

**Type TL Series**



Tyco are pleased to offer this unique High Power, metal chip resistor for current sensing positions. It has a special metal resistive element and suitable barrier layers beneath the solder to prolong terminal life. Following the developments by semiconductor manufacturers in the production of a range of IC's for battery charge management and low voltage power supplies, the TL Series satisfies the demand for a low ohmic shunt resistor to act as a current sensor. It has particular applications in the automotive industry for sensing in EMU's.

**Key Features**

- Up to 1 Watt at 70°C
- Supplied on Tape
- Ideal for Current Detection
- Wide Value Range R001 to 1R0 Possible
- Fully Automated Manufacture
- 12:06, 20:10 and 25:12 Packages Available
- Available in Distribution

PRODUCT  
PLANNED FOR EOL

LTB 15/11/2023

For suggested alternatives please see following pages

**Type TL Series**

Product Planned For EOL

**Characteristics - Electrical**

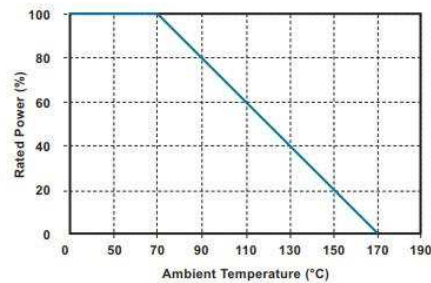
|                         | 1206   | 2010     | 2512     |
|-------------------------|--|----------|----------|
| Resistance Value Range: | R003-R20                                       | R003-R50 | R001-R50 |
| Resistance Tolerance:   | ± 1%   |          |          |
| Power Rating:           | Up to 1 watt at 70°C derating to zero at 170°C |          |          |
| Operating Temperature:  | -65°C to +170°C                                |          |          |
| Inductance:             | < 5 Nanohenries                                |          |          |
| T.C.R.                  | ±75ppm/°C (R007-R20/R50)                       |          |          |

**Characteristics - Mechanical**

|                    |                      |
|--------------------|----------------------|
| Body Construction: | Fully Welded Element |
| Terminations:      | 100% Tin             |
| Coating:           | Epoxy                |

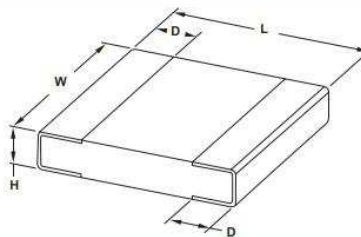
**Power Derating Curve**

| Type  | Power Rating |
|-------|--------------|
| TL2B  | 0.25 Watts   |
| TL2H* | 0.5 Watts    |
| TL3A  | 1.0 Watts    |



For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with this curve.

**Dimensions**



| Type  | L   | W   | H   | D   |
|-------|-----|-----|-----|-----|
| TL2B  | 3.2 | 1.6 | 0.6 | 0.5 |
| TL2H* | 5.1 | 2.5 | 0.6 | 0.5 |
| TL3A  | 6.4 | 3.2 | 0.6 | 0.8 |

**How to Order**

| TL                 | 3A                                      | R015  | F         | TE  |
|--------------------|---|---|-----------|---|
| Common Part        | Power Ratings                           | Resistance Value  | Tolerance | Packaging   |
| TL - Standard Part | 2B - 12:06<br>*2H - 20:10<br>3A - 25:12 | 0.005 ohm<br>(5 milli ohm) R005<br><br>0.015 ohm<br>(15 milli ohms) R015<br><br>0.047 ohm<br>(47 milli ohms) R047 | F - ±1%   | TE - 4000 per Reel<br><br>TDG - 2000 per Reel (2512 only) |

## Suggested Replacement Parts

### Series:

TLR Series [TLR Series Data Sheet](#)

TLRP Series [TLRP Series Data Sheet](#)

TLM Series [TLM Series Data Sheet](#)

TLRF Series [TLRF Data Sheet](#)

| Original Part |                    |             | Replacement Part |                                    |                  | Comparison  |
|---------------|--------------------|-------------|------------------|------------------------------------|------------------|---|
| TCPN          | Part Description   | Alias       | TCPN             | Part Description                   | Alias            | Key Differences   |
| 4-1625826-3   | TL2B R01 1% 4K RL  | TL2BR01FTE  | 1-2176467-4      | TLRP 1206 1.0W R010 1% 75PPM 5K RL | TLRP2B10WR010FTD | Power Rating (W) - 0.25 Vs 1:<br>Dimensions (mm) 3.2 x 1.6 x 0.635 Vs 3.15 x 1.45 x 0.55:<br>See Datasheet  |
| 1625826-3     | TL2B R01 1%        | TL2BR01F    | 1-2176467-4      | TLRP 1206 1.0W R010 1% 75PPM 5K RL | TLRP2B10WR010FTD |   |
| 1625826-1     | TL2B R015 1%       | TL2BR015F   | 1-2176467-6      | TLRP 1206 1.0W R015 1% 75PPM 5K RL | TLRP2B10WR015FTD |   |
| 4-1625826-1   | TL2B R015 1% 4K RL | TL2BR015FTE | 1-2176467-6      | TLRP 1206 1.0W R015 1% 75PPM 5K RL | TLRP2B10WR015FTD | Element Metal Strip Vs Metal Foil Power Rating (W) 0.25 Vs 1<br>TCR $\pm 75$ PPM/ $^{\circ}$ C Vs $\pm 50$ PPM/ $^{\circ}$ C See Data Sheet                           |
| 4-1625826-2   | TL2B R018 1% 4K RL | TL2BR018FTE | 2176418-6        | TLRF 1206 1.0W R018 1% 50PPM 5K RL | TLRF2B10DR018FTD |   |
| 1625826-2     | TL2B R018 1%       | TL2BR018F   | 2176418-6        | TLRF 1206 1.0W R018 1% 50PPM 5K RL | TLRF2B10DR018FTD |   |
| 4-1625826-4   | TL2B R022 1% 4K RL | TL2BR022FTE | 2176418-8        | TLRF 1206 1.0W R022 1% 50PPM 5K RL | TLRF2B10DR022FTD | Power Rating (W) - 0.25 Vs 1:<br>Dimensions (mm) 3.2 x 1.6 x 0.635 Vs 3.15 x 1.45 x 0.55:<br>See Datasheet  |
| 1625826-4     | TL2B R022 1%       | TL2BR022F   | 2176418-8        | TLRF 1206 1.0W R022 1% 50PPM 5K RL | TLRF2B10DR022FTD |   |
| 5-1625826-4   | TL2B R025 1% 4K RL | TL2BR025FTE | 1-2176467-8      | TLRP 1206 1.0W R025 1% 75PPM 5K RL | TLRP2B10WR025FTD |   |
| 1625826-5     | TL2B R033 1%       | TL2BR033F   | 2-2176467-0      | TLRP 1206 1.0W R033 1% 75PPM 5K RL | TLRP2B10WR033FTD | Element Metal strip Vs Metal Foil: Power W 0.25 Vs 0.5: TCR PPM/ $^{\circ}$ C 75 Vs 50:<br>Dimensions (MM) 3.2 x 1.6 x 0.635 Vs 3.05 x 1.55 x 0.55:<br>See Data sheet |
| 4-1625826-5   | TL2B R033 1% 4K RL | TL2BR033FTE | 2-2176467-0      | TLRP 1206 1.0W R033 1% 75PPM 5K RL | TLRP2B10WR033FTD |   |
| 1625826-6     | TL2B R047 1%       | TL2BR047F   | 3-2176156-0      | TLM 1206 0.5W R047 1% 50PPM 5K RL  | TLM2BDR047FTD    |   |
| 4-1625826-6   | TL2B R047 1% 4K RL | TL2BR047FTE | 3-2176156-0      | TLM 1206 0.5W R047 1% 50PPM 5K RL  | TLM2BDR047FTD    | Element Metal strip Vs Metal Foil: Power W 0.25 Vs 0.5: TCR PPM/ $^{\circ}$ C 75 Vs 50:<br>Dimensions (MM) 3.2 x 1.6 x 0.635 Vs 3.05 x 1.55 x 0.55:<br>See Data sheet |
| 1625826-7     | TL2B R051 1% 4K RL | TL2BR051FTE | 3-2176156-1      | TLM 1206 0.5W R051 1% 50PPM 5K RL  | TLM2BDR051FTD    |   |
| 1625826-8     | TL2B R068 1%       | TL2BR068F   | 3-2176156-4      | TLM 1206 0.5W R068 1% 50PPM 5K RL  | TLM2BDR068FTD    |   |
| 4-1625826-8   | TL2B R068 1% 4K RL | TL2BR068FTE | 3-2176156-4      | TLM 1206 0.5W R068 1% 50PPM 5K RL  | TLM2BDR068FTD    |   |
| 1-1625826-1   | TL2B R075 1% 4K RL | TL2BR075FTE | 3-2176156-5      | TLM 1206 0.5W R075 1% 50PPM 5K RL  | TLM2BDR075FTD    |   |
| 1-1625826-2   | TL2B R082 1% 4K RL | TL2BR082FTE | 3-2176156-6      | TLM 1206 0.5W R082 1% 50PPM 5K RL  | TLM2BDR082FTD    |   |
| 4-1625826-9   | TL2B R09 1% 4K RL  | TL2BR09FTE  | 3-2176156-9      | TLM 1206 0.5W R090 1% 50PPM 5K RL  | TLM2BDR090FTD    |   |
| 1625826-9     | TL2B R09 1%        | TL2BR09F    | 3-2176156-9      | TLM 1206 0.5W R090 1% 50PPM 5K RL  | TLM2BDR090FTD    |   |
| 1-1625826-0   | TL2B R10 1% 4K RL  | TL2BR10FTE  | 3-2176156-8      | TLM 1206 0.5W R10 1% 50PPM 5K RL   | TLM2BDR100FTD    |   |



| Original Part |                    |              | Replacement Part |                                    |                   | Comparison   |
|---------------|--------------------|--------------|------------------|------------------------------------|-------------------|--|
| TCPN          | Part Description   | Alias        | TCPN             | Part Description                   | Alias             | Key Differences  |
| 5-1625826-3   | TL2B R15 1% 4K RL  | TL2BR15FTE   | No Replacement   |                                    |                   | N/A  |
| 2-1625827-0   | TL3A R001 1% 2K RL | TL3AR001FTDG | 2-1879378-8      | TLR 2512 1.0W R001 1% 50PPM 2K RL  | TLR3A10DR001FTDG  | TCR: Unspecified Vs 50PPM/°C<br>Dimensions (mm): 6.35 x 3.18 x 0.635<br>Vs 6.35 x 3.18 x 0.35<br>See Data sheet                  |
| 2-1625827-1   | TL3A R002 1% 2K RL | TL3AR002FTDG | 3-1879378-0      | TLR 2512 1.0W R002 1% 50PPM 2K RL  | TLR3A10DR002FTDG  |  |
| 2-1625827-2   | TL3A R003 1% 2K RL | TL3AR003FTDG | 7-2176421-6      | TLRP 2512 2.0W R003 1% 75PPM 2K RL | TLRP3A20WR003FTDG | Power Rating (W) - 1 Vs 2: Dimensions (mm) 6.35 x 3.18 x 0.635 Vs 6.4 x 3.2 x 0.7: See Datasheet                                 |
| 2-1625827-3   | TL3A R004 1% 2K RL | TL3AR004FTDG | 2176421-7        | TLRP 2512 2.0W R004 1% 75PPM 4K RL | TLRP3A20WR004FTE  |  |
| 1625827-1     | TL3A R005 1%       | TL3AR005F    | 2176421-4        | TLRP 2512 2.0W R005 1% 75PPM 4K RL | TLRP3A20WR005FTE  |  |
| 4-1625827-0   | TL3A R005 1% 2K RL | TL3AR005FTDG | 2176421-4        | TLRP 2512 2.0W R005 1% 75PPM 4K RL | TLRP3A20WR005FTE  |  |
| 1625827-2     | TL3A R006 1% 2K RL | TL3AR006FTDG | 7-2176421-7      | TLRP 2512 2.0W R006 1% 75PPM 4K RL | TLRP3A20WR006FTE  |  |
| 4-1625827-3   | TL3A R01 1% 2K RL  | TL3AR01FTDG  | 2176421-1        | TLRP 2512 2.0W R010 1% 75PPM 4K RL | TLRP3A20WR010FTE  |  |
| 1625827-5     | TL3A R01 1%        | TL3AR01F     | 2176421-1        | TLRP 2512 2.0W R010 1% 75PPM 4K RL | TLRP3A20WR010FTE  |  |
| 1625827-3     | TL3A R015 1%       | TL3AR015F    | 2176421-8        | TLRP 2512 2.0W R015 1% 75PPM 4K RL | TLRP3A20WR015FTE  |  |
| 4-1625827-1   | TL3A R015 1% 2K RL | TL3AR015FTDG | 2176421-8        | TLRP 2512 2.0W R015 1% 75PPM 4K RL | TLRP3A20WR015FTE  |  |
| 4-1625827-2   | TL3A R018 1% 2K RL | TL3AR018FTDG | 2176421-9        | TLRP 2512 2.0W R018 1% 75PPM 4K RL | TLRP3A20WR018FTE  |  |
| 1625827-4     | TL3A R018 1%       | TL3AR018F    | 2176421-9        | TLRP 2512 2.0W R018 1% 75PPM 4K RL | TLRP3A20WR018FTE  |  |
| 5-1625827-1   | TL3A R02 1% 2K RL  | TL3AR02FTDG  | 2176421-2        | TLRP 2512 2.0W R020 1% 75PPM 4K RL | TLRP3A20WR020FTE  |  |
| 4-1625827-4   | TL3A R022 1% 2K RL | TL3AR022FTDG | 8-2176421-0      | TLRP 2512 2.0W R022 1% 75PPM 4K RL | TLRP3A20WR022FTE  |  |
| 1625827-6     | TL3A R022 1%       | TL3AR022F    | 8-2176421-0      | TLRP 2512 2.0W R022 1% 75PPM 4K RL | TLRP3A20WR022FTE  |  |
| 1625827-7     | TL3A R025 1% 2K RL | TL3AR025FTDG | 8-2176421-1      | TLRP 2512 2.0W R025 1% 75PPM 4K RL | TLRP3A20WR025FTE  |  |
| 1-1625827-5   | TL3A R027 1% 2K RL | TL3AR027FTDG | 2-2176158-4      | TLM 2512 1.0W R027 1% 50PPM 4K RL  | TLM3ADR027FTE     | Element Metal strip Vs Metal Foil: TCR PPM/C 75 Vs 50: Dimensions (MM) 6.35 x 3.18 x 0.635 Vs 6.30 x 3.15 x 0.55: See Data sheet |
| 4-1625827-5   | TL3A R033 1% 2K RL | TL3AR033FTDG | 8-2176421-2      | TLRP 2512 2.0W R033 1% 75PPM 4K RL | TLRP3A20WR033FTE  | Power Rating (W) - 1 Vs 2: Dimensions (mm) 6.35 x 3.18 x 0.635 Vs 6.4 x 3.2 x 0.7: See Datasheet                                 |
| 1625827-8     | TL3A R033 1%       | TL3AR033F    | 8-2176421-2      | TLRP 2512 2.0W R033 1% 75PPM 4K RL | TLRP3A20WR033FTE  |  |
| 1-1625827-6   | TL3A R039 1% 2K RL | TL3AR039FTDG | 8-2176421-4      | TLRP 2512 2.0W R039 1% 75PPM 4K RL | TLRP3A20WR039FTE  |  |
| 1625827-9     | TL3A R047 1%       | TL3AR047F    | 8-2176421-6      | TLRP 2512 2.0W R047 1% 75PPM 4K RL | TLRP3A20WR047FTE  |  |
| 4-1625827-6   | TL3A R047 1% 2K RL | TL3AR047FTDG | 8-2176421-6      | TLRP 2512 2.0W R047 1% 75PPM 4K RL | TLRP3A20WR047FTE  |  |



| Original Part |                    |              | Replacement Part |                                    |                  | Comparison   |
|---------------|--------------------|--------------|------------------|------------------------------------|------------------|--|
| TCPN          | Part Description   | Alias        | TCPN             | Part Description                   | Alias            | Key Differences  |
| 4-1625827-7   | TL3A R051 1% 2K RL | TL3AR051FTDG | 3-2176158-1      | TLM 2512 1.0W R051 1% 50PPM 4K RL  | TLM3ADR051FTE    | Element Metal strip Vs Metal Foil: TCR PPM/C 75 Vs 50: Dimensions (MM) 6.35 x 3.18 x 0.635 Vs 6.30 x 3.15 x 0.55: See Data sheet |
| 1-1625827-0   | TL3A R051 1%       | TL3AR051F    | 3-2176158-1      | TLM 2512 1.0W R051 1% 50PPM 4K RL  | TLM3ADR051FTE    |  |
| 5-1625827-0   | TL3A R056 1% 2K RL | TL3AR056FTDG | 3-2176158-2      | TLM 2512 1.0W R056 1% 50PPM 4K RL  | TLM3ADR056FTE    |  |
| 1-1625827-1   | TL3A R068 1%       | TL3AR068F    | 8-2176421-9      | TLRP 2512 2.0W R068 1% 75PPM 4K RL | TLRP3A20WR068FTE | Power Rating (W) - 1 Vs 2: Dimensions (mm) 6.35 x 3.18 x 0.635 Vs 6.4 x 3.2 x 0.7: See Datasheet                                 |
| 4-1625827-8   | TL3A R068 1% 2K RL | TL3AR068FTDG | 8-2176421-9      | TLRP 2512 2.0W R068 1% 75PPM 4K RL | TLRP3A20WR068FTE |  |
| 1-1625827-2   | TL3A R075 1%       | TL3AR075F    | 1-2176421-0      | TLRP 2512 2.0W R075 1% 75PPM 4K RL | TLRP3A20WR075FTE |  |
| 4-1625827-9   | TL3A R075 1% 2K RL | TL3AR075FTDG | 1-2176421-0      | TLRP 2512 2.0W R075 1% 75PPM 4K RL | TLRP3A20WR075FTE |  |
| 1-1625827-3   | TL3A R082 1% 2K RL | TL3AR082FTDG | 9-2176421-2      | TLRP 2512 2.0W R082 1% 75PPM 4K RL | TLRP3A20WR082FTE |  |
| 1-1625827-4   | TL3A R10 1% 2K RL  | TL3AR10FTDG  | 1-2176421-1      | TLRP 2512 2.0W R100 1% 75PPM 4K RL | TLRP3A20WR100FTE |  |
| 1-1625827-7   | TL3A R15 1% 2K RL  | TL3AR15FTDG  | 9-2176421-6      | TLRP 2512 2.0W R150 1% 75PPM 4K RL | TLRP3A20WR150FTE |  |
| 2-1625827-4   | TL3A R22 1% 2K RL  | TL3AR22FTDG  | No Replacement   |                                    |                  | N/A  |

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