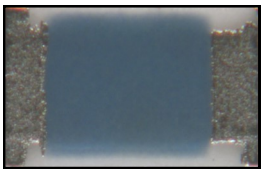
Thin Film Technology Corp.

Product Family: General Purpose Thick Film Chip Resistor

Part Number Series: TFG Series

RoHS 2011/65/EU



Construction:

- High Purity Alumina Substrate
- Thick Film resistive element
- Wrap around electrodes
- RoHS 2011/65/EU compliant
- RoHS 2016 ready (RoHS compliant and Pb Free, with no exemptions–100% matte tin over Ni terminations)

Features:

- 01005, 0201, 0402, 0603, 0805, 1206, 1210, 1218, 2010, 2512 sizes
- Tolerances of ±1.0% and ±5.0%
- Resistances from 1Ω to 10MΩ available
- High volume production suitable for commercial and special applications

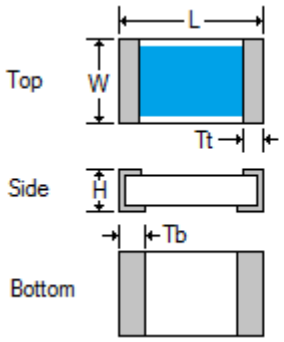
Description:

These general purpose thick film chip resistors are constructed on a high grade ceramic body for extreme durability. Utilizing a proprietary thick film resistive element to deliver a wide range of size, power handling and resistive values to make this series suitable for most applications. Very competitive pricing for all volume levels.

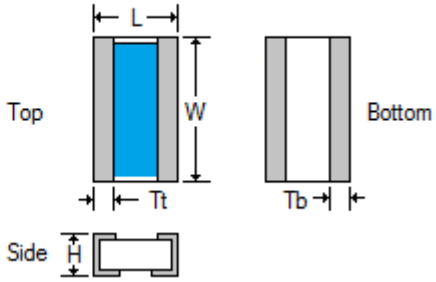
Product Dimensions:

Dimension (Metric)	TFG0100 (0402)	TFG0201 (0603)	TFG0402 (1005)	TFG0603 (1608)	TFG0805 (2012)	TFG1206 (3216)	TFG1210 (3226)	TFG1218 (3248)	TFG2010 (5025)	TFG2512 (6432)
L	0.016 ±0.001	0.024 ±0.001	0.039 ±0.002	0.063 ±0.004	0.079 ±0.004	0.122 ±0.004	0.122 ±0.004	0.120 ±0.006	0.197 ±0.008	0.252 ±0.008
W	0.008 ±0.001	0.012 ±0.001	0.020 ±0.002	0.031 ±0.004	0.049 ±0.004	0.063 ±0.004	0.102 ±0.004	0.181 ±0.008	0.098 ±0.008	0.126 ±0.008
H	0.005 ±0.001	0.009 ±0.001	0.014 ±0.002	0.018 ±0.006	0.020 ±0.006	0.024 ±0.006	0.022 ±0.004	0.022 ±0.004	0.022 ±0.004	0.024 ±0.004
Tb	0.004 ±0.001	0.006 ±0.002	0.010 ±0.004	0.012 ±0.006	0.016 ±0.008	0.018 ±0.008	0.020 ±0.008	0.020 ±0.010	0.024 ±0.010	0.035 ±0.010
Tt	0.003 ±0.001	0.004 ±0.002	0.008 ±0.004	0.012 ±0.004	0.016 ±0.008	0.020 ±0.008	0.020 ±0.008	0.018 ±0.010	0.026 ±0.010	0.026 ±0.010

All dimensions are shown in inches. Metric case sizes are shown in parenthesis.



The 1218 chip has long side electrodes.
All other sizes are short side as shown left



Part Numbering: Ex: TFG0603R1002J-T5

Product Designator	English Size W x L	Temp. Coefficient of Resistance (TCR)	Resistance Value	Resistance Tolerance	T&R Packaging Quantity
TFG	01005 (use 0100), 0201, 0402 0603, 0805 1206, 1210 1218, 2010 2512	R = 100 ppm/°C S = 200 ppm/°C W = See Charts (TCR value is determined by resistance value. See electrical tables)	4 digits with the first 3 being significant. The last digit specifies the number of zeros. "R" denotes decimal position as necessary Jumper = JUMP	F = ±1.0%* J = ±5.0% (see electrical tables)	-T5 = 5,000 -T10 = 10,000 -T15 = 15,000 -T20 = 20,000 See electrical tables for available options versus case size

- *Note: Use "F" resistance tolerance code for all Jumper products indicating max resistance of 50mΩ.

Electrical Specifications:

Type	TFG01005	TFG0201	TFG0402	TFG0603	TFG0805
English Size	01005	0201	0402	0603	0805
Power	1/32 Watt	1/20 Watt	1/16 Watt	1/10 Watt	1/8 Watt
Resistance Range (Ω)	4.7Ω ~ 1MΩ +Jumper	1Ω ~ 10MΩ, + Jumper (0Ω)			
Resistance Tolerance (code)	E-24 Values = ±1.0% (F) or ±5.0% (J) E-96 Values + Jumper = ±1.0% (F)				
TCR ppm/°C (code)	4.7Ω-9.1Ω= -200/+600 (W) 10Ω-91Ω = ±300 (W) 100Ω-1MΩ = ±200 (S)	1Ω-9.76Ω = -100~+800 (W) 10Ω-97.6Ω = 0~+600 (W) 100Ω-10MΩ = ±200 (S)	1Ω-10Ω = -300/+500 (W) 10.2Ω to 976kΩ = ±100 (R) for 1% tol. parts ±200 (S) for 5% tol. Parts 1MΩ or greater = ±300 (W)	1Ω-10Ω = -300/+500 (W) 10.2Ω to 976kΩ = ±100 (R) for 1% tol. parts, ±200 (S) for 5% tol. Parts, 1MΩ or greater = ±200 (S)	
Max Voltage DC or RMS	Operating 15 V Overload 30 V	Operating 25 V Overload 50 V	Operating 50 V Overload 100 V		Operating 150 V Overload 300 V
Operating Temp. Range	-55°C ~ 125°C (derating from 100% at 70°C to 0% at 125°C)		-55°C ~ 155°C (derating from 100% at 70°C to 0% at 155°C)		
Packaging	20,000 pcs/reel	15,000 pcs/reel	10,000 pcs/reel	5,000 pcs/reel	5,000 pcs/reel

Type	TFG1206	TFG1210	TFG1218	TFG2010	TFG2512
English Size	1206	1210	1218	2010	2512
Max Power @ 70°C	1/4 Watt	1/3 Watt	1 Watt	0.5 Watt	1 Watt
Resistance Range (Ω)	1Ω ~ 10MΩ, + Jumper (0Ω)				
Resistance Tolerance (code)	E-24 Values = ±1.0% (F) or ±5.0% (J) E-96 Values + Jumper = ±1.0% (F)				
TCR ppm/°C (code)	1Ω-10Ω = -300/+500 (W) 10.2Ω to 976kΩ = ±100 (R) for 1% tol. parts, ±200 (S) for 5% tol. parts 1MΩ or greater = ±200 (S)		1Ω-10Ω = ±200 (S) 10.2Ω or greater = ±100 (R)		
Max Voltage: DC or RMS	Operating 200 V Overload 400 V				Operating 250 V Overload 500 V
Operating Temp. Range	-55°C ~ 155°C (derating from 100% at 70°C to 0% at 155°C)				
Packaging	5,000 pcs/reel				

Reliability Specifications:

Test	Test Method	Specification
Short Time Overload	Applied voltage: 2.5X rated voltage or 2X maximum operating voltage, whichever is less. Test duration: 5 seconds	1% Tol: ±(1%+0.1Ω) 5% Tol: ±(2% +0.1Ω)
Resistance to Soldering Heat	Dip into 260°C solder bath until fully immersed 10 ±1 seconds	1% Tol: ±(0.5%+0.01Ω) 5% Tol: ±(1% +0.01Ω)
Load Life	Test Temperature: 70°C Applied voltage: rated voltage Test period: 1000 hours with power cycling as follows: 90 min. power ON/30 min. power OFF,	1% Tol: ±(1%+0.1Ω) 5% Tol: ±(3% +0.1Ω)
Moisture Load Life	Test Condition: 40°C/95% RH Applied voltage: rated voltage Test period: 1000 hours with power cycling as follows: 90 min. power ON/30 min. power OFF	1% Tol: ±(1%+0.1Ω) 5% Tol: ±(3% +0.1Ω)
Temperature Cycle	Repeat 5 cycles as follows: -55°C(30 min.) / Room temp (2 min) / +155°C(30 min.) / Room temp (2 min)	1% Tol: ±(0.5%+0.01Ω) 5% Tol: ±(1% +0.01Ω)
Solderability	Dip into 235°C solder bath until fully immersed (SAC solder) 2 ±0.5 seconds	Minimum 95% coverage of new solder