





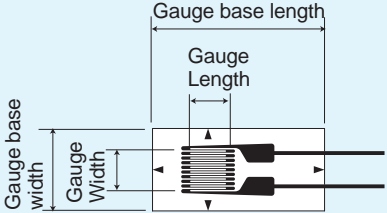













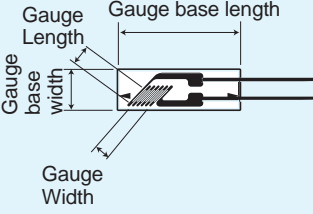
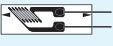



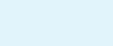
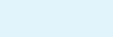
HIGH TEMPERATURE STRAIN GAUGES series QF

Operating temperature range
 -20°C  +200°C
 Temperature compensation range
 +10°C  +100°C

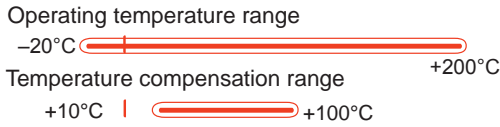
Suffix code for temperature compensation materials
 -11: Mild steel (ferritic) -28: Magnesium

Applicable adhesives	CN	-20 to +120°C
	NP-50B	-20 to +200°C
	C-1	-20 to +200°C

GENERAL PURPOSE/SHEARING STRESS MEASUREMENT

Gauge pattern	Basic type	Gauge size		Backing		Resistance Ω	
		L	W	L	W		
These are foil strain gauges having a polyimide resin backing, which exhibits excellent performance in high temperature up to 200°C. Stress concentration measurement gauges and shear stress measurement gauges are also available in this series.		L : length W : width (Unit:mm)		 			
Single element : QFLG/QFLA/QFLK Each package contains 10 gauges.							
	General purpose 	QFLG-02-11	0.2	1.4	3.5	2.5	120
		QFLA-1-11	1	1.3	5.0	2.5	120
		QFLA-2-11	2	1.5	6.5	3.0	120
		QFLA-3-11	3	1.7	8.8	3.5	120
		QFLA-5-11	5	1.5	10.0	3.0	120
		QFLA-6-11	6	2.2	12.5	4.3	120
	FLK type with narrow gauge base 	QFLK-1-11	1	0.7	4.5	1.4	120
		QFLK-2-11	2	0.9	5.5	1.5	120
	for Magnesium	QFLK-2-28	2	0.9	5.5	1.5	120
	High gauge resistance 	QFLA-1-350-11	1	2.0	5.0	4.0	350
	QFLA-2-350-11	2	1.9	6.1	3.5	350	
	QFLA-3-350-11	3	3.2	8.5	5.0	350	
	QFLA-6-350-11	6	2.6	12.5	4.5	350	
	QFLA-6-1000-11	6	4.6	13.5	7.0	1000	
0°/90° 2-element Rosette Plane : QFCA Each package contains 10 gauges.							
	QFCA-1-11	1	1.3	7.2	7.2	120	
	QFCB-2-11	3	1.7	11.0	11.0	120	
	QFCB-2-11	2	1.5	8.2	8.0	120	
0°/45°/90° 3-element Rosette Plane : QFRA Each package contains 10 gauges.							
	QFRA-1-11	1	1.3	7.2	7.2	120	
	QFRA-3-11	3	1.7	11.0	11.0	120	
Single element Shearing strain measurement Each package contains 10 gauges.							
	 (x 3)	QFLT-05A-11-002LE	0.5	0.66	4.0	1.3	120
	 (x 3)	QFLT-05B-11-002LE	0.5	0.66	4.0	1.3	120
	 (x 3)	QFLT-1A-11-002LE	1.2	1.1	5.7	2.0	120
	 (x 3)	QFLT-1-350A-11-002LE	1	1.1	5.7	2.0	350
	 (x 3)	QFLT-1B-11-002LE	1.2	1.1	5.7	2.0	120
	 (x 3)	QFLT-1-350B-11-002LE	1	1.1	5.7	2.0	350
N.B. -002LE: Polyimide sheathed joints of 2-cm pre-attached							

HIGH TEMPERATURE series QF STRAIN GAUGES

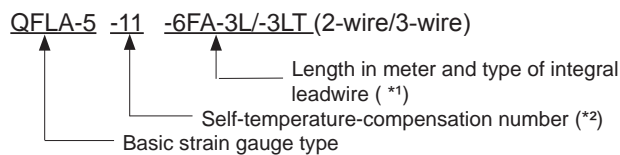


Applicable adhesives	CN	-20 to +120°C
	NP-50B	-20 to +200°C
	C-1	-20 to +200°C

STRESS CONCENTRATION MEASUREMENT

Gauge pattern	Basic type	Gauge size L W	Backing L W	Resist- ance Ω		
		L : length	W : width (Unit:mm)			
5-element single-axis : QFXV/QFYV/QFBXV/QFBYV		Each package contains 10 gauges.				
QFXV-1-11-002LE X-axis magnified	QFYV-1-11-002LE Y-axis magnified	Gauge pitch 2mm	QFXV-1-11-002LE	1 1.3	5.0 12.0	120
			QFYV-1-11-002LE	1 1.4	5.0 12.0	120
N.B. -002LE: Polyimide sheathed joints of 2-cm pre-attached						
QFBXV-04 magnified	QFBYV-06 magnified	Gauge pitch 1mm	QFBXV-04-11-005LE	0.4 1.3	5.4 7.4	120
			QFBYV-06-11-005LE	0.6 0.8	5.3 7.0	120
N.B. -005LE: Polyimide sheathed joints of 5-cm pre-attached						
10-element 2 axes : QFCV		Each package contains 10 gauges.				
QFCV-1 X and Y axes Y-axis leadwire is marked for identification. magnified	Gauge pitch 2mm	QFCV-1-11-005LE	1 1.4	7.5 12.0	120	
N.B. -005LE: Polyimide sheathed joints of 5-cm pre-attached						
Single element : QFBX/QFBY/QFLX		Each package contains 10 gauges.				
Single element cut away from the above Stress Concentration gauge.						
QFBX-04	(x 3)	QFBX-04-11-005LE	0.4 1.3	5.4 1.0	120	
QFBY-06	(x 3)	QFBY-06-11-005LE	0.6 0.8	5.3 1.0	120	
QFLX-1	(x 3)	QFLX-1-11-002LE	1 1.3	5.0 2.0	120	
N.B. -005LE: Polyimide sheathed joints of 5-cm pre-attached N.B. -002LE: Polyimide sheathed joints of 2-cm pre-attached						
Torque measurement : QFCT		Each package contains 10 gauges.				
QFCT-2-11		QFCT-2-11	2 1.5	8.7 6.5	120	
QFCT-2-350-11		QFCT-2-350-11	2 1.7	7.6 5.3	350	

Example of type number designation.



*1: Not mentioned for gauges without integral leadwire.

*2: QF-series gauges are available for self-temperature-compensation with -11 (Mild steel of 11ppm/°C)

For the following numbers, contact TML or your local representatives.

- 17: Stainless steel, Copper alloy (17ppm/°C)
- 23: Aluminium (23ppm/°C)

Refer to pages 19~20 for applicable integral leadwires.