Brass, gold plated*

Betriebstemperatur / *Operating temperature:*

-55°C bis / *to* 125°C  
(De-rating beachten / *consider De-rating*)

Lötbarkeit / *Solderability:*

235°C ± 5 °C, t: 5 s ± 0,5 s

Max. zul. Löttemp. / *Max. adms. soldering temp.:* 260°C ± 5 °C, t: 10 s ± 1 s

Verpackungsmöglichkeit / *Packing options:*

1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = *taped & reeled*

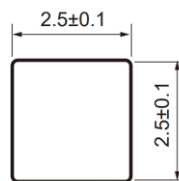
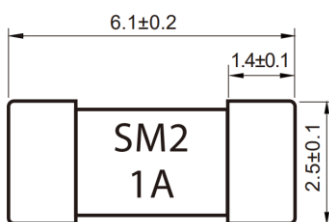
**Bemessungswerte / Ratings:**

Art. No.	I <sub>N</sub>	U <sub>N, (AC / DC)</sub> [V]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
220.017-X	1 A	250 / 125	50	1,58
220.018-X	1,25 A	250 / 125	50	2,48
220.059-X	1,5 A	250 / 125	50	3,13
220.019-X	1,6 A	250 / 125	50	4,03
220.020-X	2 A	250 / 125	50	4,89
220.021-X	2,5 A	250 / 125	50	7,62
220.034-X	3 A	250 / 125	50	10,73
220.022-X	3,15 A	250 / 125	50	12,52
220.037-X	3,5 A	250 / 125	50	16,31
220.023-X	4 A	250 / 125	50	20,35
220.024-X	5 A	250 / 125	50	27,88

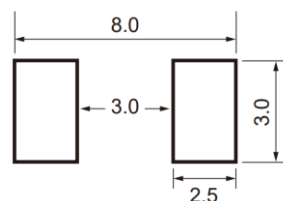
**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / <i>Rated current factor</i>	Schmelzzeit / <i>Melting time:</i>
1 A	0
-	-
5 A	2 min
2 · I <sub>N</sub>	t <sub>min</sub> 0 t <sub>max</sub> 2 min
10 · I <sub>N</sub>	t <sub>min</sub> 1 ms t <sub>max</sub> 10 ms

**Maße / Dimensions:**



**Lötpadgröße / Solder pad size:**



**10,2 x 3,2 mm**

F - flink  
quick acting



**Spannung AC: 250 V**

**Strom**

**Ausschaltvermögen**

**100 A -**

**Voltage**

**DC: 72-125 V**

**Current**

**20 A – 60 A**

**Breaking capacity**

**1.000 A**



Norm gemäß / Standard according to:

UL 248-14; IEC 60127-4

Aufbau / Construction:

Keramikgehäuse / Ceramic body

**Bauform / Type: 4012 (10032M)**

Anschluss / Connection:

Messing, vergoldet / Brass, gold plated

Betriebstemperatur / Operating temperature:

-55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

235°C ± 5 °C, t: 5 s ± 0,5 s

Hitzebeständigkeit / Resistance to heat:

260°C; t<sub>max</sub> = 10s (Reflow)

Verpackungsmöglichkeit / Packing options:

1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = taped & reeled

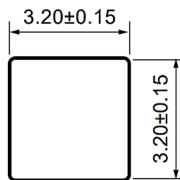
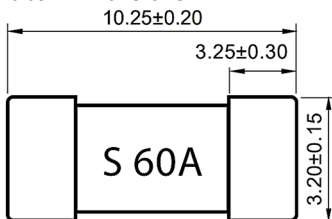
**Bemessungswerte / Ratings:**

Art. No.	I <sub>N</sub>	U <sub>N</sub> (AC / DC) [V]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
223.031-XF	20 A	250 / 100	AC: 100A @ 250 V AC: 300A @ 65 V	264
223.032-XF	25 A	250 / 100	DC: 300A @ 100 V DC: 500A @ 72 V	413
223.033-XF	30 A	250 / 100	DC: 1.000A @ 32 V	594
223.034-XF	40 A	250 / 72	AC: 100A @ 250 V AC: 300A @ 65 V	1.024
223.035-XF	50 A	250 / 72	DC: 180A @ 72 V	1.650
223.036-XF	60 A	250 / 72	DC: 600A @ 60 V	2.376

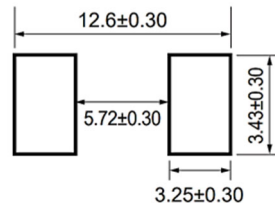
**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:	
	20 A	60 A
1 · I <sub>N</sub>	t <sub>min</sub>	4 h
	t <sub>max</sub>	-
2 · I <sub>N</sub>	t <sub>min</sub>	0
	t <sub>max</sub>	1 min
10 · I <sub>N</sub>	t <sub>min</sub>	1 ms
	t <sub>max</sub>	-

**Maße / Dimensions:**



**Lötpadgröße / Solder pad size:**



10,2 x 3,2 mm

F - flink  
quick acting



Spannung AC: 250 V

Strom

Ausschaltvermögen

100 A -

Voltage

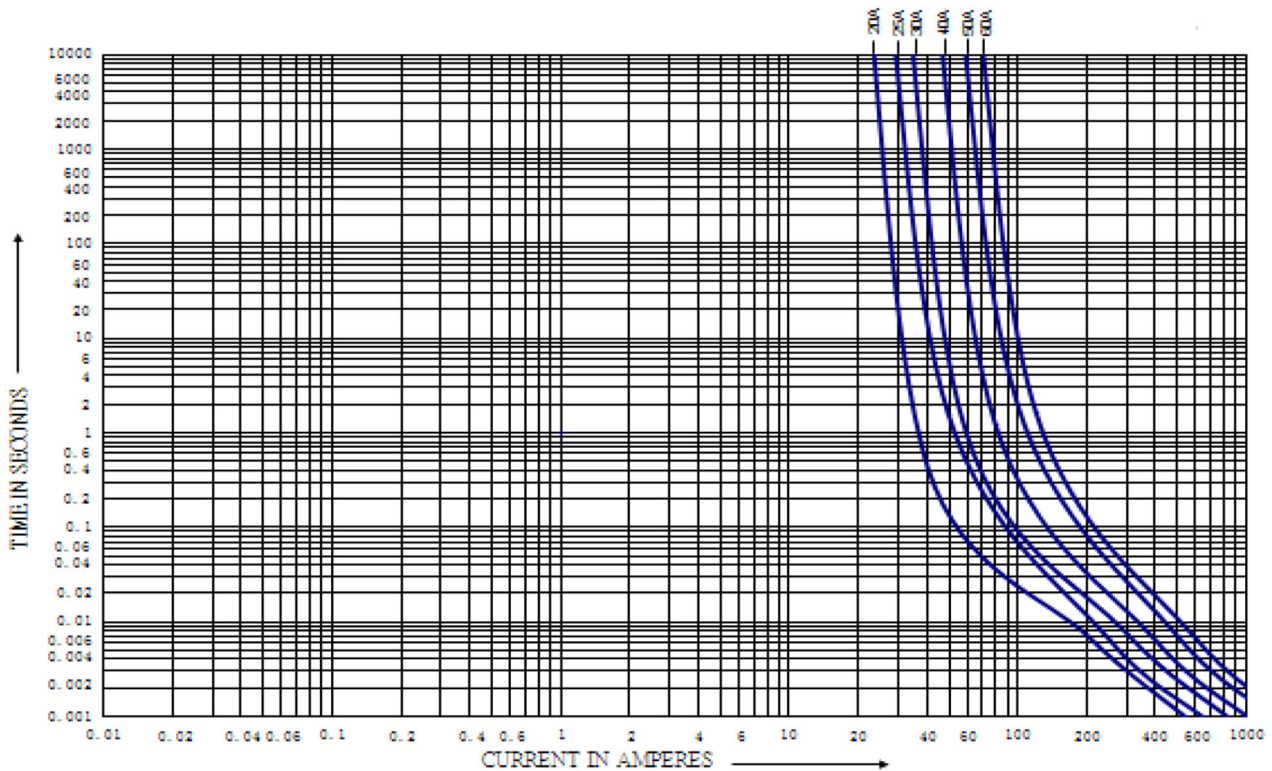
DC: 72-125 V Current

20 A - 60 A

Breaking capacity

1.000 A

Strom-Zeit-Kennlinie / Time-current-characteristic:



**6,1 x 2,5 mm**

T - träge  
time-lag



**Spannung** 125 V  
Voltage

**Strom** 375 mA – 7 A  
Current

**Ausschaltvermögen** 50 A  
Breaking capacity



**EOL – Restbestände vorhanden**  
/  
**EOL - Remaining stocks available**

**Ersetzt durch / Replaced by:**  
222.000L

Norm gemäß / Standard according to: UL 248-14

Aufbau / Construction: Keramikgehäuse / Ceramic body

**Bauform / Type: 2410 (6125M)**

Anschluss / Connection: Palladium beschichtete Messingkappen / Palladium plated brass caps (Bleifrei / Lead free)

Betriebstemperatur / Operating temperature: -55°C bis / to 125°C (De-rating beachten / consider De-rating)

Lötbarkeit / Solderability: MIL-STD-202G, Method 208H  
Reflow: 150°C ≤ T ≤ 200°C (T<sub>min</sub> zu / to T<sub>max</sub> = 60-120s)  
Max. 260°C (max. 30s)  
Wave: Max. 260°C (max. 10s)

Verpackungsmöglichkeit / Packing options: 1.000 Stk. = gegurtet auf Rolle / 1.000 pcs. = taped & reeled

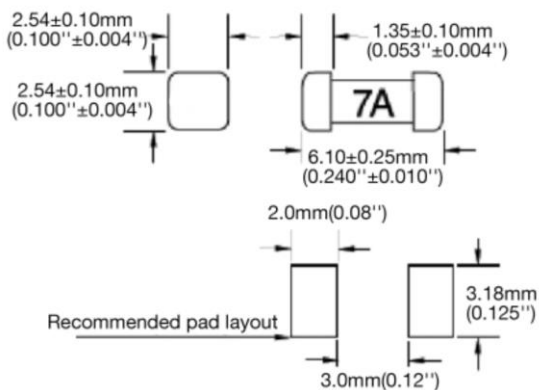
**Bemessungswerte / Ratings:**

Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	U <sub>d</sub> [mV]	I <sub>BC</sub> [A]	I <sup>2</sup> t <sub>melt</sub> [A <sup>2</sup> s]
222.017	375 mA	125	530	50	0,15
222.019	500 mA	125	520	50	0,28
222.020	625 mA	125	500	50	0,47
222.022	750 mA	125	420	50	0,69
222.024	1 A	125	350	50	1,3
222.027	1,5 A	125	260	50	3,1
222.030	2 A	125	240	50	5,7
222.031	2,5 A	125	220	50	9,0
222.034	3 A	125	200	50	16
222.037	3,5 A	125	190	50	20
222.038	4 A	125	190	50	26
222.039	5 A	125	180	50	43
222.040	6 A	125	180	50	63
222.025	6,3 A	125	170	50	70
222.042	7 A	125	160	50	90

**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	375 mA – 7 A
2 · I <sub>N</sub>	t <sub>min</sub> 1 s t <sub>max</sub> 1 min
3 · I <sub>N</sub>	t <sub>min</sub> 200 ms t <sub>max</sub> 3 s
8 · I <sub>N</sub>	t <sub>min</sub> 20 ms t <sub>max</sub> 100 ms

**Maße / Dimensions:**



**6,1 x 2,5 mm**

T - träge  
time-lag

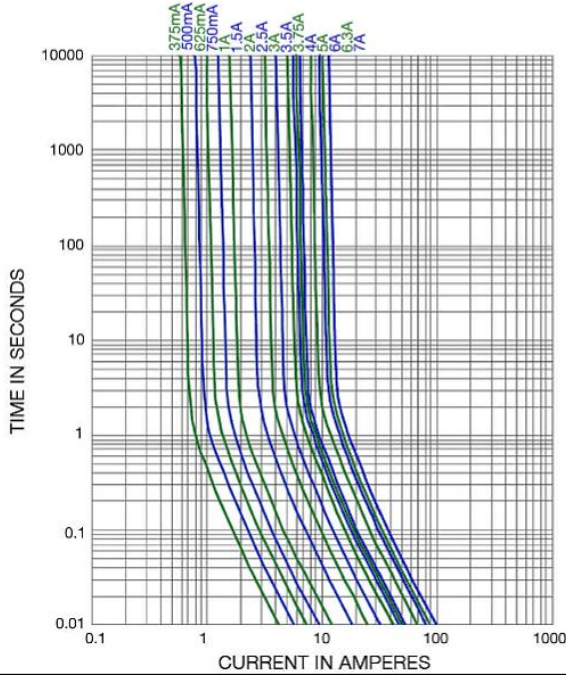


**Spannung** 125 V  
Voltage

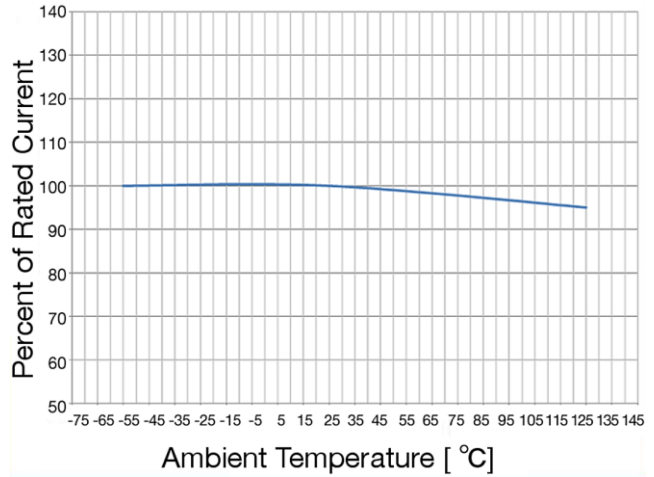
**Strom** 375 mA – 7 A  
Current

**Ausschaltvermögen** 50 A  
Breaking capacity

**Strom-Zeit Charakteristik / Time-current characteristics:**



**De-rating:**



**6,1 x 2,5 mm**

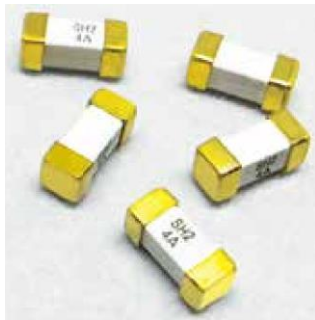
High Inrush



**Spannung AC: 250 V**  
Voltage **DC: 125 V**

**Strom 1 A – 5 A**  
Current

**Ausschaltvermögen 50 A**  
Breaking capacity



Norm gemäß / Standard according to:

UL 248-14; IEC 60127-4

Aufbau / Construction:

Keramikgehäuse / Ceramic body

**Bauform / Type: 2410 (6125M)**

Anschluss / Connection:

Messing, vergoldet / Brass, gold plated

Betriebstemperatur / Operating temperature:

-55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

235°C ± 5 °C, t: 5 s ± 0,5 s

Max. zul. Löttemp. / Max. adms. soldering temp.: 260°C ± 5 °C, t: 10 s ± 1 s

Verpackungsmöglichkeit / Packing options:

1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = taped & reeled

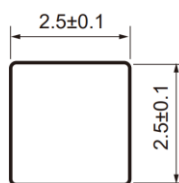
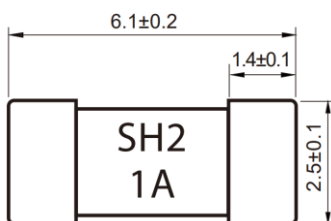
**Bemessungswerte / Ratings:**

Art. No.	I <sub>N</sub>	U <sub>N, (AC / DC)</sub> [V]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
222.017-X	1 A	250 / 125	50	3,32
222.018-X	1,25 A	250 / 125	50	4,48
222.059-X	1,5 A	250 / 125	50	5,11
222.019-X	1,6 A	250 / 125	50	6,13
222.020-X	2 A	250 / 125	50	6,95
222.021-X	2,5 A	250 / 125	50	14,42
222.034-X	3 A	250 / 125	50	15,33
222.022-X	3,15 A	250 / 125	50	18,12
222.037-X	3,5 A	250 / 125	50	22,51
222.023-X	4 A	250 / 125	50	26,45
222.024-X	5 A	250 / 125	50	31,28

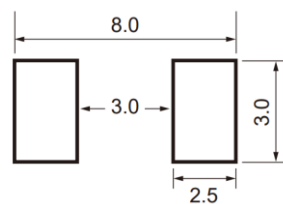
**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
1 A	0
5 A	2 min
2 · I <sub>N</sub>	t <sub>min</sub> 0 t <sub>max</sub> 2 min
10 · I <sub>N</sub>	t <sub>min</sub> 1 ms t <sub>max</sub> 60 ms

**Maße / Dimensions:**



**Lötpadgröße / Solder pad size:**



**6,1 x 2,5 mm**

High Inrush



**Spannung AC: 125 V**

**Strom**

**Ausschaltvermögen**

*Voltage*

**DC: 125 V**

*Current*

**1 A – 6,3 A**

*Breaking capacity*

**50 A**



Norm gemäß / *Standard according to:*

UL 248-14; IEC 60127-4

Aufbau / *Construction:*

Keramikgehäuse / *Ceramic body*

**Bauform / Type: 2410 (6125M)**

Anschluss / *Connection:*

Messing, vergoldet / *Brass, gold plated*

Betriebstemperatur / *Operating temperature:*

-55°C bis / *to* 125°C  
(De-rating beachten / *consider De-rating*)

Lötbarkeit / *Solderability:*

235°C ± 5 °C, t: 5 s ± 0,5 s

Max. zul. Löttemp. / *Max. adms. soldering temp.:* 260°C ± 5 °C, t: 10 s ± 1 s

Verpackungsmöglichkeit / *Packing options:*

1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = *taped & reeled*

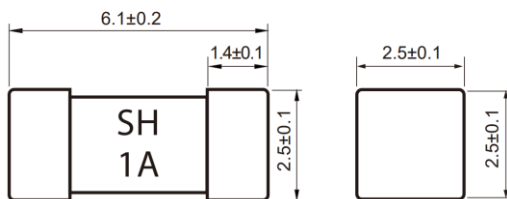
**Bemessungswerte / Ratings:**

Art. No.	I <sub>N</sub>	U <sub>N</sub> (AC / DC) [V]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
222.017-XH	1 A	250 / 125	50	3,16
222.018-XH	1,25 A	250 / 125	50	4,33
222.059-XH	1,5 A	250 / 125	50	4,91
222.019-XH	1,6 A	250 / 125	50	5,76
222.020-XH	2 A	250 / 125	50	9,13
222.021-XH	2,5 A	250 / 125	50	17,23
222.034-XH	3 A	250 / 125	50	19,50
222.022-XH	3,15 A	250 / 125	50	24,59
222.037-XH	3,5 A	250 / 125	50	26,12
222.023-XH	4 A	250 / 125	50	37,58
222.024-XH	5 A	250 / 125	50	44,33
222.025-XH	6,3 A	250 / 125	50 A	65,50

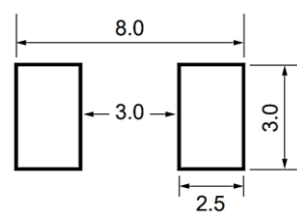
**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / <i>Rated current factor</i>	Schmelzzeit / <i>Melting time:</i>
1 A	0
–	–
6,3 A	2 min
2 · I <sub>N</sub>	t <sub>min</sub>
	t <sub>max</sub>
10 · I <sub>N</sub>	t <sub>min</sub>
	t <sub>max</sub>

**Maße / Dimensions:**



**Lötpadgröße / Solder pad size:**



**6,1 x 2,7 mm**

T - träge  
time-lag



<b>Spannung</b>	<b>AC 250 V</b>	<b>Strom</b>	<b>500 mA – 6,3 A</b>	<b>Ausschaltvermögen</b>	<b>100 A</b>
<b>Voltage</b>	<b>DC 125 V</b>	<b>Current</b>		<b>Breaking capacity</b>	



Norm gemäß / Standard according to:	Werknorm
Aufbau / Construction:	Keramikgehäuse / Ceramic body
<b>Bauform / Type:</b>	<b>2410 (6125M)</b>
Anschluss / Connection:	Messing, versilbert / Brass, silver plated
Isolationswiderstand / Insulation resistance:	> 10 kΩ
Betriebstemperatur / Operating temperature:	-55°C bis / to 125°C (De-rating beachten / consider De-rating)
Lötbarkeit / Solderability:	245°C ± 5 °C, t: 3 s ± 0,5 s
Max. zul. Löttemp. / Max. adms. soldering temp.:	260°C, t: 10 s
Verpackungsmöglichkeit / Packing options:	1.000 Stk. = gegurtet auf Rolle / 1.000 pcs. = taped & reeled

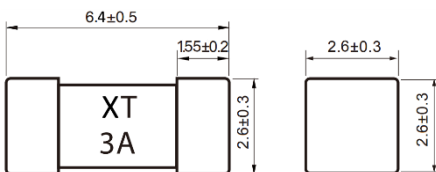
**Bemessungswerte / Ratings:**

Art. No.	I <sub>N</sub>	U <sub>N</sub> (AC/DC) [V]	R <sub>C</sub> [mΩ]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
222.014-XT	500 mA	250 / 125	260		0,30
222.015-XT	630 mA	250 / 125	230		0,48
222.016-XT	800 mA	250 / 125	150	50 A	1,3
222.017-XT	1 A	250 / 125	117	@	3,1
222.059-XT	1,5 A	250 / 125	75	AC 250 V	8,0
222.020-XT	2 A	250 / 125	49		10,3
222.021-XT	2,5 A	250 / 125	39		17,2
222.034-XT	3 A	250 / 125	27		25,6
222.037-XT	3,5 A	250 / 125	20	80 A	33,7
222.023-XT	4 A	250 / 125	15	@	43,4
222.024-XT	5 A	250 / 125	13	DC 125 V	50,5
222.025-XT	6,3 A	250 / 125	10		68,3

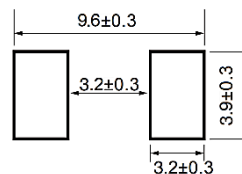
**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
1 · I <sub>N</sub>	4 h
2 · I <sub>N</sub>	2 min

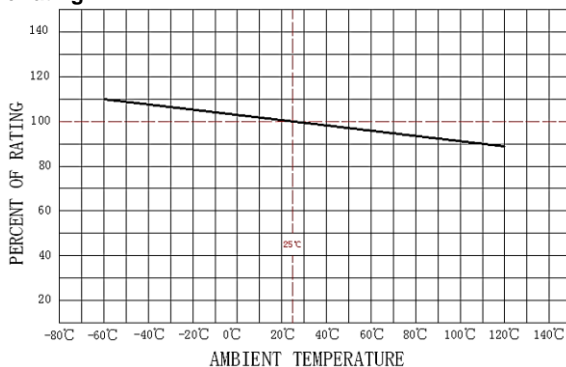
**Maße / Dimensions:**



**Lötpadgröße / Solder pad size:**



**De-rating:**





**3,1 x 10 mm**

F - flink  
quick acting



**Spannung AC 250 V**

**Strom 500 mA – 40 A**

**Ausschaltvermögen 100 A –**

**Voltage DC 125 V**

**Current**

**Breaking capacity 2.000 A**



**EOL – keine Restbestände  
vorhanden  
/  
EOL – no remaining stocks  
available**

Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

rechteckig / rectangular  
Keramikkörper / Ceramicbody

**Bauform / Type: 3912 (1031M)**

Kontaktkappen / Contact caps:

Versilbert / Silver plated

Schock / Shock resistance:

MIL-STD-202G, Method 213B, Test Condition I

Vibration / Vibration resistance:

MIL-STD-202G, Method 201A

Wärmebeständigkeit beim Löten /

MIL-STD-202G, Method 210F,

Soldering heat resistance:

Test Condition C / D (top/bottom)

Temperaturtest / Thermal shock:

MIL-STD-202G, Method 107G, Test Condition B

Lötbarkeit / Solderability:

MIL-STD-202G, Method 208H

Isolationswiderstand / Insulation resistance:

MIL-STD-202G, Method 302H, Test Condition A  
(After Opening) min. 10.000 Ohms @500VDC

Temperaturbereich / Operating temperature:

-55°C - +125°C

Verpackungsmöglichkeiten / Packing options:

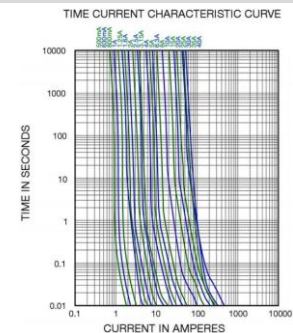
2.000 Stk. = gegurtet auf Rolle /  
2.000 pcs. = taped & reeled

**Bemessungswerte / Ratings:**

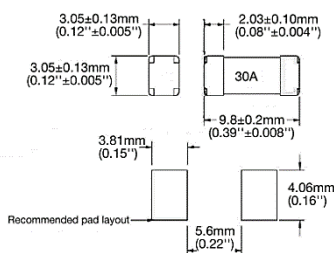
Art. No.	I <sub>N</sub>	U <sub>N</sub> (AC/DC) [V]	U <sub>d,max</sub> [mV]	P <sub>d,max</sub> [W]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
224.014	500 mA	250 / 125	1.000	0,5	1.000 A	0,03
224.015	630 mA	250 / 125	1.300	0,8	@	0,06
224.016	800 mA	250 / 125	1.100	0,9	AC 125 V	0,08
224.017	1 A	250 / 125	700	0,7		0,3
224.018	1,25 A	250 / 125	200	0,3	300 A	0,4
224.019	1,6 A	250 / 125	190	0,3	@	0,5
224.020	2 A	250 / 125	180	0,4	AC 250 V	1,0
224.021	2,5 A	250 / 125	180	0,5		1,8
224.022	3,15 A	250 / 125	180	0,6	2.000 A	2,8
224.023	4 A	250 / 125	180	0,7	@	7,8
224.024	5 A	250 / 125	180	0,9	DC 125 V	10
224.025	6,3 A	250 / 125	170	1,1		20
224.026	8 A	250 / 125	150	1,2	500 A @ AC 125 V	34
224.027	10 A	250 / 125	130	1,3	100 A @ AC 250 V	90
224.029	15 A	250 / 125	120	1,8	1.000 A @ DC 125 V	220
224.031	20 A	250 / 125	90	1,8		420
224.032	25 A	250 / 125	80	2,0	100 A @ AC 250 V 200 A @ AC 125 V	660
224.033	30 A	250 / 125	80	2,4	1.000 A @ DC 125 V	2.000
224.034	35 A	250 / 125	110	3,9	100 A @ AC 250 V 500 A @ AC 125 V	735
224.035	40 A	250 / 125	110	4,4	1.000 A @ DC 125 V	1.000

**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

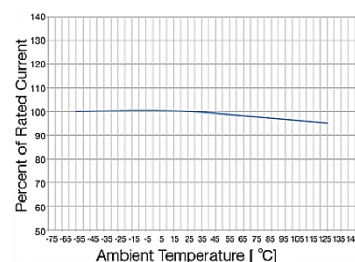
Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	500 mA
	-
	40 A
1 · I <sub>N</sub>	t <sub>min</sub> 4 h
	t <sub>max</sub> -
2 · I <sub>N</sub>	t <sub>min</sub> 0
	t <sub>max</sub> 1 min



**Maße / Dimensions:**



**De-Rating:**



**10,2 x 3,2 mm**

F - flink  
quick acting



**Spannung AC: 250 V**

**Strom**

**Ausschaltvermögen**

**100 A -**

*Voltage*

**DC: 72-125 V**

*Current*

**20 A – 60 A**

*Breaking capacity*

**1.000 A**



Norm gemäß / Standard according to:

UL 248-14; IEC 60127-4

Aufbau / Construction:

Keramikgehäuse / Ceramic body

**Bauform / Type: 4012 (10032M)**

Anschluss / Connection:

Messing, vergoldet / Brass, gold plated

Betriebstemperatur / Operating temperature:

-55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

235°C ± 5 °C, t: 5 s ± 0,5 s

Hitzebeständigkeit / Resistance to heat:

260°C; t<sub>max</sub> = 10s (Reflow)

Verpackungsmöglichkeit / Packing options:

1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = taped & reeled

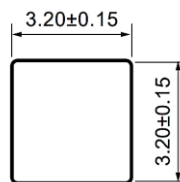
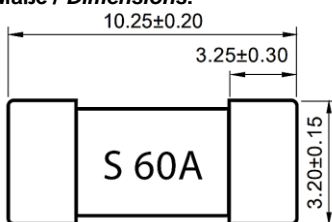
**Bemessungswerte / Ratings:**

Art. No.	I <sub>N</sub>	U <sub>N (AC / DC)</sub> [V]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
223.031-XF	20 A	250 / 100	AC: 100A @ 250 V AC: 300A @ 65 V	264
223.032-XF	25 A	250 / 100	DC: 300A @ 100 V DC: 500A @ 72 V	413
223.033-XF	30 A	250 / 100	DC: 1.000A @ 32 V	594
223.034-XF	40 A	250 / 72	AC: 100A @ 250 V AC: 300A @ 65 V	1.024
223.035-XF	50 A	250 / 72	DC: 180A @ 72 V	1.650
223.036-XF	60 A	250 / 72	DC: 600A @ 60 V	2.376

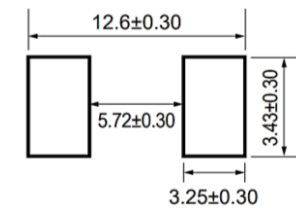
**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:	
	20 A	60 A
1 · I <sub>N</sub>	t <sub>min</sub>	4 h
	t <sub>max</sub>	-
2 · I <sub>N</sub>	t <sub>min</sub>	0
	t <sub>max</sub>	1 min
10 · I <sub>N</sub>	t <sub>min</sub>	1 ms
	t <sub>max</sub>	-

**Maße / Dimensions:**



**Lötpadgröße / Solder pad size:**



**10,0 x 3,2 mm**

T - träge  
time-lag



**Spannung**  
*Voltage* **250 A**

**Strom**  
*Current* **500 mA – 5 A**

**Ausschaltvermögen**  
*Breaking capacity* **50 A**



Norm gemäß / *Standard according to:*

UL 248-14; IEC 60127-4

Aufbau / *Construction:*

**Bauform / Type:** 4012 (10032M)

Keramikgehäuse / *Ceramic body*

Anschluss / *Connection:*

Messing, vergoldet / *Brass, gold plated*

Betriebstemperatur / *Operating temperature:*

-55°C bis / *to* 125°C  
(De-rating beachten / *consider De-rating*)

Lötbarkeit / *Solderability:*

235°C ± 5 °C, t: 5 s ± 0,5 s

Hitzebeständigkeit / *Resistance to heat:*

260°C; t<sub>max</sub> = 10s (Reflow)

Verpackungsmöglichkeit / *Packing options:*

1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = *taped & reeled*

**Bemessungswerte / Ratings:**

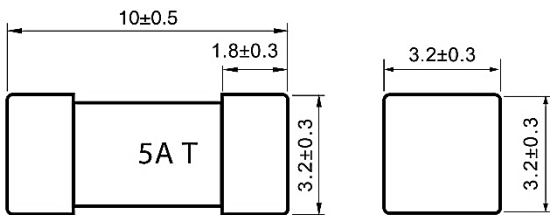
Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
223.014-XT	500 mA	250	50 A	2,88
223.055-XT	750 mA	250	50 A	3,80
223.017-XT	1 A	250	50 A	9,21
223.059-XT	1,5 A	250	50 A	12,92
223.020-XT	2 A	250	50 A	19,67
223.021-XT	2,5 A	250	50 A	34,52
223.034-XT	3 A	250	50 A	52,68
223.022-XT	3,15 A	250	50 A	48,00
222.037-XT	3,5 A	250	50 A	75,49
223.023-XT <sup>1)</sup>	4 A	250	50 A	105
223.024-XT	5 A	250	50 A	215

<sup>1)</sup> TÜV-Prüfzeichen / *TÜV-Approval*

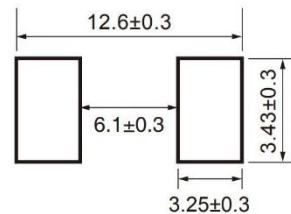
**I<sub>N</sub>- t Verhalten / I<sub>N</sub>- t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:	
	500 mA	5 A
1 · I <sub>N</sub>	t <sub>min</sub>	4 h
	t <sub>max</sub>	-
2 · I <sub>N</sub>	t <sub>min</sub>	0
	t <sub>max</sub>	2 min

**Maße / Dimensions:**



**Lötpadgröße / Solder pad size:**



### 12,0 x 4,5 mm

T - träge  
time-lag



**Spannung**  
Voltage **250 V**

**Strom**  
Current **250 mA - 6,3 A**

**Ausschaltvermögen**  
Breaking capacity **150 A**



**EOL – Restbestände  
vorhanden**  
/  
**EOL – remaining stocks  
available**

Norm / Standard:

UL 248-14

Aufbau / Construction:

Keramikkörper / Ceramicbody

**Bauform / Type: 4818 (12045M)**

Kontaktkappen / Contact caps:

Messing, vergoldet / Brass, gold plated

Schock / Shock resistance:

MIL-STD-202G, Method 213B, Test Condition I

Vibration / Vibration resistance:

MIL-STD-202G, Method 201A

Wärmebeständigkeit beim Löten /

MIL-STD-202G, Method 210F, Test Condition J

Soldering heat resistance:

Temperaturtest / Thermal shock:

MIL-STD-202G, Method 107G, Test Condition B

Lötbarkeit / Solderability:

MIL-STD-202G, Method 208H

Isolationswiderstand / Insulation resistance:

MIL-STD-202G, Method 302H, Test Condition B  
(After Opening) min. 0,1 MOhms @500VDC

Temperaturbereich / Operating temperature:

-55°C - +125°C

Verpackungsmöglichkeiten / Packing options:

1.500 St. pro Rolle / 1.500 pcs. per reel

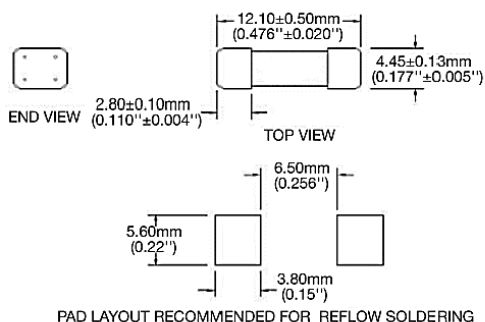
### Bemessungswerte / Ratings:

Art. No.	$I_N$	$U_N$ [V]	$U_{d,max}$ [mV]	$P_{d,max}$ [W]	$I_{BC}$ [A]	$I^2t$ [A <sup>2</sup> s]
225.011	250 mA	250 V	314	0,12	150	0,26
225.012	315 mA	250 V	279	0,14	150	0,42
225.013	400 mA	250 V	248	0,16	150	0,67
225.014	500 mA	250 V	221	0,19	150	1,1
225.015	630 mA	250 V	197	0,21	150	1,7
225.016	800 mA	250 V	175	0,25	150	2,8
225.017	1 A	250 V	156	0,28	150	4,4
225.018	1,25 A	250 V	139	0,33	150	7,0
225.019	1,6 A	250 V	110	0,37	150	5,6
225.020	2 A	250 V	108	0,46	150	9,2
225.021	2,5 A	250 V	106	0,50	150	15
225.022	3,15 A	250 V	104	0,57	150	25
225.023	4 A	250 V	101	0,66	150	42
225.024	5 A	250 V	99	0,75	150	69
225.025	6,3 A	250 V	97	0,87	150	113

### $I_N$ - t Verhalten / $I_N$ - t characteristics:

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	250 mA - 6,3 A
$1,25 \cdot I_N$	$t_{min}$ 1 h $t_{max}$ -
$2 \cdot I_N$	$t_{min}$ 0 $t_{max}$ 2 min
$10 \cdot I_N$	$t_{min}$ 10 ms $t_{max}$ 100 ms

### Maße / Dimensions:



# SMD Chip Sicherungen 320.000

## SMD Chip Fuses AC / DC

3,2 x 1,6 mm

FF - super flink  
super quick acting



<b>Spannung</b> Voltage	<b>AC: 125 V</b> <b>DC: 63 V</b>	<b>Strom</b> Current	<b>250 mA – 5 A</b>	<b>Ausschaltvermögen</b> Breaking capacity	<b>50 A /</b> <b>100 A</b>
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Norm gemäß / Standard according to:	UL 248-14
Aufbau / Construction:	Keramikssubstrate / Ceramic substrates
<b>Bauform / Type:</b>	<b>1206</b>
Anschluss / Connection:	Silber, Nickel, Zinn / Silver, Nickel, Tin
Betriebstemperatur / Operating temperature:	-55°C bis / to 125°C (De-rating beachten / consider De-rating)
Lötbarkeit / Solderability:	Reflow: Max. 260°C (max. 30s) Wave: Max. 260°C (max. 10s)
Verpackungsmöglichkeit / Packing options:	Auf Anfrage / On request

**Bemessungswerte / Ratings:**

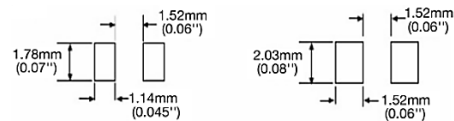
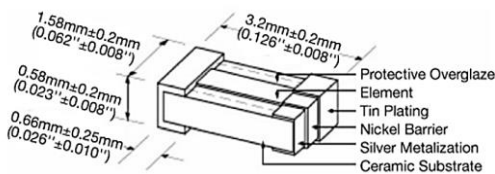
Art. No.	$I_N$	$U_{N\_AC/DC}$ [V]	$U_d$ [mV]	$I_{BC}$ [A]	$I^2 t_{pre-arcing}$ [A <sup>2</sup> s]
320.014	250 mA	125 V / 63 V	250		0,00004
320.017	375 mA	125 V / 63 V	222		0,00006
320.019	500 mA	125 V / 63 V	195	100 A	0,00011
320.022	750 mA	125 V / 63 V	163	@	0,00042
320.024	1 A	125 V / 63 V	156	AC 125 V	0,00096
320.026	1,25 A	125 V / 63 V	149		0,0020
320.027	1,5 A	125 V / 63 V	142		0,0024
320.030	2 A	125 V / 63 V	140		0,005
320.032	2,5 A	125 V / 63 V	138	50 A	0,008
320.034	3 A	125 V / 63 V	136	@	0,020
320.037	3,5 A	125 V / 63 V	140	DC 63 V	0,029
320.038	4 A	125 V / 63 V	144		0,038
320.039	5 A	125 V / 63 V	154		0,075

**$I_N - t$  Verhalten /  $I_N - t$  characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	500 mA
	-
	5 A
$1 \cdot I_N$	$t_{min}$ 4 h
	$t_{max}$ -
$2 \cdot I_N$	$t_{min}$ 0
	$t_{max}$ 5 s
$3 \cdot I_N$	$t_{min}$ 0
	$t_{max}$ 0,2 s

**Maße / Dimensions:**

**Lötpadgröße / Solder pad size:**



# SMD Chip Sicherungen 430.000

## SMD Chip Fuses AC / DC

3,2 x 1,6 mm

T - träge  
time-lag



**Spannung** 63 V  
*Voltage*

**Strom** 750 mA – 5 A  
*Current*

**Ausschaltvermögen** 50 A  
*Breaking capacity*



Norm gemäß / *Standard according to:*

Werknorm

Aufbau / *Construction:*

Keramiksubstrate / *Ceramic substrates*  
Elementdeckschicht: Bleifreies Glas /  
*Element cover coating: Lead-free glass*

**Bauform / Type: 1206 (3216M)**

Anschluss / *Connection:*

Silber, Nickel, Zinn / *Silver, Nickel, Tin*  
(Bleifrei / *Lead-free*)

Betriebstemperatur / *Operating temperature:*

-55°C bis / *to 125°C*  
(De-rating beachten / *consider De-rating*)

Lötbarkeit / *Solderability:* MIL-STD-202G, Method 208H

Reflow: 150°C ≤ T ≤ 200°C (T<sub>min</sub> zu / *to T<sub>max</sub>* = 60-120s)

Max. 260°C (max. 30s)

Wave: Max. 260°C (max. 10s)

Verpackungsmöglichkeit / *Packing options:*

5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = *taped & reeled*

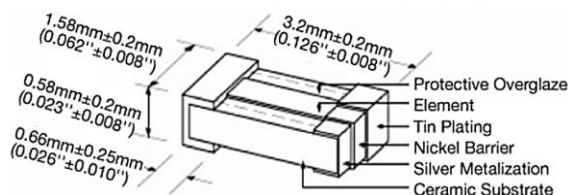
### Bemessungswerte / Ratings:

Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	U <sub>d</sub> [mV]	I <sub>BC</sub> [A]	I <sup>2</sup> t <sub>melt</sub> [A <sup>2</sup> s]
430.022	750 mA	63	333	50	0,01
430.017	1 A	63	349	50	0,05
430.018	1,25 A	63	346	50	0,14
430.019	1,5 A	63	348	50	0,20
430.020	2 A	63	254	50	0,26
430.021	2,5 A	63	221	50	0,40
430.016	3 A	63	182	50	0,83
430.037	3,5 A	63	171	50	1,18
430.023	4 A	63	160	50	2,05
430.024	5 A	63	140	50	3,10

### I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:

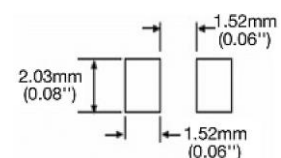
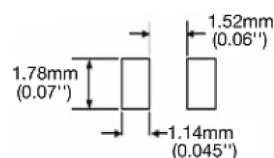
Bemessungsstrom-Faktor / <i>Rated current factor</i>	Schmelzzeit / <i>Melting time:</i>
	750 mA
	–
	5 A
2 · I <sub>N</sub>	t <sub>min</sub> 1 s t <sub>max</sub> 2 min
3 · I <sub>N</sub>	t <sub>min</sub> 100 ms t <sub>max</sub> 3 s
8 · I <sub>N</sub>	t <sub>min</sub> 2 ms t <sub>max</sub> 50 ms

### Maße / Dimensions:



### Lötpadgröße / Solder pad size:

Pad-Layout: Infrarot löten / *Infrared solder* Pad-Layout: Wellenlöten / *Wave solder*



# SMD Chip Sicherungen 430.000

## SMD Chip Fuses AC / DC



3,2 x 1,6 mm

T - träge  
time-lag



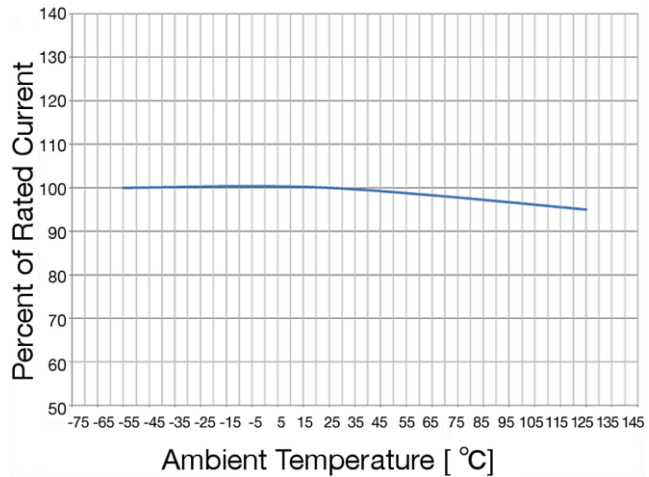
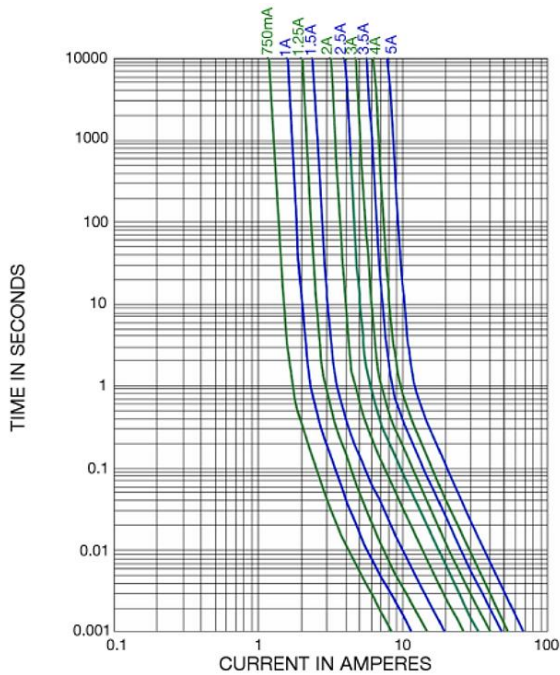
Spannung 63 V  
Voltage

Strom 750 mA – 5 A  
Current

Ausschaltvermögen 50 A  
Breaking capacity

Strom-Zeit Charakteristik / Time-current characteristics:

De-rating:



3,2 x 1,6 mm

T - träge  
time-lag



Spannung 63 V  
Voltage

Strom 1 A - 10 A  
Current

Ausschaltvermögen 50 A  
Breaking capacity



Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

Aluminiumoxidkeramik / Alumina ceramic  
Cu / Sn

Bauform / Type: 1206 (3216M)

Anschluss / Connection:

Cu / Ni / Sn (Anschluss mit Nickel und reinem  
Zinn verlöten / Termination with nickel and  
pure-tin solder plating)

Betriebstemperatur / Operating temperature:

-55°C bis / to 150°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

T = 235°C ± 5°C; t = 2s +0/-0,5s;  
Überzug / cover ≥ 95 %;  
Verstärkung / magnifier: 20X;  
Kompatibel mit Wellenlöten und Reflow-Löten /  
(Compatible with wave-solder and solder-reflow)

Hitzebeständigkeit / Resistance to solder. heat:

T = 260°C ± 5°C; t = 10s ± 1s

Lagerung / Storage:

2 Jahre / years @+10°C - +40°C (RH ≤ 75%)

Verpackungsmöglichkeit / Packing options:

5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = taped & reeled

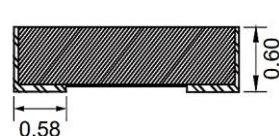
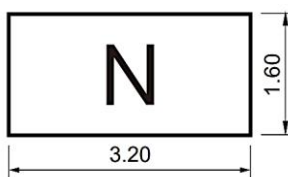
### Bemessungswerte / Ratings:

Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	U <sub>d,max</sub> [V]	P <sub>d,max</sub> [W]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
1.430.017	1	63			50	0,259
1.430.018	1,25	63			50	0,405
1.430.019	1,5	63			50	0,583
1.430.020	2	63	Auf		50	1,063
1.430.021	2,5	63	Anfrage		50	1,619
1.430.016	3	63			50	2,332
1.430.037	3,5	63	/		50	3,174
1.430.023	4	63			50	4,145
1.430.024	5	63	On		50	6,477
1.430.025	6	63	Request		50	9,327
1.430.040	7	63			50	12,969
1.430.026	8	63			50	16,582
1.430.027	10	63			50	25,909

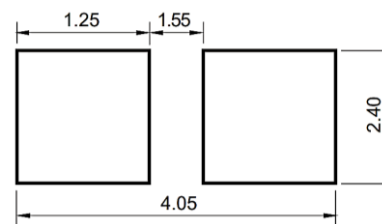
### I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	500 mA - 10 A
2 · I <sub>N</sub>	t <sub>min</sub> 1 s t <sub>max</sub> 2 min
3 · I <sub>N</sub>	t <sub>min</sub> 100 ms t <sub>max</sub> 3 s
8 · I <sub>N</sub>	t <sub>min</sub> 2 ms t <sub>max</sub> 50 ms
10 · I <sub>N</sub>	t <sub>min</sub> 200 µs t <sub>max</sub> 20 ms

### Maße / Dimensions:



### Pad-Layout:





# SMD Chip Sicherungen 431.000

## SMD Chip Fuses DC

3,2 x 1,6 mm

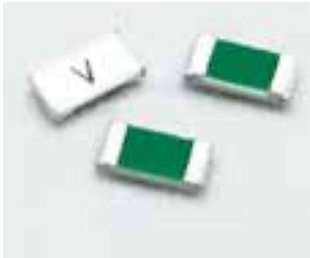
F - flink  
quick acting



**Spannung**  
Voltage **63 V**

**Strom**  
Current **1 A – 10 A**

**Ausschaltvermögen**  
Breaking capacity **50 A**



Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

Keramiksubstrate / Ceramic substrates  
Gehäuse / Body: Kupfer, Zinn / Copper, tin  
Bauform / Type: **1206 (3216M)**

Anschluss / Connection:

Kupfer, Nickel, Zinn / Copper, Nickel, Tin  
(Bleifrei / Lead-free)

Betriebstemperatur / Operating temperature:

-55°C bis / to 150°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

235°C ± 5°C; t = 5s +0/-0,5s;

Hitzebeständigkeit / Resistance to heat:

260°C; t<sub>max</sub> = 10s (Reflow)

Lagerung / Storage:

2 Jahre / years @+10°C - +40°C (RH ≤ 75%)

Verpackungsmöglichkeit / Packing options:

5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = taped & reeled

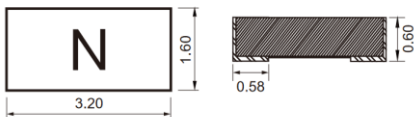
### Bemessungswerte / Ratings:

Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	U <sub>d</sub> [mV]	I <sub>BC</sub> [A]	I <sup>2</sup> t <sub>melt</sub> [A <sup>2</sup> s]
431.017	1 A	63		50	
431.018	1,25 A	63		50	
431.036	1,5 A	63	Auf	50	Auf
431.037	1,75 A	63	Anfrage	50	Anfrage
431.020	2 A	63		50	
431.021	2,5 A	63	/	50	/
431.041	3 A	63		50	
431.038	3,5 A	63	On	50	On
431.023	4 A	63	Request	50	Request
431.024	5 A	63		50	
431.039	6 A	63		50	
431.040	7 A	63		50	
431.026	8 A	63		50	
431.027	10 A	63		50	

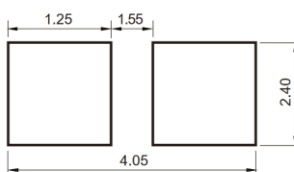
### I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:	
	t <sub>min</sub>	t <sub>max</sub>
1 · I <sub>N</sub>	t <sub>min</sub>	4 h
	t <sub>max</sub>	
2,5 · I <sub>N</sub>	t <sub>min</sub>	0 s
	t <sub>max</sub>	5 s
3,5 · I <sub>N</sub>	t <sub>min</sub>	0 s
	t <sub>max</sub>	1 s

### Maße / Dimensions:



Recommended Pad Layout



# SMD Chip Sicherungen 431.000

## SMD Chip Fuses DC



3,2 x 1,6 mm

F - flink  
quick acting



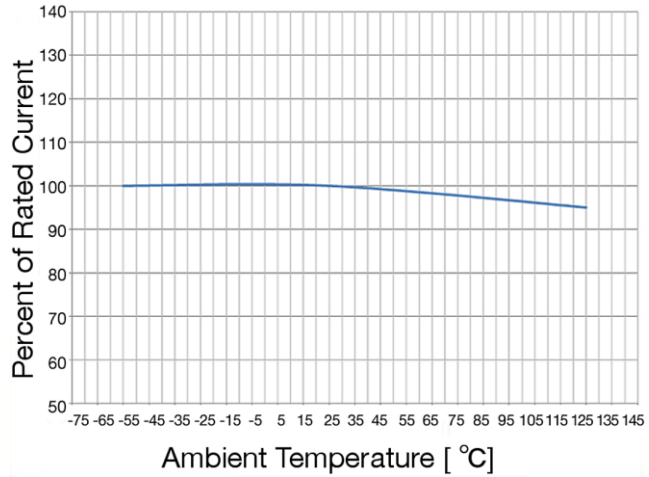
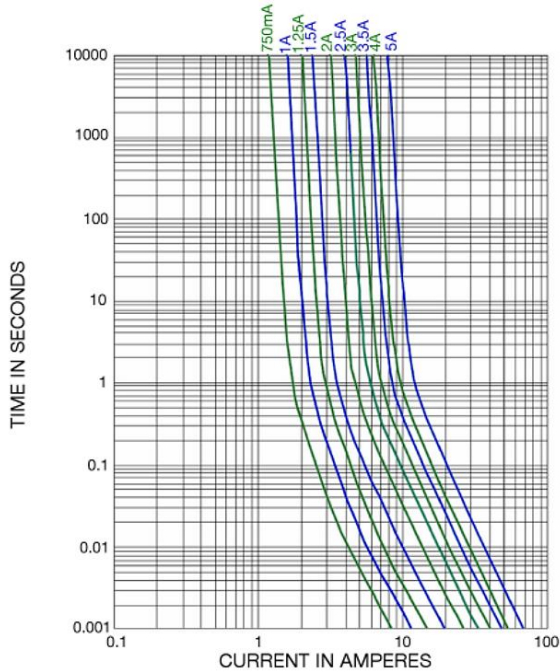
Spannung  
Voltage 63 V / 125 V

Strom  
Current 500 mA – 10 A

Ausschaltvermögen  
Breaking capacity 50 A

Strom-Zeit Charakteristik / Time-current characteristics:

De-rating:



# SMD Chip Sicherungen FUSE0402

## SMD Chip Fuses AC / DC



1,0 x 0,5 x 0,32 mm

FF - super flink  
super quick acting



Spannung  
Voltage 32 V

Strom  
Current 500 mA – 3,15 A

Ausschaltvermögen  
Breaking capacity 50 A



Norm gemäß / Standard according to:

IEC 60127; UL 248-14

Aufbau / Construction:

Keramiksubstrate / Ceramic substrates

Bauform / Type: 0402 (1005M)

Anschluss / Connection:

Silber, Nickel, Zinn / Silver, Nickel, Tin

Betriebstemperatur / Operating temperature:

-55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

IEC 60068-2  
Reflow: Max. 260°C (max. 10s)  
Wave: Max. 260°C (max. 10s)

Verpackungsmöglichkeit / Packing options:

**P1:** 1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = taped & reeled  
**P5:** 5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = taped & reeled  
**PW:** 20.000 Stk. = gegurtet auf Rolle /  
20.000 pcs. = taped & reeled

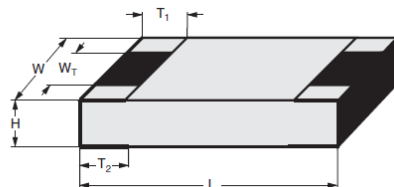
### Bemessungswerte / Ratings:

Art. No.	$I_N$	$U_N$ [V]	$U_d$ [mV]	$I_{BC}$ [A]	$I^2 t_{pre-arcing}$ [A <sup>2</sup> s]
FUSE0402FF-P1-0A5	500 mA	32	368	50	0,0009
FUSE0402FF-P1-0A63	630 mA	32	331	50	0,0014
FUSE0402FF-P1-0A75	750 mA	32	275	50	0,0020
FUSE0402FF-P1-0A8	800 mA	32	231	50	0,0023
FUSE0402FF-P1-1A0	1 A	32	184	50	0,0028
FUSE0402FF-P1-1A25	1,25 A	32	159	50	0,0039
FUSE0402FF-P1-1A5	1,5 A	32	146	50	0,0059
FUSE0402FF-P1-1A6	1,6 A	32	136	50	0,0065
FUSE0402FF-P1-1A75	1,75 A	32	124	50	0,0077
FUSE0402FF-P1-2A0	2 A	32	115	50	0,0101
FUSE0402FF-P1-2A5	2,5 A	32	107	50	0,0157
FUSE0402FF-P1-3A0	3 A	32	95	50	0,0227
FUSE0402FF-P1-3A15	3,15 A	32	90	50	0,0250

### $I_N$ -t Verhalten / $I_N$ -t characteristics:

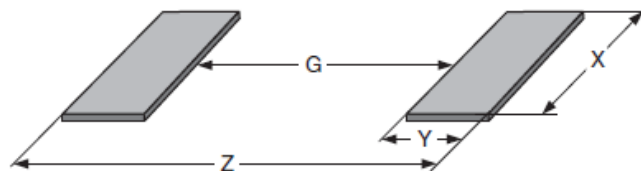
Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	500 mA – 3,15 A
$1,25 \cdot I_N$	$t_{min}$ 1 h $t_{max}$ -
$2 \cdot I_N$	$t_{min}$ 0 $t_{max}$ 5 s
$10 \cdot I_N$	$t_{min}$ 0 $t_{max}$ 0,001 s

### Maße / Dimensions:



H (mm)	L (mm)	W (mm)	$W_r$ (mm)	$T_1$ (mm)	$T_2$ (mm)
0,32	1,0	0,5	> 75 % of W	0,2	0,2

### Lötpadgröße / Solder pad size:



Wave Soldering				Reflow Soldering			
G (mm)	Y (mm)	X (mm)	Z (mm)	G (mm)	Y (mm)	X (mm)	Z (mm)
-	-	-	-	0,35	0,55	0,55	1,45

# SMD Chip Sicherungen FUSE0603

## SMD Chip Fuses AC / DC



1,6 x 0,8 mm

FF - super flink  
super quick acting



Spannung 32 V  
Voltage

Strom 500 mA – 5 A  
Current

Ausschaltvermögen 50 A  
Breaking capacity



Norm gemäß / Standard according to:

IEC 60127; UL 248-14

Aufbau / Construction:

Keramiksubstrate / Ceramic substrates

Bauform / Type: 0603 (1608M)

Anschluss / Connection:

Silber, Nickel, Zinn / Silver, Nickel, Tin

Betriebstemperatur / Operating temperature:

-55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

IEC 60068-2  
Reflow: Max. 260°C (max. 10s)  
Wave: Max. 260°C (max. 10s)

Verpackungsmöglichkeit / Packing options:

**P1:** 1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = taped & reeled  
**P5:** 5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = taped & reeled  
**PW:** 20.000 Stk. = gegurtet auf Rolle /  
20.000 pcs. = taped & reeled

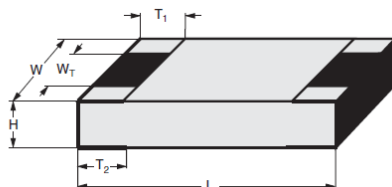
### Bemessungswerte / Ratings:

Art. No.	$I_N$	$U_N$ [V]	$U_d$ [mV]	$I_{BC}$ [A]	$I^2t_{pre-arcing}$ [A <sup>2</sup> s]
FUSE0603FF-P1-0A5	500 mA	32	361	50	0,0009
FUSE0603FF-P1-0A63	630 mA	32	331	50	0,0014
FUSE0603FF-P1-0A75	750 mA	32	258	50	0,0020
FUSE0603FF-P1-0A8	800 mA	32	249	50	0,0023
FUSE0603FF-P1-1A0	1 A	32	223	50	0,0028
FUSE0603FF-P1-1A25	1,25 A	32	180	50	0,0039
FUSE0603FF-P1-1A5	1,5 A	32	155	50	0,0059
FUSE0603FF-P1-1A6	1,6 A	32	159	50	0,0065
FUSE0603FF-P1-1A75	1,75	32	138	50	0,0077
FUSE0603FF-P1-2A0	2 A	32	150	50	0,0101
FUSE0603FF-P1-2A5	2,5 A	32	121	50	0,0157
FUSE0603FF-P1-3A0	3 A	32	126	50	0,0227
FUSE0603FF-P1-3A15	3,15 A	32	120	50	0,0250
FUSE0603FF-P1-3A5	3,5 A	32	106	50	0,0308
FUSE0603FF-P1-4A0	4 A	32	100	50	0,0403
FUSE0603FF-P1-5A0	5 A	32	85	50	0,2275

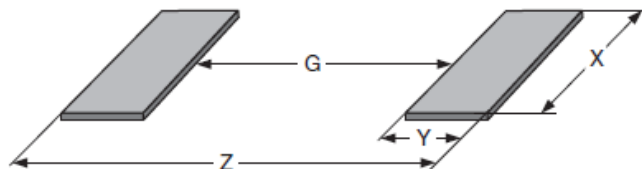
### $I_N$ - t Verhalten / $I_N$ - t characteristics:

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	500 mA – 5 A
$1,25 \cdot I_N$	$t_{min}$ 1 h $t_{max}$ -
$2 \cdot I_N$	$t_{min}$ 0 $t_{max}$ 5 s
$10 \cdot I_N$	$t_{min}$ 0 $t_{max}$ 0,001 s

### Maße / Dimensions:



### Lötpadgröße / Solder pad size:



H (mm)	L (mm)	W (mm)	$W_T$ (mm)	$T_1$ (mm)	$T_2$ (mm)
0,45	1,55	0,85	> 75 % of W	0,3	0,3

Wave Soldering				Reflow Soldering			
G (mm)	Y (mm)	X (mm)	Z (mm)	G (mm)	Y (mm)	X (mm)	Z (mm)
0,55	1,10	1,10	2,75	0,65	0,70	0,95	2,05

**1,6 x 0,8 mm**

F - flink  
quick acting



**Spannung** AC 32 V  
**Voltage** DC 63 V

**Strom** 250 mA – 5 A  
**Current**

**Ausschaltvermögen** 35 A / 50 A  
**Breaking capacity**



Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

**Bauform / Type:** 0603 (1608M)

Keramiksubstrat / Ceramic substrate

Anschluss / Connection:

Silber, Nickel, Zinn / Silver, nickel, tin

Betriebstemperatur / Operating temperature:

-55 °C bis / to 125 °C  
(De-rating beachten / Consider De-rating)

Lötbarkeit / Solderability:

235°C ± 5 °C, t: 2 s +0/-0,5 s

Max. zul. Löttemp. / Max. adms. soldering temp.: 260°C, t: 10 s

Verpackungsmöglichkeit / Packing options:

5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = taped & reeled

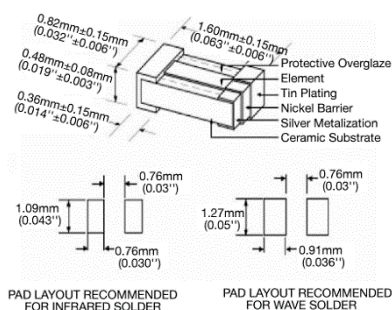
**Bemessungswerte / Ratings:**

Art. No.	I <sub>N</sub>	U <sub>N</sub> (AC/DC) [V]	U <sub>d</sub> [mV]	P <sub>d,max</sub> [W]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]	
420.014	250 mA	32 / 63	243	0,06	35 A @ AC 32 V	0,00001	
420.015	300 mA	32 / 63	217	0,07		0,00003	
420.017	375 mA	32 / 63	196	0,07		0,00004	
420.019	500 mA	32 / 63	171	0,09		0,00015	
420.022	750 mA	32 / 63	159	0,12		0,0005	
420.024	1 A	32 / 63	154	0,15		0,0010	
420.026	1,25 A	32 / 63	152	0,19		0,0018	
420.027	1,5 A	32 / 63	146	0,22		0,0025	
420.029	1,75 A	32 / 63	144	0,25		0,0044	
420.030	2 A	32 / 63	133	0,27		0,0063	
420.032	2,5 A	32 / 63	130	0,33	50 A @ DC 63 V	0,0074	
420.034	3 A	32 / 63	130	0,39		0,018	
420.037	3,5 A	32 / 63	131	0,46		0,021	
420.038	4 A	32 / 63	131	0,52		0,042	
420.039	5 A	32	131	0,66		50	0,055

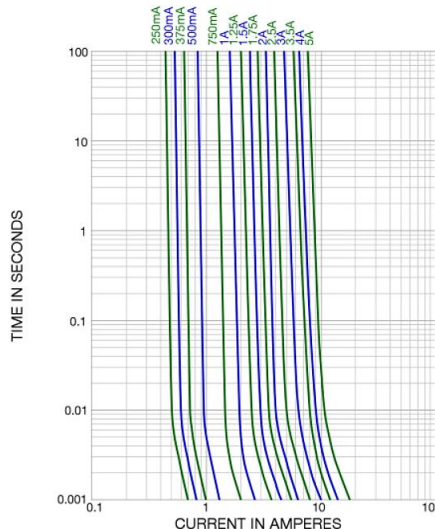
**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:	
	t <sub>min</sub>	t <sub>max</sub>
1 · I <sub>N</sub>	4 h	-
2 · I <sub>N</sub>	0	5 s
3 · I <sub>N</sub>	0	200 ms

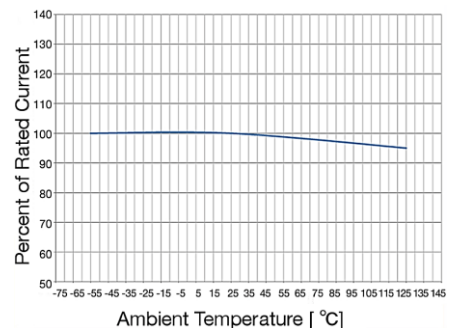
**Maße / Dimensions:**



**I-t Kennlinie / I-t curve:**



**De-Rating:**



**1,6 x 0,8 mm**

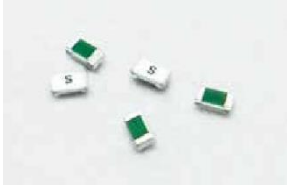
F - flink  
quick acting



**Spannung** 125 V / 63 V  
**Voltage**

**Strom** 500 mA – 6 A  
**Current**

**Ausschaltvermögen** 50 A  
**Breaking capacity**



Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

Aluminiumoxid-Keramik / Alumina ceramic

**Bauform / Type: 0603 (1608M)**

Anschluss / Connection:

Kupfer, Nickel, Zinn / Copper, nickel, tin

Betriebstemperatur / Operating temperature:

-55°C bis / to 150°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

235°C ± 5 °C, t: 2 s +0/-0,5 s

Max. zul. Löttemp. / Max. adms. soldering temp.: 260°C, t: 10 s

Verpackungsmöglichkeit / Packing options:

1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = taped & reeled

**Bemessungswerte / Ratings:**

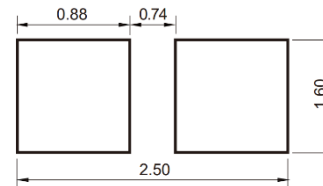
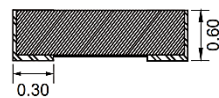
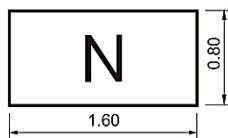
Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	I <sub>BC</sub> [A]	I <sup>2</sup> t [A <sup>2</sup> s]
421.014	500 mA	125	50	0,012
421.036	750 mA	125	50	0,027
421.017	1 A	63	50	0,047
421.018	1,25 A	63	50	0,074
421.037	1,5 A	63	50	0,106
421.038	1,75 A	63	50	0,145
421.020	2 A	63	50	0,189
421.021	2,5 A	63	50	0,296
421.034	3 A	63	50	0,426
421.037	3,5 A	63	50	0,579
421.023	4 A	63	50	0,757
421.024	5 A	63	50	1,183
421.039	6 A	63	50	1,703

**I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:	
	500 mA	6 A
1 · I <sub>N</sub>	t <sub>min</sub>	4 h
	t <sub>max</sub>	-
2 · I <sub>N</sub>	t <sub>min</sub>	0
	t <sub>max</sub>	5 s

**Maße / Dimensions:**

**Lötpadgröße / Solder pad size:**



**1,6 x 0,8 mm**

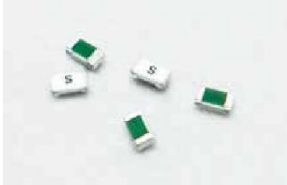
T - träge  
time-lag



**Spannung** 32 V  
**Voltage**

**Strom** 1 A – 6 A  
**Current**

**Ausschaltvermögen** 50 A  
**Breaking capacity**



Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

**Bauform / Type:** 0603 (1608M)

Aluminiumoxid-Keramik / Alumina ceramic

Anschluss / Connection:

Kupfer, Nickel, Zinn / Copper, nickel, tin

Betriebstemperatur / Operating temperature:

-55°C bis / to 150°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

235°C ± 5 °C, t: 2 s +0/-0,5 s

Max. zul. Löttemp. / Max. adms. soldering temp.: 260°C, t: 10 s

Verpackungsmöglichkeit / Packing options:

5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = taped & reeled

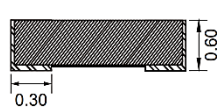
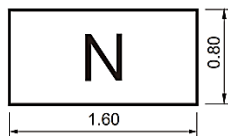
**Bemessungswerte / Ratings:**

Art. No.	$I_N$	$U_N$ [V]	$I_{BC}$ [A]	$I^2t$ [A <sup>2</sup> s]
422.017	1 A	32	50	0,20
422.059	1,5 A	32	50	0,45
422.020	2 A	32	50	0,80
422.021	2,5 A	32	50	1,25
422.034	3 A	32	50	1,80
422.037	3,5 A	32	50	2,45
422.023	4 A	32	50	3,20
422.024	5 A	32	50	5,00
422.040	6 A	32	50	7,20

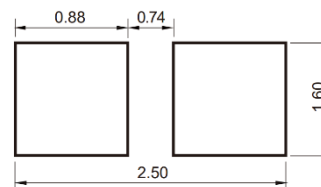
**$I_N$  - t Verhalten /  $I_N$  - t characteristics:**

Bemessungsstrom-Faktor / Rated current factor		Schmelzzeit / Melting time:	
		1 A	6 A
2 · $I_N$	$t_{min}$	0	
	$t_{max}$	2 min	
3 · $I_N$	$t_{min}$	0	
	$t_{max}$	3 s	
8 · $I_N$	$t_{min}$	1 ms	
	$t_{max}$	50 ms	

**Maße / Dimensions:**



**Lötpadgröße / Solder pad size:**



# SMD Chip Sicherungen FUSE0805

## SMD Chip Fuses AC / DC



2,0 x 1,2 mm

FF - super flink  
super quick acting



Spannung 32 V  
Voltage

Strom 500 mA – 5 A  
Current

Ausschaltvermögen 50 A  
Breaking capacity



Norm gemäß / Standard according to: UL 248-14

Aufbau / Construction: Keramikssubstrate / Ceramic substrates  
Bauform / Type: 0805 (2012M)

Anschluss / Connection: Silber, Nickel, Zinn / Silver, Nickel, Tin

Betriebstemperatur / Operating temperature: -55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability: IEC 60068-2  
Reflow: Max. 260°C (max. 10s)  
Wave: Max. 260°C (max. 10s)

Verpackungsmöglichkeit / Packing options: **P1:** 1.000 Stk. = gegurtet auf Rolle / 1.000 pcs. = taped & reeled  
**P5:** 5.000 Stk. = gegurtet auf Rolle / 5.000 pcs. = taped & reeled  
**PW:** 20.000 Stk. = gegurtet auf Rolle / 20.000 pcs. = taped & reeled

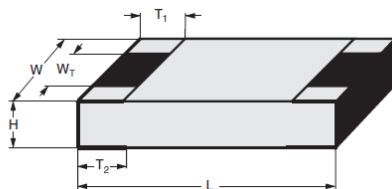
### Bemessungswerte / Ratings:

Art. No.	$I_N$	$U_N$ [V]	$U_d$ [mV]	$I_{BC}$ [A]	$I^2t_{pre-arcing}$ [A <sup>2</sup> s]
FUSE0805FF-P1-0A5	500 mA	32	374	50	0,0009
FUSE0805FF-P1-0A63	630 mA	32	347	50	0,0014
FUSE0805FF-P1-0A75	750 mA	32	280	50	0,0020
FUSE0805FF-P1-0A8	800 mA	32	262	50	0,0023
FUSE0805FF-P1-1A0	1 A	32	243	50	0,0028
FUSE0805FF-P1-1A25	1,25 A	32	205	50	0,0040
FUSE0805FF-P1-1A5	1,5 A	32	171	50	0,0059
FUSE0805FF-P1-1A6	1,6 A	32	164	50	0,0065
FUSE0805FF-P1-1A75	1,75	32	161	50	0,0077
FUSE0805FF-P1-2A0	2 A	32	176	50	0,0101
FUSE0805FF-P1-2A5	2,5 A	32	131	50	0,0157
FUSE0805FF-P1-3A0	3 A	32	134	50	0,0227
FUSE0805FF-P1-3A15	3,15 A	32	128	50	0,0250
FUSE0805FF-P1-3A5	3,5 A	32	119	50	0,0308
FUSE0805FF-P1-4A0	4 A	32	105	50	0,0403
FUSE0805FF-P1-5A0	5 A	32	98	50	0,2275

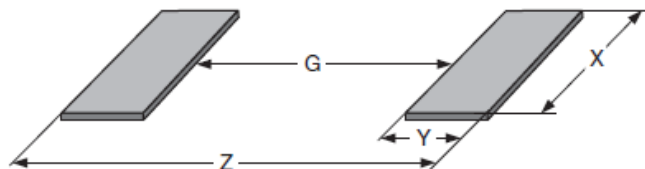
### $I_N$ - t Verhalten / $I_N$ - t characteristics:

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	500 mA
	–
	5 A
$1,25 \cdot I_N$	$t_{min}$ 1 h
	$t_{max}$ -
$2 \cdot I_N$	$t_{min}$ 0
	$t_{max}$ 5 s
$10 \cdot I_N$	$t_{min}$ 0
	$t_{max}$ 0,001 s

### Maße / Dimensions:



### Lötpadgröße / Solder pad size:



H (mm)	L (mm)	W (mm)	$W_T$ (mm)	$T_1$ (mm)	$T_2$ (mm)
0,45	2,0	1,25	> 75 % of W	0,4	0,4

Wave Soldering				Reflow Soldering			
G (mm)	Y (mm)	X (mm)	Z (mm)	G (mm)	Y (mm)	X (mm)	Z (mm)
0,8	1,25	1,50	3,30	0,90	0,90	1,40	2,70



# SMD Chip Sicherungen FUSE1206

## SMD Chip Fuses AC / DC

3,2 x 1,6 mm

FF - super flink  
super quick acting



**Spannung**  
Voltage **63 V**

**Strom**  
Current **500 mA – 6,3 A**

**Ausschaltvermögen**  
Breaking capacity **50 A**



Norm gemäß / Standard according to:

IEC 60127; UL 248-14

Aufbau / Construction:

Keramiksubstrate / Ceramic substrates

**Bauform / Type: 1206 (3216M)**

Anschluss / Connection:

Silber, Nickel, Zinn / Silver, Nickel, Tin

Betriebstemperatur / Operating temperature:

-55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

IEC 60068-2  
Reflow: Max. 260°C (max. 10s)  
Wave: Max. 260°C (max. 10s)

Verpackungsmöglichkeit / Packing options:

**P1:** 1.000 Stk. = gegurtet auf Rolle /  
1.000 pcs. = taped & reeled  
**P5:** 5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = taped & reeled  
**PW:** 20.000 Stk. = gegurtet auf Rolle /  
20.000 pcs. = taped & reeled

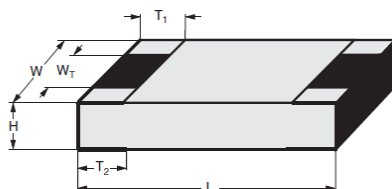
### Bemessungswerte / Ratings:

Art. No.	$I_N$	$U_N$ [V]	$U_d$ [mV]	$I_{BC}$ [A]	$I^2t_{pre-arcing}$ [A <sup>2</sup> s]
FUSE1206FF-P1-0A5	500 mA	63	433	50	0,0009
FUSE1206FF-P1-0A63	630 mA	63	372	50	0,0014
FUSE1206FF-P1-0A75	750 mA	63	325	50	0,0020
FUSE1206FF-P1-0A8	800 mA	63	273	50	0,0023
FUSE1206FF-P1-1A0	1 A	63	262	50	0,0028
FUSE1206FF-P1-1A25	1,25 A	63	230	50	0,0039
FUSE1206FF-P1-1A5	1,5 A	63	207	50	0,0059
FUSE1206FF-P1-1A6	1,6 A	63	168	50	0,0065
FUSE1206FF-P1-1A75	1,75	63	174	50	0,0077
FUSE1206FF-P1-2A0	2 A	63	181	50	0,0101
FUSE1206FF-P1-2A5	2,5 A	63	161	50	0,0157
FUSE1206FF-P1-3A0	3 A	63	173	50	0,0227
FUSE1206FF-P1-3A15	3,15 A	63	153	50	0,0250
FUSE1206FF-P1-3A5	3,5 A	63	161	50	0,0308
FUSE1206FF-P1-4A0	4 A	63	147	50	0,0403
FUSE1206FF-P1-5A0	5 A	63	131	50	0,2275
FUSE1206FF-P1-6A3	6,3 A	63	116	50	0,5160

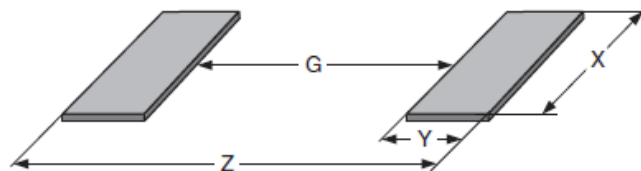
### $I_N$ - t Verhalten / $I_N$ - t characteristics:

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	500 mA – 6,3 A
$1,25 \cdot I_N$	$t_{min}$ 1 h $t_{max}$ -
$2 \cdot I_N$	$t_{min}$ 0 $t_{max}$ 5 s
$10 \cdot I_N$	$t_{min}$ 0 $t_{max}$ 0,001 s

### Maße / Dimensions:



### Lötpadgröße / Solder pad size:



H (mm)	L (mm)	W (mm)	$W_T$ (mm)	$T_1$ (mm)	$T_2$ (mm)
0,55	3,2	1,6	> 75 % of W	0,5	0,5

Wave Soldering				Reflow Soldering			
G (mm)	Y (mm)	X (mm)	Z (mm)	G (mm)	Y (mm)	X (mm)	Z (mm)
1,40	1,50	1,90	4,40	1,50	1,15	1,75	3,80

# SMD Chip Sicherungen 431.000

## SMD Chip Fuses DC

3,2 x 1,6 mm

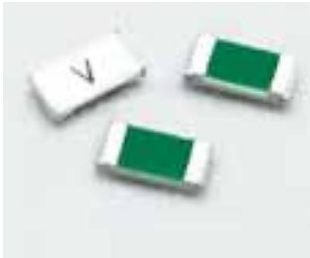
F - flink  
quick acting



**Spannung** 63 V  
*Voltage*

**Strom** 1 A – 10 A  
*Current*

**Ausschaltvermögen** 50 A  
*Breaking capacity*



Norm gemäß / *Standard according to:*

Werknorm

Aufbau / *Construction:*

Keramiksubstrate / *Ceramic substrates*  
Gehäuse / *Body:* Kupfer, Zinn / *Copper, tin*  
Bauform / *Type:* 1206 (3216M)

Anschluss / *Connection:*

Kupfer, Nickel, Zinn / *Copper, Nickel, Tin*  
(Bleifrei / *Lead-free*)

Betriebstemperatur / *Operating temperature:*

-55°C bis / *to* 150°C  
(De-rating beachten / *consider De-rating*)

Lötbarkeit / *Solderability:*

235°C ± 5°C; t = 5s +0/-0,5s;

Hitzebeständigkeit / *Resistance to heat:*

260°C; t<sub>max</sub> = 10s (Reflow)

Lagerung / *Storage:*

2 Jahre / *years* @+10°C - +40°C (RH ≤ 75%)

Verpackungsmöglichkeit / *Packing options:*

5.000 Stk. = gegurtet auf Rolle /  
5.000 pcs. = *taped & reeled*

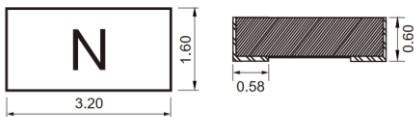
### Bemessungswerte / Ratings:

Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	U <sub>d</sub> [mV]	I <sub>BC</sub> [A]	I <sup>2</sup> t <sub>melt</sub> [A <sup>2</sup> s]
431.017	1 A	63		50	
431.018	1,25 A	63		50	
431.036	1,5 A	63	Auf	50	Auf
431.037	1,75 A	63	Anfrage	50	Anfrage
431.020	2 A	63		50	
431.021	2,5 A	63	/	50	/
431.041	3 A	63		50	
431.038	3,5 A	63	On	50	On
431.023	4 A	63	Request	50	Request
431.024	5 A	63		50	
431.039	6 A	63		50	
431.040	7 A	63		50	
431.026	8 A	63		50	
431.027	10 A	63		50	

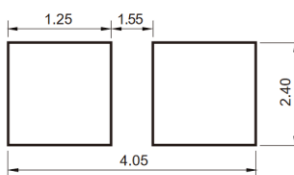
### I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:

Bemessungsstrom-Faktor / <i>Rated current factor</i>	Schmelzzeit / <i>Melting time:</i>
	1 A
	–
	10 A
2,5 · I <sub>N</sub>	t <sub>min</sub> 0
	t <sub>max</sub> 5 s
3,5 · I <sub>N</sub>	t <sub>min</sub> 0
	t <sub>max</sub> 1 s

### Maße / Dimensions:



Recommended Pad Layout



# SMD Chip Sicherungen 430.000

## SMD Chip Fuses AC / DC

3,2 x 1,6 mm

T - träge  
time-lag



**Spannung**  
Voltage **63 V**

**Strom**  
Current **750 mA – 8 A**

**Ausschaltvermögen**  
Breaking capacity **50 A**



Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

Keramikssubstrate / Ceramic substrates  
Elementdeckschicht: Bleifreies Glas /  
Element cover coating: Lead-free glass

**Bauform / Type: 1206 (3216M)**

Anschluss / Connection:

Silber, Nickel, Zinn / Silver, Nickel, Tin  
(Bleifrei / Lead-free)

Betriebstemperatur / Operating temperature:

-55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability: MIL-STD-202G, Method 208H

Reflow: 150°C ≤ T ≤ 200°C (T<sub>min</sub> zu / to T<sub>max</sub> = 60-120s)

Max. 260°C (max. 30s)

Wave: Max. 260°C (max. 10s)

Verpackungsmöglichkeit / Packing options:

5.000 Stk. = gegurtet auf Rolle /

5.000 pcs. = taped & reeled

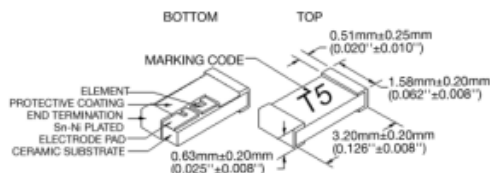
### Bemessungswerte / Ratings:

Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	U <sub>d</sub> [mV]	I <sub>BC</sub> [A]	I <sup>2</sup> t <sub>melt</sub> [A <sup>2</sup> s]
430.022	750 mA	63	795	50	0,06
430.017	1 A	63	597	50	0,12
430.018	1,25 A	63	541	50	0,20
430.019	1,5 A	63	436	50	0,23
430.020	2 A	63	325	50	0,63
430.021	2,5 A	63	274	50	1,07
430.016	3 A	63	232	50	1,64
430.037	3,5 A	63	194	50	2,28
430.023	4 A	63	195	50	2,56
430.024	5 A	63	157	50	5,30
430.025	6 A	63	153	50	6,00
430.067	7 A	63	139	50	6,90
430.026	8 A	63	135	50	8,00

### I<sub>N</sub>- t Verhalten / I<sub>N</sub>- t characteristics:

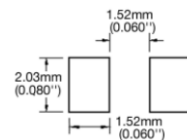
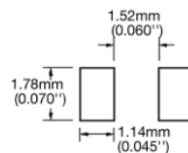
Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
	<b>750 mA</b>
	<b>8 A</b>
2 · I <sub>N</sub>	t <sub>min</sub> 1 s t <sub>max</sub> 2 min
3 · I <sub>N</sub>	t <sub>min</sub> 100 ms t <sub>max</sub> 3 s
8 · I <sub>N</sub>	t <sub>min</sub> 2 ms t <sub>max</sub> 50 ms

### Maße / Dimensions:



### Lötpadgröße / Solder pad size:

Pad-Layout: Infrarot löten / Infrared solder Pad-Layout: Wellenlöten / Wave solder



# SMD Chip Sicherungen 432.000

## SMD Chip Fuses DC



3,2 x 1,6 mm

High Inrush



<b>Spannung</b> Voltage	<b>48 V / 32 V</b>	<b>Strom</b> Current	<b>12 A – 30 A</b>	<b>Ausschaltvermögen</b> Breaking capacity	<b>150 A – 300 A</b>
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Norm gemäß / Standard according to:

Werknorm

Aufbau / Construction:

Keramik / Ceramic

Gehäuse / Body: Kupfer, Zinn / Copper, tin

Bauform / Type: 1206 (3216M)

Anschluss / Connection:

12 – 15 A: Silber, verzinkt / Silver plated with tin

20 – 30 A: Silber, beschichtet mit Kupfer, Nickel, Zinn / Silver plated with copper, nickel, tin

Betriebstemperatur / Operating temperature:

-55°C bis / to 150°C

(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

235°C ± 5°C; t = 2 s +0/-0,5s;

Hitzebeständigkeit / Resistance to heat:

260°C; t<sub>max</sub> = 10 s (Reflow)

Lagerung / Storage:

2 Jahre / years @+10°C - +40°C (RH ≤ 75%)

Verpackungsmöglichkeit / Packing options:

5.000 Stk. = gegurtet auf Rolle /

5.000 pcs. = taped & reeled

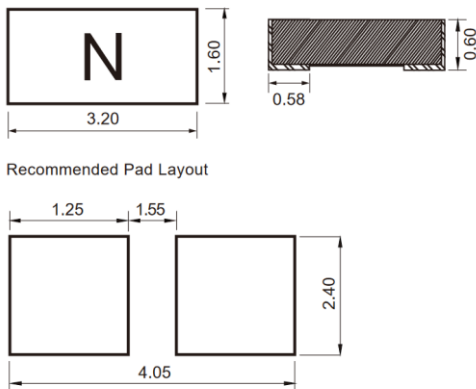
### Bemessungswerte / Ratings:

Art. No.	I <sub>N</sub>	U <sub>N</sub> [V]	R <sub>C</sub> [mΩ]	I <sub>BC</sub> [A]	I <sup>2</sup> t <sub>melt</sub> [A <sup>2</sup> s]
432.050	12 A	32	5,0	150	22,0
432.029	15 A	32	4,0	150	33,7
432.031	20 A	32 / 48	1,8	200 A @ DC 48 V	48,0
432.032	25 A	32 / 48	1,3	300 A @ DC 32 V	70,0
432.033	30 A	32 / 48	1,1		90,0

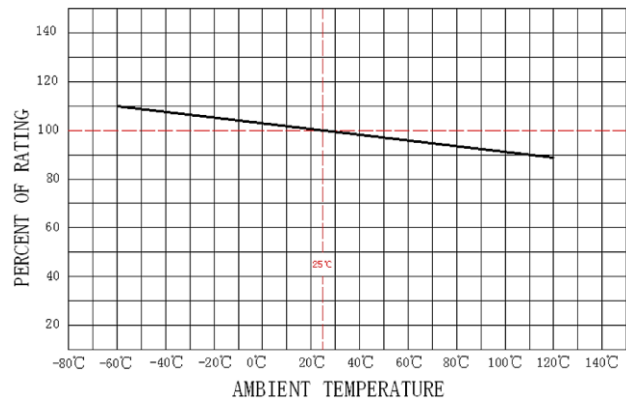
### I<sub>N</sub> - t Verhalten / I<sub>N</sub> - t characteristics:

Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
1 · I <sub>N</sub>	12 A
	-
	30 A
1 · I <sub>N</sub>	t <sub>min</sub> 4 h
	t <sub>max</sub> -
3,5 · I <sub>N</sub>	t <sub>min</sub> 0
	t <sub>max</sub> 5 s

### Maße / Dimensions:



### De-rating:



# SMD Chip Sicherungen 432.100

## SMD Chip Fuses DC

3,2 x 1,6 mm / 1206

F - flink  
quick acting



**Spannung**

32 V

**Strom**

15 A – 40 A

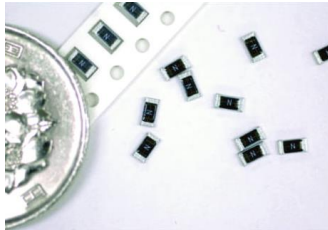
**Ausschaltvermögen**

450 A

Voltage

Current

Breaking capacity



Norm gemäß / Standard according to: UL 248-14

Aufbau / Construction:

Keramikssubstrate / Ceramic substrates

**Bauform / Type: 1206 (3216M)**

Anschluss / Connection:

Silber, verzinnertes Palladium /  
Silver, tin-plated palladium

Betriebstemperatur / Operating temperature:

-55°C bis / to 125°C  
(De-rating beachten / consider De-rating)

Lötbarkeit / Solderability:

IEC 60068-2

Infrarot / Infrared: Max. 260°C (max. 30s)

Wave: Max. 260°C (max. 10s)

Manuell / Manual: Max. 350°C (max. 3s)

Verpackungsmöglichkeit / Packing options:

3.000 Stk. = gegutet auf Rolle /  
3.000 pcs. = taped & reeled

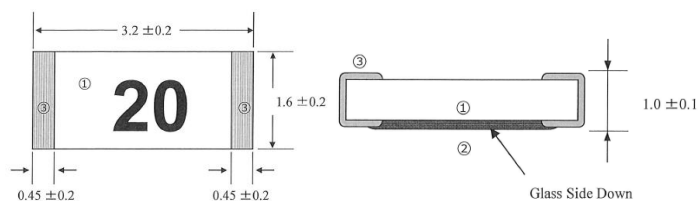
### Bemessungswerte / Ratings:

Art. No.	$I_N$	$U_N$ [V]	$U_d$ [mV]	$I_{BC}$ [A]	$I^2 t_{pre-arcing}$ [A <sup>2</sup> s]
432.129	15 A	32	Auf	450	Auf
432.131	20 A	32	Anfrage	450	Anfrage
432.132	25 A	32	/	450	/
432.133	30 A	32	On	450	On
432.135	40 A	32	request	450	request

### $I_N - t$ Verhalten / $I_N - t$ characteristics:

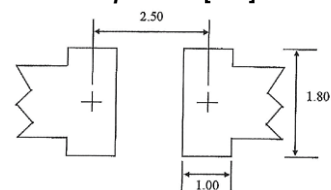
Bemessungsstrom-Faktor / Rated current factor	Schmelzzeit / Melting time:
1 · $I_N$	15 A
	40 A
2,5 · $I_N$	4 h
	0
	5 s

### Maße / Dimensions:



- (1) Substrat: Keramik / substrate: ceramic
- (2) Abdeckung: Glas / cover: glass
- (3) Anschlüsse: verzinkt / Terminations: tin-plated

### Lötpadgröße / Solder pad size [mm]:



# SMD Chip Sicherungen 432.100

## SMD Chip Fuses DC



3,2 x 1,6 mm / 1206

F - flink  
quick acting

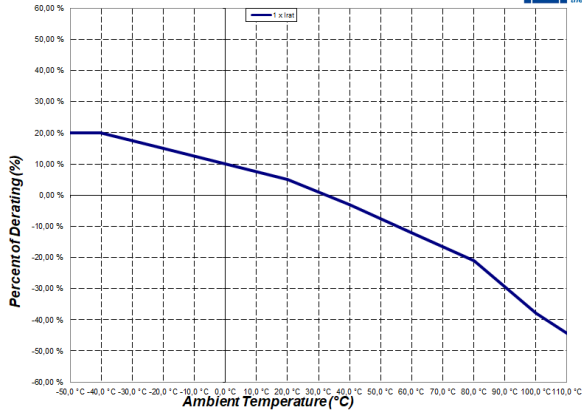


Spannung  
Voltage 32 V

Strom  
Current 15 A – 40 A

Ausschaltvermögen  
Breaking capacity 450 A

DERATING CURVE 431.000



I-t-Diagramm / Time-Current Curve

