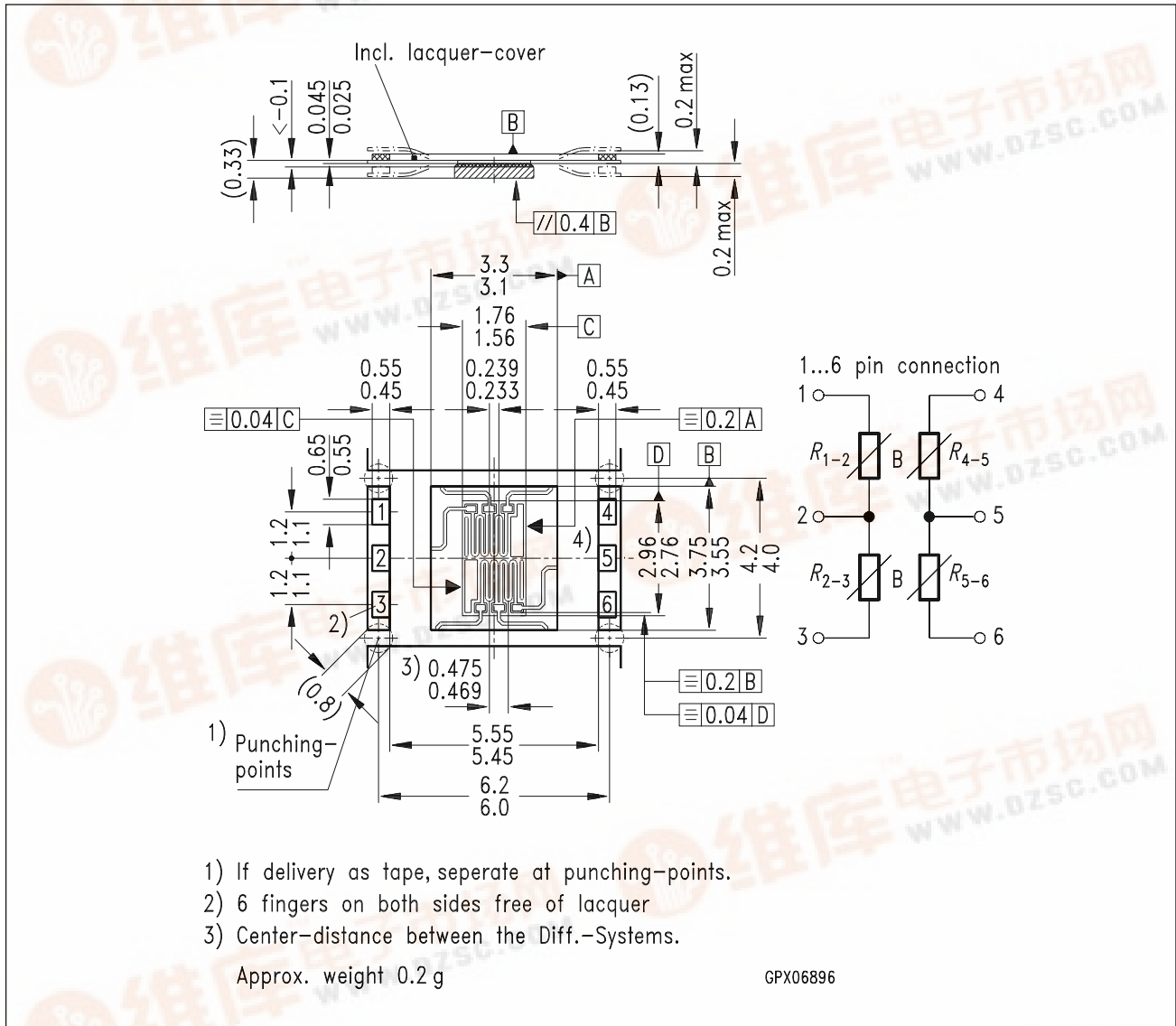


SIEMENS

Double Differential Magneto Resistor

FP 420 L 90



Dimensions in mm

Features

- Double differential magneto resistor on one carrier
- Accurate intercenter spacing
- High operating temperature range
- High output voltage
- Compact construction
- Available in strip form for automatic assembly
- Optimized intercenter spacing on modules
 $m = 0.3 \text{ mm}$
- Reduced temperature dependence of offset

Typical applications

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

Type	Ordering Code
FP 420 L 90	Q65420-L90 (singular)
FP 420 L 90	Q65420-L0090E001 (taped)

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 silicon substrate. Contact to the magneto resistors is achieved using a copper/polyimide carrier film known as TAB.

The basic resistance of each of the magneto resistors is 90 Ω . The two series coupled pairs of magneto 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}	800	mW
Supply voltage ($B = 0.2$ T, $T_A = 25$ °C)	V_{IN}	8	V
Thermal conductivity – attached to heatsink – in still air	G_{thcase} G_{thA}	20 1.5	mW/K mW/K

Characteristics ($T_A = 25$ °C)

Nominal supply voltage ($B = 0.2$ T) ²⁾	V_{INN}	5	V
Basic resistance ($I < 1$ mA, $B = 0$ T)	R_{01-3}	160...280	Ω
Center symmetry ³⁾	M	≤ 3	%
Relative resistance change ($R_0 = R_{01-3}$, 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) $T = T_{case}$

2) $T = T_{case}$, $T < 80$ °C

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

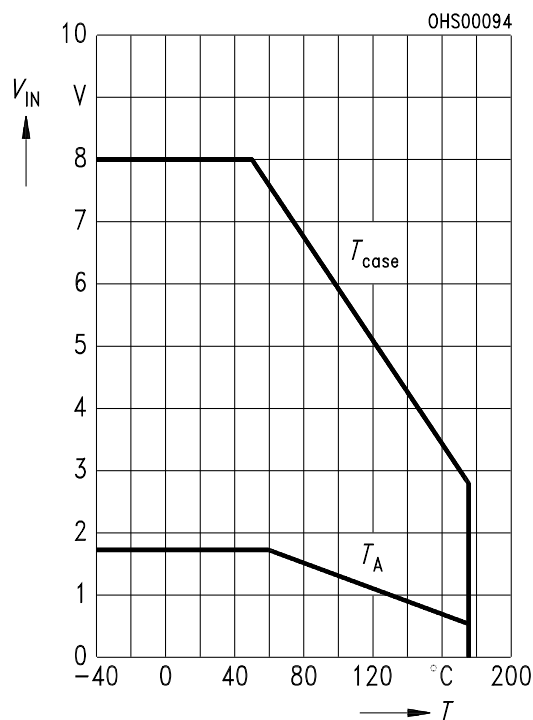
Max. power dissipation versus temperature

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



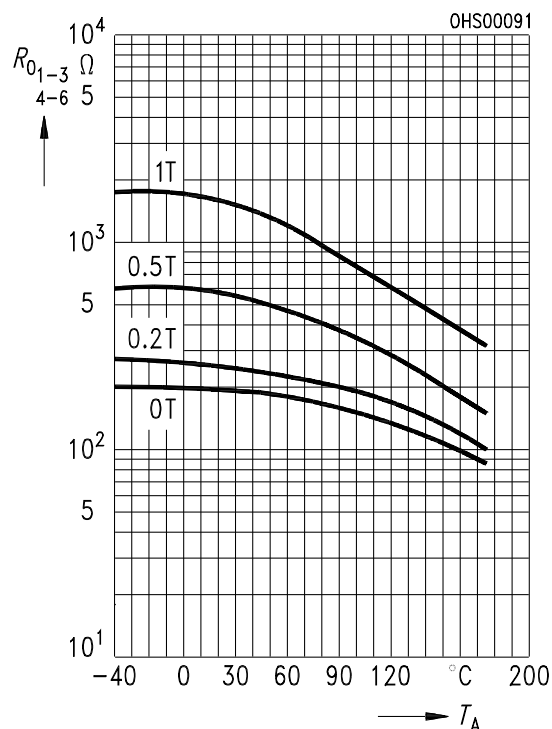
Maximum supply voltage versus temperature

$$V_{\text{IN}} = f(T), B = 0.2 \text{ T}$$



Typical MR resistance versus temperature

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



Typical MR resistance versus magnetic induction B

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

