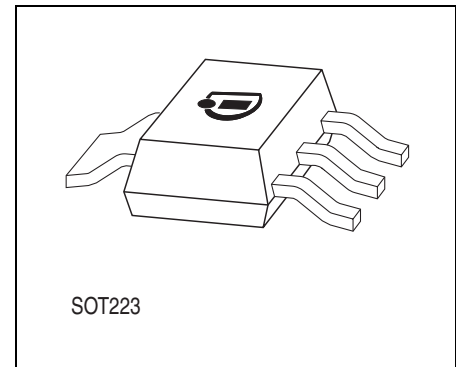




Features

- Output voltage tolerance $\leq \pm 2\%$
- Low-drop voltage
- Very low current consumption
- Overtemperature protection
- Short-circuit proof
- Suitable for use in automotive electronics
- Reverse polarity
- Green Product (RoHS compliant)
- AEC Qualified



Functional Description

TLE 4264 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 $5.5 \text{ V} < V_I < 45 \text{ V}$ to $V_{\text{Qrated}} = 5.0 \text{ V}$. 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. $1 \text{ } \Omega$ 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 $C_Q \geq 10 \text{ } \mu\text{F}$ and an $\text{ESR} \leq 10 \text{ } \Omega$ within the operating temperature range.

Type	Package
TLE 4264 G	PG-SOT223-4

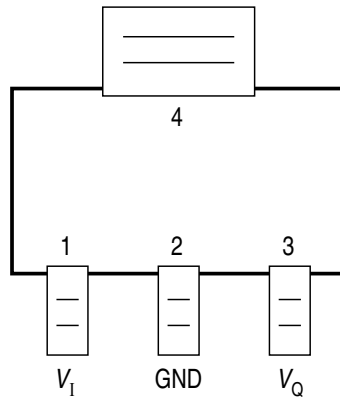


Figure 1 Pin Configuration (top view)

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 $\geq 10 \mu\text{F}$ capacitor, $\text{ESR} \leq 10 \Omega$

Circuit Description

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.

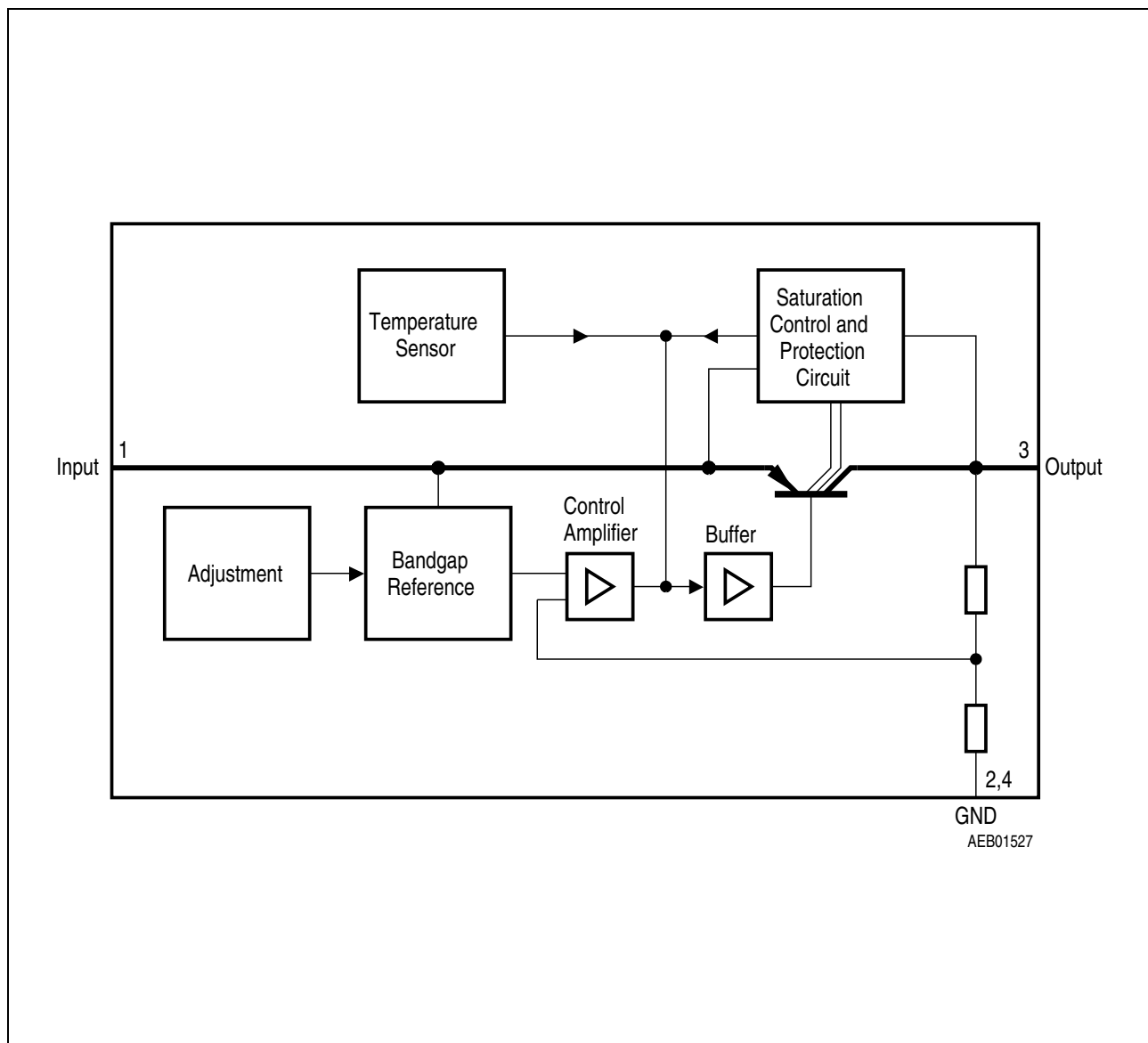


Figure 2 **Block Diagram**

Table 2 Absolute Maximum Ratings
 $T_j = -40$ to $150\text{ }^{\circ}\text{C}$

Parameter	Symbol	Limit Values		Unit	Notes
		Min.	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	$R_{\text{thj-a}}$	—	85	K/W	1)
Junction-pin4	$R_{\text{thj-pin4}}$	—	20	K/W	—

1) Worst case, regarding peak temperature; zero airflow; mounted on a PCB $80 \times 80 \times 1.5\text{ mm}^3$, heat sink area 300 mm^2 .

Table 3 Characteristics
 $V_I = 13.5 \text{ V}; -40 \text{ }^{\circ}\text{C} \leq T_j \leq 125 \text{ }^{\circ}\text{C}$, unless specified otherwise

Parameter	Symbol	Limit Values			Unit	Test Conditions
		Min.	Typ.	Max.		
Output voltage	V_Q	4.9	5.0	5.1	V	$5 \text{ mA} \leq I_Q \leq 100 \text{ mA}$ $6 \text{ V} \leq V_I \leq 28 \text{ V}$
Output-current limiting	I_Q	120	160	—	mA	—
Current consumption $I_q = I_I - I_Q$	I_q	—	—	400	μA	$I_Q = 1 \text{ mA}$
Current consumption $I_q = I_I - I_Q$	I_q	—	9	15	mA	$I_Q = 100 \text{ mA}$
Drop voltage	V_{dr}	—	0.25	0.5	V	$I_Q = 100 \text{ mA}^{1)}$
Load regulation	ΔV_Q	—	—	40	mV	$I_Q = 5 \text{ to } 100 \text{ mA}$ $V_I = 6 \text{ V}$
Supply-voltage regulation	ΔV_Q	—	15	30	mV	$V_I = 6 \text{ to } 28 \text{ V}$ $I_Q = 5 \text{ mA}$
Power Supply ripple rejection	$PSRR$	—	54	—	dB	$f_r = 100 \text{ Hz}$ $V_r = 0.5 \text{ Vpp}$

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

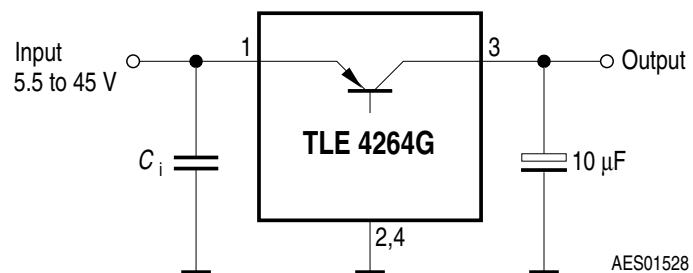
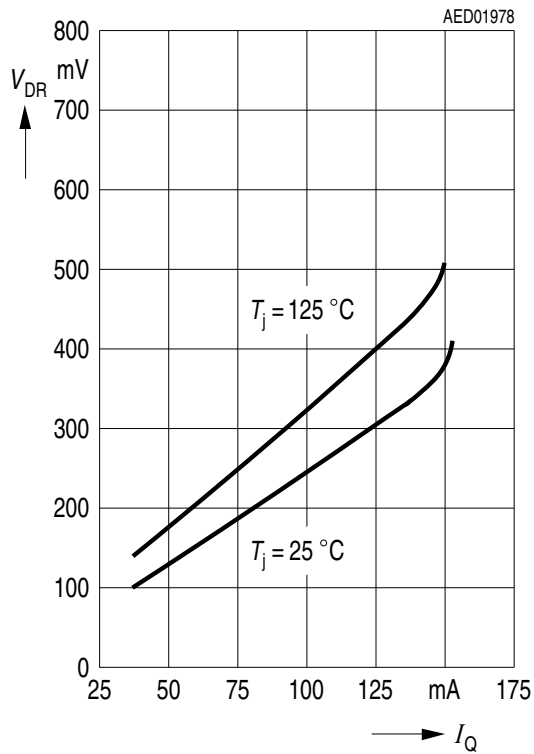
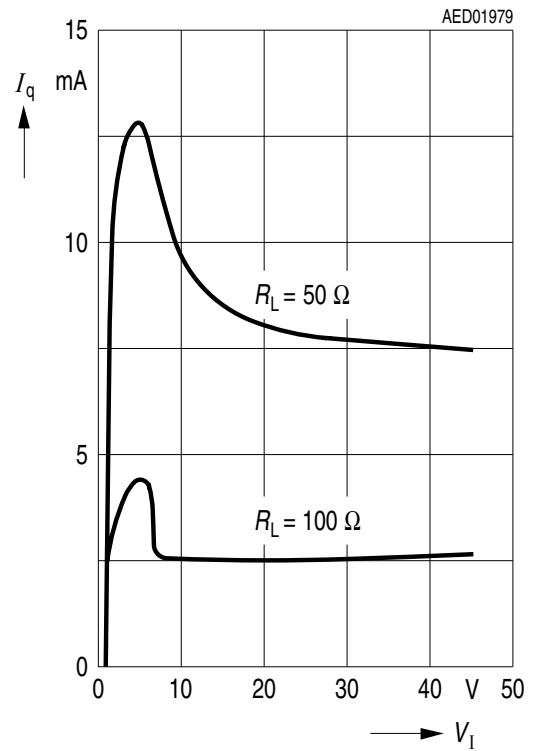


Figure 3 **Application Circuit**

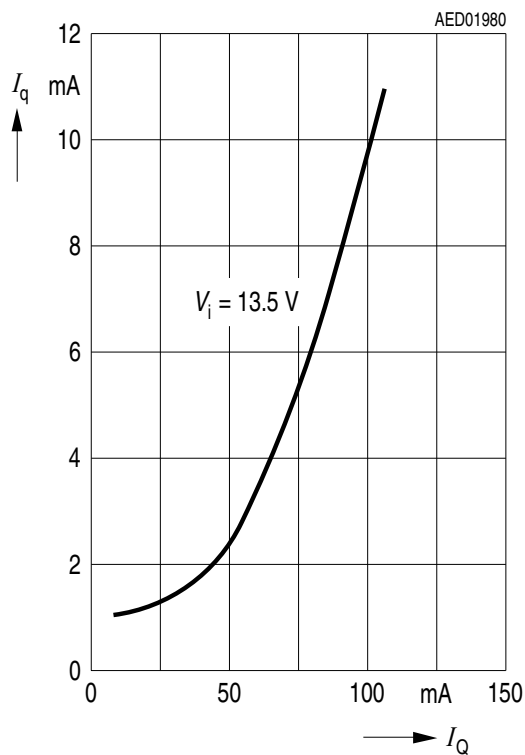
Drop Voltage V_{DR} versus Output Current I_Q



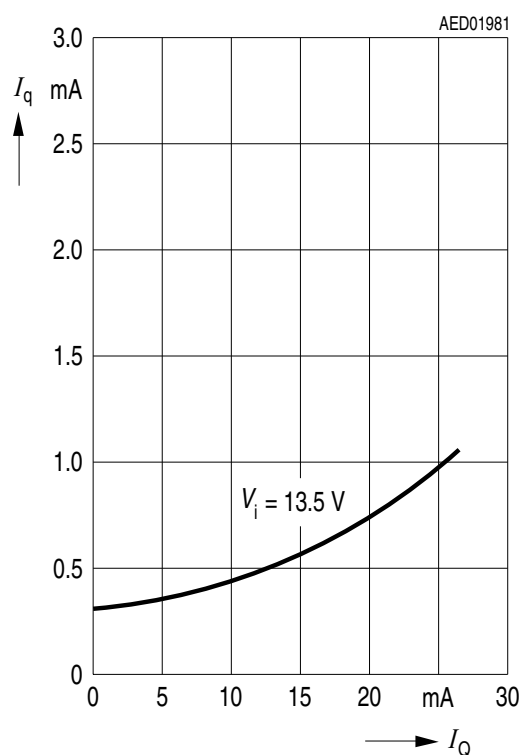
Current Consumption I_q versus Input Voltage V_i



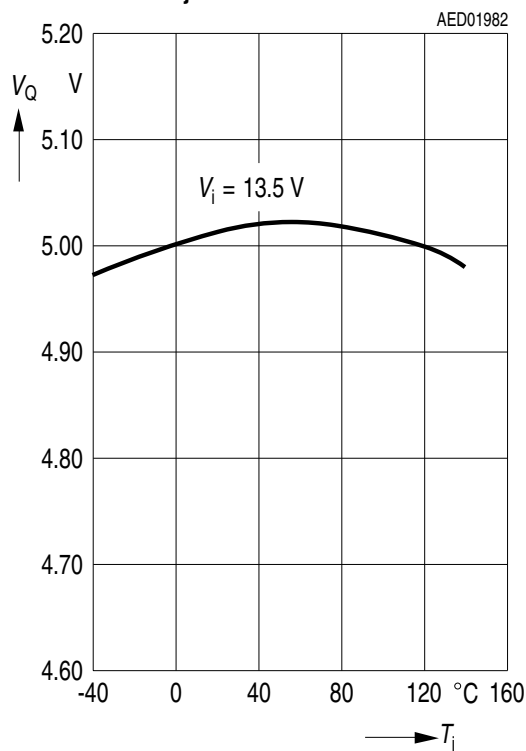
Current Consumption I_q versus Output Current I_Q



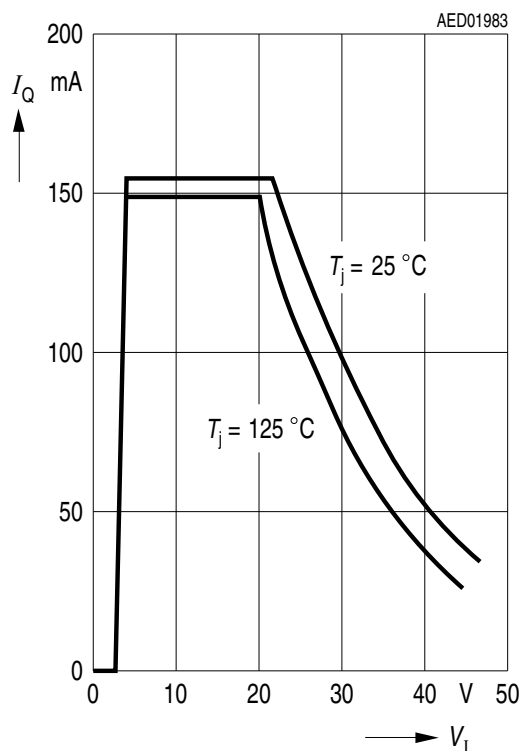
Current Consumption I_q versus Output Current I_Q



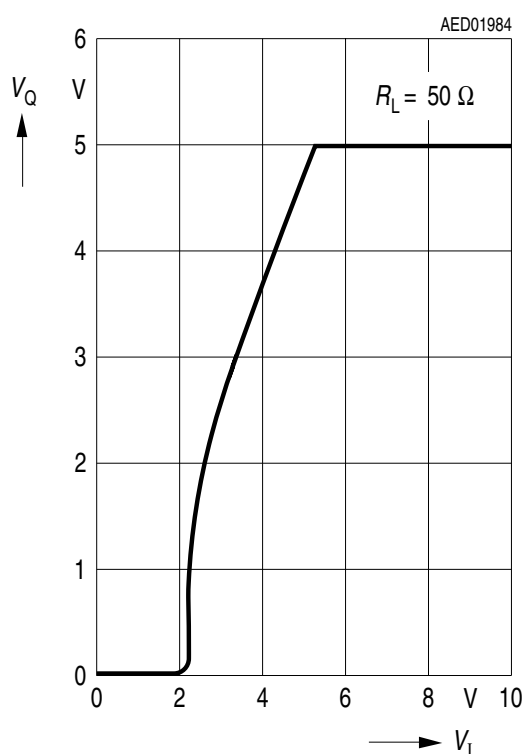
Output Voltage V_Q versus Temperature T_j



Output Current I_Q versus Input Voltage V_i



Output Voltage V_Q versus Input Voltage V_i



Package Outlines

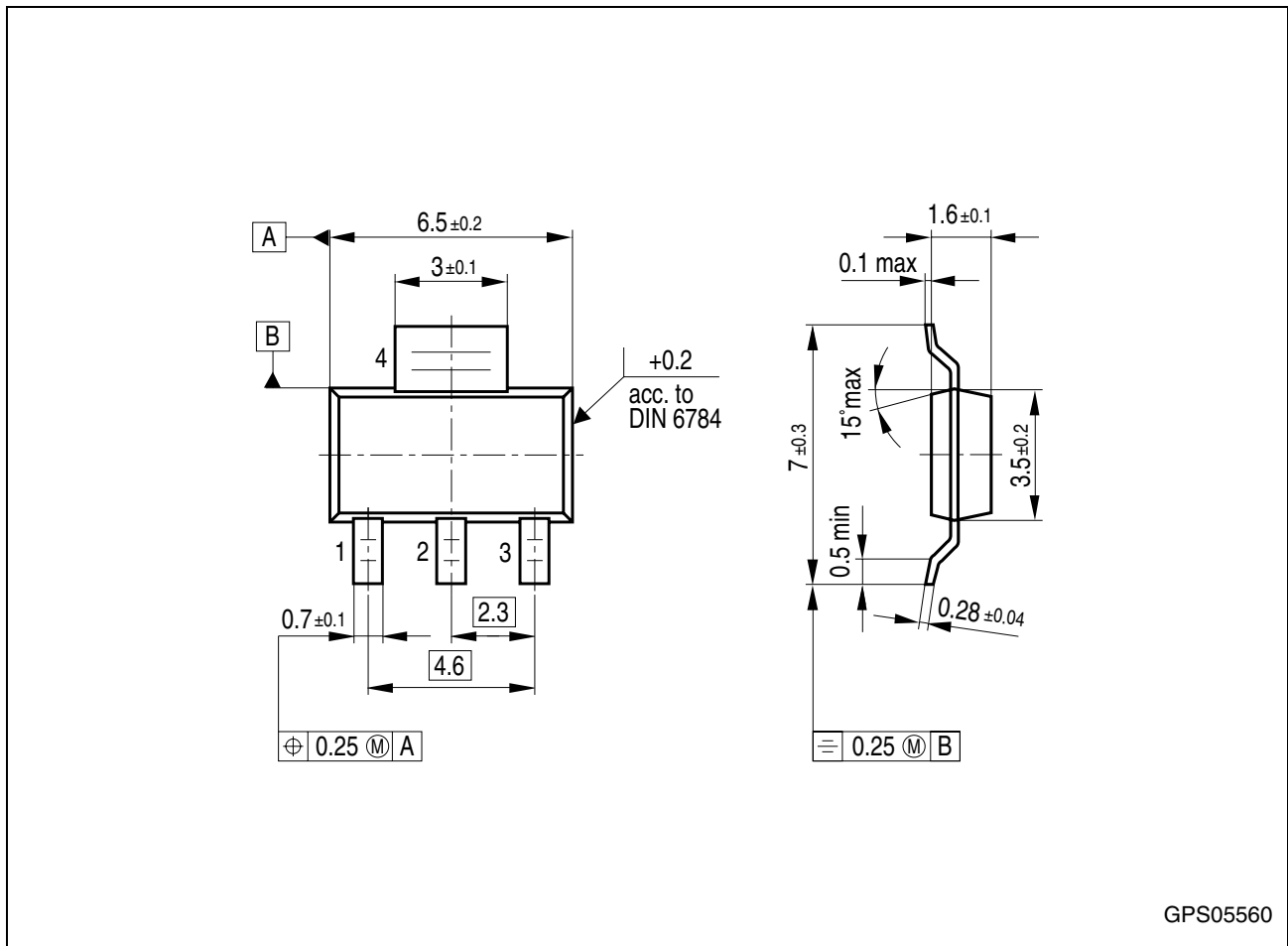


Figure 4 PG-SOT223-4 (Plastic Small Outline Transistor)

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).

You can find all of our packages, sorts of packing and others in our Infineon Internet Page "Products": <http://www.infineon.com/products>.

SMD = Surface Mounted Device

Dimensions in mm

Revision History

Version	Date	Changes
Rev. 2.3	2008-03-07	Simplified package name to PG-SOT223-4. No modification of released product.
Rev. 2.2	2007-03-20	Initial version of RoHS-compliant derivate of TLE 4264 Page 1 : AEC certified statement added Page 1 and Page 9 : RoHS compliance statement and Green product feature added Page 1 and Page 9 : Package changed to RoHS compliant version Legal Disclaimer updated

Edition 2008-03-07

**Published by
Infineon Technologies AG
81726 Munich, Germany**

**© 2008 Infineon Technologies AG
All Rights Reserved.**

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, 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.

Information

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, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.