



Type	Ordering Code
FP 420 L 90 B	Q65420-L90-B (singular)
FP 420 L 90 B	Q65420-L90-B1 (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  $\Omega$ . 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.

## Absolute Maximum Ratings

Parameter	Symbol	Limit Values	Unit
Operating temperature	$T_A$	– 40 / + 175	°C
Storage temperature	$T_{stg}$	– 40 / + 185	°C
Power dissipation <sup>1)</sup>	$P_{tot}$	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

## Electrical Characteristics ( $T_A = 25$ °C)

Nominal supply voltage ( $B = 0.2$ T) <sup>2)</sup>	$V_{INN}$	5	V
Basic resistance ( $I < 1$ mA, $B = 0$ T)	$R_{01-3}$	160...280	Ω
Center symmetry <sup>3)</sup>	$M$	≤ 3	%
Relative resistance change ( $R_0 = R_{01-3}$ , $R_{04-6}$ at $B = 0$ T) $B = \pm 0.3$ T <sup>4)</sup> $B = \pm 1$ 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

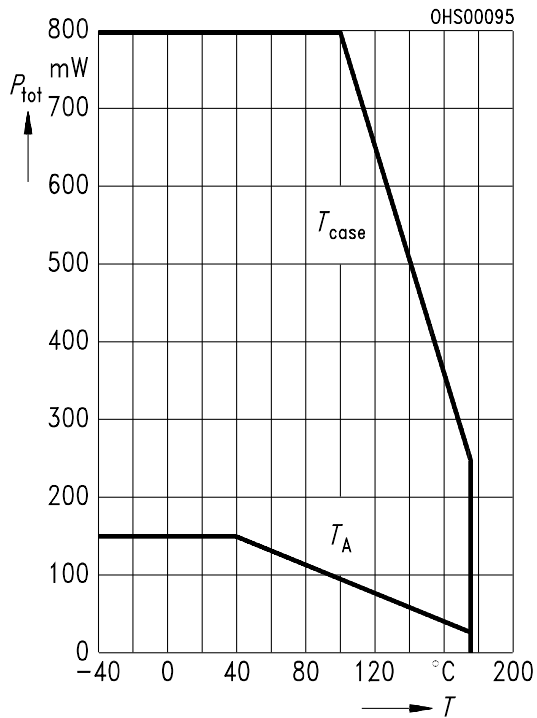
3) 
$$M = \frac{R_{01-2} - R_{02-3}}{R_{01-2}} \times 100\% \text{ for } R_{01-2} > R_{02-3}$$

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

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

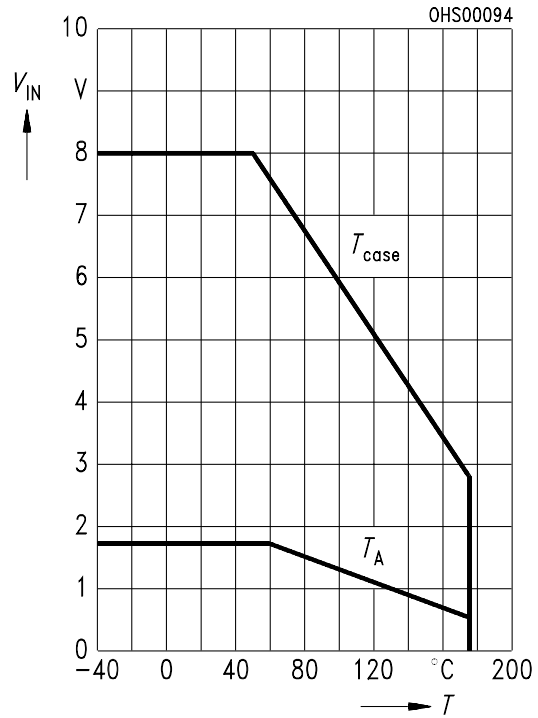
### Max. power dissipation versus temperature

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



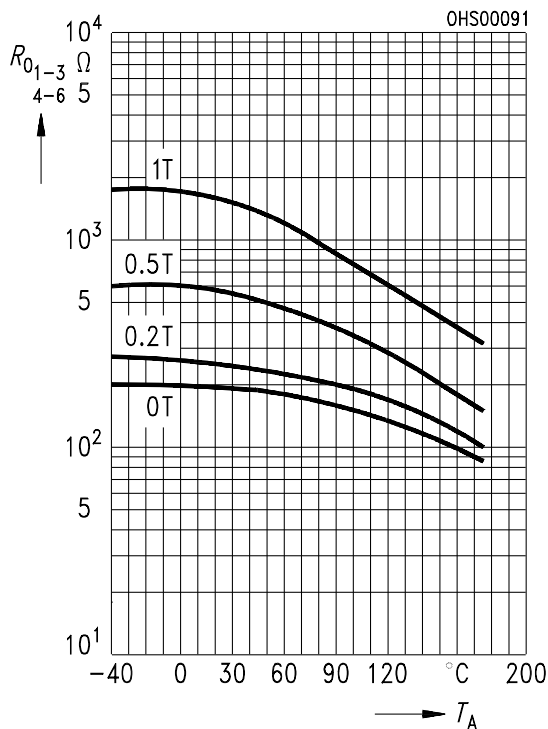
### Maximum supply voltage versus temperature

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



### Typical MR resistance versus temperature

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



### Typical MR resistance versus magnetic induction $B$

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

