

## ISA-PLAN® - SMD Präzisionswiderstände / SMD precision resistors

| TECHNISCHE DATEN / TECHNICAL DATA                                                                                                    |                                        |                                              |
|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------|
| Widerstandswerte                                                                                                                     | Resistance values                      | 10 mOhm - 4.7 Ohm                            |
| Toleranz                                                                                                                             | Tolerance                              | 0.5 % ( $\geq 50$ mOhm), 1 %, 5 %            |
| Temperaturkoeffizient(MANGANIN®)                                                                                                     | Temperature coefficient (tcr)          | $< \pm 50$ ppm/K ( 20 °C to 60 °C )          |
| Temperaturbereich                                                                                                                    | Applicable temperature range           | -55 °C to +140 °C                            |
| Belastbarkeit                                                                                                                        | Load capacity                          | 3 W                                          |
| Innerer Wärmewiderstand ( $R_{thi}$ )                                                                                                | Internal heat resistance ( $R_{thi}$ ) | $< 15$ K/W                                   |
| Isolationsspannung                                                                                                                   | Dielectric withstanding voltage        | 1000 VAC                                     |
| Induktivität                                                                                                                         | Inductance                             | $< 10$ nH                                    |
| Stabilität (Nennlast) Abweichung $T_K$ = Kontaktstellentemperatur<br>Stability (nominal load) deviation $T_K$ = terminal temperature |                                        | $< 0.5$ % nach/after 2000 h ( $T_K = 80$ °C) |

### MERKMALE / FEATURES

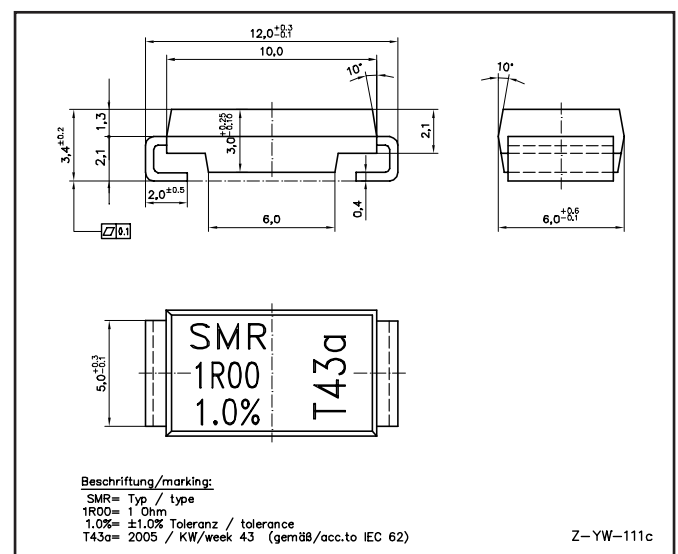
- 3 Watt Dauerleistung
- 3 Watt permanent power
- Dauerströme bis 17 A ( 10 mOhm )
- Continuous current load up to 17 Amps( 10 mOhm )
- Standard-Lötpadgeometrie (Baugröße 4723)
- Standard pad size (size 4723)
- sehr hohe Pulsbelastbarkeit
- High pulse power rating
- Bauteilemontage: Reflow-, IR-Löten und Wellenlöten
- Mounting: reflow-, infrared soldering and wave soldering



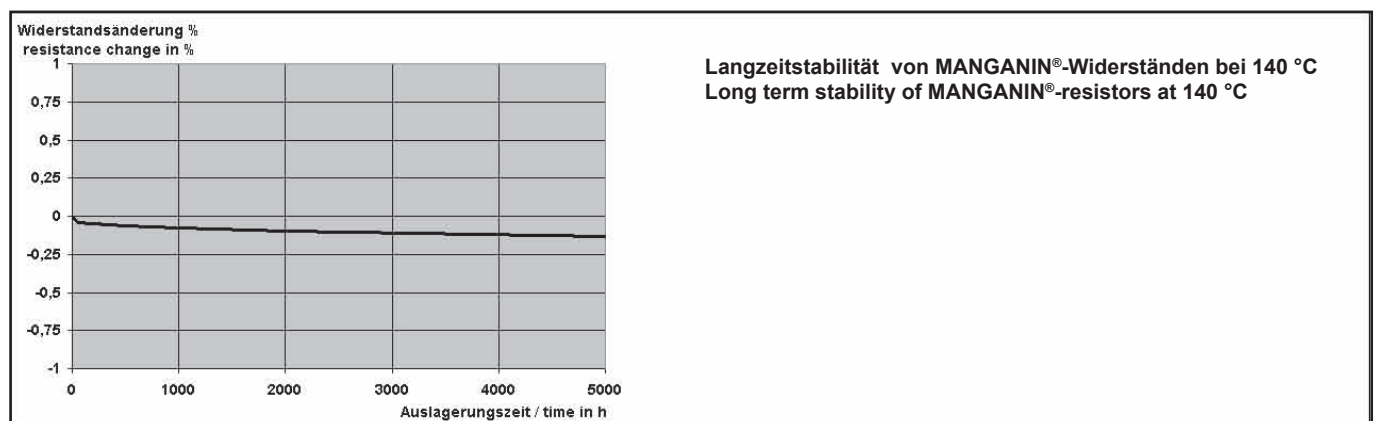
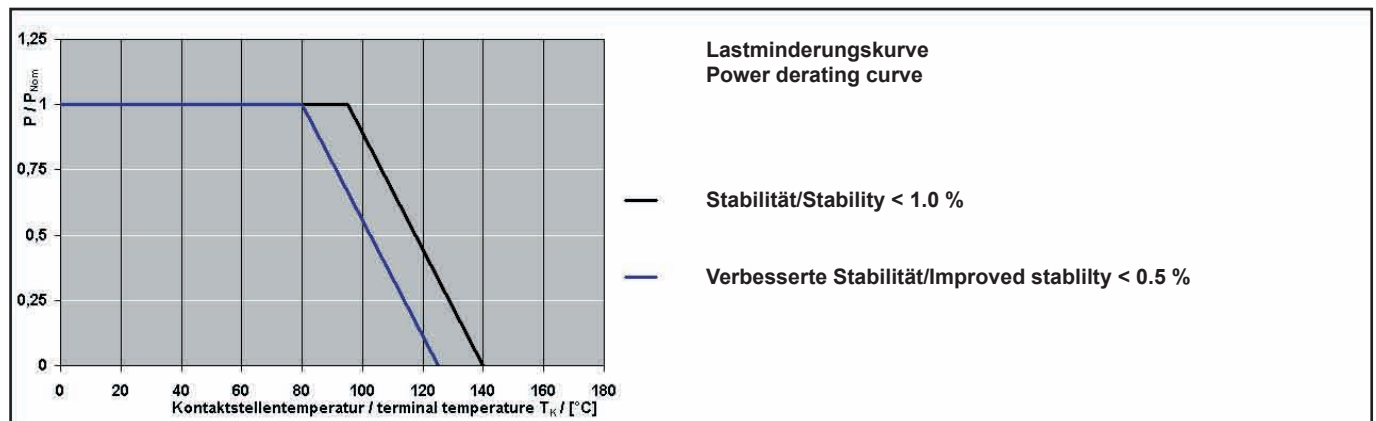
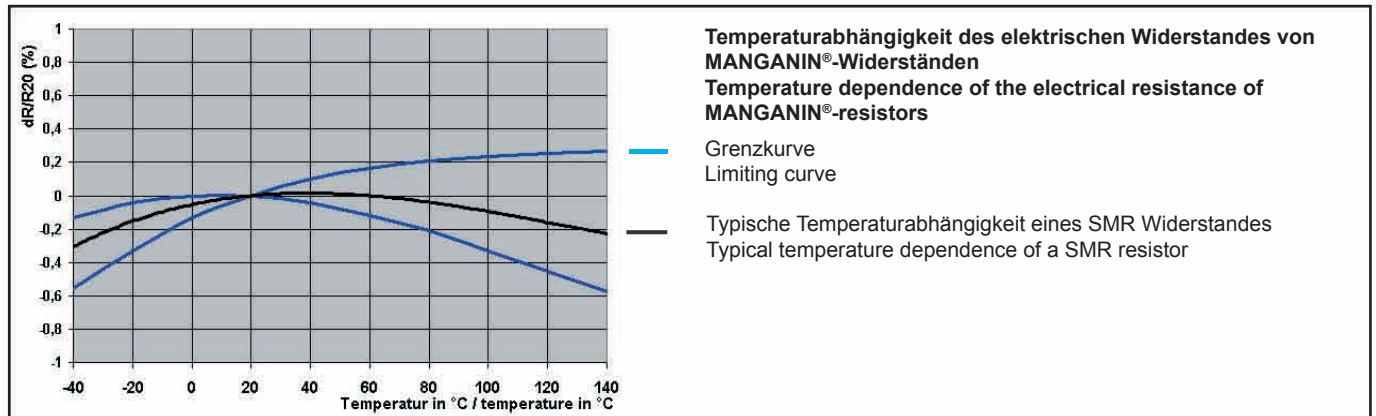
Bauform/Size 4723

### APPLIKATIONEN / APPLICATION

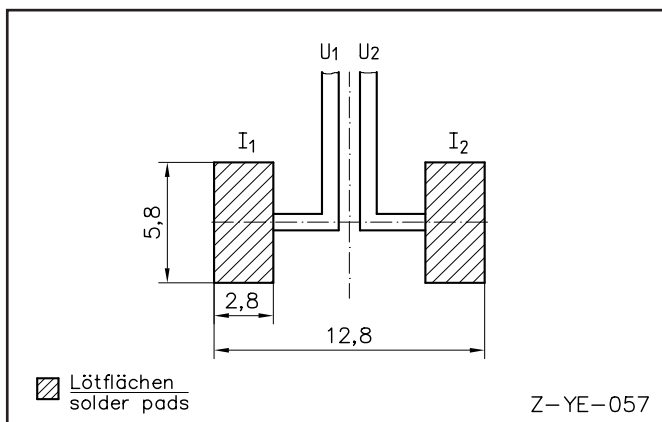
- Messwiderstand für Leistungshybride
- Current sensor for power hybrid applications
- Steuergeräte in der Automobiltechnik
- Control systems for the automotive market
- Leistungsmodule
- Power modules
- Schaltnetzteile
- Switch mode power supplies



## TK, Lastminderung und Langzeitstabilität / TCR, power derating and long term stability

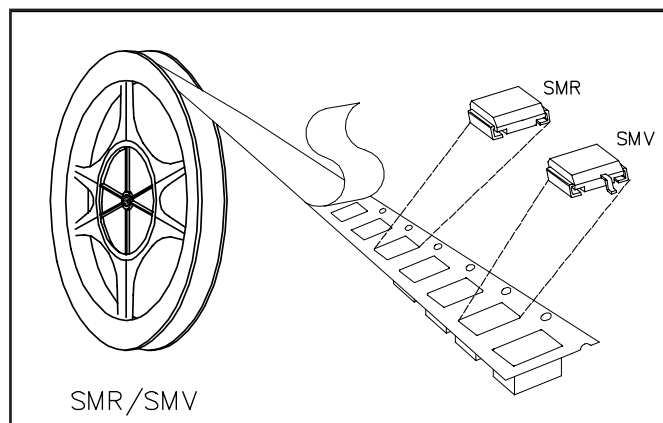


## Vorschlag für Leiterplatten Layout (Reflowlöten) Proposal for pcb-layout (reflow soldering)



| Lötprofil Vorschlag / Recommended solder profile                                                                                                                                                                                                                                                                                                                      |        |        |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|
| Reflow-, Wellen und IR-löten,<br>Reflow, wave and infrared soldering                                                                                                                                                                                                                                                                                                  |        |        |        |
| Temperatur                                                                                                                                                                                                                                                                                                                                                            | 260 °C | 255 °C | 217 °C |
| Zeit (s)                                                                                                                                                                                                                                                                                                                                                              | peak   | 40     | 90     |
| <b>RoHS 2002/95/EG konform seit 01.01.2005.</b><br>Ausführliche Informationen erhalten Sie auf unserer Homepage:<br><a href="http://www.isabellenhuette.de">www.isabellenhuette.de</a><br><b>RoHS 2002/95/EC compliance since 01.01.2005.</b><br>For more information please visit our website:<br><a href="http://www.isabellenhuette.de">www.isabellenhuette.de</a> |        |        |        |

| GURTINFORMATIONEN<br>TAPE & REEL INFORMATION |                  |           |
|----------------------------------------------|------------------|-----------|
| Norm / Specification                         | DIN EN 60286-3   |           |
| Gurtbreite / Tape width                      | 24 mm            |           |
| Anzahl Bauteile/Parts per reel               | 1500             |           |
| BESTELLBEZEICHNUNG / ORDERING CODE           |                  |           |
| SMR-R010-1.0                                 |                  |           |
| Typ                                          | Widerstandswert  | Toleranz  |
| Type                                         | Resistance value | Tolerance |
| SMR                                          | 10 mOhm          | 1.0 %     |



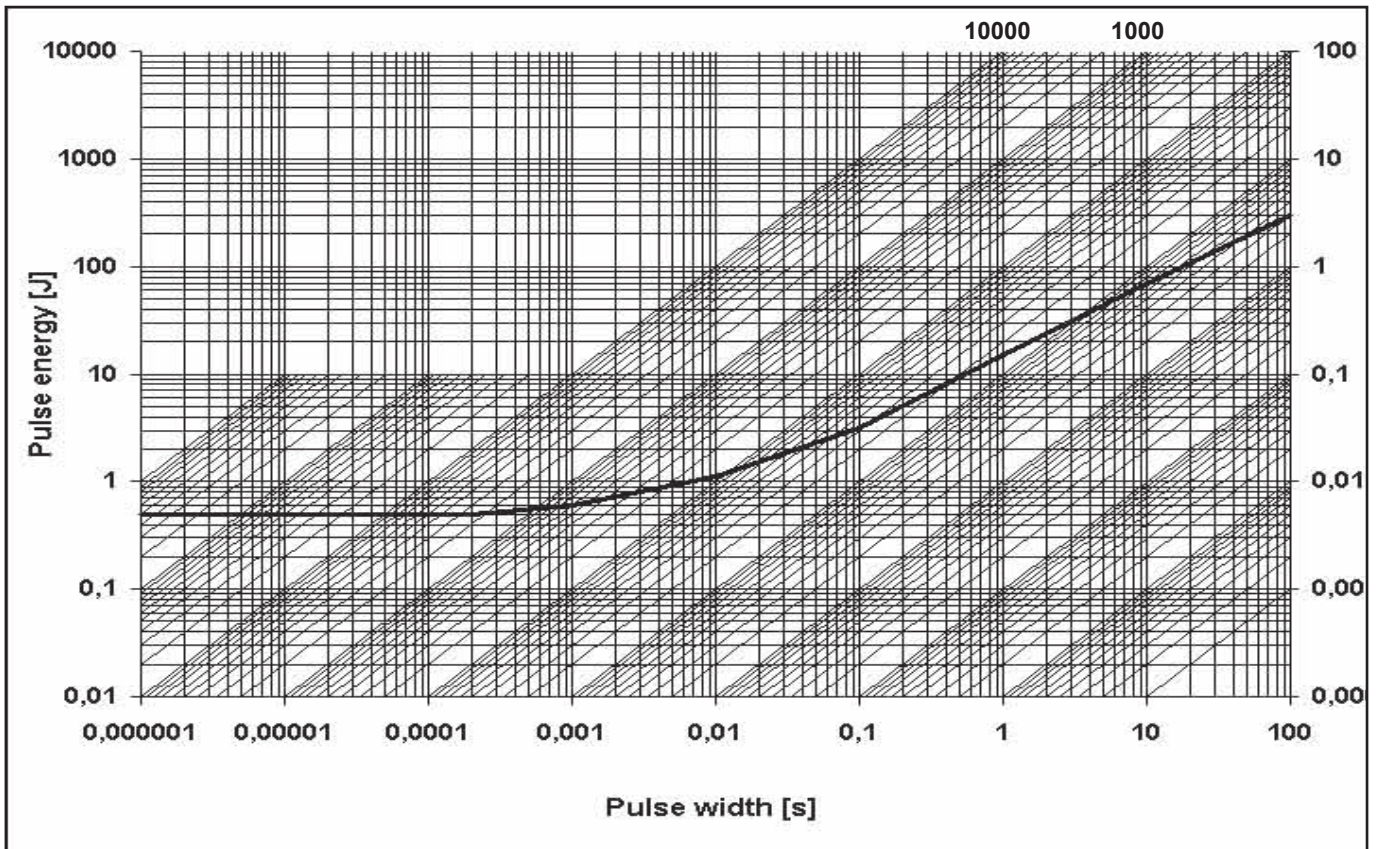
### Gewährleistung

Alle Angaben über Eignung, Verarbeitung und Anwendung unserer Produkte, technische Beratung und sonstige Angaben erfolgen nach bestem Wissen, befreien den Käufer jedoch nicht von eigenen Prüfungen und Versuchen.

### Warranty

All information regarding the suitability, workability and applicability of our products, all technical advice and other information are provided to the best of our knowledge and belief, but shall not discharge the buyer from his own examinations and tests.

## Grenzkurve für maximale Pulsenergie bzw. Pulsleistung für Dauerbetrieb Maximum puls energy resp. pulse power for continuous operation



Die dargestellte Kurve gilt für den Widerstandswert R010. Für andere Werte kann die Kurve im unteren Bereich ggf. anders verlaufen, so dass in Grenzbereichen eine separate Qualifikation erfolgen sollte.

This curve is only valid for the resistance value R010. The shape of the curve in the range below 0.1 sec will be different for other resistance values. Therefore a separate qualification should be made for pulse power close to the above curve.

| MIL. - STANDARD                              |                                        |                                 |
|----------------------------------------------|----------------------------------------|---------------------------------|
| Parameters                                   | Test Conditions                        | Specification                   |
| Maximum Temperature for full power operation | 80 °C                                  | 80 °C                           |
| Working Temperature                          | -55 to 140 °C                          | -55 to 140 °C                   |
| Thermal Shock                                | MIL-STD-202 method 107E-B1             | 0.1 %                           |
| Overload                                     | MIL-R-26E (5 times rated power, 5 sec) | 0.2 %                           |
| Solderability                                | MIL-STD-202 method 208                 | > 95 % coverage                 |
| Resistance to Solvents                       | MIL-STD-202 method 215A, 2.1a, 2.1d    | no damage                       |
| Low Temperature Storage and Operation        | MIL-STD-26E                            | 0.1 %                           |
| Terminal Strength                            | MIL-STD-202 method 211A                | 50N, 0.02 %                     |
| Resistance to Soldering Heat                 | MIL-STD-202 method 210B                | 0.1 %                           |
| Moisture Resistance                          | MIL-STD-202 method 106                 | 0.1 %                           |
| Shock                                        | MIL-STD-202 method 213B-A              | 0.2 %                           |
| Vibration, High Frequency                    | MIL-STD-202 method 204D-B              | 0.2 %                           |
| Life                                         | MIL-STD-26E                            | 0.2 %                           |
| Storage Life at Elevated Temperature         | MIL-STD-202 method 108A-F              | 0.3 %                           |
| High Temperature Exposure                    | 140 °C, 2000 h                         | 0.2%                            |
| Current Noise                                | MIL-STD-202 method 308                 | 0.01 %                          |
| Voltage Coefficient (%/V)                    | MIL-STD-202 method 309                 | linearity error less than 120dB |
| Resistance Temperature Characteristic        | MIL-STD-202 method 304 (20-60°C)       | <50 ppm/K                       |
| Thermal EMF                                  | 0 - 100 °C                             | 2 µV/ °C max.                   |
| Frequency Characteristic                     | inductivity                            | < 10 nH                         |