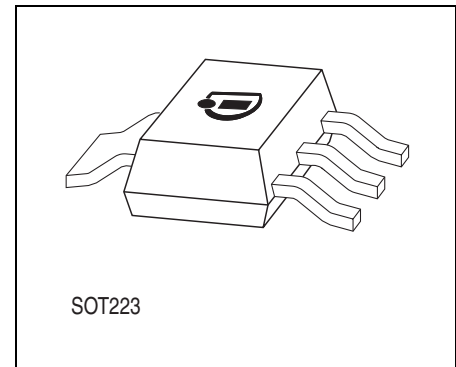




Features

- 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. 1Ω 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

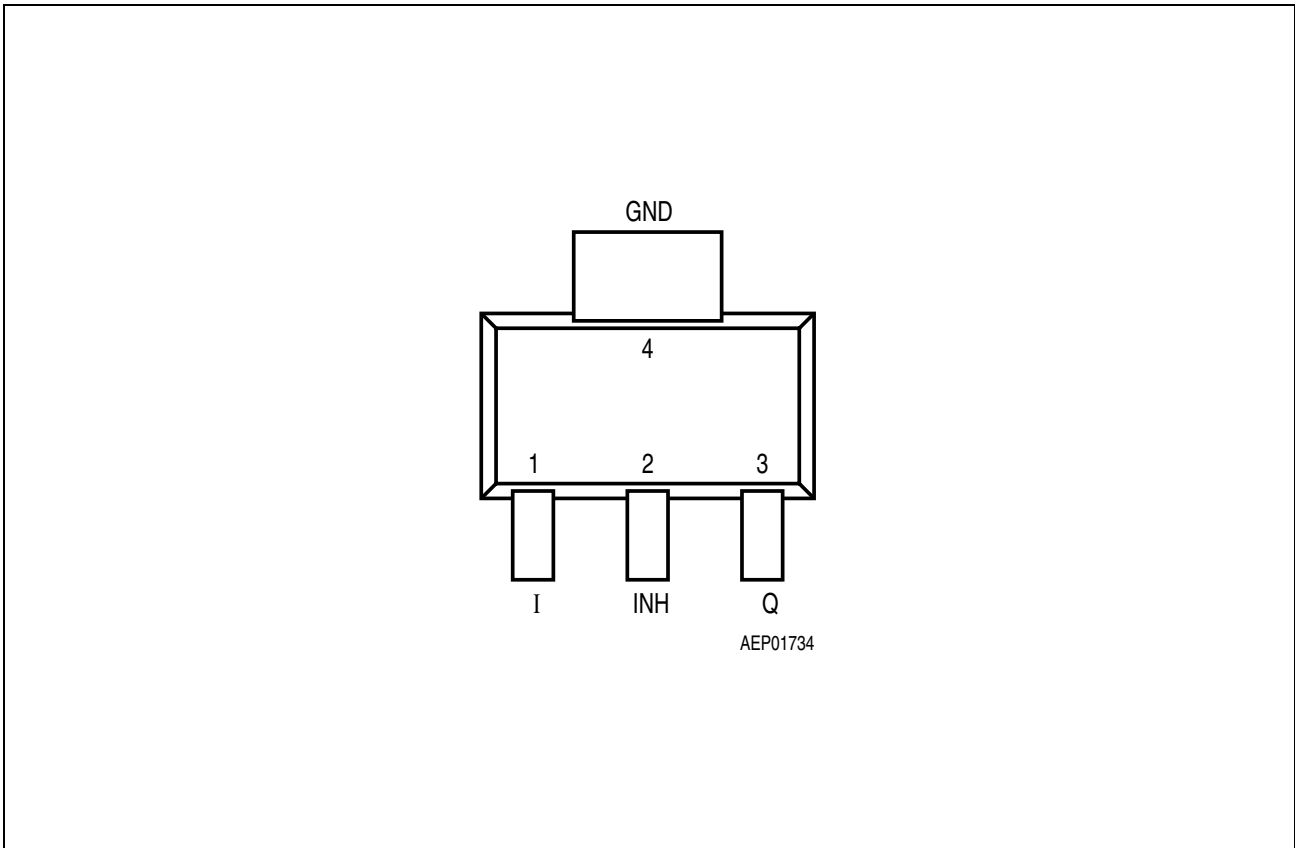


Figure 1 Pin Configuration (top view)

Table 1 Pin Definitions and Functions

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

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

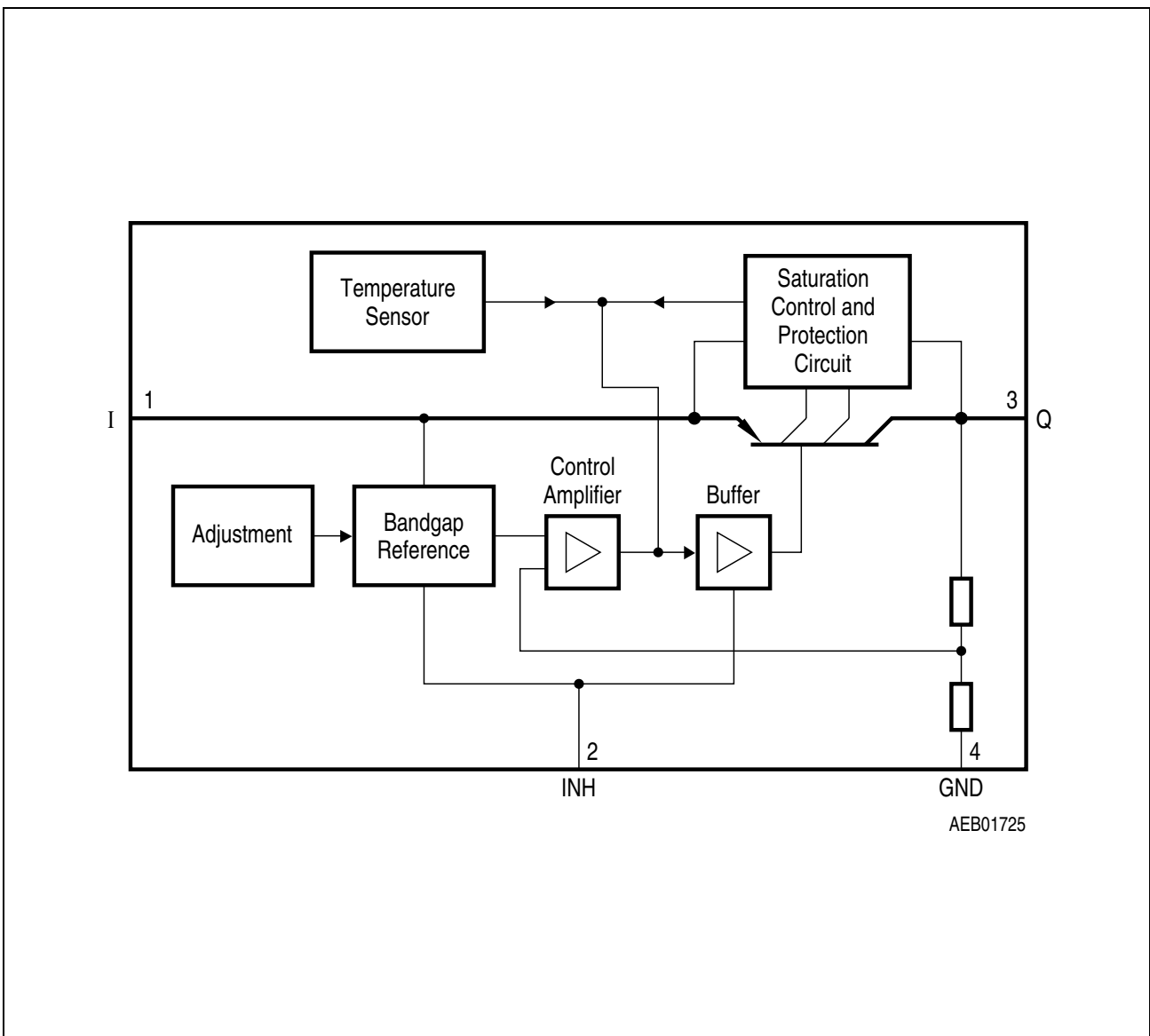


Figure 2 Block Diagram

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

¹⁾ Package mounted on PCB $80 \times 80 \times 1.5$ mm³; 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	μA	$V_{\text{INH}} = 0 \text{ V};$ $T_j \leq 100 \text{ }^\circ\text{C}$
Current consumption $I_q = I_i - I_Q$	I_q	–	–	400	μA	$I_Q = 1 \text{ mA}$ 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_{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_{INH}	5	15	25	μA	$V_{\text{INH}} = 5 \text{ V}$

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	μA	$V_{INH} = 0 \text{ V};$ $T_j \leq 100 \text{ }^\circ\text{C}$
Current consumption $I_q = I_I - I_Q$	I_q	–	350	500	μA	$I_Q < 1 \text{ mA}$ 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	μA	$V_{INH} = 5 \text{ V}$

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

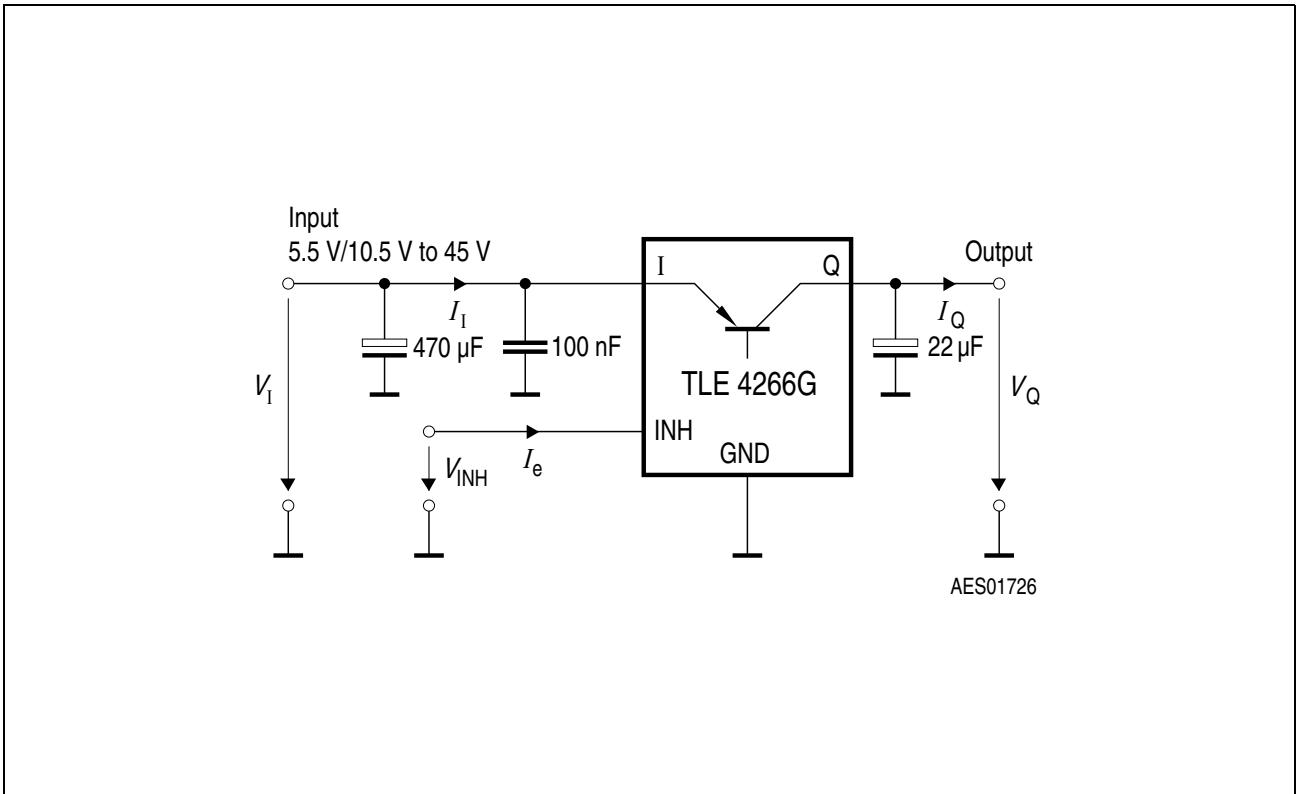


Figure 3 Measuring Circuit (TLE 4266 G, TLE 4266 GSV10)

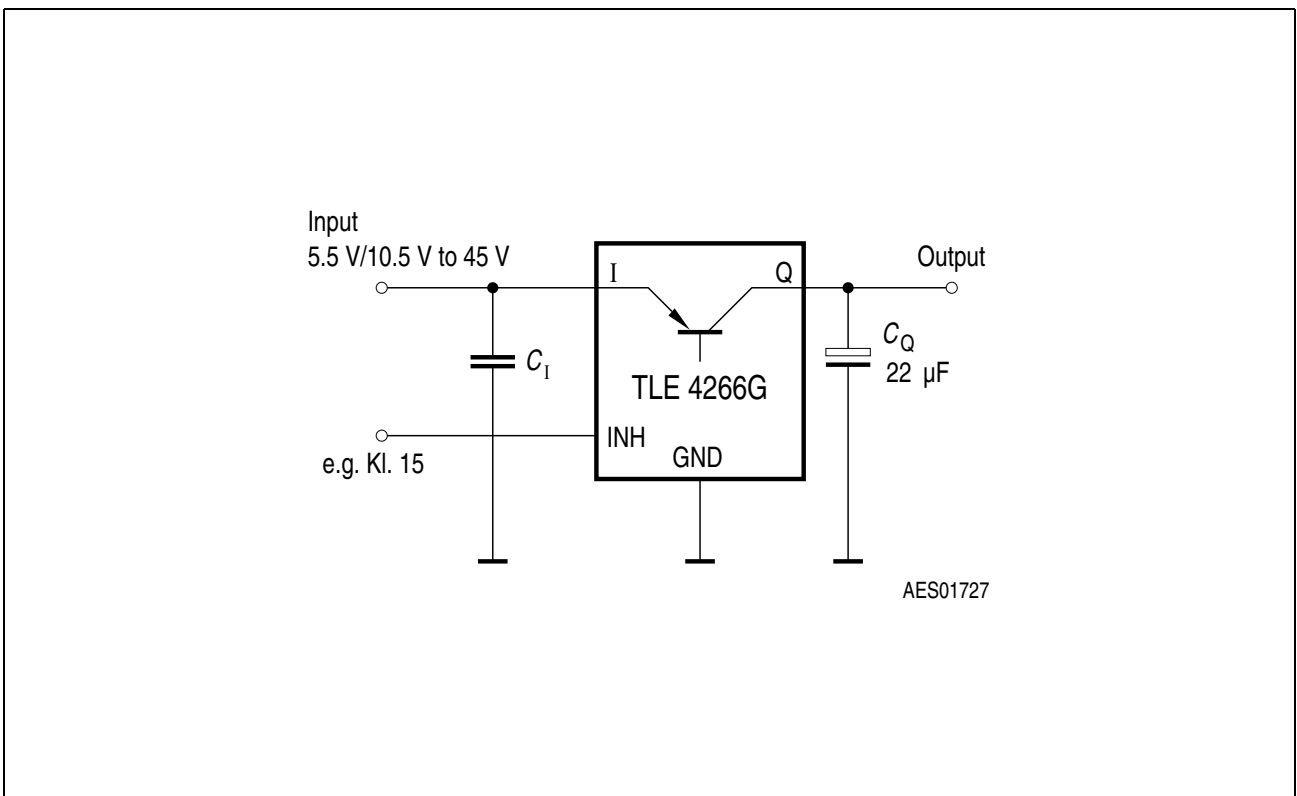
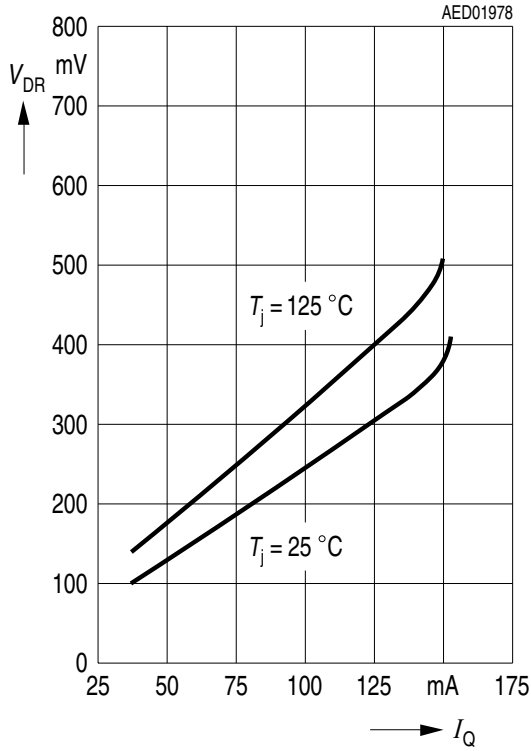
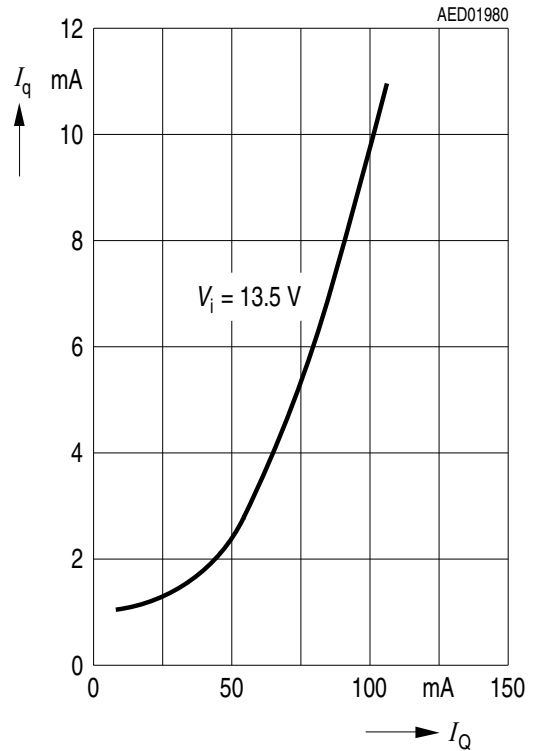


Figure 4 Application Circuit (TLE 4266 G, TLE 4266 GSV10)

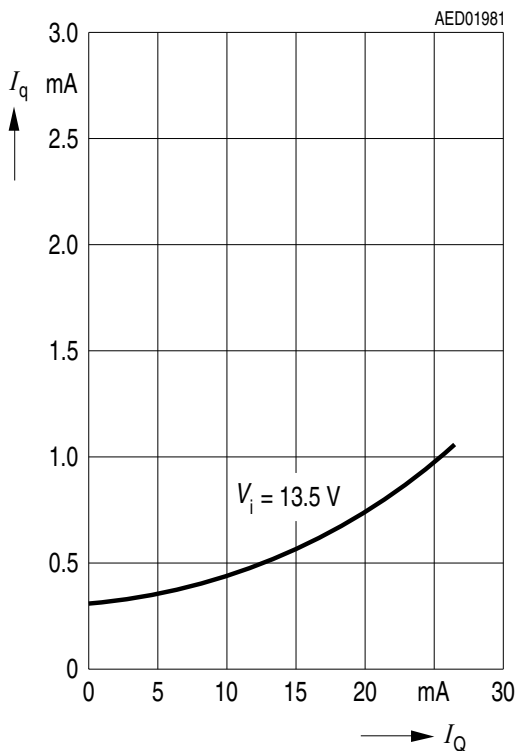
Drop Voltage V_{DR} versus Output Current I_Q (5 V, 10 V)



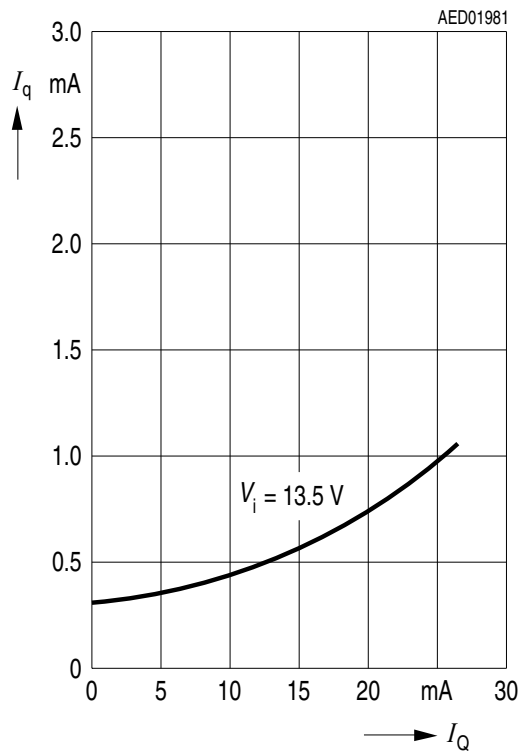
Current Consumption I_q versus Output Current I_Q (5 V)



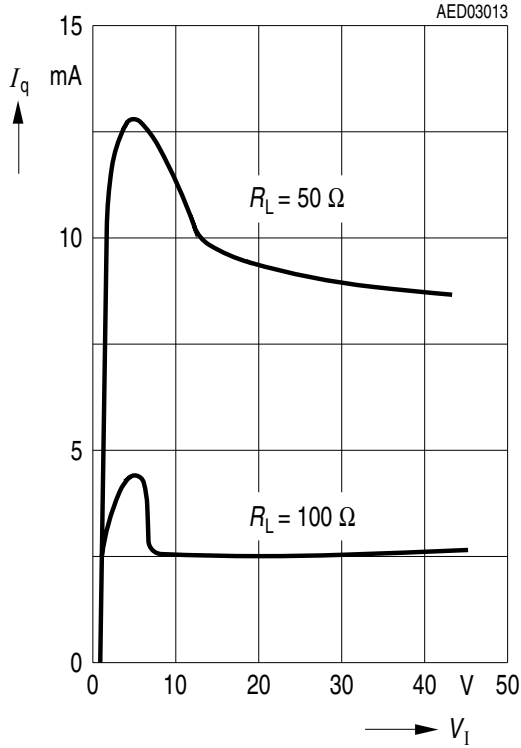
Current Consumption I_q versus Output Current I_Q (5 V version)



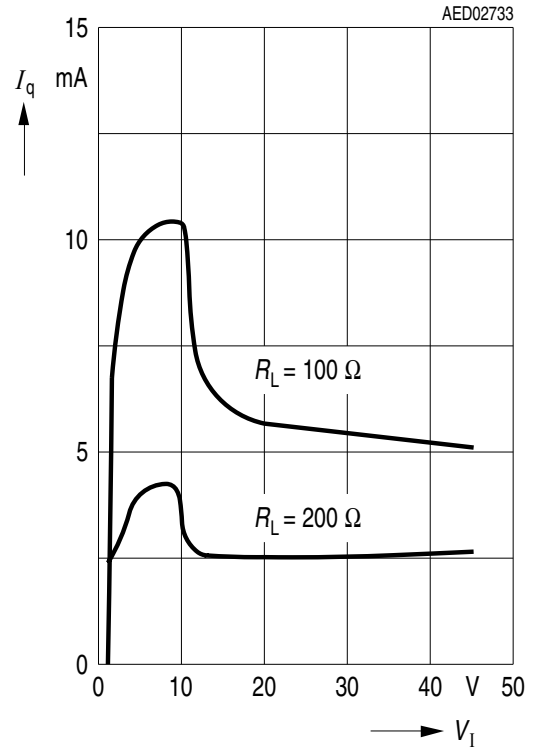
Current Consumption I_q versus Output Current I_Q (10 V version)



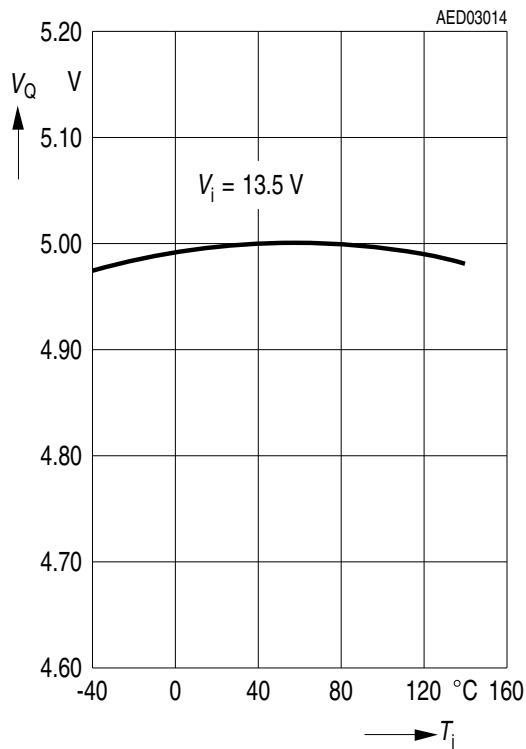
Current Consumption I_q versus Input Voltage V_i (5 V version)



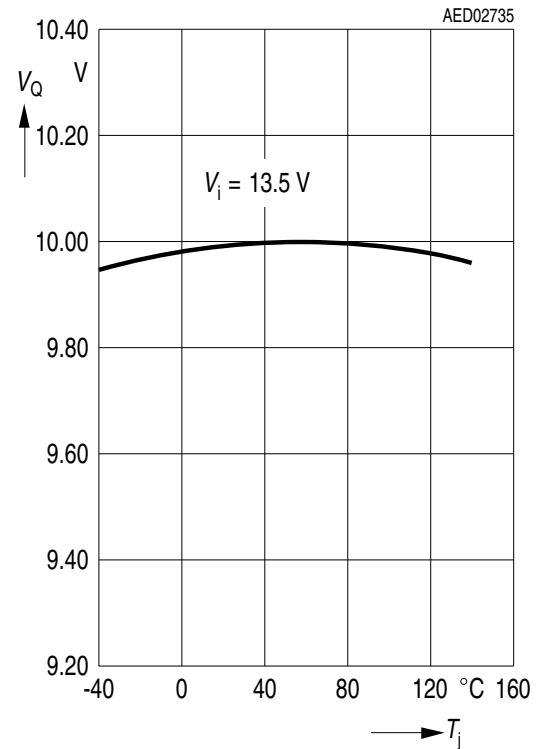
Current Consumption I_q versus Input Voltage V_i (10 V version)



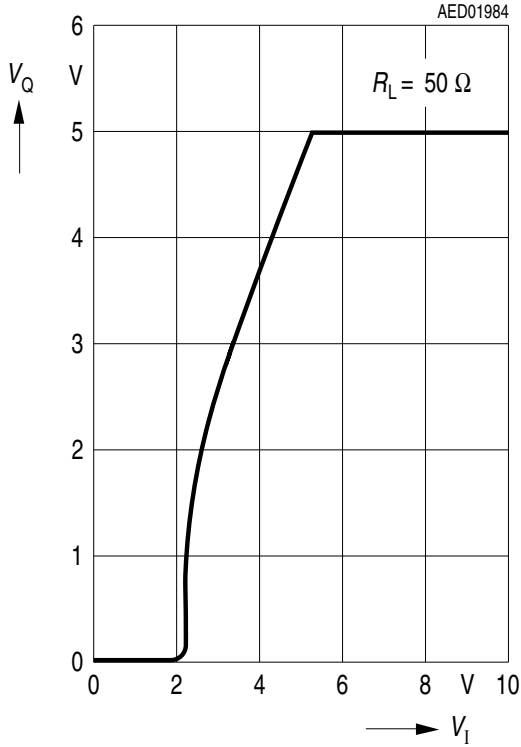
Output Voltage V_Q versus Temperature T_j (5 V version)



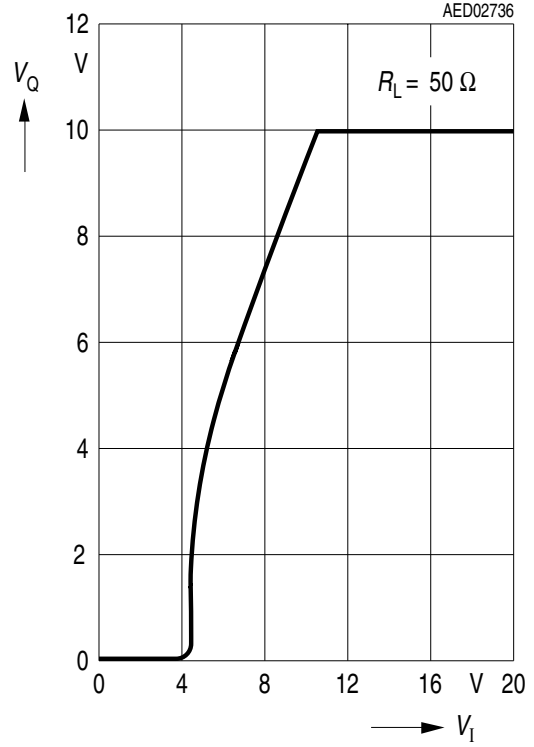
Output Voltage V_Q versus Temperature T_j (10 V version)



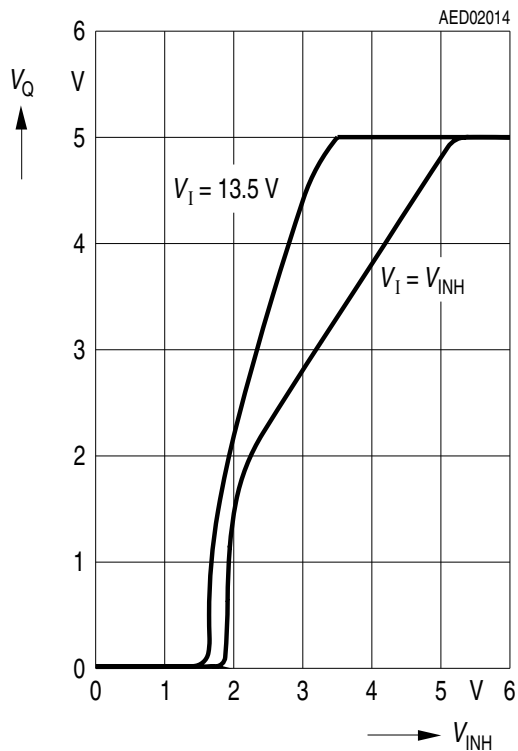
Output Voltage V_Q versus Input Voltage V_I (5 V version)



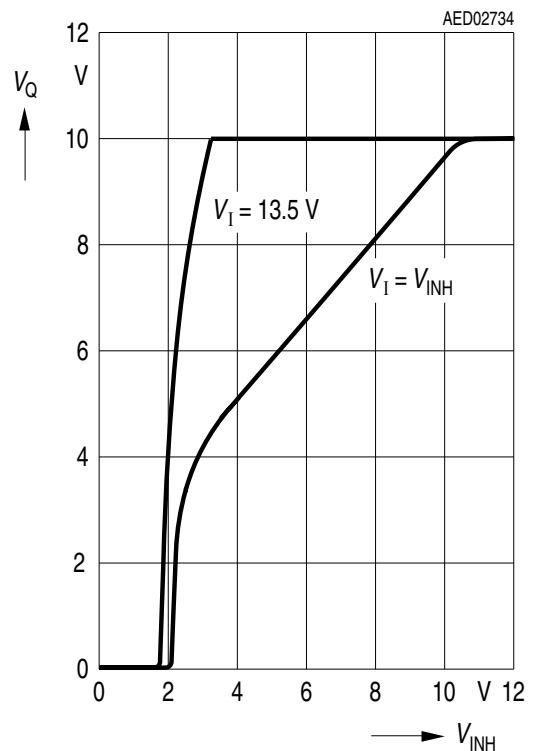
Output Voltage V_Q versus Input Voltage V_I (10 V version)



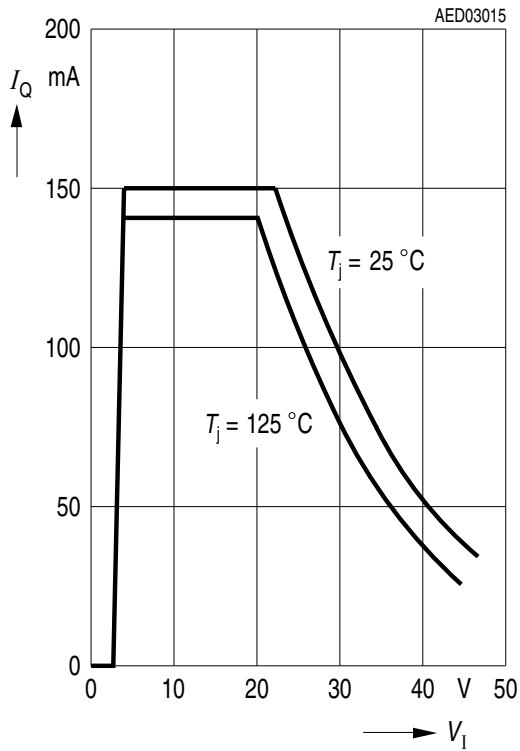
Output Voltage V_Q versus Inhibit Voltage V_{INH} (5 V version)



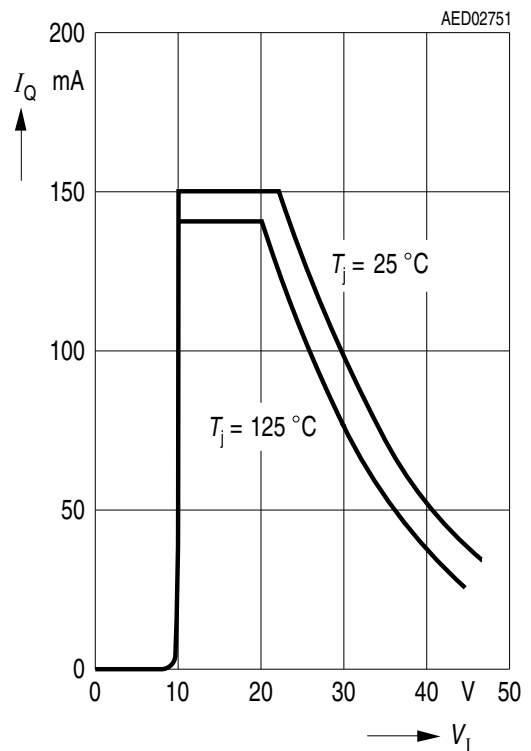
Output Voltage V_Q versus Inhibit Voltage V_{INH} (10 V version)



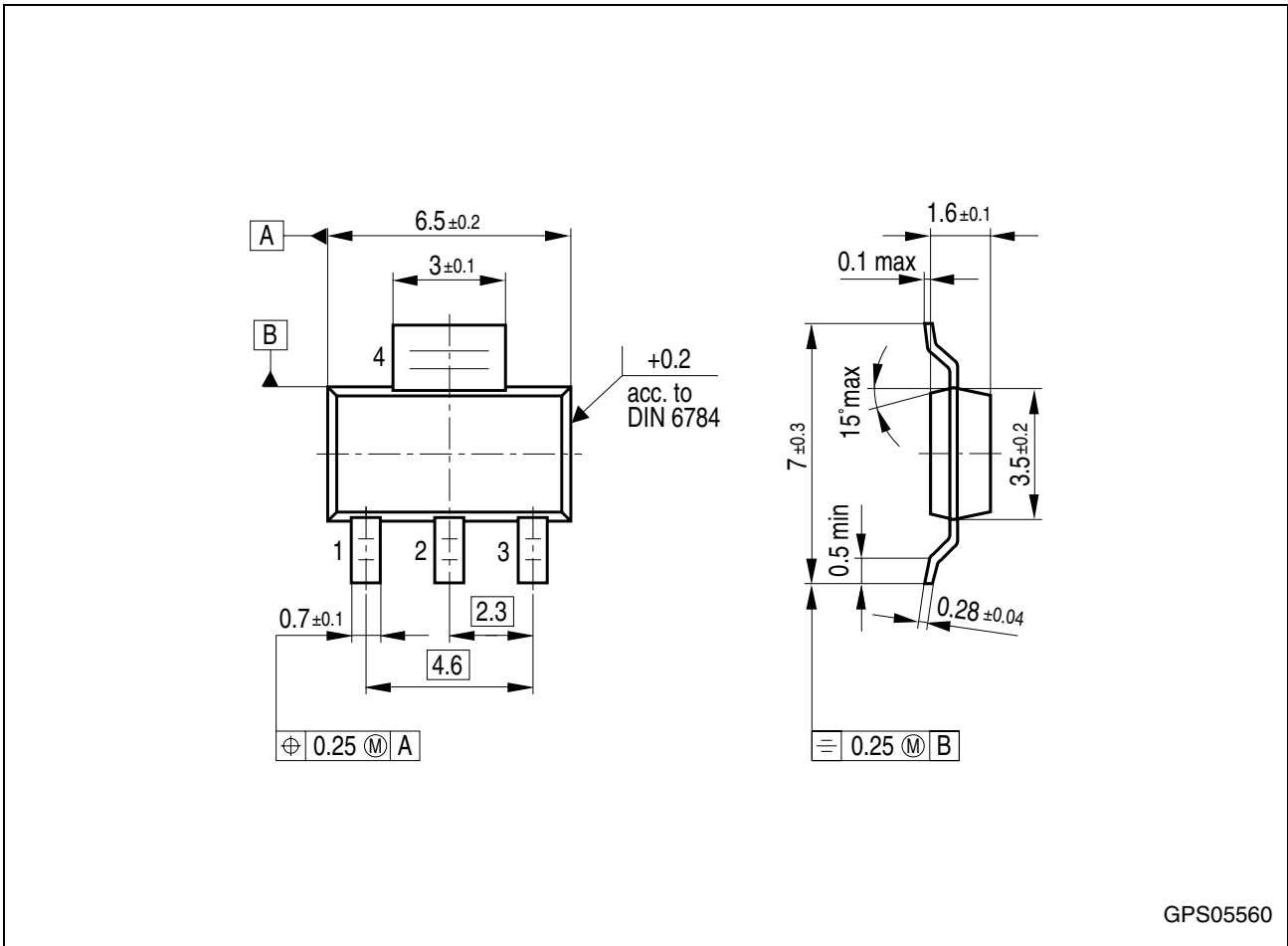
Output Current I_Q versus Input Voltage V_I (5 V-version)



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

Revision History

Version	Date	Changes
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 Page 1 : AEC certified statement added Page 1 and Page 12 : RoHS compliance statement and Green product feature added Page 1 and Page 12 : Package changed to RoHS compliant version Legal Disclaimer updated

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