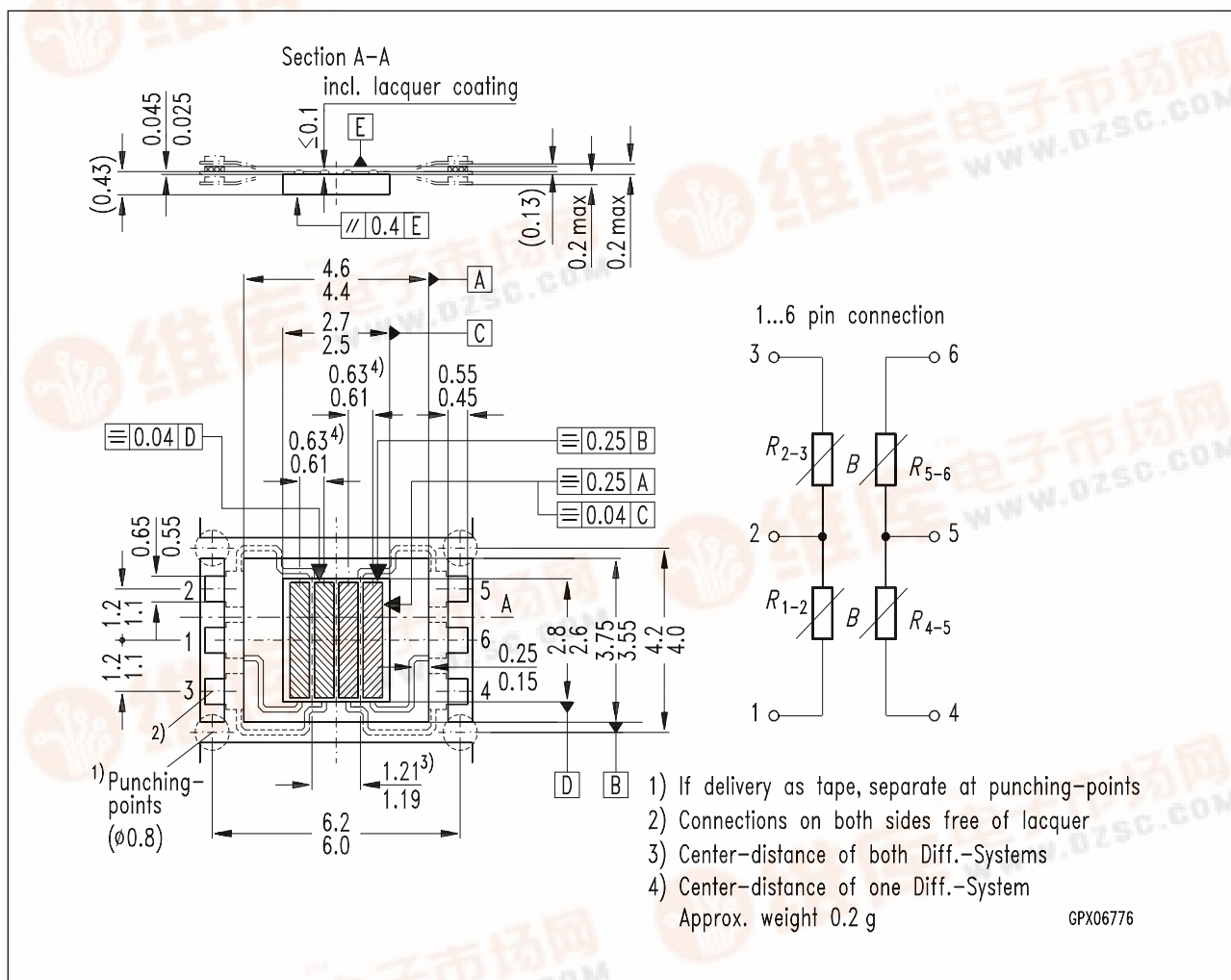


SIEMENS

Double Differential Magneto Resistor

FP 410 L (4 x 80) FM



Dimensions in mm

Features

- Double differential magneto resistor on same carrier
- Accurate intercenter spacing
- High operating temperature range
- High output voltage
- Compact construction
- Available in strip form for automatic assembly

Typical applications

- Incremental angular encoders
- Detection of sense of rotation
- Detection of speed
- Detection of position

Type	Ordering Code
FP 410 L (4x80) FM	Q65410-L80E (taped)
FP 410 L (4x80) FM	Q65110-L80F (singular)

The double differential magneto resistor assembly consists of two pairs of magneto resistors, (L-type InSb/NiSb semiconductor resistors whose resistance value can be magnetically controlled), which are fixed to a ferrite substrate. Contact to the magneto resistors is achieved using a copper/polyimide carrier film known as Micropack.

The basic resistance of each of the magnetic resistors is 80 Ω . The two series coupled pairs of magnetic resistors are actuated by an external magnetic field or can be biased by a permanent magnet and actuated by a soft iron target.

Maximum ratings

Parameter	Symbol	Value	Unit
Operating temperature	T_A	– 40 / + 175	°C
Storage temperature	T_{stg}	– 40 / + 185	°C
Power dissipation ¹⁾	P_{tot}	1000	mW
Supply voltage ²⁾ ($B = 0.3$ T)	V_{IN}	8	V
Thermal conductivity – attached to heatsink – in still air	$G_{th\ case}$ $G_{th\ A}$	≥ 20 2	mW/K

Characteristics ($T_A = 25$ °C)

Basic resistance ($I \leq 1$ mA; $B = 0$ T)	R_{01-3} R_{04-6}	110...220	Ω
Center symmetry ³⁾	M	≤ 6	%
Relative resistance change ($R = R_{01-3}, R_{04-6}$ at $B = 0$ T) $B = \pm 0.3$ T ⁴⁾ $B = \pm 1$ T	R_B/R_0	> 1.7 > 7	–
Temperature coefficient $B = 0$ T $B = \pm 0.3$ T $B = \pm 1$ T	TC_R	– 0.16 – 0.38 – 0.54	%/K %/K %/K

1) Corresponding to diagram $P_{tot} = f(T_{case})$

2) Corresponding to diagram $V_{IN} = f(T_{case})$

3)

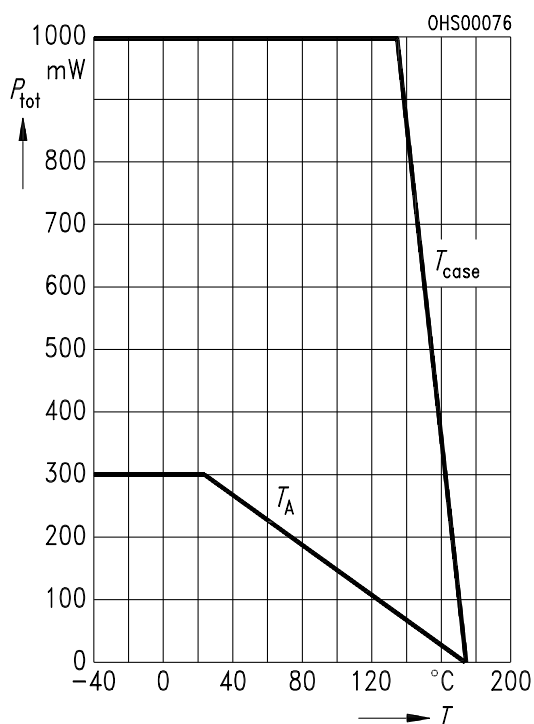
$$M = \frac{R_{01-2} - R_{02-3}}{R_{01-2}} \times 100\% \text{ for } R_{01-2} > R_{02-3}$$

$$M = \frac{R_{04-5} - R_{05-6}}{R_{04-5}} \times 100\% \text{ for } R_{04-5} > R_{05-6}$$

4) 1 T = 1 Tesla = 10^4 Gauss

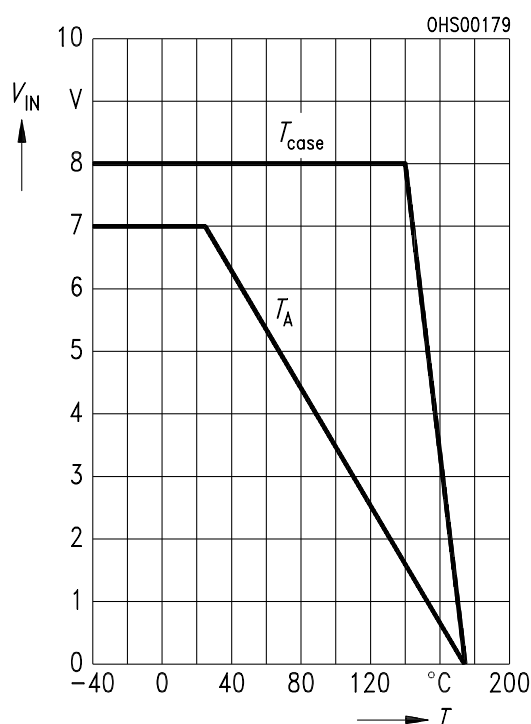
Max. power dissipation versus temperature

$$P_{\text{tot}} = f(T), T = T_{\text{case}}, T_A$$



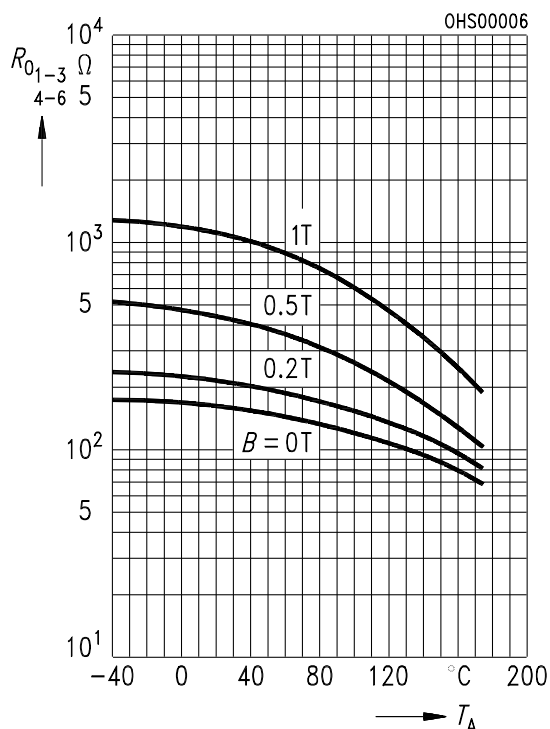
Maximum supply voltage versus temperature

$$V_{\text{IN } 1-3, 4-6} = f(T), B = 0.3 \text{ T}$$



Typical MR resistance versus temperature

$$R_{01-3, 4-6} = f(T_A), B = \text{Parameter}$$



Typical MR resistance versus magnetic induction B

$$R_{01-3, 4-6} = f(B), T_A = 25 \text{ °C}$$

