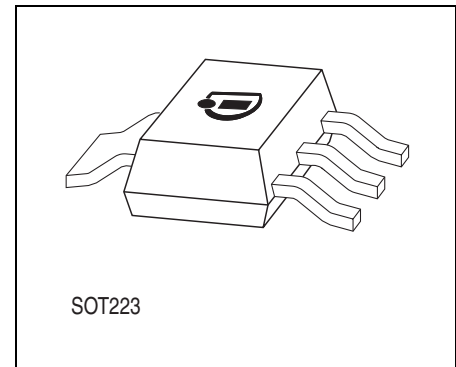




## Features

- Output voltage 5 V or 10 V
- Output voltage tolerance  $\leq \pm 2\%$
- 120 mA current capability
- Very low current consumption
- Low-drop voltage
- Overtemperature protection
- Reverse polarity proof
- Wide temperature range
- Suitable for use in automotive electronics
- Inhibit
- Green Product (RoHS compliant)
- AEC Qualified



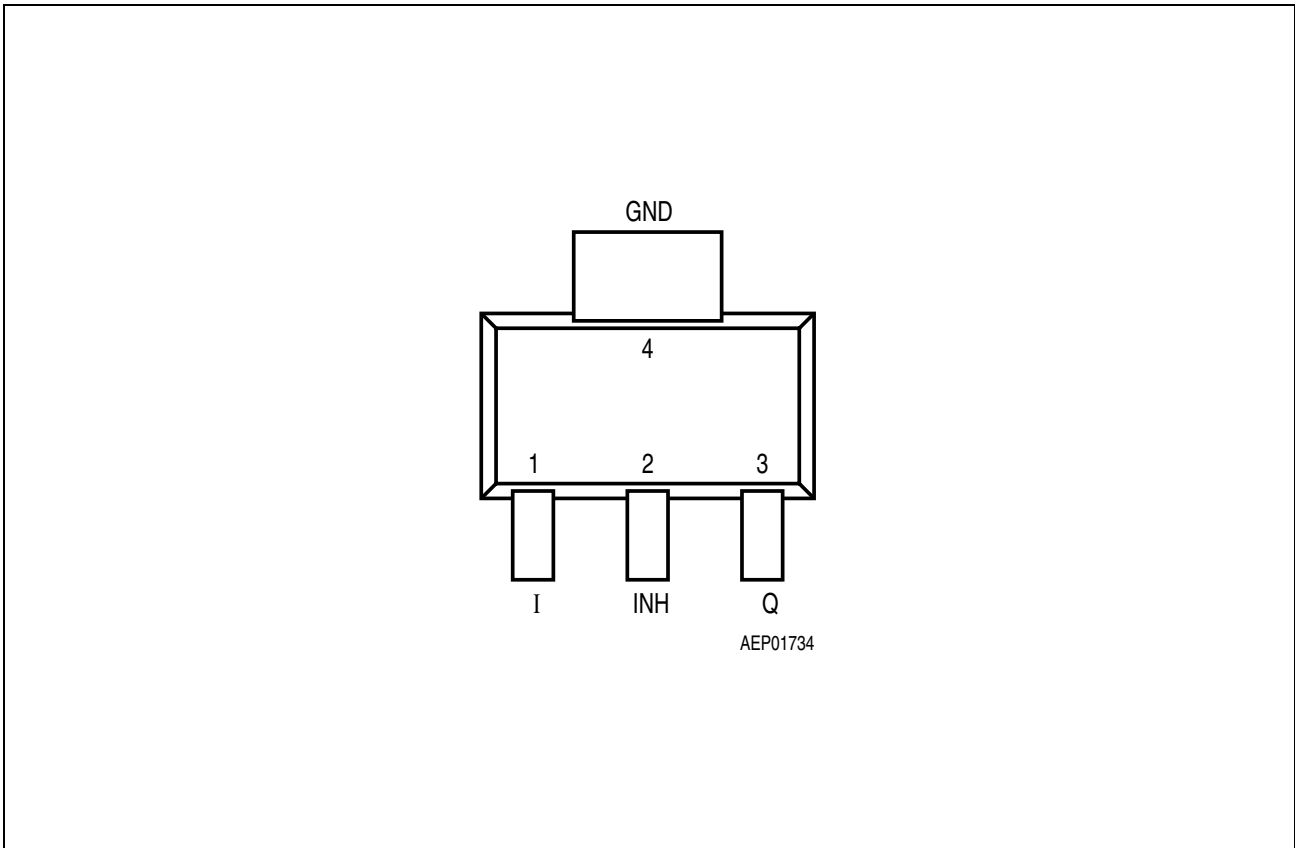
## Functional Description

TLE 4266 is a low-drop voltage regulator for 5 V or 10 V supply in a PG-SOT223-4 SMD package. The IC regulates an input voltage  $V_I$  in the range of  $5.5 \text{ V}/10.5 \text{ V} < V_I < 45 \text{ V}$  to  $V_{Q,nom} = 5 \text{ V}/10 \text{ V}$ . The maximum output current is more than 120 mA. The IC can be switched off via the inhibit input, which causes the current consumption to drop below  $10 \mu\text{A}$ . The IC is shortcircuit-proof and incorporates a temperature protection which turns off the IC at overtemperature.

## Choosing 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 line inductivity and input capacitance can be clamped. 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 whole operating temperature range.

Type	Package
TLE 4266 G	PG-SOT223-4
TLE 4266 GSV10	PG-SOT223-4



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

**Table 1** Pin Definitions and Functions

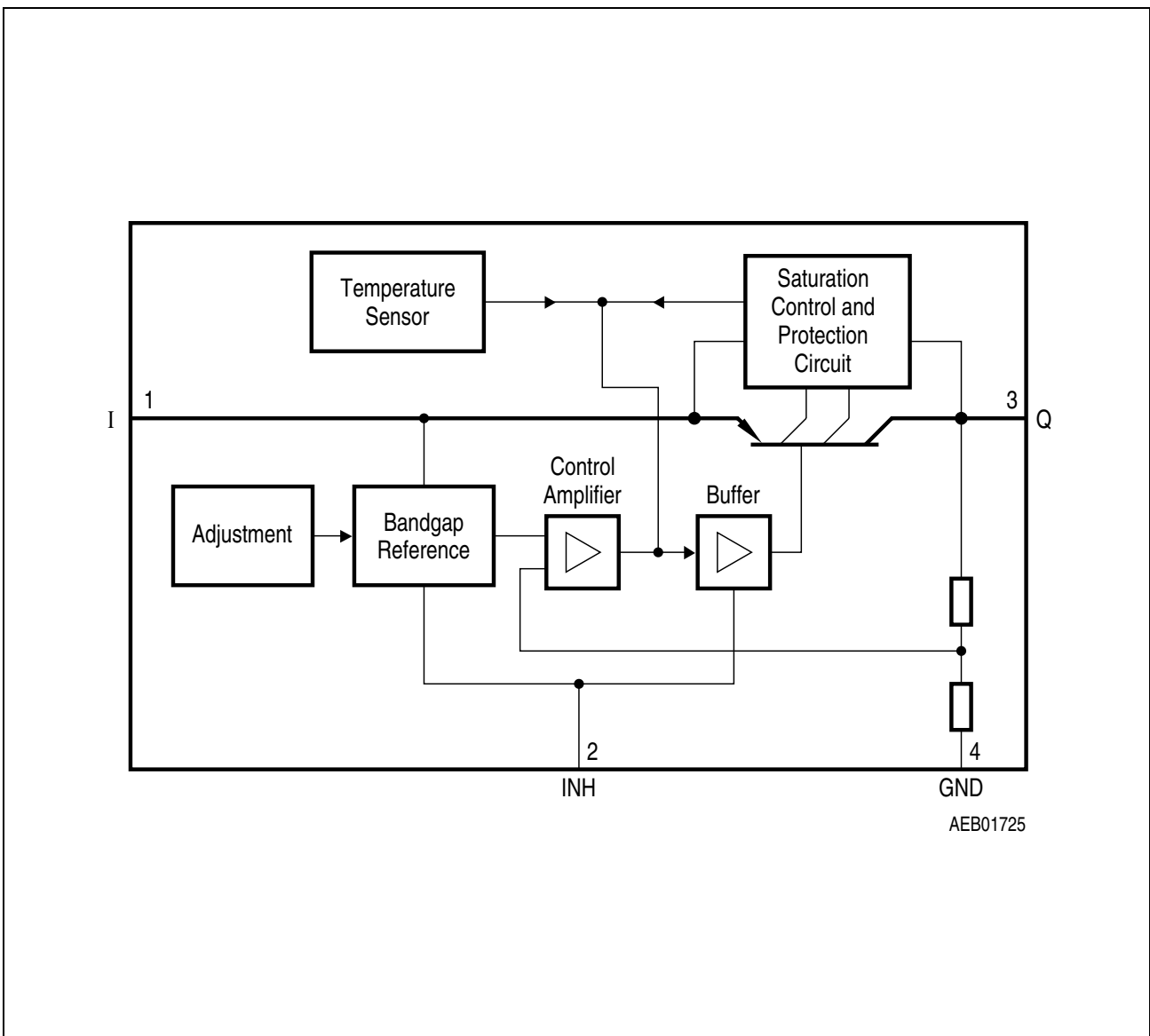
Pin	Symbol	Function
1	I	<b>Input voltage</b> ; block to ground directly at the IC with a ceramic capacitor.
2	INH	<b>Inhibit</b> ; low-active input.
3	Q	<b>Output voltage</b> ; block to ground with a capacitor $C_Q \geq 10 \mu\text{F}$ .
4	GND	<b>Ground</b>

### Circuit Description

The device includes a precise reference voltage, which is very accurate due to resistor adjustment. A control amplifier compares the divided output voltage to this reference voltage and drives the base of the PNP series transistor through a buffer.

Saturation control as a function of the load current prevents any oversaturation of the power element. The IC also incorporates a number of protection circuitry for:

- Overload
- Overtemperature
- Reverse polarity



**Figure 2 Block Diagram**

**Table 2 Absolute Maximum Ratings (TLE 4266 G, TLE 4266 GSV10)**
 $T_j = -40$  to  $150$  °C

Parameter	Symbol	Limit Values		Unit	Notes
		Min.	Max.		
<b>Input</b>					
Voltage	$V_I$	-42	45	V	–
Current	$I_I$	–	–	–	internally limited
<b>Inhibit</b>					
Voltage	$V_{INH}$	-42	45	V	–
<b>Output</b>					
Voltage	$V_Q$	-1	32	V	–
Current	$I_Q$	–	–	–	internally limited
<b>GND</b>					
Current	$I_{GND}$	50	–	mA	–
<b>Temperature</b>					
Junction temperature	$T_j$	–	150	°C	–
Storage temperature	$T_S$	-50	150	°C	–
<b>Operating Range (TLE 4266 G)</b>					
Input voltage	$V_I$	5.5	45	V	–
Junction temperature	$T_j$	-40	150	°C	–
<b>Operating Range (TLE 4266 GSV10)</b>					
Input voltage	$V_I$	10.5	45	V	–
Junction temperature	$T_j$	-40	150	°C	–
<b>Thermal Resistance</b>					
Junction ambient	$R_{thj-a}$	–	165	K/W	<sup>1)</sup>
Junction case	$R_{thj-pin}$	–	17	K/W	measured to pin 4

<sup>1)</sup> Package mounted on PCB  $80 \times 80 \times 1.5$  mm<sup>3</sup>; 35μ Cu; 5μ Sn; Footprint only; zero airflow.

**Table 3 Characteristics (TLE 4266 G)**
 $V_i = 13.5 \text{ V}; -40 \text{ }^\circ\text{C} \leq T_j \leq 125 \text{ }^\circ\text{C}$ 

Parameter	Symbol	Limit Values			Unit	Test Condition
		Min.	Typ.	Max.		
Output voltage	$V_Q$	4.9	5	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 limitation	$I_Q$	120	150	–	mA	–
Current consumption $I_q = I_i - I_Q$	$I_q$	–	–	10	$\mu\text{A}$	$V_{\text{INH}} = 0 \text{ V};$ $T_j \leq 100 \text{ }^\circ\text{C}$
Current consumption $I_q = I_i - I_Q$	$I_q$	–	–	400	$\mu\text{A}$	$I_Q = 1 \text{ mA}$ Inhibit ON
Current consumption $I_q = I_i - I_Q$	$I_q$	–	10	15	mA	$I_Q = 100 \text{ mA}$ Inhibit ON
Drop voltage	$V_{\text{DR}}$	–	0.25	0.5	V	$I_Q = 100 \text{ mA}^{1)}$
Load regulation	$\Delta V_{Q,\text{lo}}$	–	–	40	mV	$I_Q = 5 \text{ to } 100 \text{ mA}$ $V_i = 6 \text{ V}$
Line regulation	$\Delta V_{Q,\text{li}}$	–	15	30	mV	$V_i = 6 \text{ V to } 28 \text{ V}$ $I_Q = 5 \text{ mA}$
Power supply ripple rejection	$PSRR$	–	54	–	dB	$f_r = 100 \text{ Hz},$ $V_r = 0.5 \text{ Vpp}$

**Inhibit**

Inhibit on voltage	$V_{\text{INH, on}}$	3.5	–	–	V	–
Inhibit off voltage	$V_{\text{INH, off}}$	–	–	0.8	V	–
Inhibit current	$I_{\text{INH}}$	5	15	25	$\mu\text{A}$	$V_{\text{INH}} = 5 \text{ V}$

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

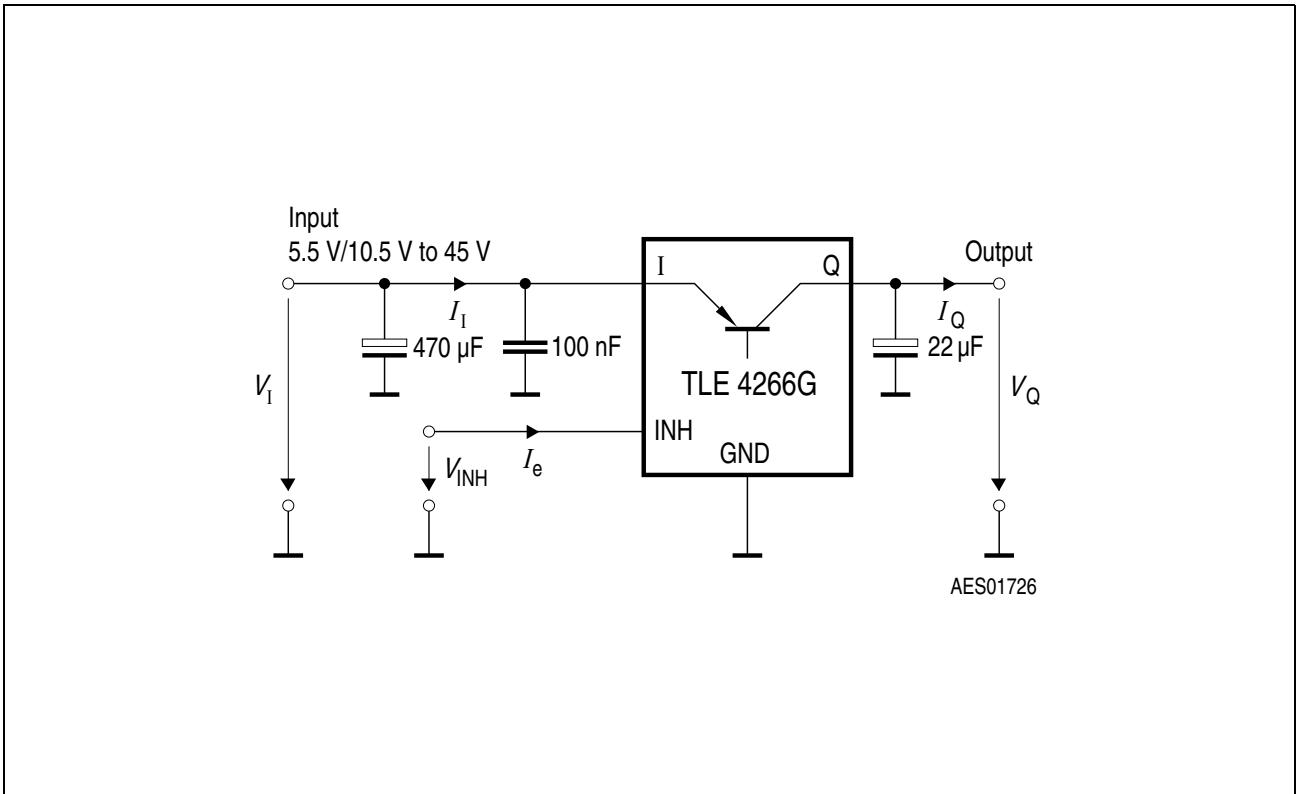
**Table 4 Characteristics (TLE 4266 GSV10)**
 $V_I = 13.5 \text{ V}; -40 \text{ }^\circ\text{C} \leq T_j \leq 125 \text{ }^\circ\text{C}$ 

Parameter	Symbol	Limit Values			Unit	Test Condition
		Min.	Typ.	Max.		
Output voltage	$V_Q$	9.8	10	10.2	V	$5 \text{ mA} \leq I_Q \leq 100 \text{ mA}$ $11 \text{ V} \leq V_I \leq 21 \text{ V}$
Output voltage	$V_Q$	9.8	10	10.2	V	$1 \text{ mA} \leq I_Q \leq 50 \text{ mA}$ $11 \text{ V} \leq V_I \leq 28 \text{ V}$
Output-current limitation	$I_Q$	120	150	200	mA	–
Current consumption $I_q = I_I - I_Q$	$I_{q,off}$	–	–	10	$\mu\text{A}$	$V_{INH} = 0 \text{ V};$ $T_j \leq 100 \text{ }^\circ\text{C}$
Current consumption $I_q = I_I - I_Q$	$I_q$	–	350	500	$\mu\text{A}$	$I_Q < 1 \text{ mA}$ Inhibit ON
Current consumption $I_q = I_I - I_Q$	$I_q$	–	7	15	mA	$I_Q < 100 \text{ mA}$ Inhibit ON
Drop voltage	$V_{DR}$	–	0.28	0.5	V	$I_Q = 100 \text{ mA}^{1)}$
Load regulation	$\Delta V_{Q,Lo}$	-80	–	80	mV	$I_Q = 5 \text{ to } 100 \text{ mA}$ $V_I = 11 \text{ V}$
Line regulation	$\Delta V_{Q,Li}$	-30	5	30	mV	$V_I = 11 \text{ V to } 28 \text{ V}$ $I_Q = 5 \text{ mA}$
Power supply ripple rejection	$PSRR$	–	54	–	dB	$f_r = 100 \text{ Hz},$ $V_r = 0.5 \text{ Vpp}$

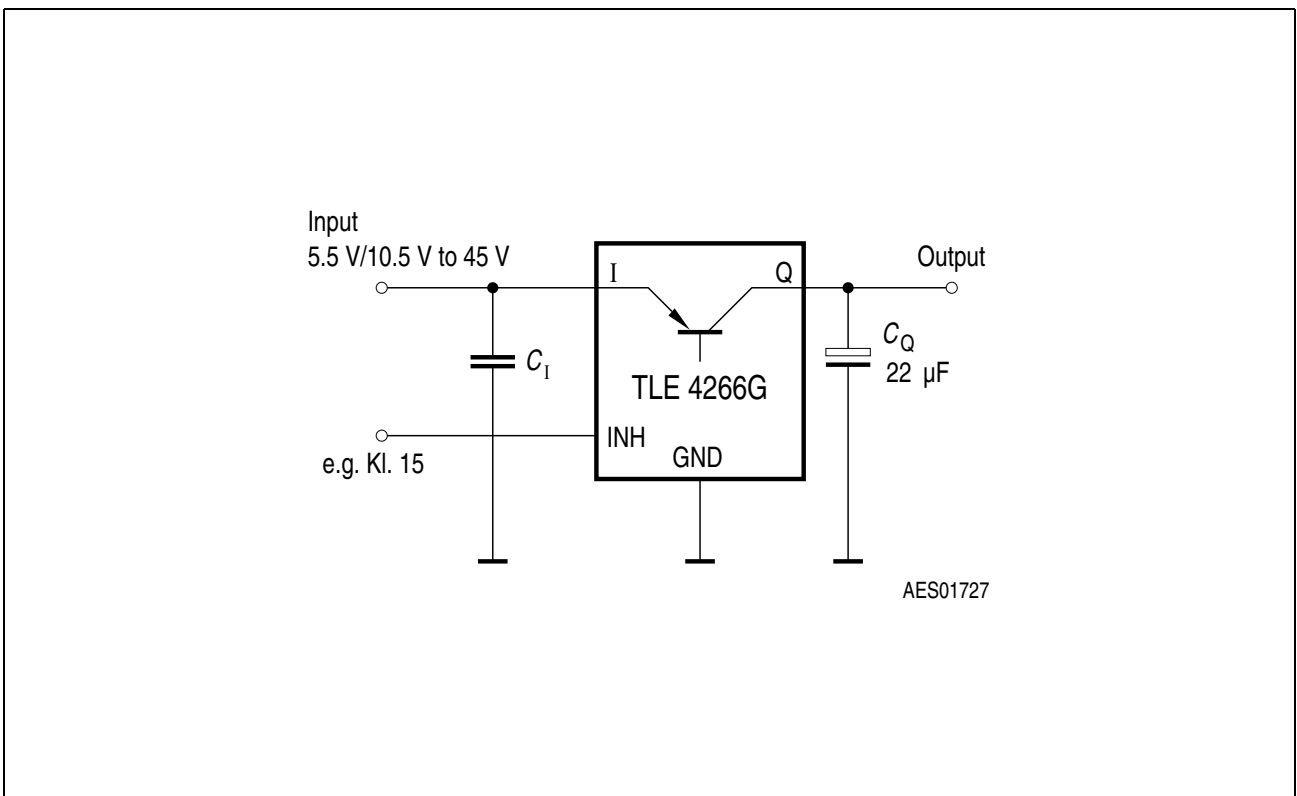
**Inhibit**

Inhibit on voltage	$V_{INH,on}$	3.5	–	–	V	–
Inhibit off voltage	$V_{INH,off}$	–	–	0.8	V	–
Inhibit current	$I_{INH}$	5	12	25	$\mu\text{A}$	$V_{INH} = 5 \text{ V}$

1) Drop voltage =  $V_I - V_Q$  measured when the output voltage  $V_Q$  has dropped 100 mV from the nominal value.

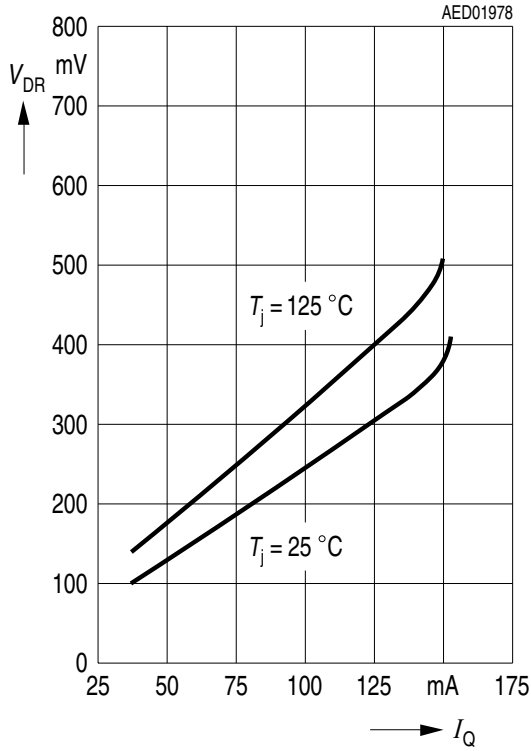


**Figure 3 Measuring Circuit (TLE 4266 G, TLE 4266 GSV10)**

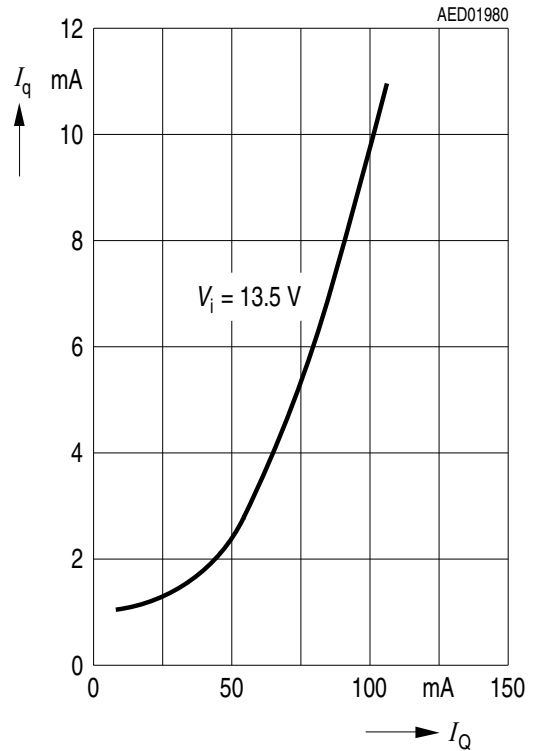


**Figure 4 Application Circuit (TLE 4266 G, TLE 4266 GSV10)**

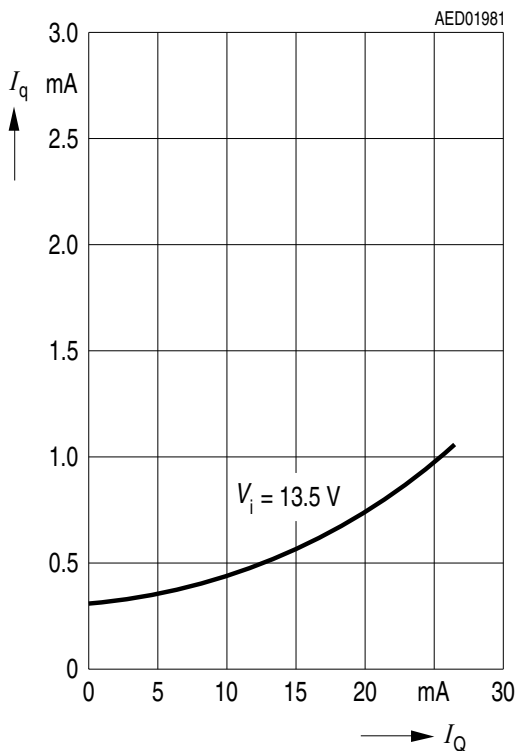
**Drop Voltage  $V_{DR}$  versus Output Current  $I_Q$  (5 V, 10 V)**



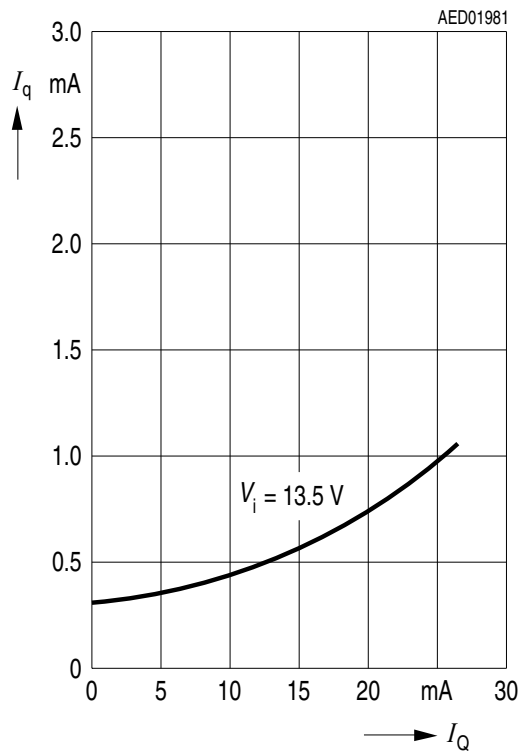
**Current Consumption  $I_q$  versus Output Current  $I_Q$  (5 V)**



**Current Consumption  $I_q$  versus Output Current  $I_Q$  (5 V version)**

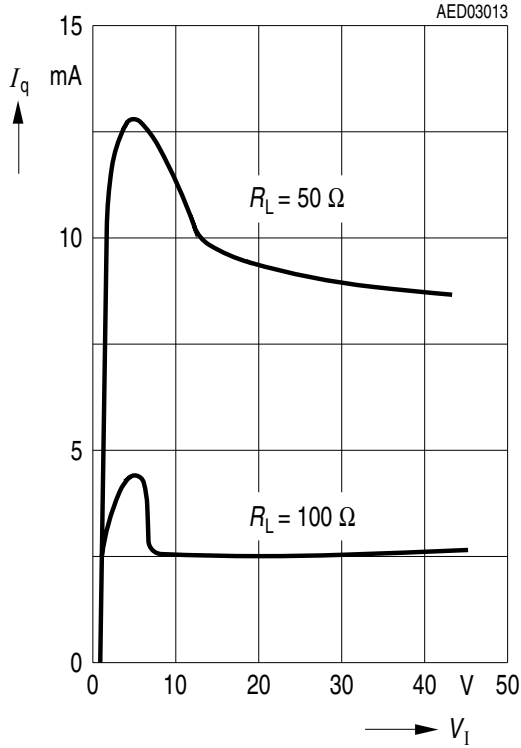


**Current Consumption  $I_q$  versus Output Current  $I_Q$  (10 V version)**

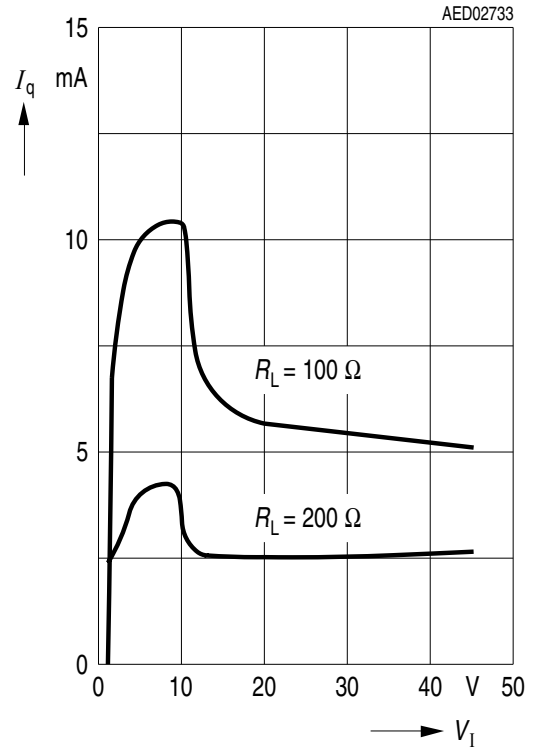




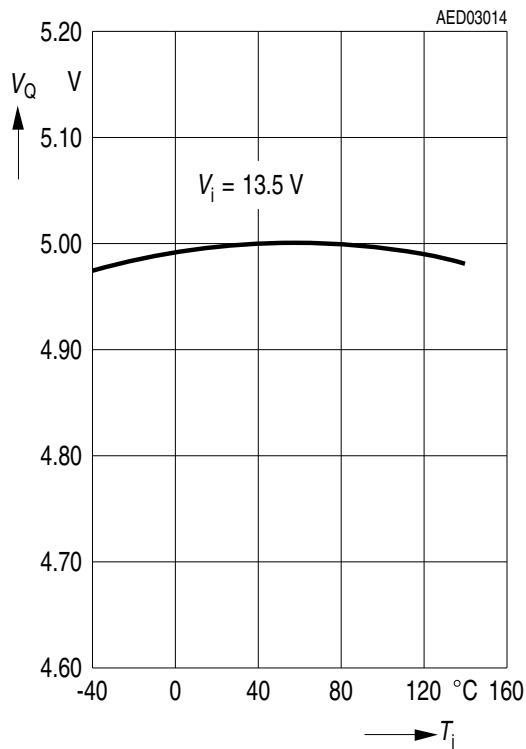
**Current Consumption  $I_q$  versus Input Voltage  $V_i$  (5 V version)**



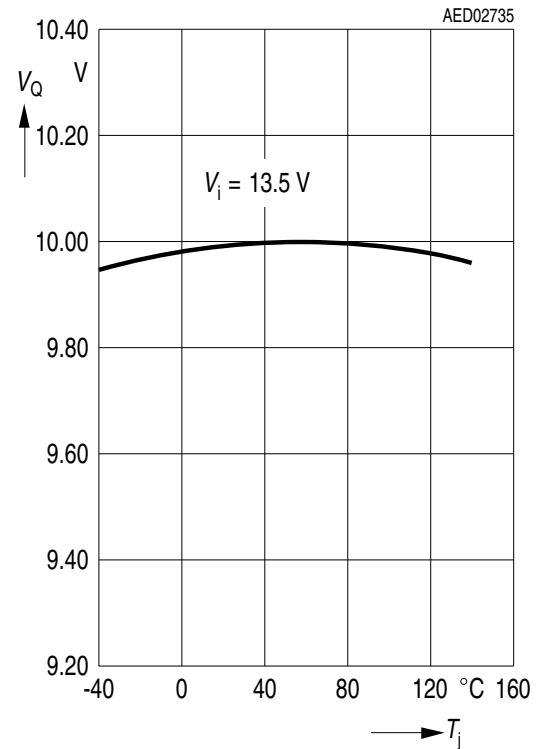
**Current Consumption  $I_q$  versus Input Voltage  $V_i$  (10 V version)**



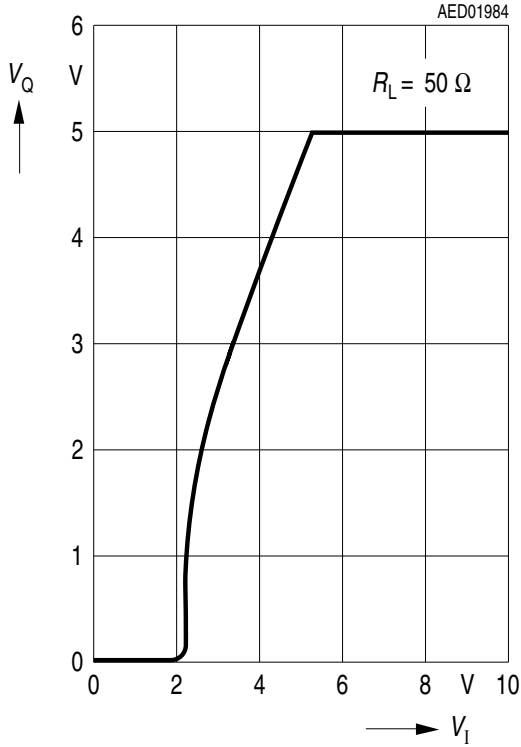
**Output Voltage  $V_Q$  versus Temperature  $T_j$  (5 V version)**



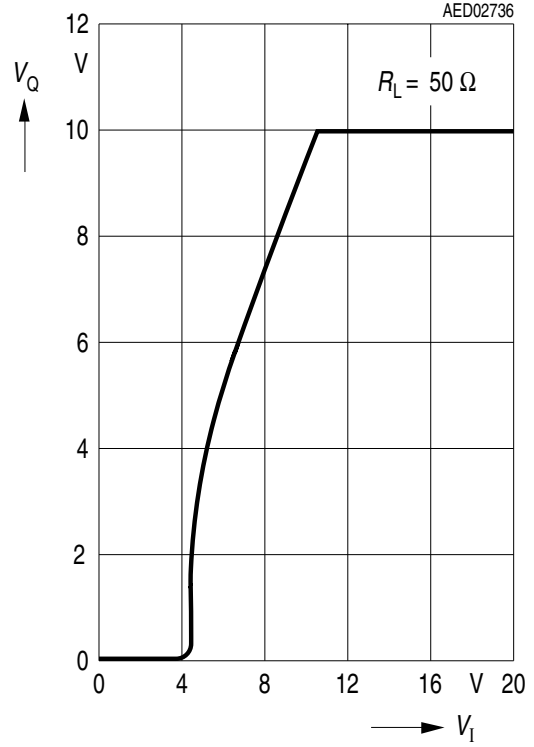
**Output Voltage  $V_Q$  versus Temperature  $T_j$  (10 V version)**



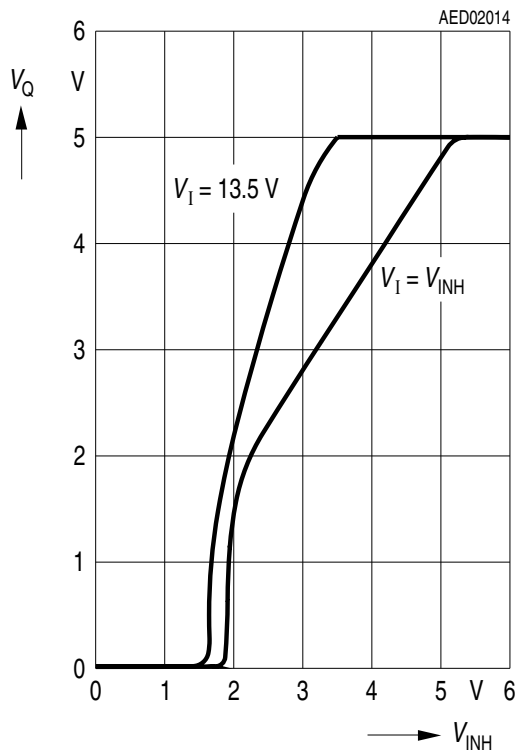
**Output Voltage  $V_Q$  versus Input Voltage  $V_I$  (5 V version)**



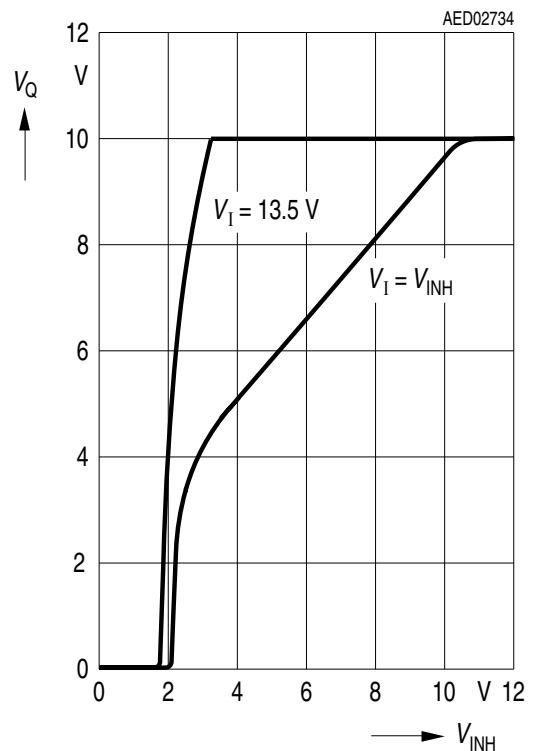
**Output Voltage  $V_Q$  versus Input Voltage  $V_I$  (10 V version)**



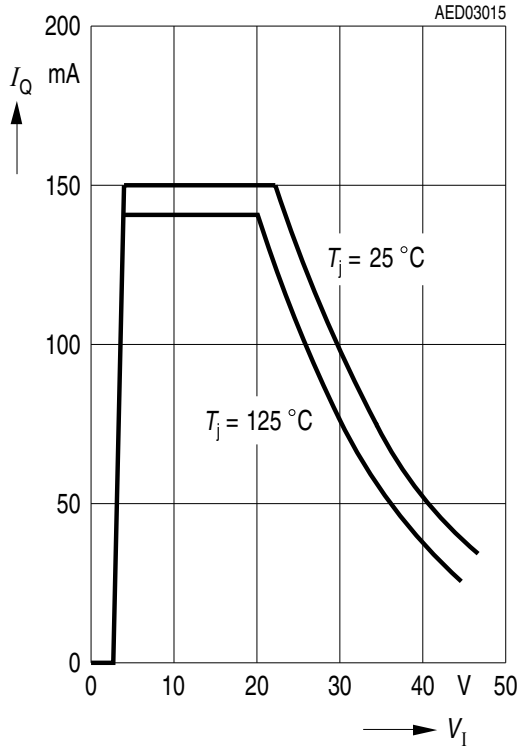
**Output Voltage  $V_Q$  versus Inhibit Voltage  $V_{INH}$  (5 V version)**



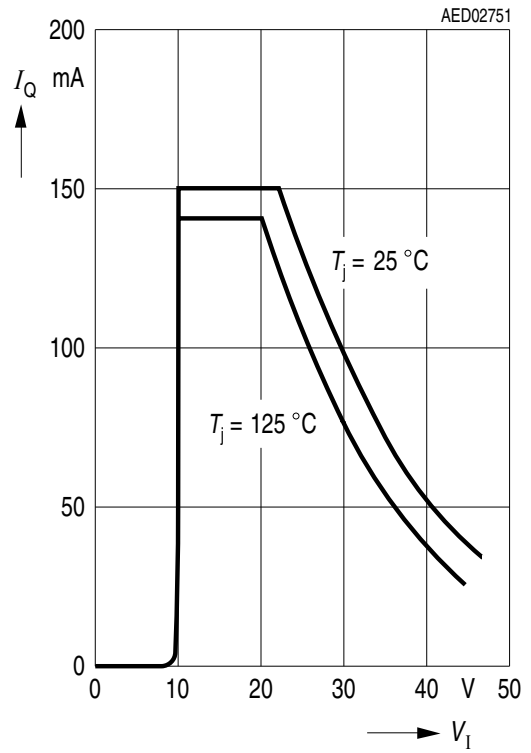
**Output Voltage  $V_Q$  versus Inhibit Voltage  $V_{INH}$  (10 V version)**



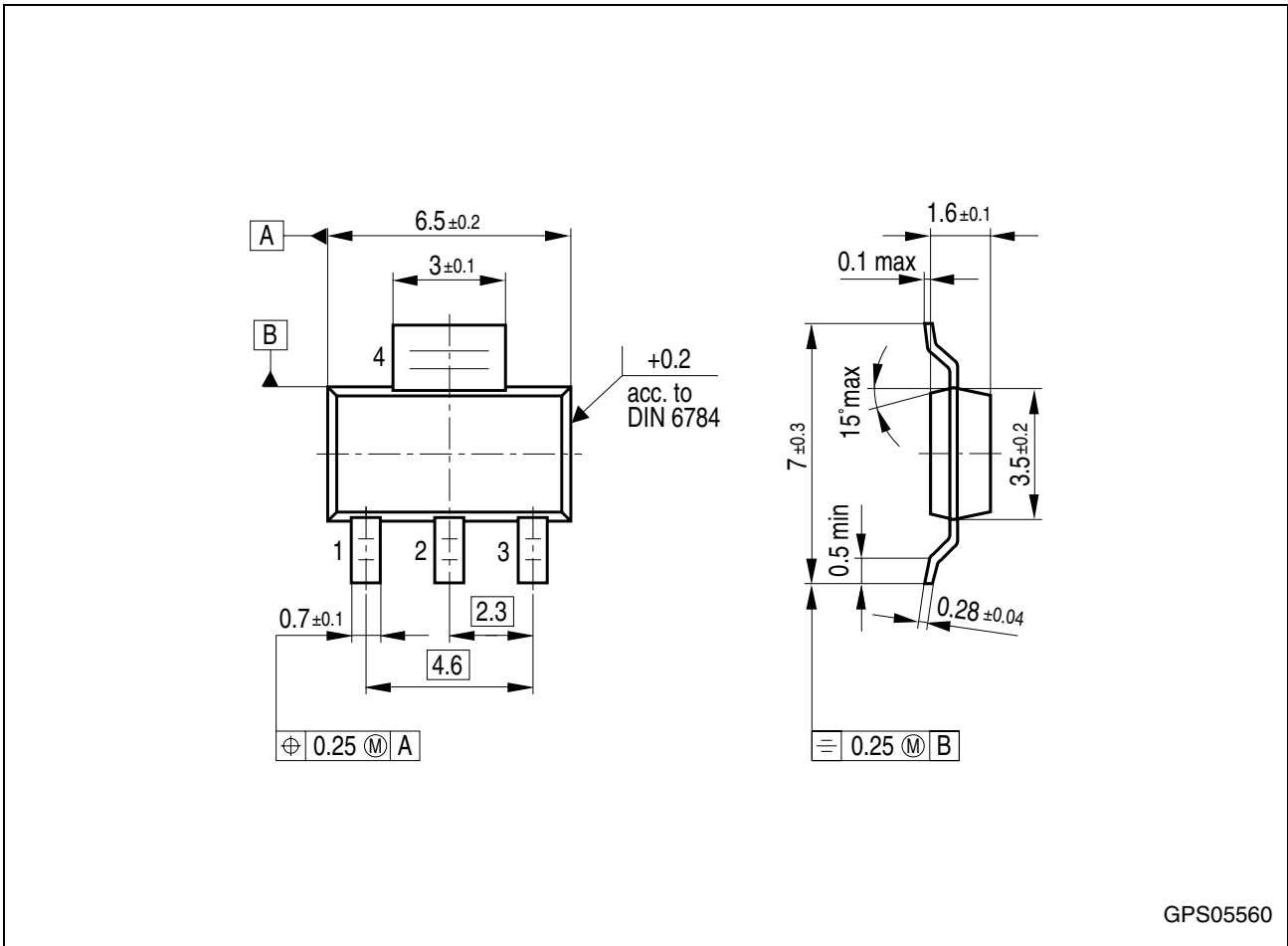
**Output Current  $I_Q$  versus Input Voltage  $V_I$  (5 V-version)**



**Output Current  $I_Q$  versus Input Voltage  $V_I$  (10 V version)**



Package Outlines



GPS05560

Figure 5 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. 2.5	2008-03-10	Simplified package name to PG-SOT223-4. No modification of released product.
Rev. 2.4	2007-03-20	Initial version of RoHS-compliant derivate of TLE 4266 <b>Page 1</b> : AEC certified statement added <b>Page 1</b> and <b>Page 12</b> : RoHS compliance statement and Green product feature added <b>Page 1</b> and <b>Page 12</b> : Package changed to RoHS compliant version Legal Disclaimer updated

**Edition 2008-03-10**

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

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