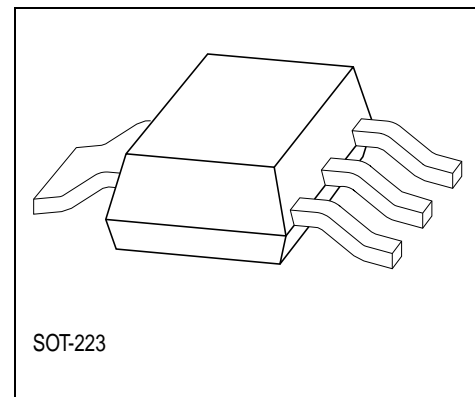


### Features

- 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



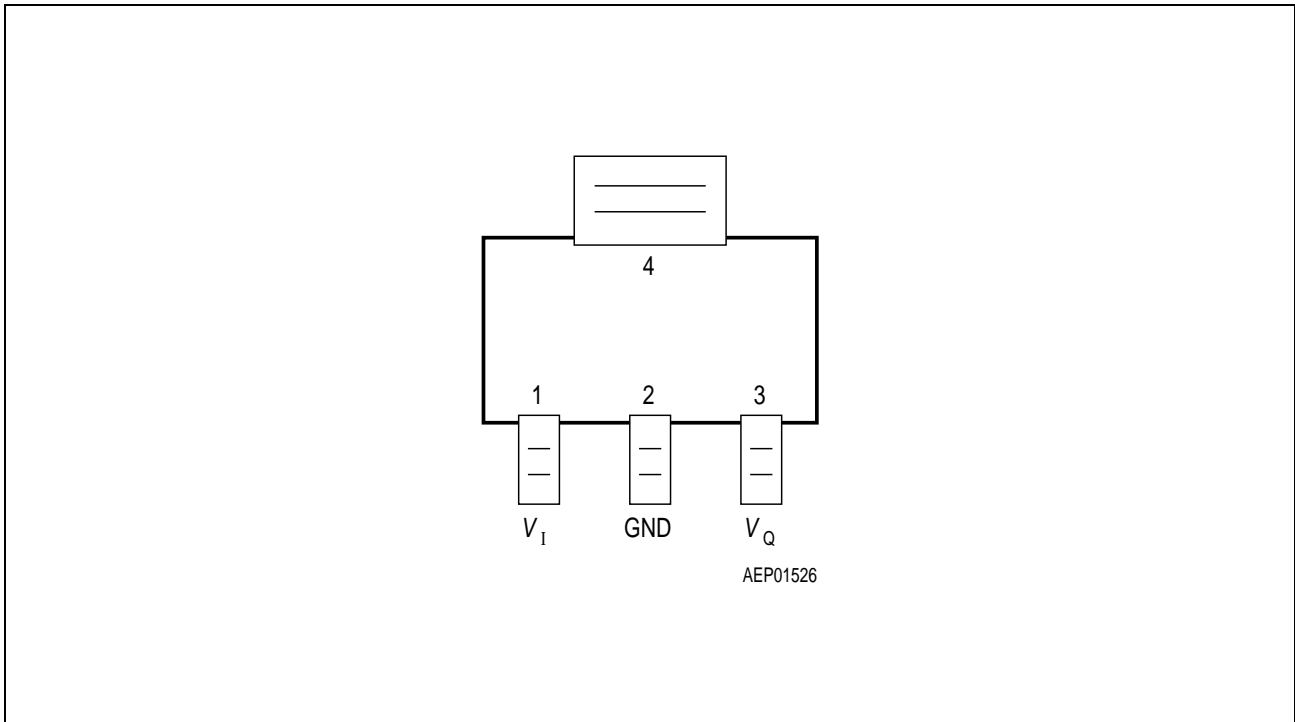
Type	Ordering Code	Package
TLE 4264 G	Q67006-A9139	P-SOT223-4-4 (SMD)

### Functional Description

TLE 4264 is a 5-V low-drop fixed-voltage regulator in an SOT-223 package. The IC regulates an input voltage  $V_I$  in the range  $5.5\text{ V} < V_I < 45\text{ V}$  to  $V_{\text{Rated}} = 5.0\text{ V}$ . 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  $C_o$  is necessary for the stability of the regulating circuit. Stability is guaranteed at values  $C_o \geq 10\ \mu\text{F}$  and an  $\text{ESR} \leq 10\ \Omega$  within the operating temperature range.



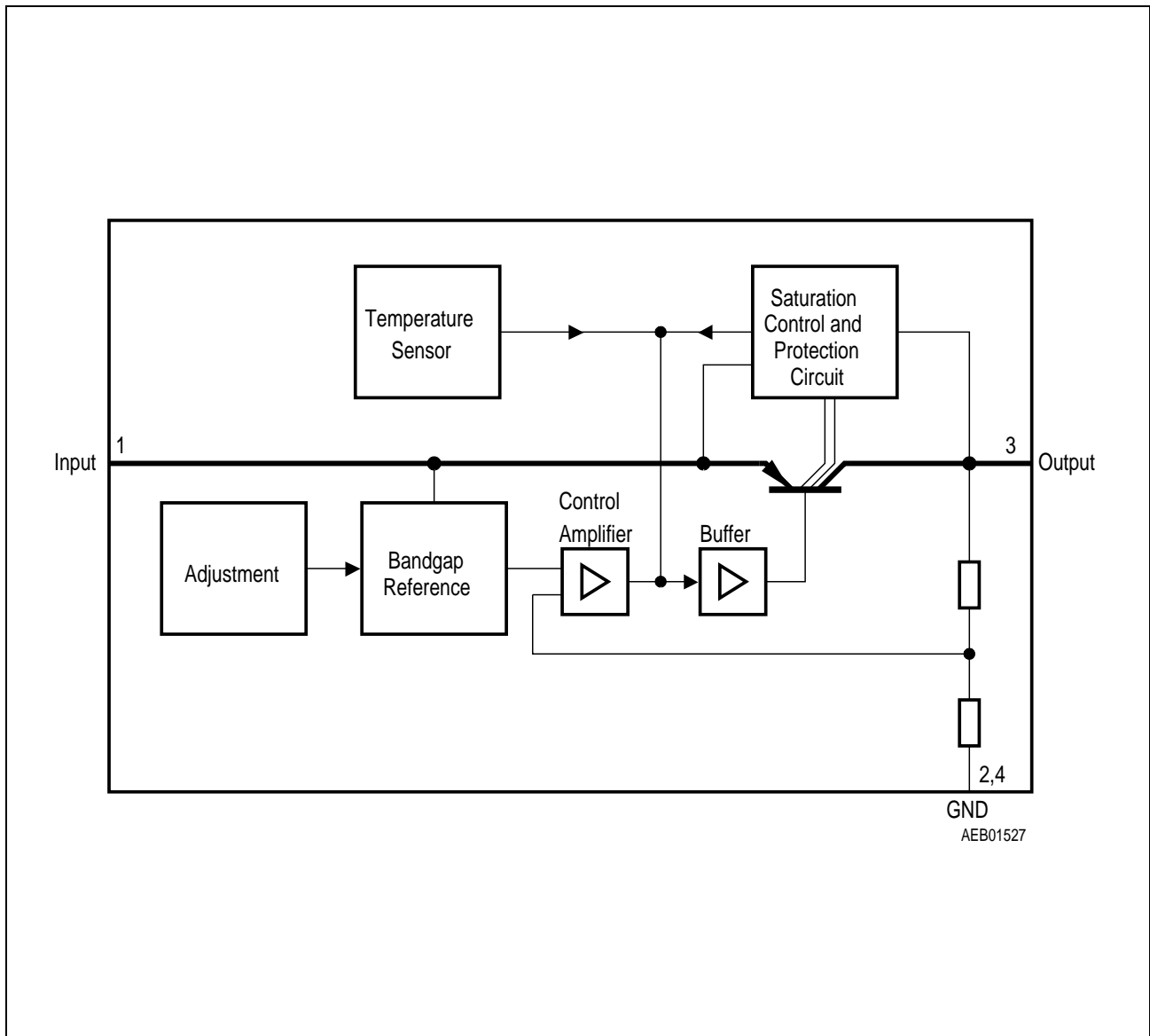
**Figure 1 Pin Configuration (top view)**

**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 $\geq 10\text{-}\mu\text{F}$ 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

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

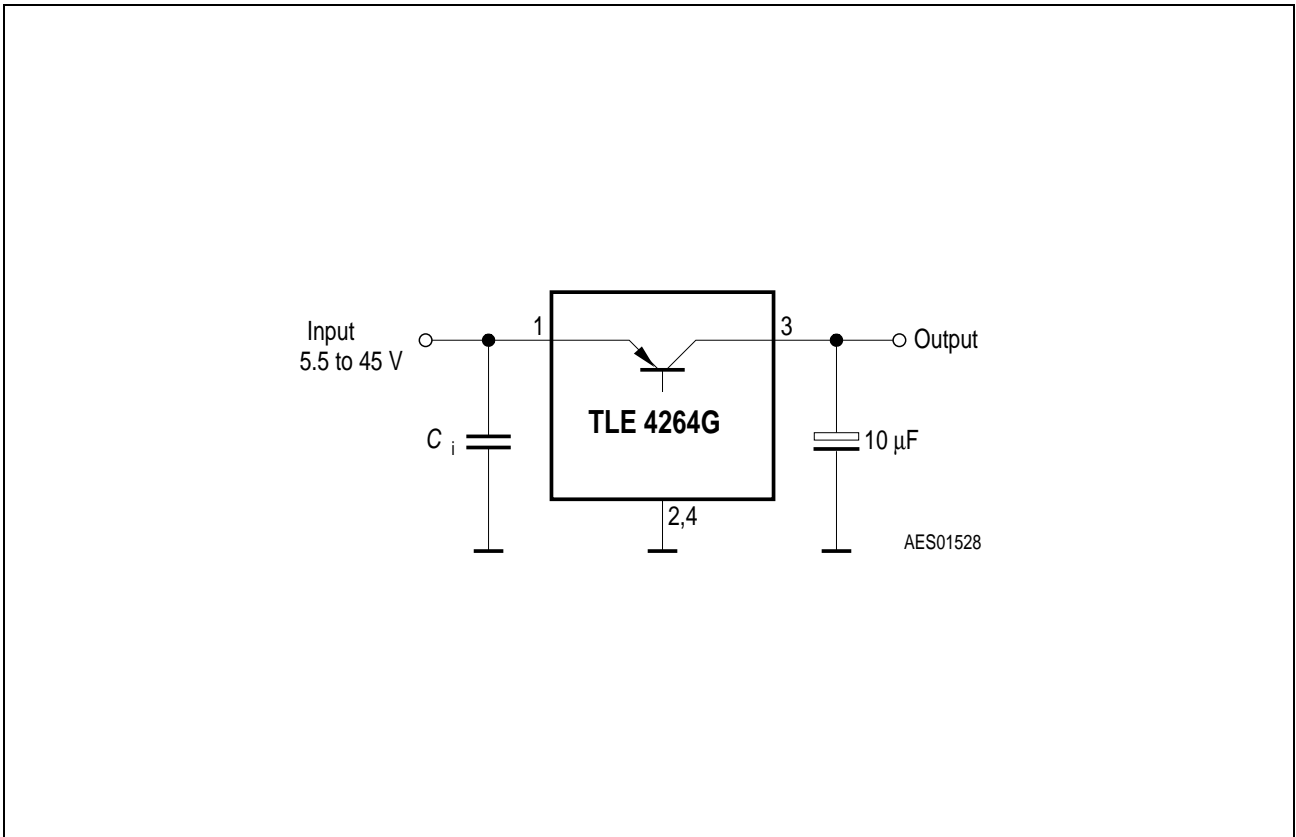
Junction-ambient	$R_{thj-a}$	-	85	K/W	1)
Junction-pin4	$R_{thj-pin4}$	-	20	K/W	-

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>.

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

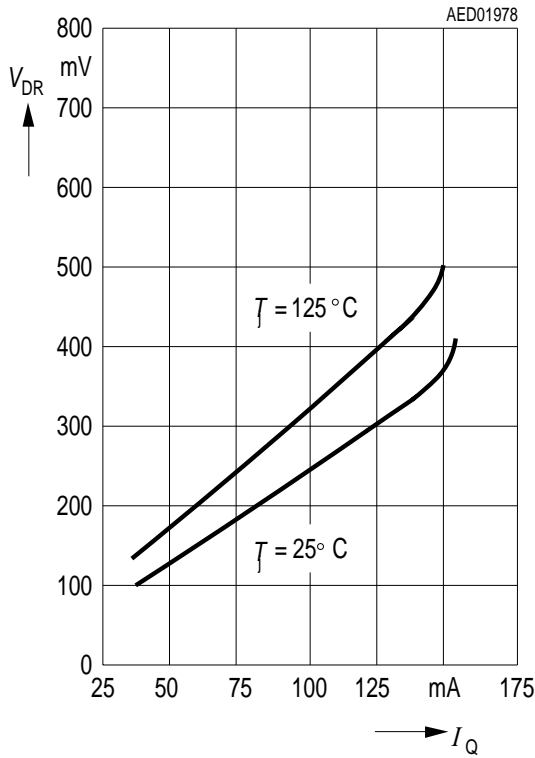
Parameter	Symbol	Limit Values			Unit	Test Conditions
		min.	typ.	max.		
Output voltage	$V_Q$	4.9	5.0	5.1	V	$5 \text{ mA} \leq I_Q \leq 100 \text{ mA}$ $6 \text{ V} \leq V_I \leq 28 \text{ V}$
Output-current limiting	$I_Q$	120	160	–	mA	–
Current consumption $I_q = I_I - I_Q$	$I_q$	–	–	400	$\mu\text{A}$	$I_Q = 1 \text{ mA}$
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	$f_r = 100 \text{ Hz}$ $V_r = 0.5 \text{ Vpp}$

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

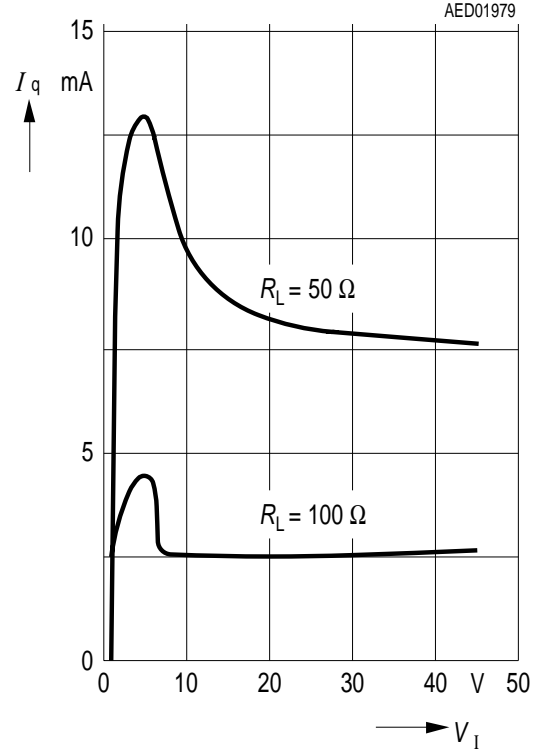


**Figure 3** Application Circuit

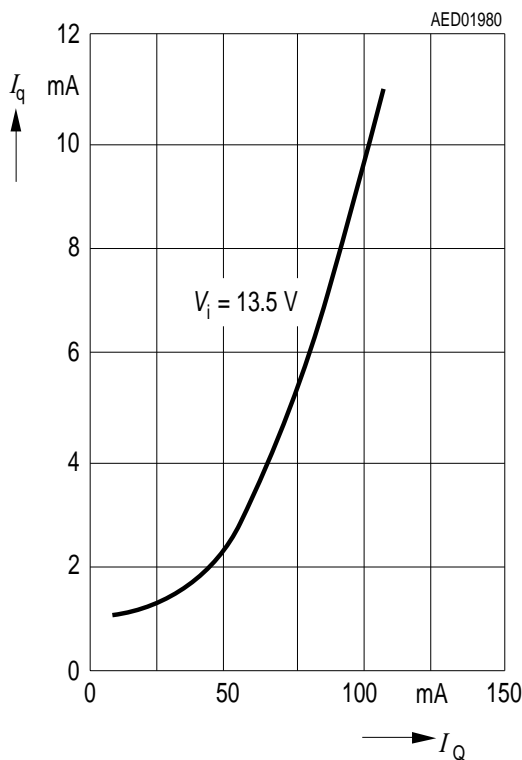
**Drop Voltage  $V_{DR}$  versus Output Current  $I_Q$**



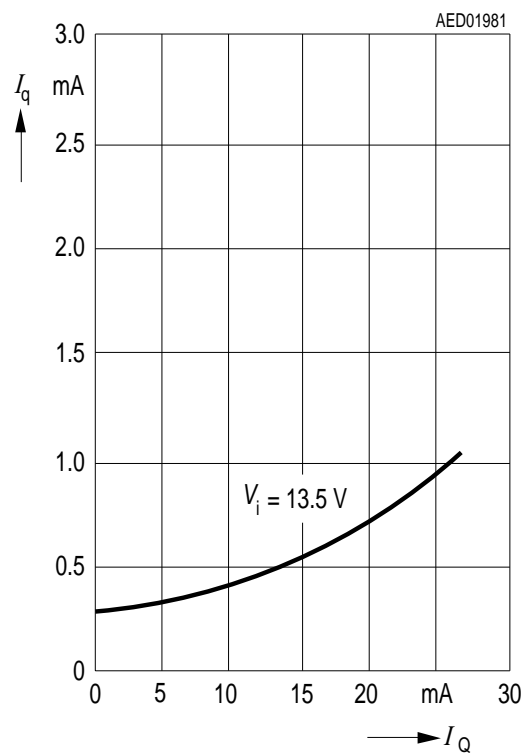
**Current Consumption  $I_q$  versus Input Voltage  $V_i$**



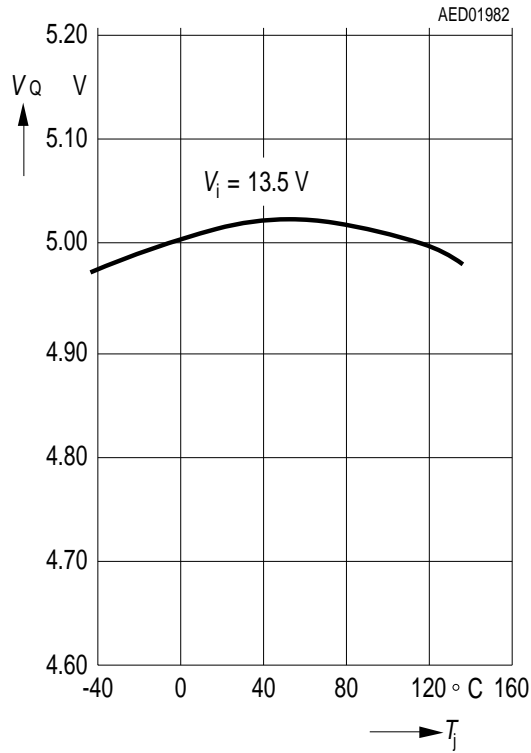
**Current Consumption  $I_q$  versus Output Current  $I_Q$**



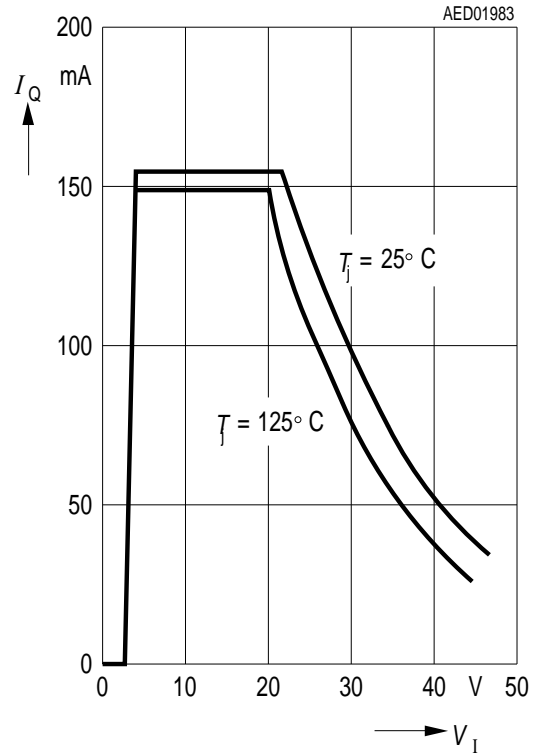
**Current Consumption  $I_q$  versus Output Current  $I_Q$**



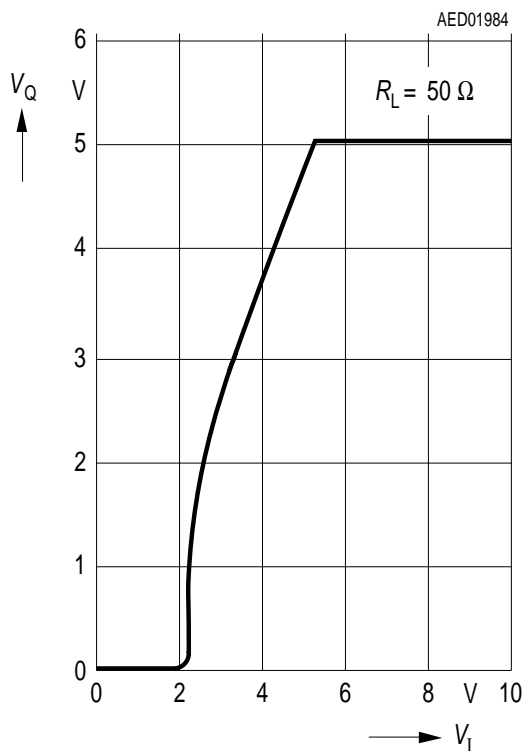
**Output Voltage  $V_Q$  versus Temperature  $T_j$**



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



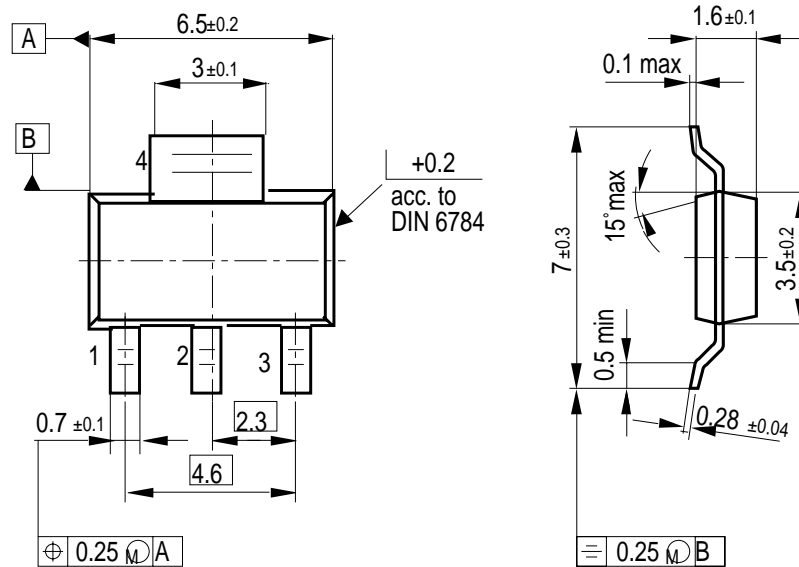
**Output Voltage  $V_Q$  versus Input Voltage  $V_i$**





Package Outlines

**P-SOT223-4-4**  
(Plastic Small Outline Transistor)



Weight approx. 0.15 g

GPS05560

**Sorts of Packing**

Package outlines for tubes, trays etc. are contained in our Data Book "Package Information"

SMD = Surface Mounted Device

Dimensions in mm

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