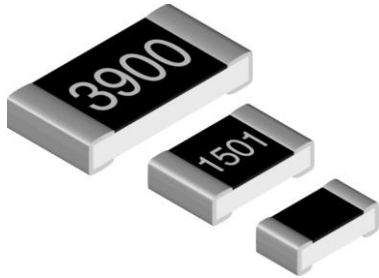


## Linear PTC Thermistors, Surface Mount Chip



### FEATURES

- Solderable wraparound terminations
- Alumina substrate base with PTC thin film element
- Lead (Pb)-free solder contacts, RoHS compliant
- 0603, 0805 and 1206 sizes available
- Available in tape and reel packaging
- Standard tolerances:  $\pm 0.5\%$ ,  $\pm 1\%$ ,  $\pm 5\%$
- Contact factory for non-standard tolerance
- Operation range - 55 °C to + 125 °C

STANDARD ELECTRICAL SPECIFICATIONS							
TCR AT ROOM TEMPERATURE (25 °C) SEE TYPICAL CURVE FOR TCR AT OTHER TEMPS.	TCR (1) TOLERANCE ppm/K	R <sub>25</sub> Ω VALUE RANGE (0.5 %, 1 %, 5 % TOLERANCE) (2)					
		0603		0805		1206	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
4110 ppm/K	$\pm 400$	100	1K	100	5K	100	10K

**Notes:**

- (1) Contact Vishay if closer TCR lot tolerance is desired  
 (2) Other R<sub>25</sub> values and tolerances are available upon request

STANDARD RESISTANCE VALUES				
100	270	680	1.8K	4.7K
120	330	820	2.2K	5.6K
150	390	1K	2.7K	6.8K
180	470	1.2K	3.3K	8.2K
220	560	1.5K	3.9K	10.0K

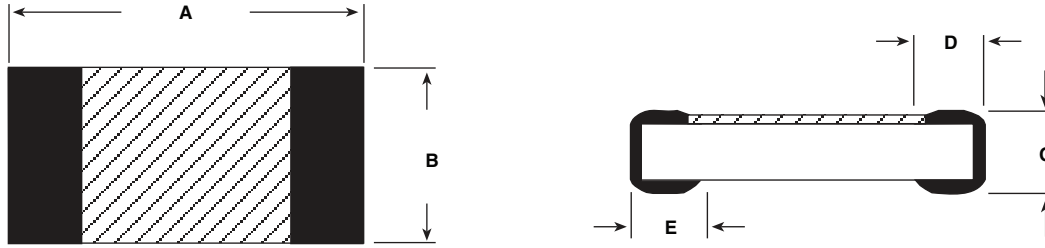
STANDARD TECHNICAL SPECIFICATIONS		
PART NUMBER	POWER RATING	MAXIMUM WORKING VOLTAGE RCWV (3)
TFPT 0603	75 mW	30 V <sub>DC</sub>
TFPT 0805	100 mW	40 V <sub>DC</sub>
TFPT 1206	125 mW	50 V <sub>DC</sub>

**Note**

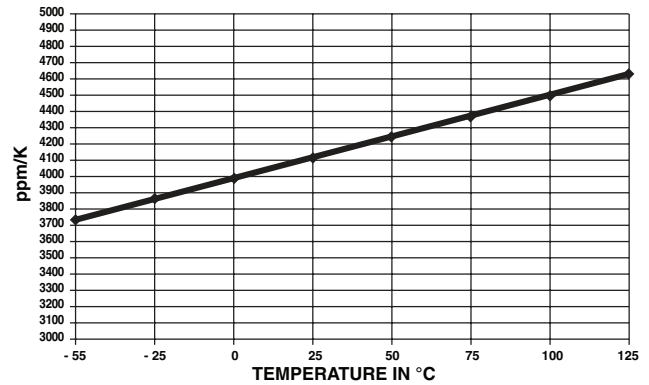
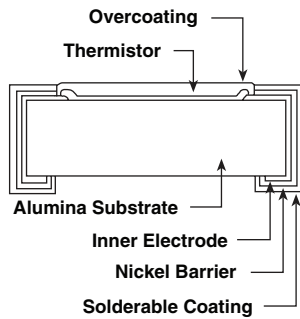
(3) Rated Continuous Working Voltage is maximum working voltage or square root of the power rating times resistance value, whichever is less.

GLOBAL PART NUMBER INFORMATION				
New Global Part Numbering: TFPT1206L1002FZ (preferred part numbering format)				
T	F	P	T	1 2 0 6 L 1 0 0 2 F Z
GLOBAL MODEL	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING
TFPT0603 TFPT0805 TFPT1206	L = Linear	1002 = 10K	D = $\pm 0.5\%$ F = $\pm 1\%$ J = $\pm 5\%$	F = Lead (Pb)-free, Bulk M = Lead (Pb)-free, T/R (5000 pcs) V = Lead (Pb)-free, T/R (1000 pcs) P = Tin/lead, Bulk Z = Tin/lead, T/R (5000 pcs) Y = Tin/lead, T/R (1000 pcs)
Historical Part Number: TFPT1206L1002FZ (will continue to be accepted)				
TFPT1206	L	1002	F	Z
HISTORICAL MODEL	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

**DIMENSIONS** in millimeters



PART NUMBER	A	B	C	D	E
TFPT 0603	1.60 ± 0.10	0.85 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20
TFPT 0805	2.00 ± 0.15	1.25 ± 0.15	0.45 ± 0.10	0.40 ± 0.20	0.40 ± 0.20
TFPT 1206	3.20 ± 0.15	1.60 ± 0.15	0.55 ± 0.10	0.50 ± 0.25	0.50 ± 0.25



**CONSTRUCTION**

**TYPICAL CURVE**

<b>PERFORMANCE (1)</b>	
TEST	MAXIMUM % ΔR (2)
High Temperature Exposure (100 h at 125 °C)	0.25 %
Effects of Bonding (10 s solder dip at 260 °C)	0.25 %
Thermal Shock (30 min at 65 °C, 30 min at 125 °C, 5 cycles)	0.25 %
Low Temperature Operation (Maximum rated power for 2 h at - 65 °C)	0.25 %
Short Time Overload (2.5 x RCWV for 5 s)	0.25 %
Load Life (1000 h 70 °C, maximum rated power 1.5 h "ON", 0.5 h "OFF")	0.25 %
Solderability (95 % coverage P/F)	P
Leaching (Physical damage P/F)	P

**Notes**

- (1) Environmental performance specifications use test procedures as outlined in MIL-R-23648D and MIL-STD-202
- (2) TFPTs are ESD sensitive



<b>AVERAGE T.C.S. TFPT ALL SIZES AND VALUES</b>							
TEMP	RATIO	TEMP	RATIO	TEMP	RATIO	TEMP	RATIO
- 55	0.698	- 10	0.861	35	1.042	80	1.240
- 54	0.701	- 9	0.865	36	1.046	81	1.244
- 53	0.705	- 8	0.869	37	1.050	82	1.249
- 52	0.708	- 7	0.873	38	1.054	83	1.254
- 51	0.712	- 6	0.876	39	1.058	84	1.258
- 50	0.715	- 5	0.880	40	1.063	85	1.263
- 49	0.719	- 4	0.884	41	1.067	86	1.268
- 48	0.722	- 3	0.888	42	1.071	87	1.272
- 47	0.726	- 2	0.892	43	1.075	88	1.277
- 46	0.729	- 1	0.896	44	1.080	89	1.282
- 45	0.733	0	0.900	45	1.084	90	1.287
- 44	0.736	1	0.904	46	1.088	91	1.291
- 43	0.740	2	0.908	47	1.092	92	1.296
- 42	0.743	3	0.911	48	1.097	93	1.301
- 41	0.747	4	0.915	49	1.101	94	1.306
- 40	0.750	5	0.919	50	1.105	95	1.311
- 39	0.754	6	0.923	51	1.110	96	1.315
- 38	0.757	7	0.927	52	1.114	97	1.320
- 37	0.761	8	0.931	53	1.118	98	1.325
- 36	0.765	9	0.935	54	1.123	99	1.330
- 35	0.768	10	0.939	55	1.127	100	1.335
- 34	0.772	11	0.943	56	1.131	101	1.340
- 33	0.775	12	0.947	57	1.136	102	1.345
- 32	0.779	13	0.951	58	1.140	103	1.349
- 31	0.783	14	0.955	59	1.145	104	1.354
- 30	0.786	15	0.959	60	1.149	105	1.359
- 29	0.790	16	0.963	61	1.153	106	1.364
- 28	0.794	17	0.967	62	1.158	107	1.369
- 27	0.797	18	0.971	63	1.162	108	1.374
- 26	0.801	19	0.975	64	1.167	109	1.379
- 25	0.805	20	0.980	65	1.171	110	1.384
- 24	0.808	21	0.984	66	1.176	111	1.389
- 23	0.812	22	0.988	67	1.180	112	1.394
- 22	0.816	23	0.992	68	1.185	113	1.399
- 21	0.820	24	0.996	69	1.189	114	1.404
- 20	0.823	25	1.000	70	1.194	115	1.409
- 19	0.827	26	1.004	71	1.198	116	1.414
- 18	0.831	27	1.008	72	1.203	117	1.419
- 17	0.834	28	1.012	73	1.208	118	1.424
- 16	0.838	29	1.017	74	1.212	119	1.429
- 15	0.842	30	1.021	75	1.217	120	1.434
- 14	0.846	31	1.025	76	1.221	121	1.439
- 13	0.850	32	1.029	77	1.226	122	1.444
- 12	0.853	33	1.033	78	1.230	123	1.450
- 11	0.857	34	1.037	79	1.235	124	1.455
						125	1.460

<b>RATIO TOLERANCES</b>		
LOW TEMPERATURE	HIGH TEMPERATURE	TOLERANCE
- 55 °C		± 4 %
- 40 °C	+ 125 °C	± 3 %
- 20 °C	+ 85 °C	± 2 %
0 °C	+ 55 °C	± 1 %
+ 12 °C	+ 40 °C	± 0.5 %

**Ratio Tolerance Examples:**

At 40 °C, Ratio = 1.063 ± 0.5 % (0.005)  
so, Ratio = 1.058 to 1.068

At 125 °C, Ratio = 1.460 ± 3 % (0.044)  
so, Ratio = 1.416 to 1.504



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