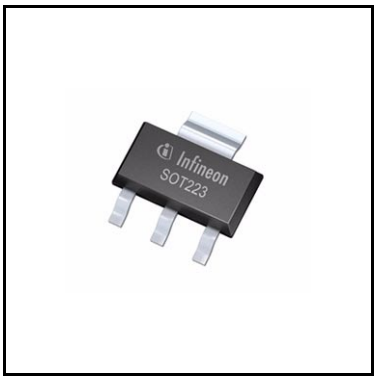
OPTIREG™ Linear TLE4264

5-V low drop fixed voltage regulator

AEC Qualified

RoHS



Features

- Output voltage tolerance ≤ ±2%
- Low-drop voltage
- Very low current consumption
- Overtemperature protection
- Short-circuit proof
- Suitable for use in automotive electronics
- Reverse polarity
- Green Product (RoHS compliant)

Potential applications

General automotive applications.

Product validation

Qualified for automotive applications. Product validation according to AEC-Q100/101.

Description

The OPTIREG™ Linear TLE4264 is a 5-V low-drop fixed-voltage regulator in an PG-SOT223-4 package. The IC regulates an input voltage V_I in the range 5.5 V < V_I < 45 V to V_{Qrated} = 5.0 V. The maximum output current is more than 120 mA. This IC is shortcircuit-proof and features temperature protection that disables the circuit at overtemperature.

Dimensioning information on external components

The input capacitor C_i is necessary for compensating line influences. Using a resistor of approx. 1 Ω in series with C_i, the oscillating of input inductivity and input capacitance can be damped. The output capacitor C_Q is necessary for the stability of the regulating circuit. Stability is guaranteed at values C_Q ≥ 10 µF and an ESR ≤ 10 Ω within the operating temperature range.

Type	Package	Marking
TLE4264G	PG-SOT223-4	4264 G

Table of contents

1 Block diagram

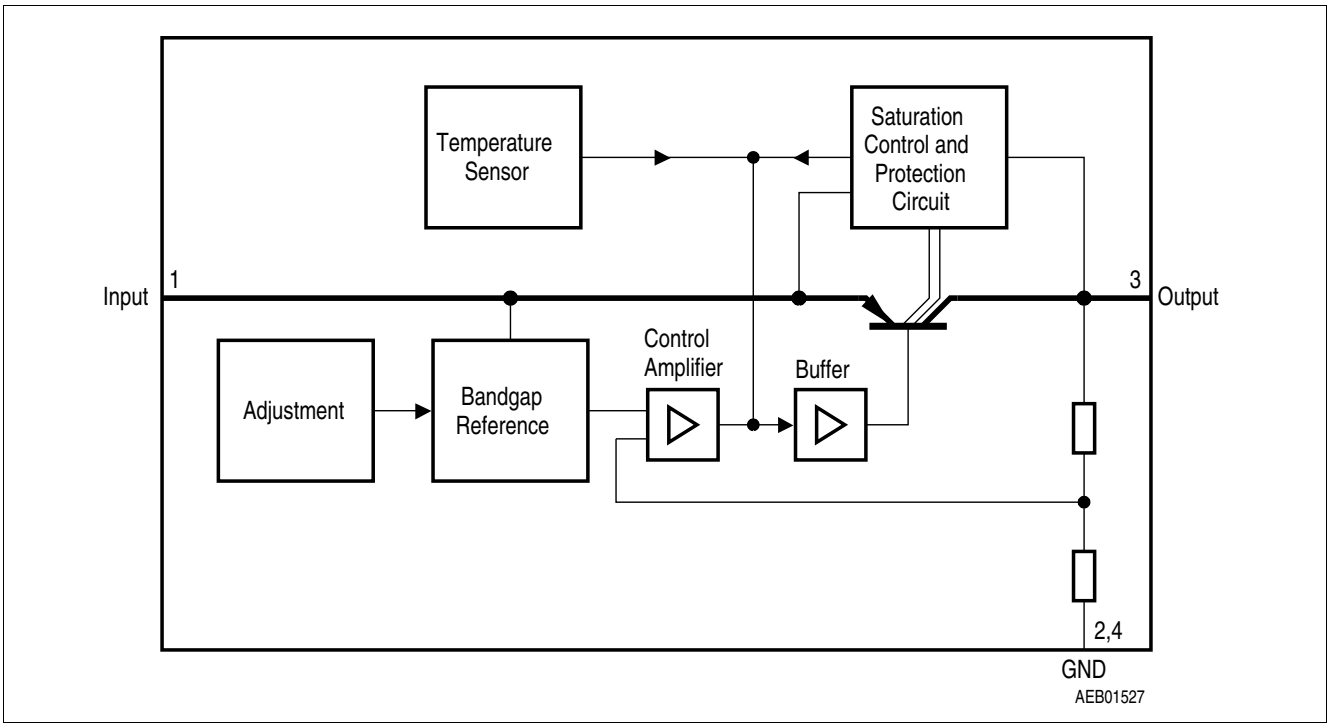


Figure 1 Block diagram

2 Pin configuration

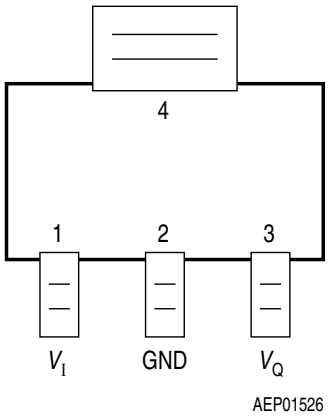


Figure 2 Pin configuration (top view)

Table 1 Pin definitions and functions

Pin	Symbol	Function
1	V_I	**Input voltage** Block to ground directly on IC with ceramic capacitor.
2, 4	GND	**Ground**
3	V_Q	**5-V output voltage** Block to ground with ≥ 10 µF capacitor, ESR ≤ 10 Ω.

3 General product characteristics

3.1 Absolute maximum ratings

Table 2 Absolute maximum ratings

T_j = -40°C to 150°C

Parameter	Symbol	Values			Unit	Note or Test Condition
		Min.	Typ.	Max.		
Input						
Input voltage	V_I	-42	–	45	V	–
Input current	I_I	–	–	–	–	Limited internally
Output						
Output voltage	V_Q	-1	–	32	V	–
Output current	I_Q	–	–	–	–	Limited internally
Ground						
Current	I_{GND}	50	–	–	mA	–
Temperatures						
Junction temperature	T_j	–	–	150	°C	–
Storage temperature	T_{stg}	-50	–	150	°C	–
Operating range						
Input voltage	V_I	5.5	–	45	V	–
Junction temperature	T_j	-40	–	150	°C	–
Thermal resistances						
Junction-ambient	$R_{thj\text{-}a}$	–	–	85	K/W	1)
Junction-pin4	$R_{thj\text{-}pin4}$	–	–	20	K/W	–

1) Worst case, regarding peak temperature; zero airflow; mounted an a PCB 80 × 80 × 1.5 mm^3, heat sink area 300 mm^2.

3.2 Electrical characteristics

Table 3 Electrical characteristics

V_I = 13.5 V; T_j = -40°C to 125°C, unless specified otherwise

Parameter	Symbol	Values			Unit	Note or Test Condition
		Min.	Typ.	Max.		
Output voltage	V_Q	4.9	5.0	5.1	V	I_Q = 5 mA to 100 mA V_I = 6 V to 28 V
Output-current limiting	I_Q	120	160	–	mA	–
Current consumption $I_q = I_I - I_Q$	I_q	–	–	400	µA	I_Q = 1 mA
Current consumption $I_q = I_I - I_Q$	I_q	–	9	15	mA	I_Q = 100 mA

Table 3 Electrical characteristics (cont'd)

V_I = 13.5 V; T_j = -40°C to 125°C, unless specified otherwise

Parameter	Symbol	Values			Unit	Note or Test Condition
		Min.	Typ.	Max.		
Drop voltage	V_{dr}	–	0.25	0.5	V	I_Q = 100 mA[1)]
Load regulation	ΔV_Q	–	–	40	mV	I_Q = 5 to 100 mA V_I = 6 V
Supply-voltage regulation	ΔV_Q	–	15	30	mV	V_I = 6 to 28 V I_Q = 5 mA
Power supply ripple rejection	*PSRR*	–	54	–	dB	f_r = 100 Hz V_r = 0.5 Vpp

1) Drop voltage = V_I - V_Q (measured where V_Q has dropped 100 mV from the nominal value obtained at V_I = 13.5 V).

4 Functional description

4.1 Application circuit

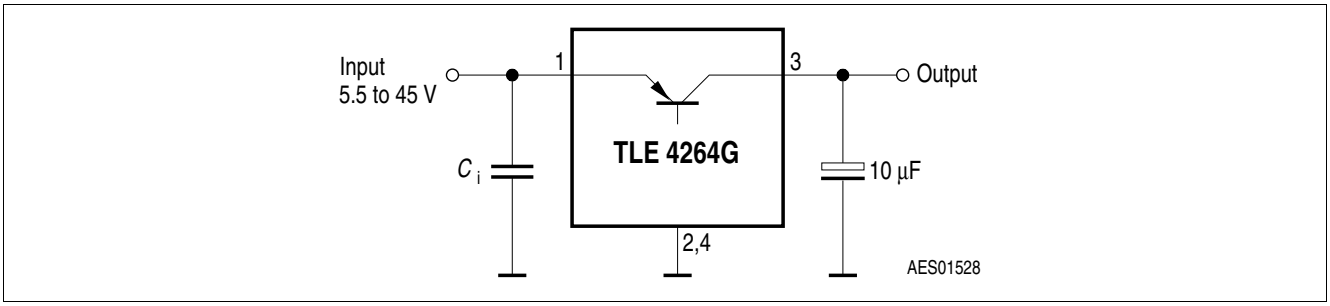
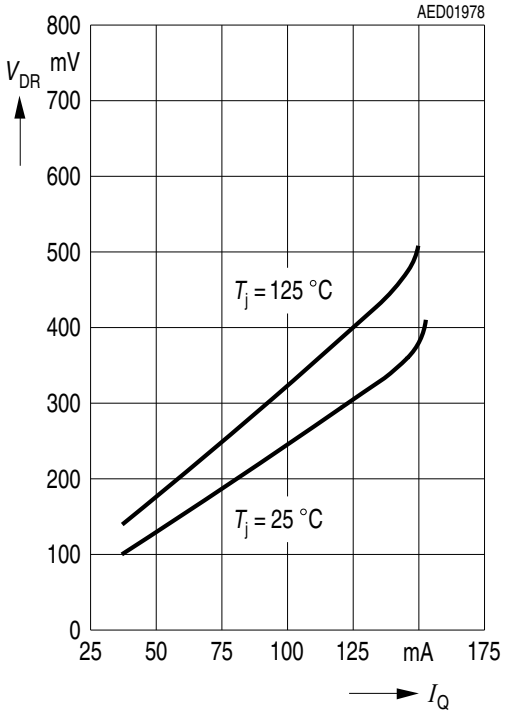


Figure 3 Application circuit

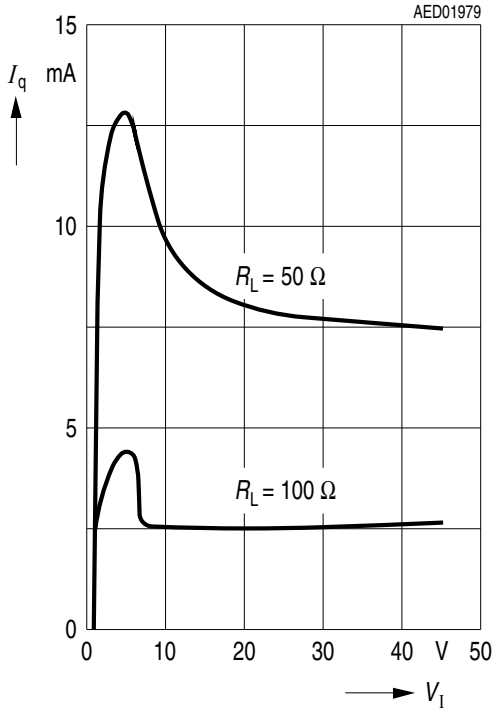
The control amplifier compares a reference voltage, which is kept highly precise by resistance adjustment, to a voltage that is proportional to the output voltage and drives the base of the series transistor via a buffer. Saturation control, working as a function of load current, prevents any over-saturation of the power element. The IC is protected against overload, overtemperature and reverse polarity.

5 Typical performance characteristics

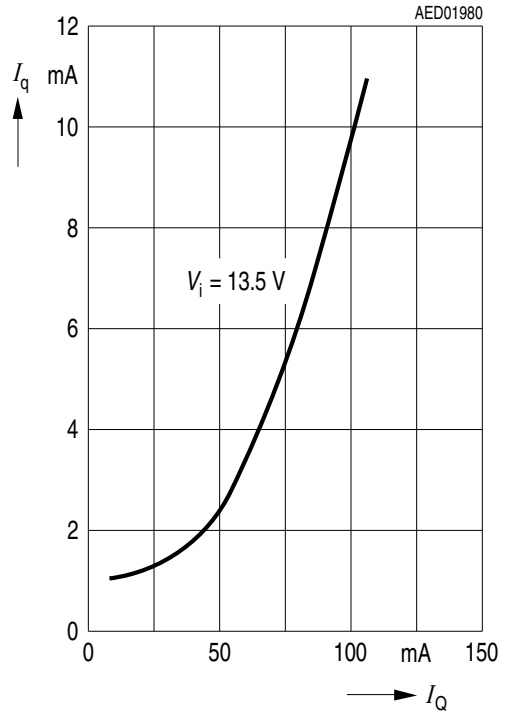
Drop voltage V_{DR} versus output current I_Q



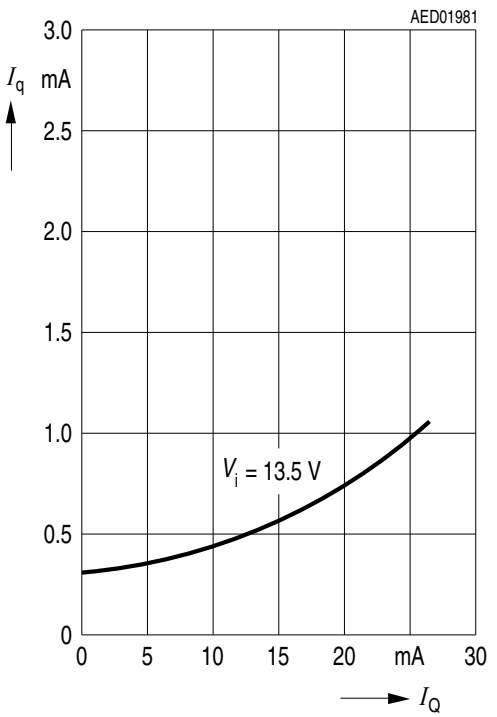
Current consumption I_q versus input voltage V_i



Current consumption I_q versus output current I_Q

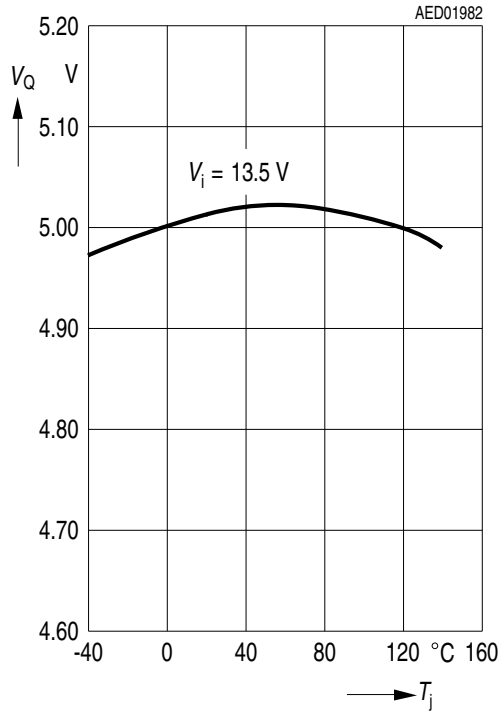


Current consumption I_q versus output current I_Q

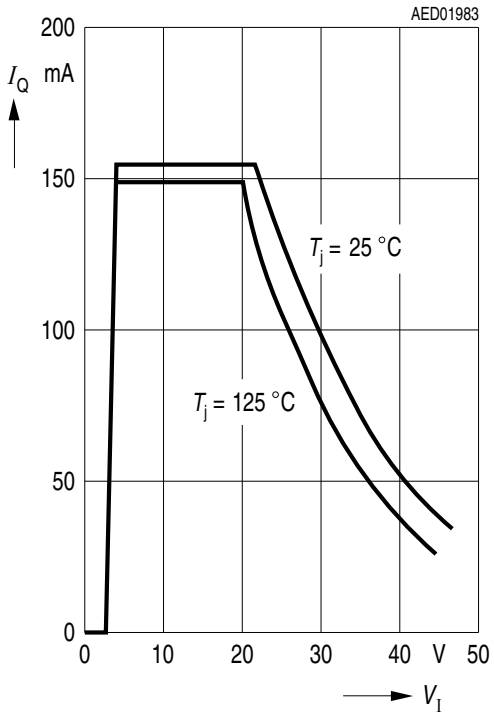


Typical performance characteristics

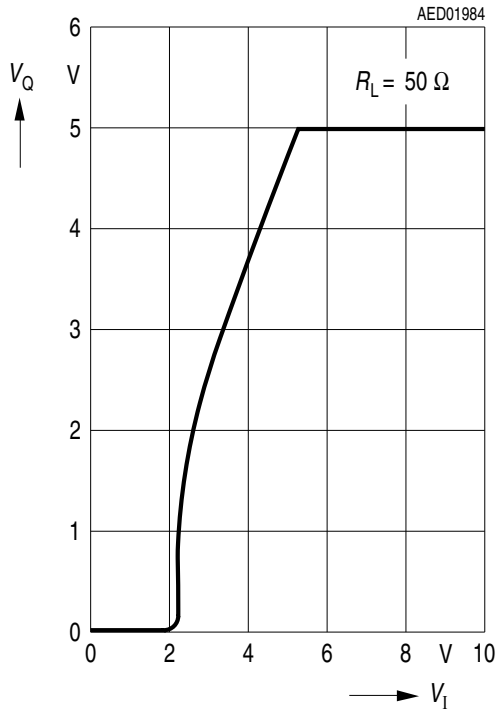
Output voltage V_Q versus junction temperature T_j



Output current I_Q versus input voltage V_i



Output voltage V_Q versus input voltage V_i



6 Package information

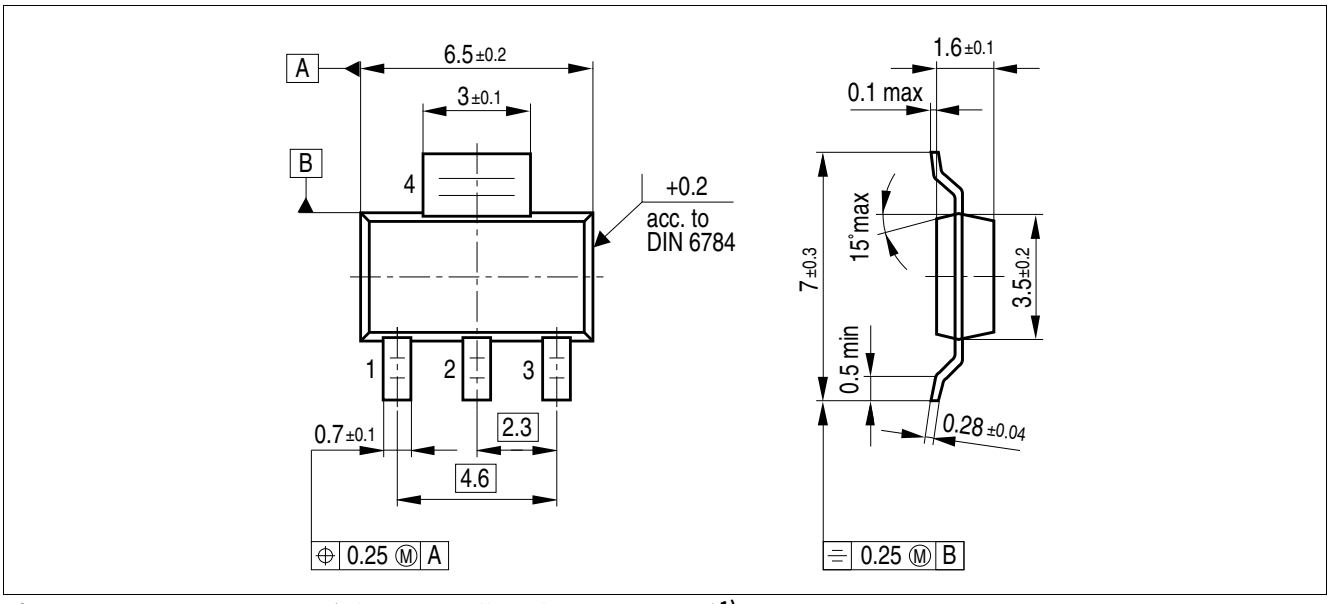


Figure 4 **PG-SOT223-4** (Plastic small outline transistor)[1)]

Green Product (RoHS compliant)

To meet the world-wide customer requirements for environmentally friendly products and to be compliant with government regulations the device is available as a green product. Green products are RoHS-Compliant (i.e Pb-free finish on leads and suitable for Pb-free soldering according to IPC/JEDEC J-STD-020).

Further information on packages

https://www.infineon.com/packages

1) Dimensions in mm

7 Revision history

Revision	Date	Changes
2.5	2021-07-12	Editorial change page 6: typo in column “Note or Test conditions” 6mA to 5mA
2.4	2019-05-22	Updated layout and structure Updated packaged drawing “PG-SOT223” Editorial changes
2.3	2008-03-07	Simplified package name to PG-SOT223-4 No modification of released product
2.2	2007-03-20	Initial version of RoHS-compliant derivate of TLE4264 Page 1: AEC certified statement added Page 1 and Page 10: RoHS compliance statement and Green product feature added Page 1 and Page 10: Package changed to RoHS compliant version Legal Disclaimer updated

Trademarks
All referenced product or service names and trademarks are the property of their respective owners.

Edition 2021-07-12
Published by
Infineon Technologies AG
81726 Munich, Germany

Do you have a question about any aspect of this document?
Email: erratum@infineon.com

Document reference
Z8F55276372

IMPORTANT NOTICE

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffenheitsgarantie").

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office (**www.infineon.com**).

WARNINGS

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.

单击下面可查看定价，库存，交付和生命周期等信息

>>Infineon(英飞凌)