

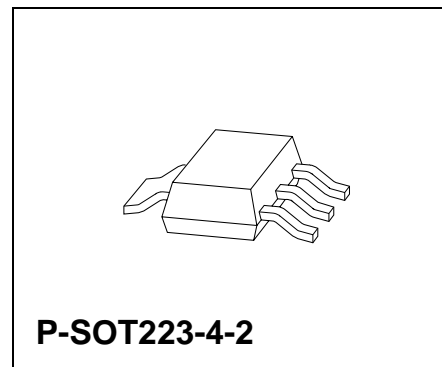
## 5-V Low-Drop Voltage Regulator

TLE 4266

Bipolar IC

### Features

- Output voltage tolerance  $\leq \pm 2\%$
- Very low current consumption
- Low-drop voltage
- Overtemperature protection
- Reverse polarity proof
- Wide temperature range
- Suitable for use in automotive electronics
- Inhibit



Type	Ordering Code	Package
TLE 4266 G	Q67006-A9152	P-SOT223-4-2 (SMD)
▼ TLE 4266 GSV10	Q67006-A9355	P-SOT223-4-2 (SMD)

▼ New type

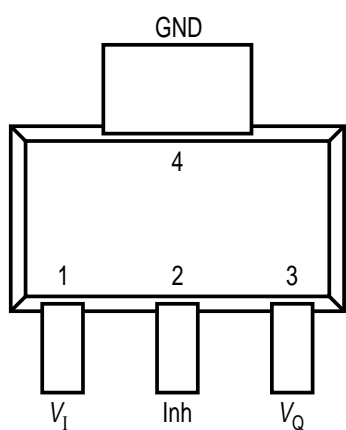
### Functional Description

TLE 4266 G is a 5-V low-drop voltage regulator in a P-SOT223-4-2 SMD package. The IC regulates an input voltage  $V_i$  in the range of  $5.5\text{ V} < V_i < 45\text{ V}$  to  $V_{\text{Qrated}} = 5\text{ V} / 10\text{ V}$ . 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 temperature protection that disables the IC an 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 clamped. 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 ESR  $\leq 10\ \Omega$  within the operating temperature range.

### Pin Configuration (top view)



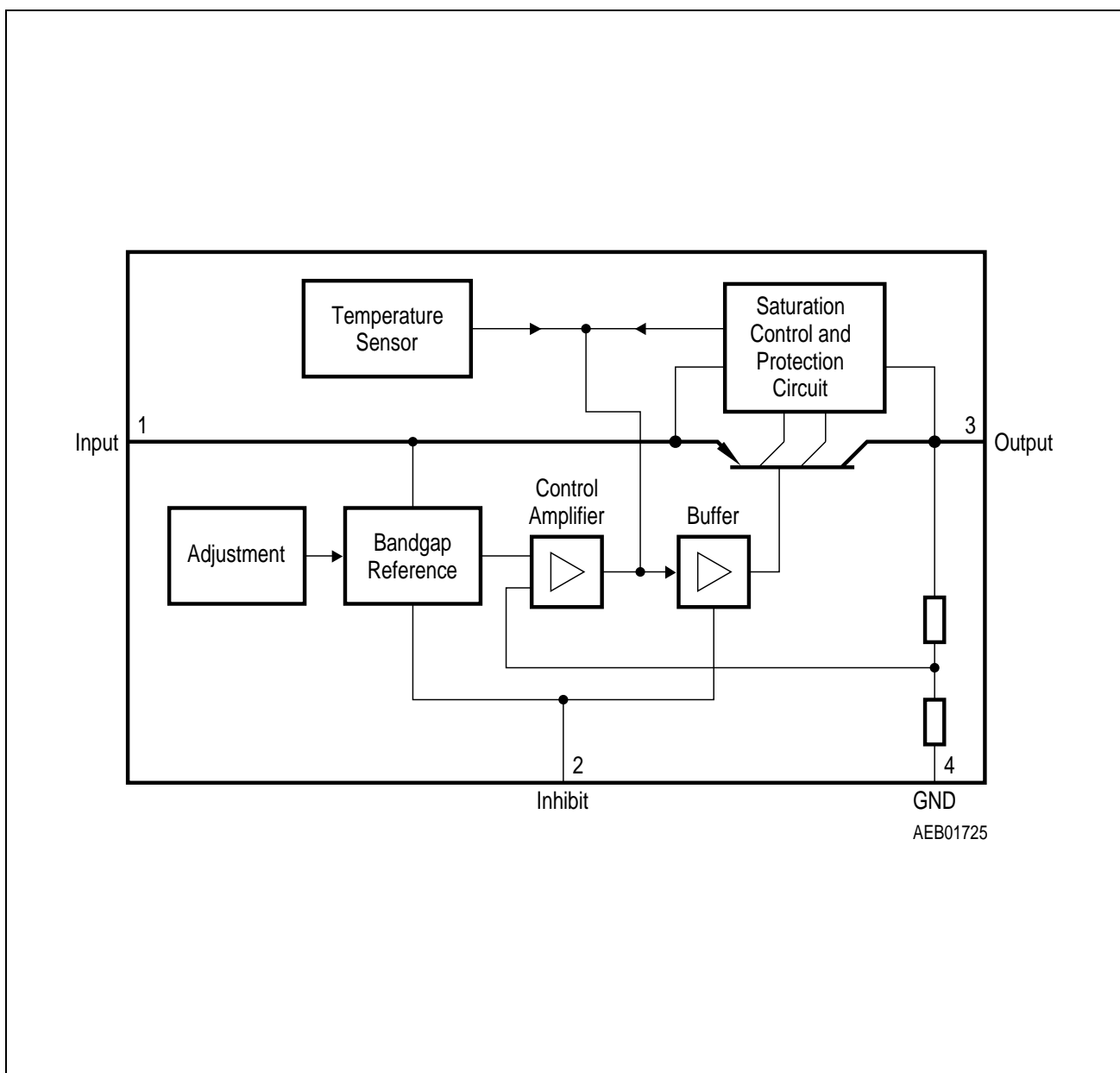
### Pin Definitions and Functions

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

## Circuit Description

The control amplifier compares a reference voltage, which is kept highly accurate 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 as a function of the load current prevents any oversaturation of the power element. The IC also incorporates a number of internal circuits for protection against:

- Overload
- Overtemperature
- Reverse polarity



## Block Diagram

## Absolute Maximum Ratings

$T_j = -40$  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	$V_e$	- 42	45	V	-
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### Output

Voltage	$V_Q$	- 1	16	V	-
Current	$I_Q$	-	-	-	internally limited

### GND

Current	$I_M$	50	-	mA	-
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### Temperature

Junction temperature	$T_j$	-	150	°C	-
Storage temperature	$T_S$	- 50	150	°C	-

### Operating Range

Input voltage	$V_i$	5.5	45	V	-
Input voltage GSV 10-version	$V_i$	10.5	45	V	-
Junction temperature	$T_j$	- 40	150	°C	-

### Thermal Resistance

Junction ambient	$R_{thjA}$	-	100	K/W	soldered
Junction case	$R_{thjC}$	-	25	K/W	-

## Characteristics

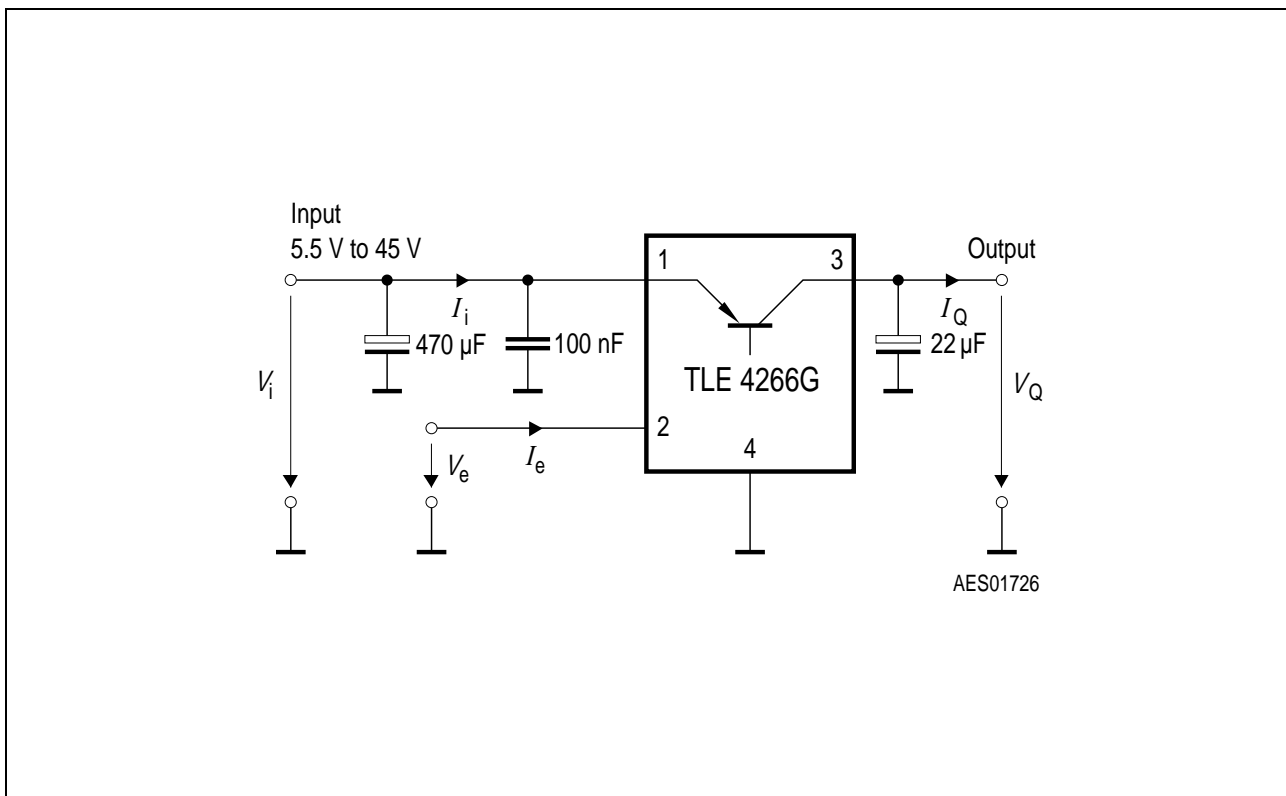
$V_i = 13.5 \text{ V}; -40 \text{ }^\circ\text{C} \leq T_j \leq 125 \text{ }^\circ\text{C}$

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 voltage GSV 10-version	$V_Q$	9.8	10.0	10.2	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 $I_q = I_i - I_Q$	$I_q$	–	0	10	$\mu\text{A}$	$V_e = 0 \text{ V}; T_j \leq 100 \text{ }^\circ\text{C}$
Current consumption $I_q = I_i - I_Q$	$I_q$	–	–	400	$\mu\text{A}$	$I_Q = 1 \text{ mA}$
Current consumption $I_q = I_i - I_Q$	$I_q$	–	10	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	$V_i = 6 \text{ V to } 28 \text{ V}$ $I_Q = 5 \text{ mA}$
Supply-voltage rejection	$SVR$	–	54	–	dB	$f_r = 100 \text{ Hz}$ $V_r = 0.5 V_{SS}$

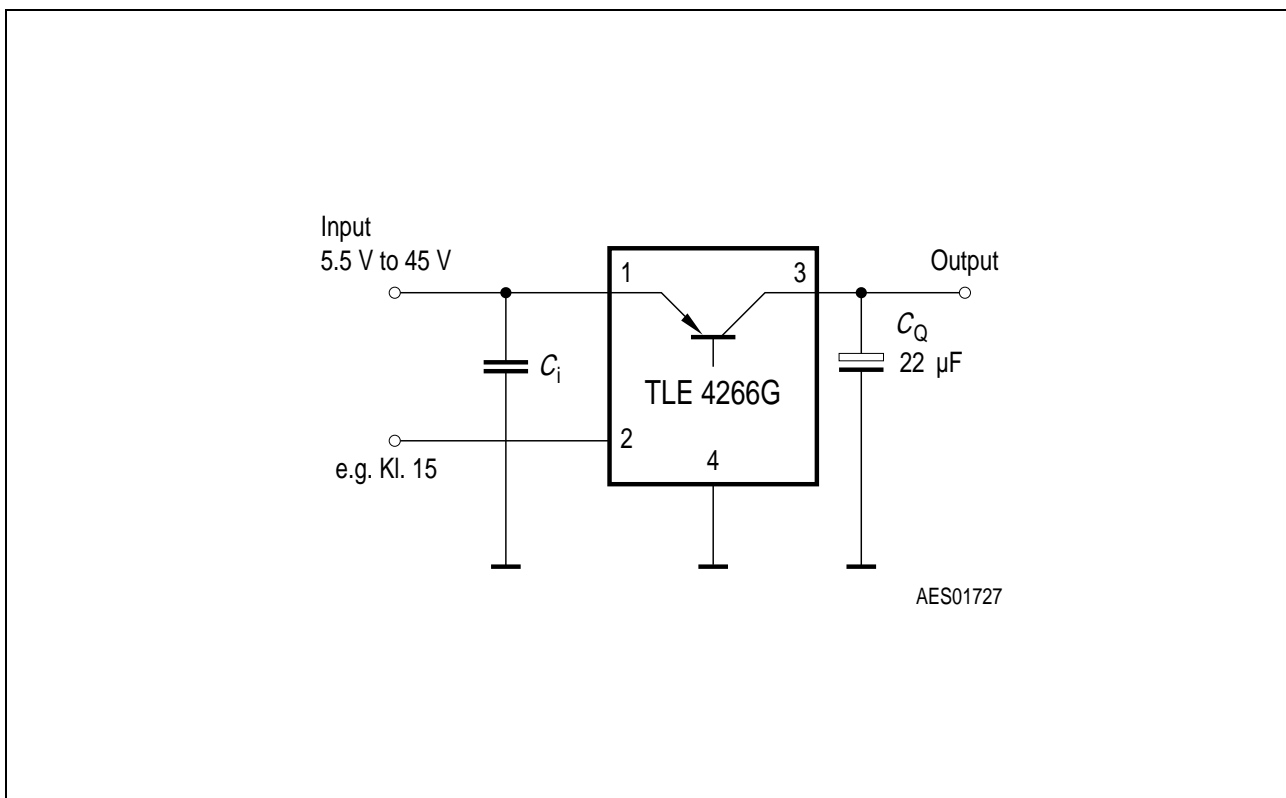
## Inhibit

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

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

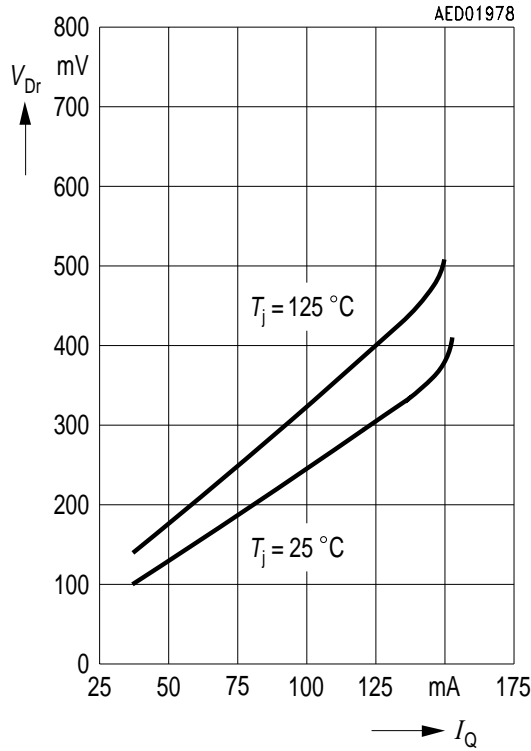


Measuring Circuit

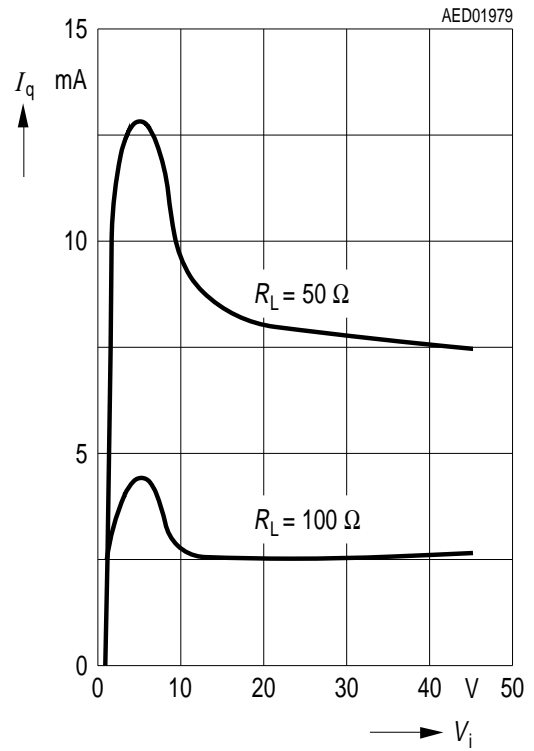


Application Circuit

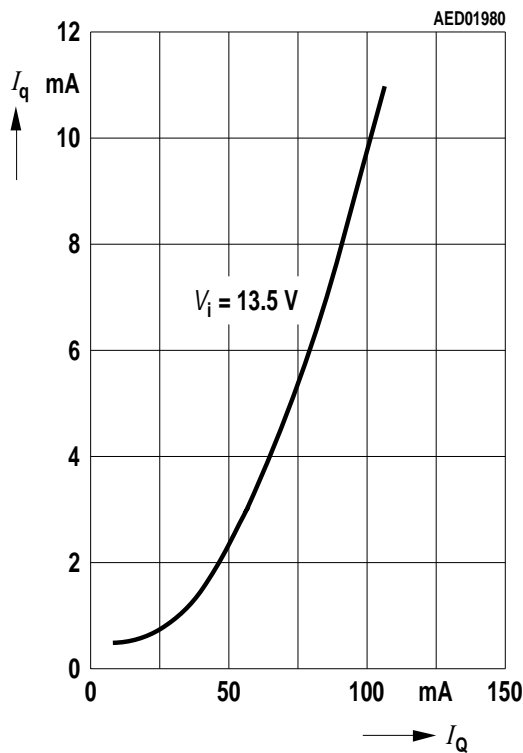
Drop Voltage  $V_{Dr}$  versus Output Current  $I_Q$



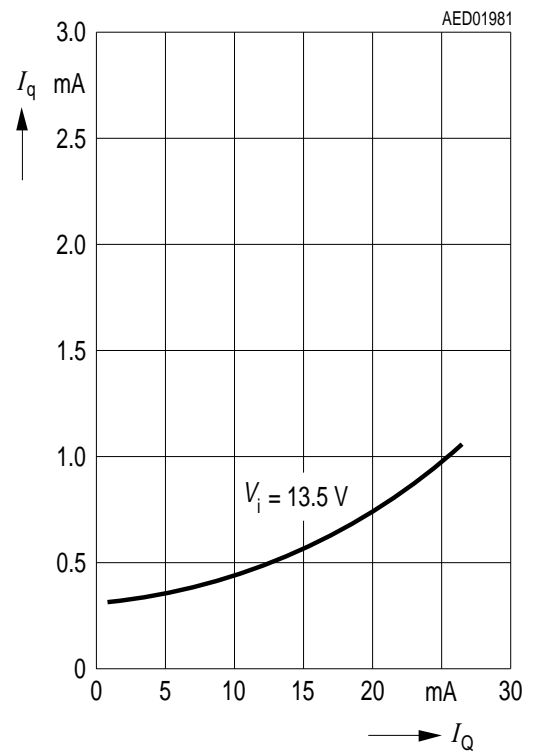
Current Consumption  $I_q$  versus Input Voltage  $V_i$



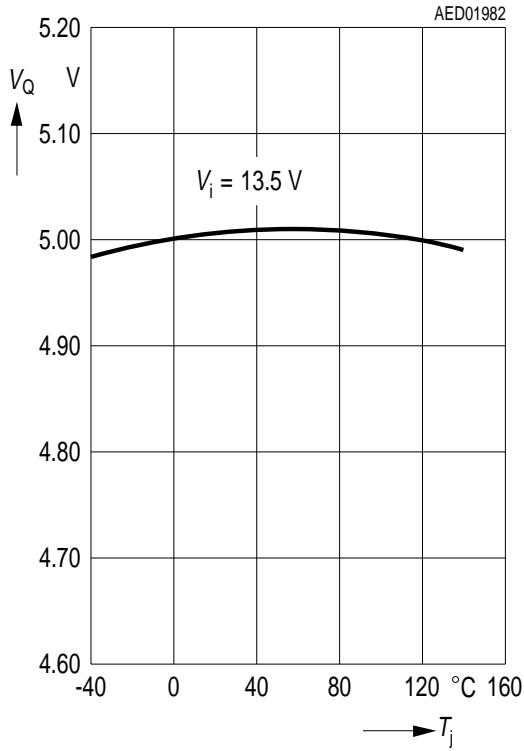
Current Consumption  $I_q$  versus Output Current  $I_Q$



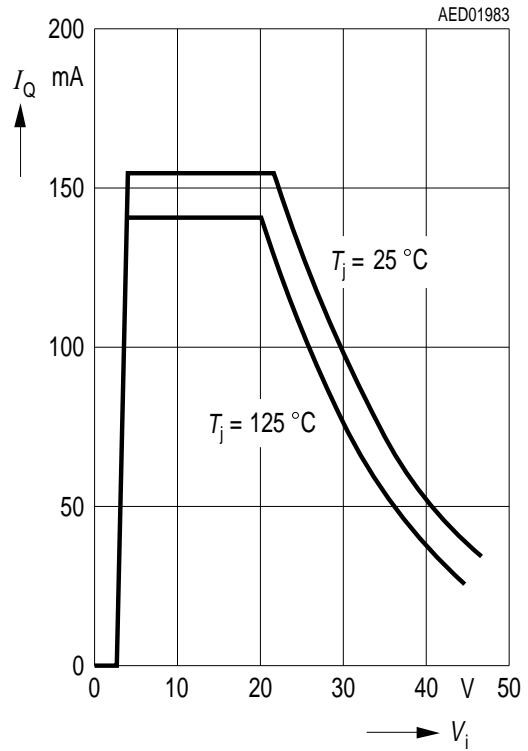
Current Consumption  $I_q$  versus Output Current  $I_Q$



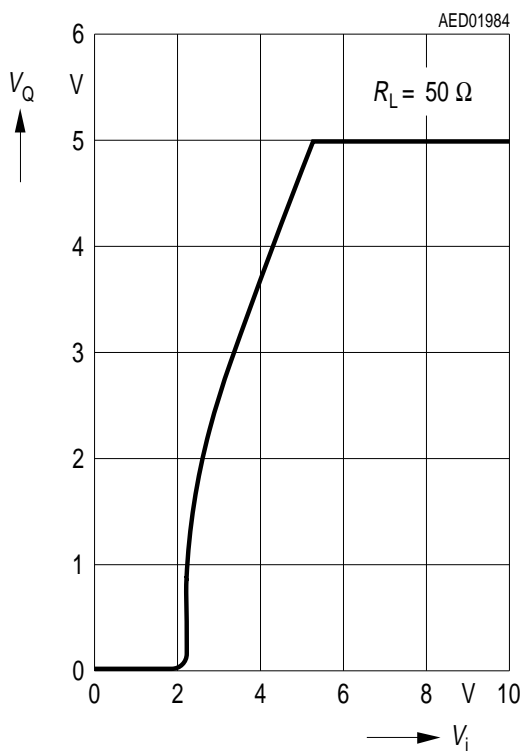
Output Voltage  $V_Q$  versus Temperature  $T_j$  (5 V-version)



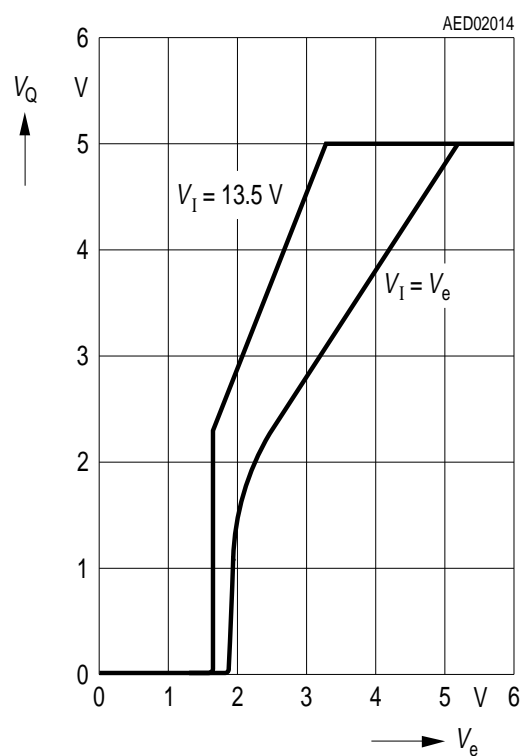
Output Current  $I_Q$  versus Input Voltage  $V_i$



Output Voltage  $V_Q$  versus Input Voltage  $V_i$  (5 V-version)



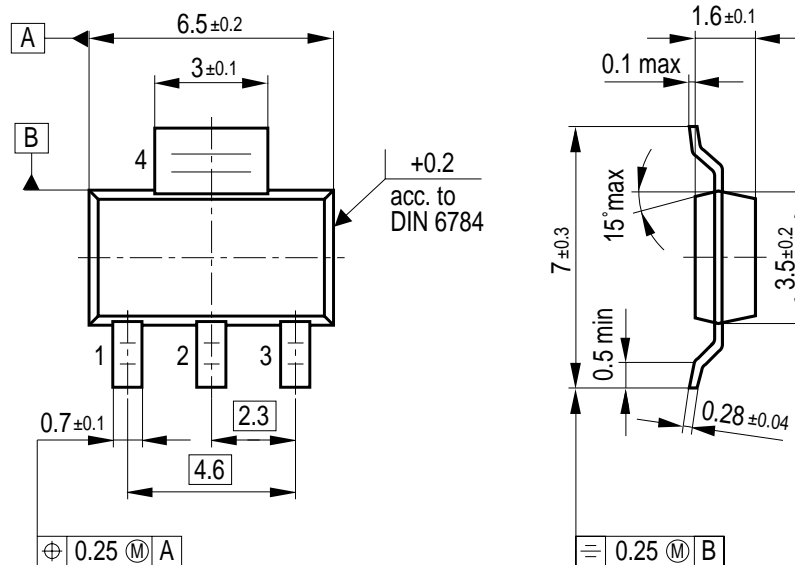
Output Voltage  $V_Q$  versus Inhibit Voltage  $V_e$  (5 V-version)





## Package Outlines

### P-SOT223-4-2 (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