TLE4953C E0184

Differential Two-Wire Hall Effect Sensor IC

Datasheet

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Sense & Control

Edition 2019-04

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Previous Revision: V 1.0 2010-10

Page	Subjects (major changes since last revision)
Page 5	Ordering code updated

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Last Trademarks Update 2009-10-19

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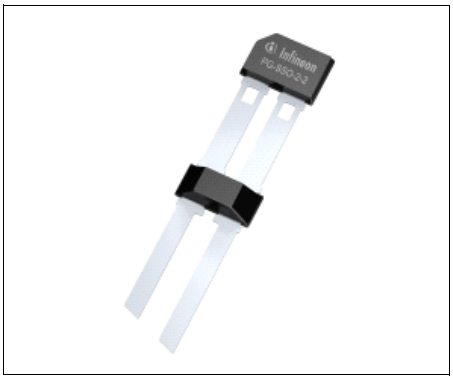
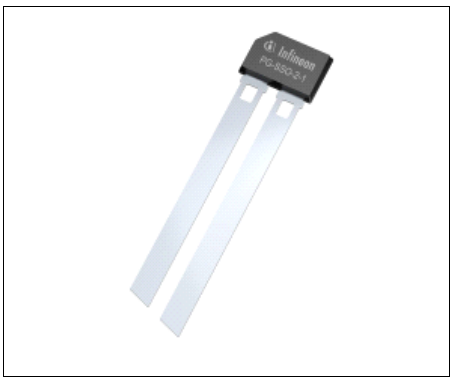
Differential Two Wire Hall Effect sensor IC

TLE4953-E0184

For All parameters not specified in this document TLE4953/C datasheet is valid

1 Features





- Two-wire PWM current interface
- Improved airgap performance
- Detection of rotation direction
- Dynamic self calibration principle
- Adaptive hysteresis
- Single chip solution
- South and north pole pre-induction possible
- High resistance to piezo effects
- Wide operating temperatures
- From 0 speed to 4.5kHz
- 1.8nF overmolded capacitor
- For coarse transmission target wheel

Product Type	Marking	Ordering Code	Package
TLE4953C-E0184	53C84	SP001963074	PG-SSO-2-4
TLE4953-E0184	53X84	SP000844996	PG-SSO-2-1

2 Specifications

2.1 Absolute Maximum Ratings

Table 1 Absolute maximum ratings

Parameter	Symbol	Limit Value			Unit	Remarks
		min.	typ.	max.		
Supply Voltage	V_{CC}			9	V	
Frequency	f			4.5	kHz	1)
Temperature profile2)	Tj				h	
-40°C≤ Tj ≤ 20°C				700		7.7% of the lifetime3)
20°C≤ Tj ≤115°C				970		9.7% of the lifetime3)
115°C≤ Tj ≤125°C				7000		70% of the lifetime3)
125°C≤ Tj ≤140°C				1000		10% of the lifetime3)
140°C≤ Tj ≤150°C				260		2.6% of the lifetime3)

1) High frequency behavior not subject to production test - verified by design/characterization

2) The component is able to withstand following temperature mission profile, subject to the following provisions: Assembly concept “Einschubtasche” (Delta T = 15K), Basis for the evaluation for the mission profile is the average of the ambient temperature interval.

3) Life time shall be considered as anticipation and will not extend the agreed warranty period

Attention: Stress in excess of those listed here may cause permanent damage to the divice. Exposure to absolute maximum rating conditions for extended periods may affect device reliability

2.2 Magnetic Characteristics

Table 2 Magnetics characteristics

Parameter	Symbol	Limit Value			Unit	Remarks
		min.	typ.	max.		
Limit threshold speed 0Hz ≤ f≤ 4500Hz	ΔB_{Limit}	0.35	0.8	1.84	mT	Max. is 5σ value at Tj≤145°C1)
Limit differential direction signal 0Hz ≤ f≤ 1100Hz	ΔB_{Dir}		0.08	0.54	mT	Calculated at two consecutive threshold crossing2)

1) Magnetic amplitude values, sine magnetic field, limits refer to the 0% criteria just 1pulse is missing out of 100. Only valid at lowest PGA stage/highest amplification because of adaptive hysteresis.

2) Magnetic peak to peak value, not subject to production test - verified by design/characterization. No part of the FAR procedure. Max is 5σ value of characterization of distribution at Tj≤145°C, with 0% criteria, just one pulse is missing out of 100.

2.3 Vibration suppression algorithm

The performance of the vibration suppression algorithm depends strongly on the typical value of the differential direction signal limit. TLE4953/C E0184 has a very reduced value to guarantee extended airgap performance, but this fact will also reduce the vibration suppression capabilities of this version.

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