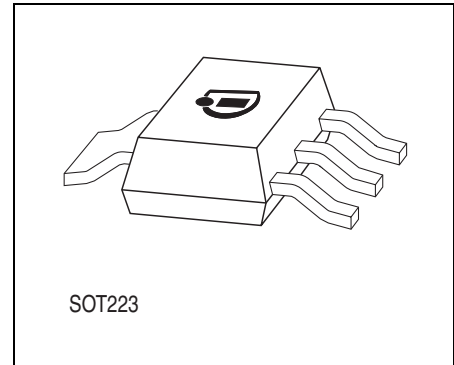




## Features

- 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



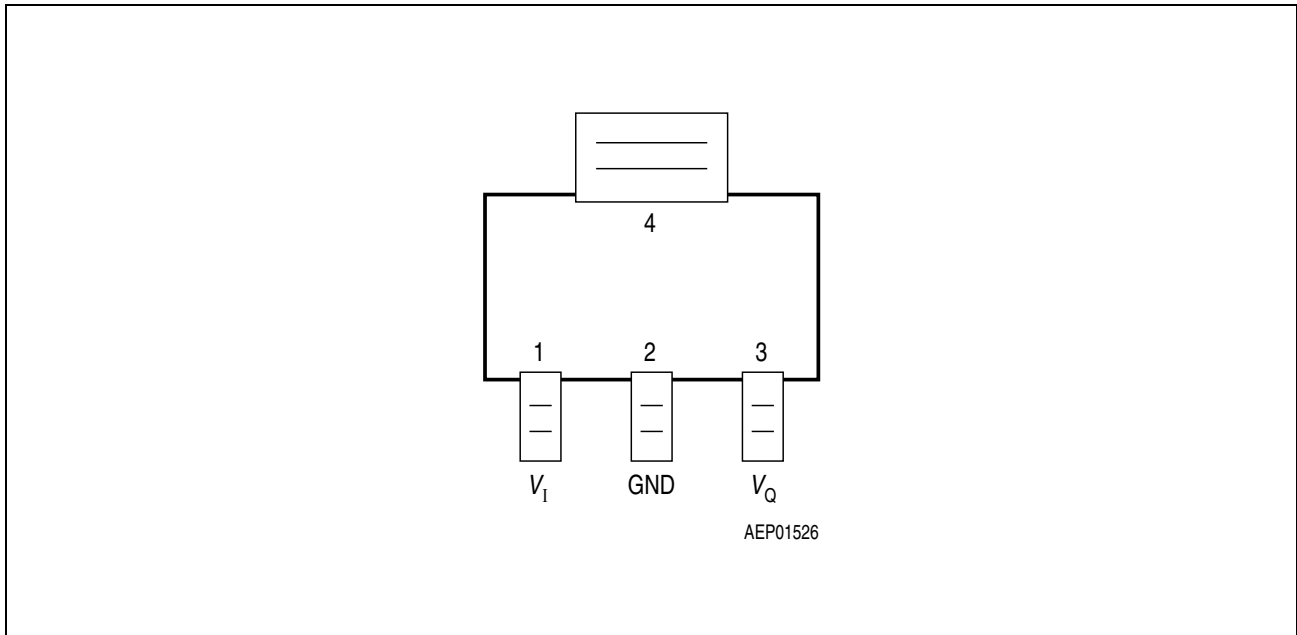
## Functional Description

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  $V_{Q_{rated}} = 5.0\text{ V}$ . 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.  $1\ \Omega$  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  $C_Q \geq 10\ \mu\text{F}$  and an  $\text{ESR} \leq 10\ \Omega$  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	$V_I$	<b>Input voltage;</b> block to ground directly on IC with ceramic capacitor
2, 4	GND	<b>Ground</b>
3	$V_Q$	<b>5-V output voltage;</b> 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.

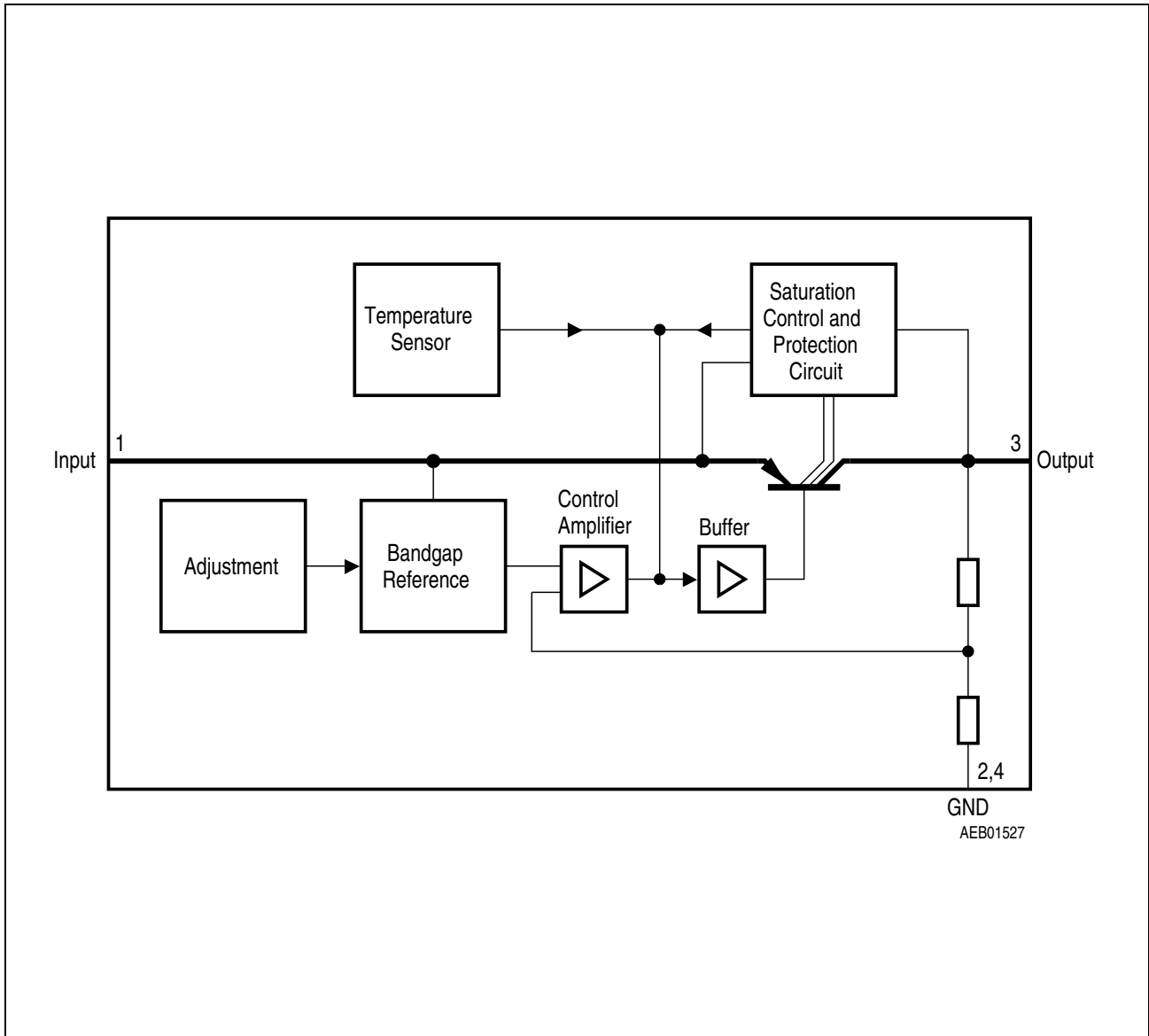


Figure 2 Block Diagram

**Table 2 Absolute Maximum Ratings**
 $T_j = -40$  to  $150$  °C

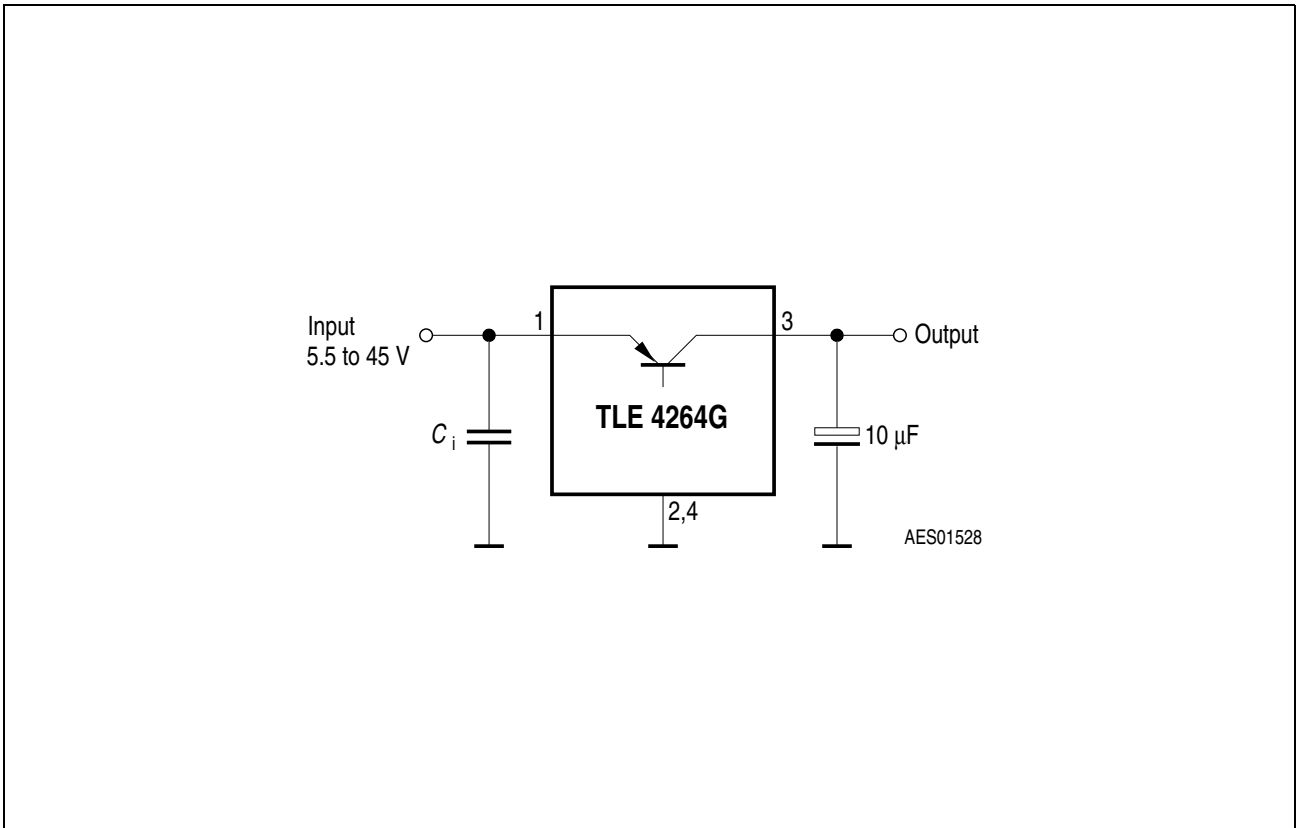
Parameter	Symbol	Limit Values		Unit	Notes
		Min.	Max.		
<b>Input</b>					
Input voltage	$V_I$	-42	45	V	–
Input current	$I_I$	–	–	–	limited internally
<b>Output</b>					
Output voltage	$V_Q$	-1	32	V	–
Output current	$I_Q$	–	–	–	limited internally
<b>Ground</b>					
Current	$I_{GND}$	50	–	mA	–
<b>Temperatures</b>					
Junction temperature	$T_j$	–	150	°C	–
Storage temperature	$T_{stg}$	-50	150	°C	–
<b>Operating Range</b>					
Input voltage	$V_I$	5.5	45	V	–
Junction temperature	$T_j$	-40	150	°C	–
<b>Thermal Resistances</b>					
Junction-ambient	$R_{thj-a}$	–	85	K/W	1)
Junction-pin4	$R_{thj-pin4}$	–	20	K/W	–

1) Worst case, regarding peak temperature; zero airflow; mounted on a PCB  $80 \times 80 \times 1.5$  mm<sup>3</sup>, heat sink area 300 mm<sup>2</sup>.

**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

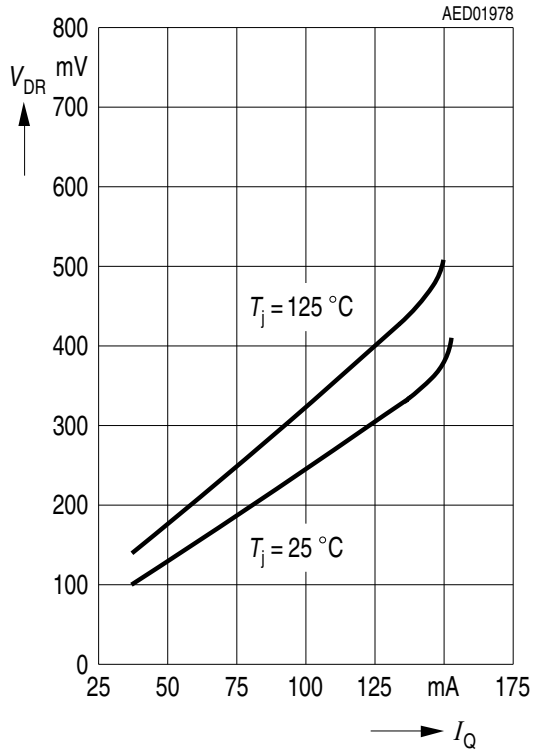
Parameter	Symbol	Limit Values			Unit	Test Conditions
		Min.	Typ.	Max.		
Output voltage	$V_Q$	4.9	5.0	5.1	V	$5 \text{ mA} \leq I_Q \leq 100 \text{ mA}$ $6 \text{ V} \leq V_I \leq 28 \text{ V}$
Output-current limiting	$I_Q$	120	160	–	mA	–
Current consumption $I_q = I_I - I_Q$	$I_q$	–	–	400	$\mu\text{A}$	$I_Q = 1 \text{ mA}$
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	$\Delta V_Q$	–	–	40	mV	$I_Q = 5 \text{ to } 100 \text{ mA}$ $V_I = 6 \text{ V}$
Supply-voltage regulation	$\Delta V_Q$	–	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  $V_I = 13.5 \text{ V}$ ).

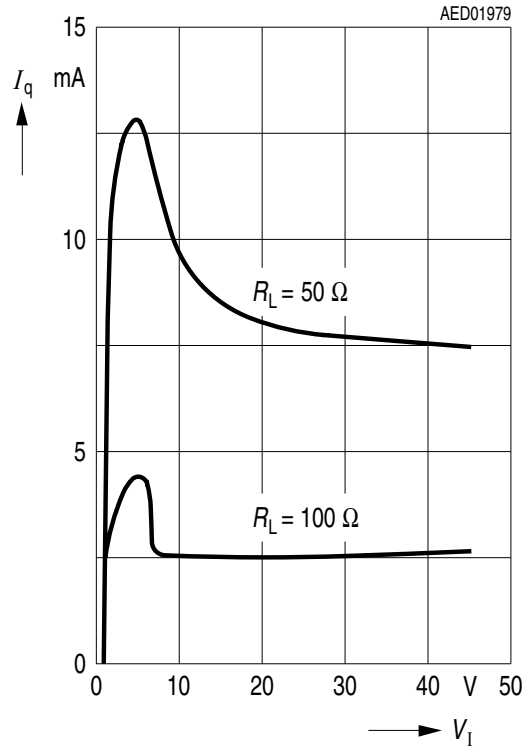


**Figure 3 Application Circuit**

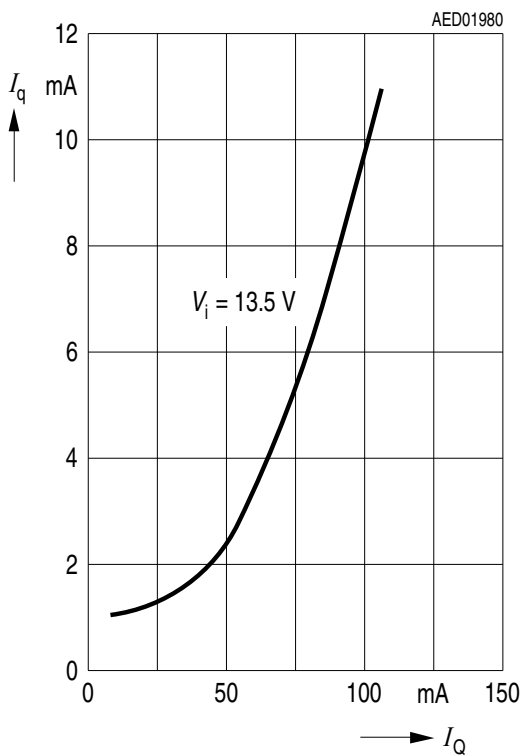
**Drop Voltage  $V_{DR}$  versus Output Current  $I_Q$**



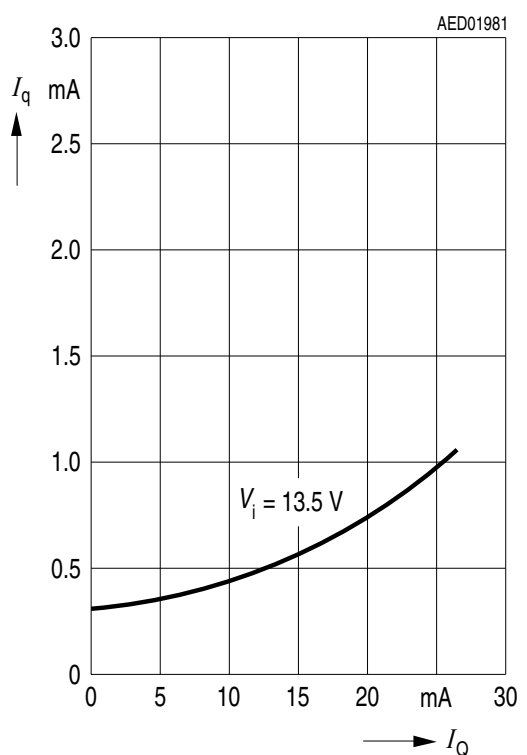
**Current Consumption  $I_q$  versus Input Voltage  $V_i$**



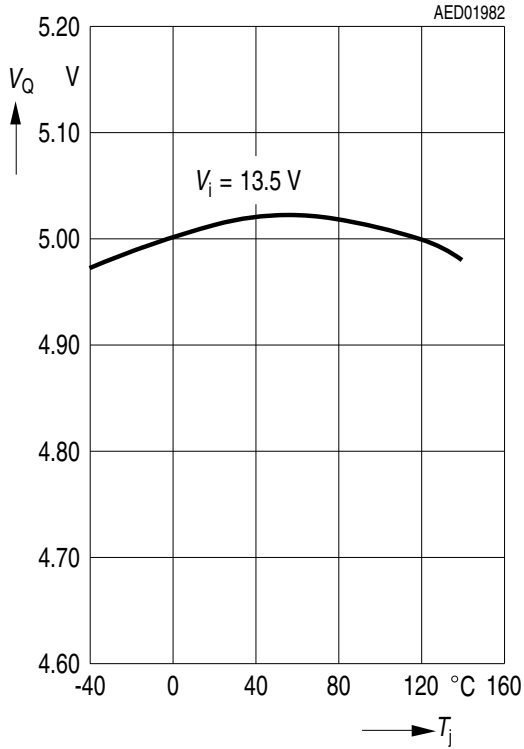
**Current Consumption  $I_q$  versus Output Current  $I_Q$**



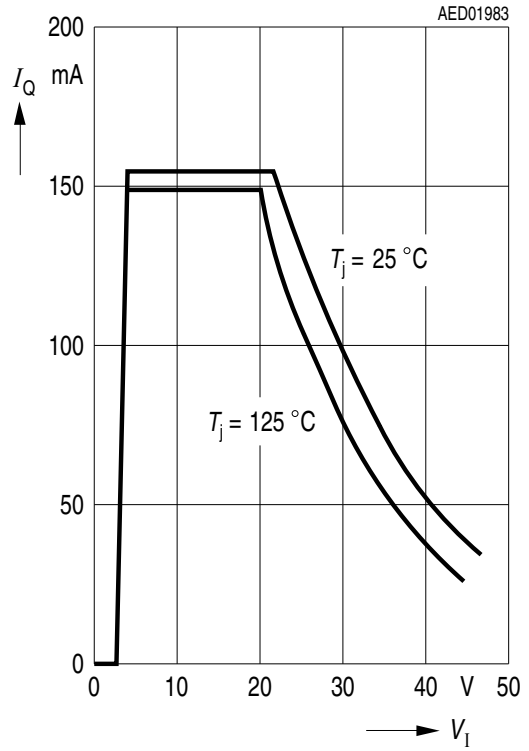
**Current Consumption  $I_q$  versus Output Current  $I_Q$**



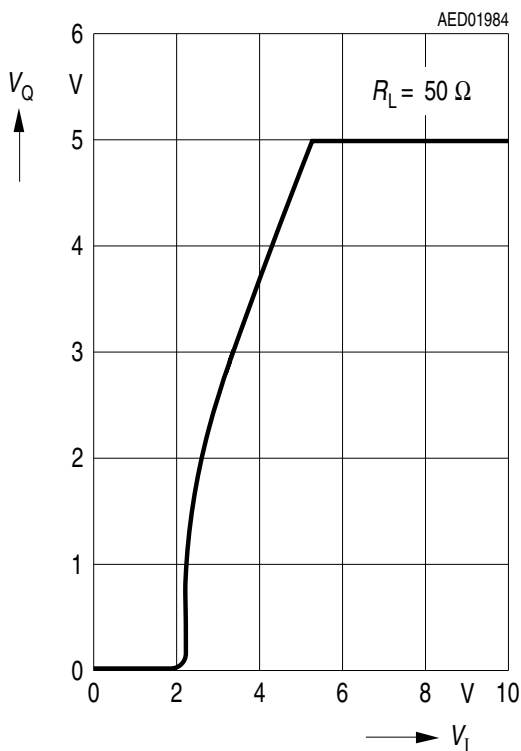
**Output Voltage  $V_Q$  versus Temperature  $T_j$**



**Output Current  $I_Q$  versus Input Voltage  $V_i$**

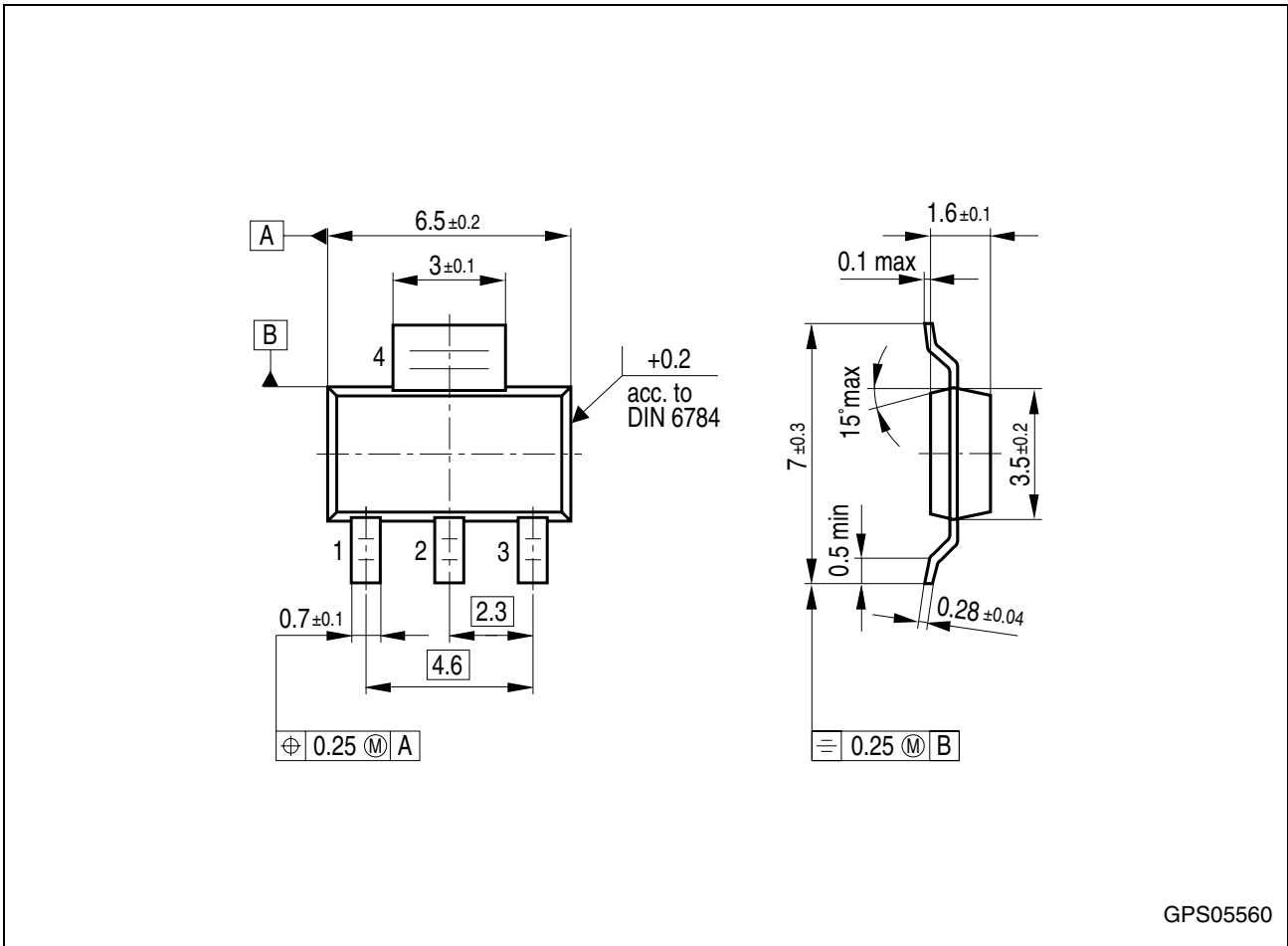


**Output Voltage  $V_Q$  versus Input Voltage  $V_i$**





Package Outlines



GPS05560

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

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**Revision History**

<b>Version</b>	<b>Date</b>	<b>Changes</b>
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 <b>Page 1</b> : AEC certified statement added <b>Page 1</b> and <b>Page 9</b> : RoHS compliance statement and Green product feature added <b>Page 1</b> and <b>Page 9</b> : Package changed to RoHS compliant version Legal Disclaimer updated

**Edition 2008-03-07**

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

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