

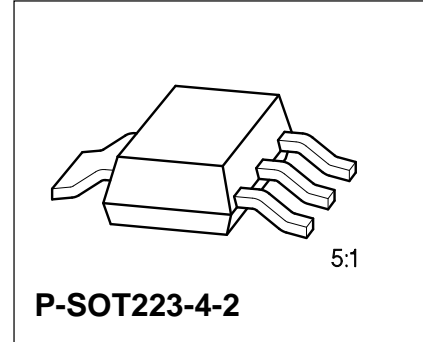
## 5-V Low-Drop Voltage Regulator

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

▼ New type

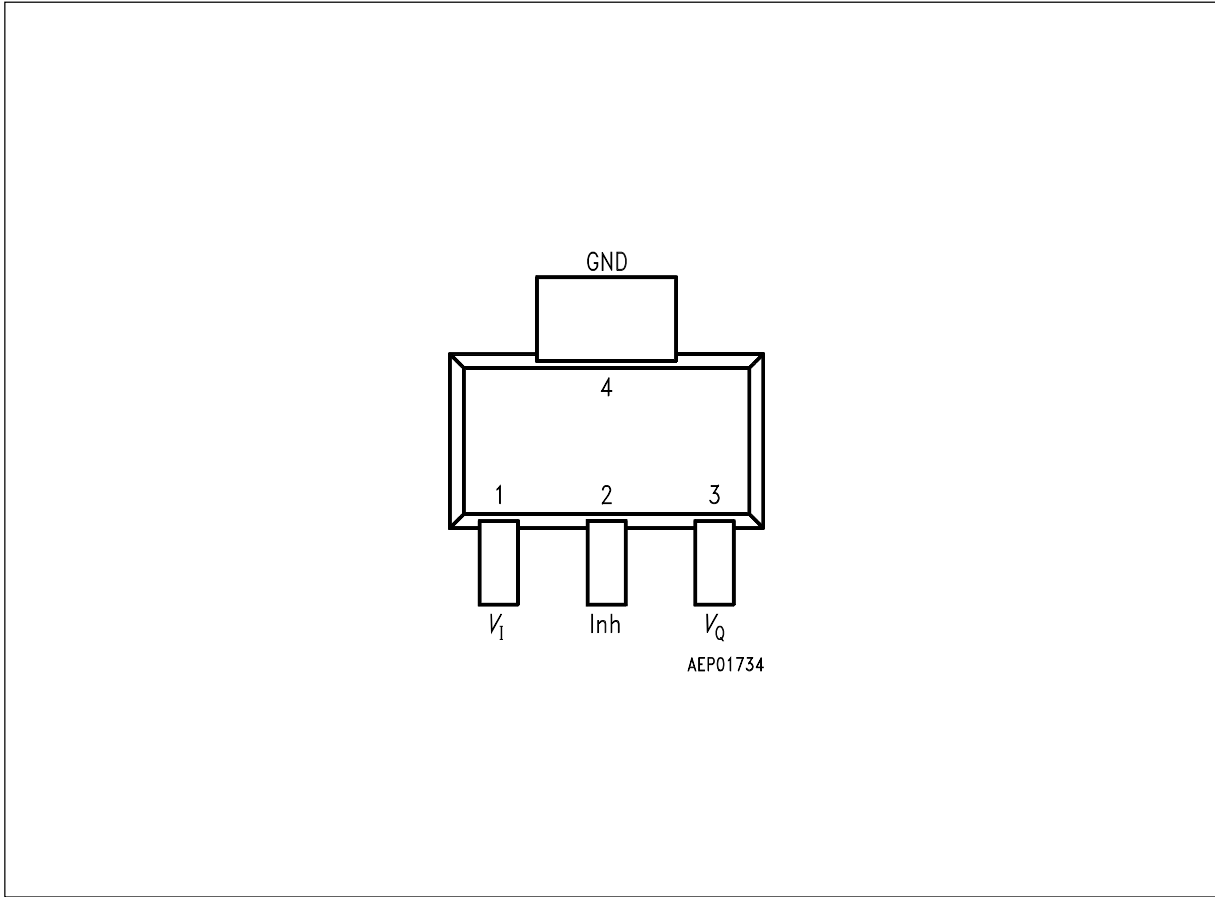
### Functional Description

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  $V_{\text{Qrated}} = 5\text{ V}$ . 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  $10\text{ }\mu\text{A}$ . 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.  $1\text{ }\Omega$  in series with  $C_i$ , the oscillating of input 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  $C_Q \geq 10\text{ }\mu\text{F}$  and an  $\text{ESR} \leq 10\text{ }\Omega$  within the operating temperature range.

**Pin Configuration**  
(top view)



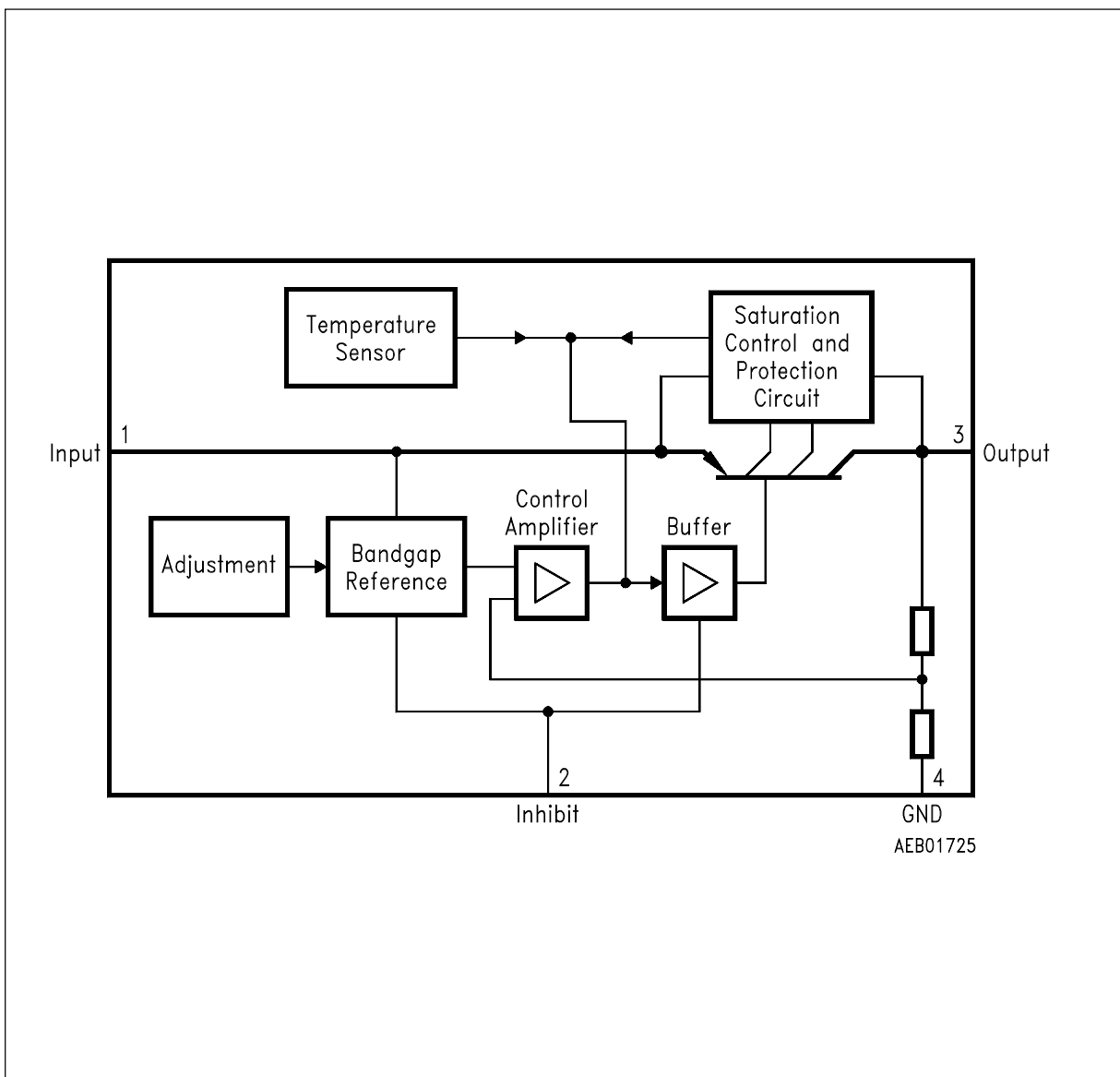
**Pin Definitions and Functions**

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>5-V 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	
Junction temperature	$T_j$	- 40	150	°C	

**Thermal Resistance**

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

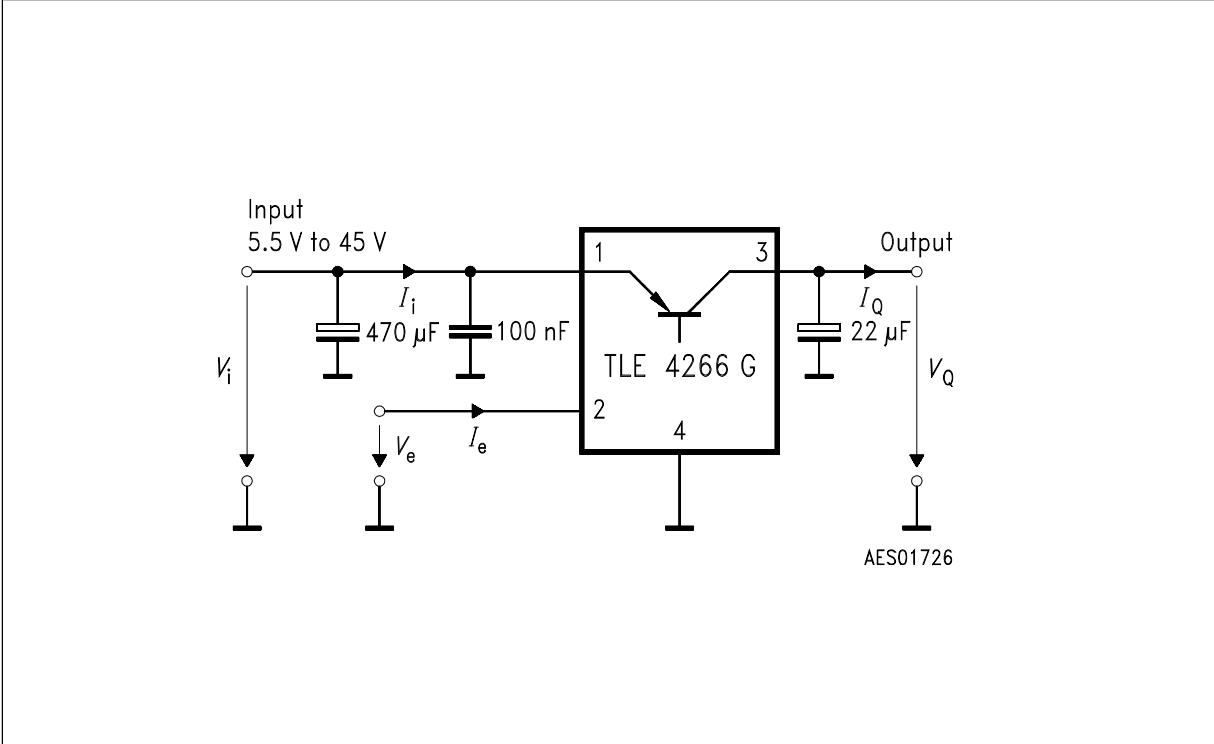
**Characteristics**
 $V_i = 13.5 \text{ V}; -40 \text{ }^\circ\text{C} \leq T_j \leq 125 \text{ }^\circ\text{C}$ 

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-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	$f_r = 100 \text{ Hz}$ $V_r = 0.5 V_{SS}$

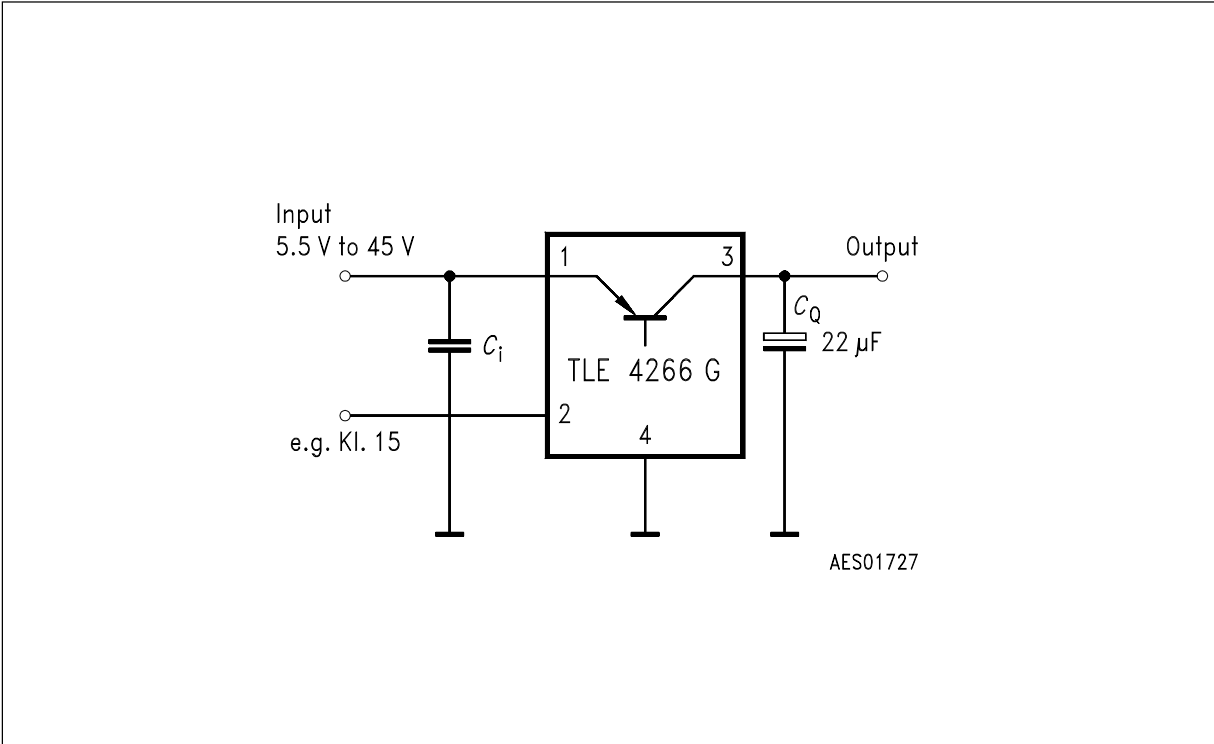
**Inhibit**

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  $V_i = 13.5 \text{ V}$ ).

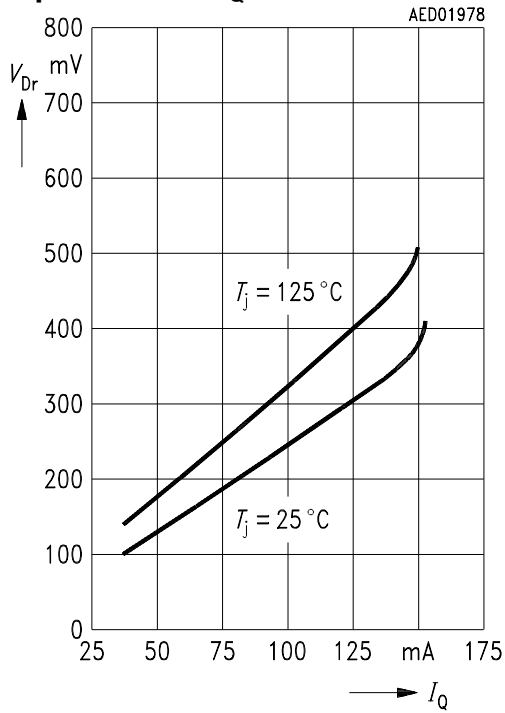


Measuring Circuit

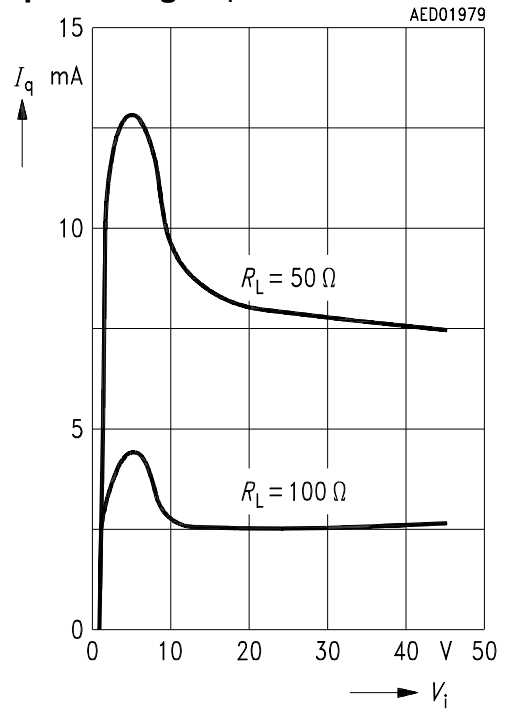


Application Circuit

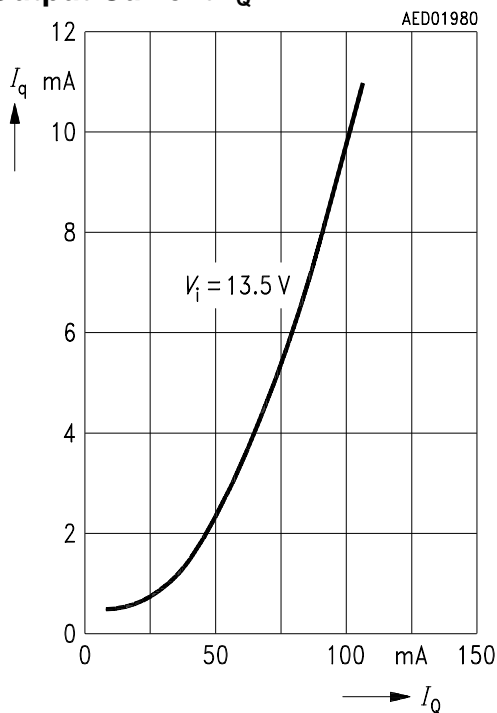
**Drop Voltage  $V_{Dr}$  versus Output Current  $I_Q$**



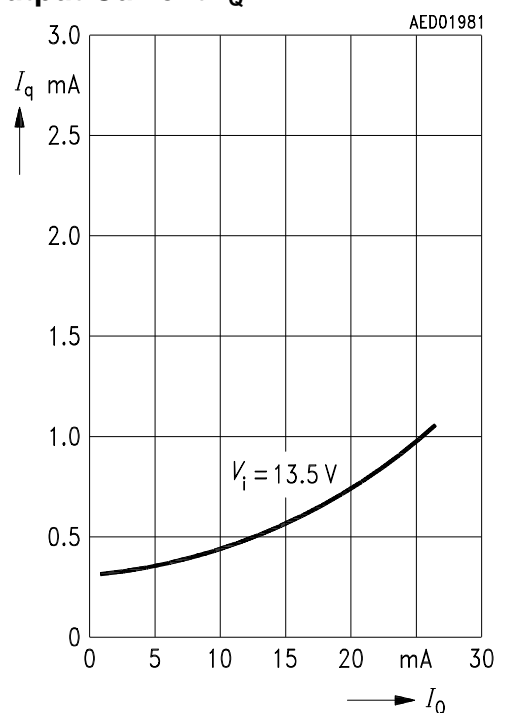
**Current Consumption  $I_q$  versus Input Voltage  $V_i$**



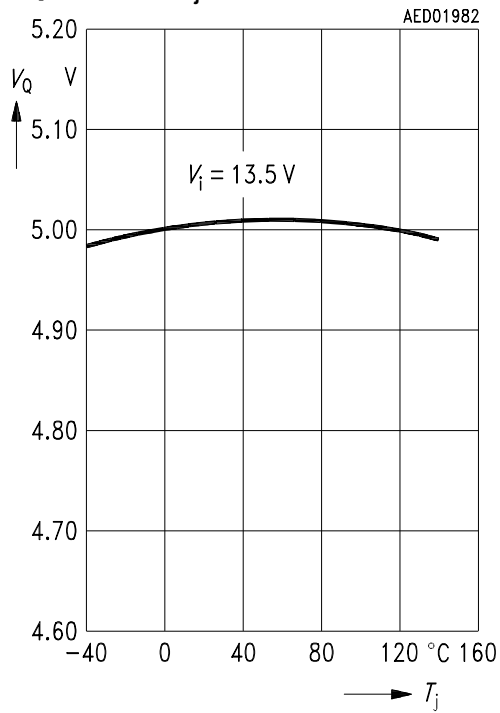
**Current Consumption  $I_q$  versus Output Current  $I_Q$**



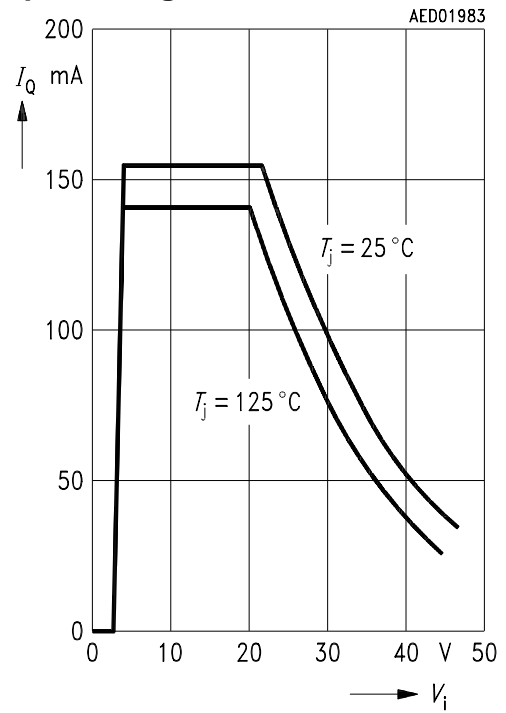
**Current Consumption  $I_q$  versus Output Current  $I_Q$**



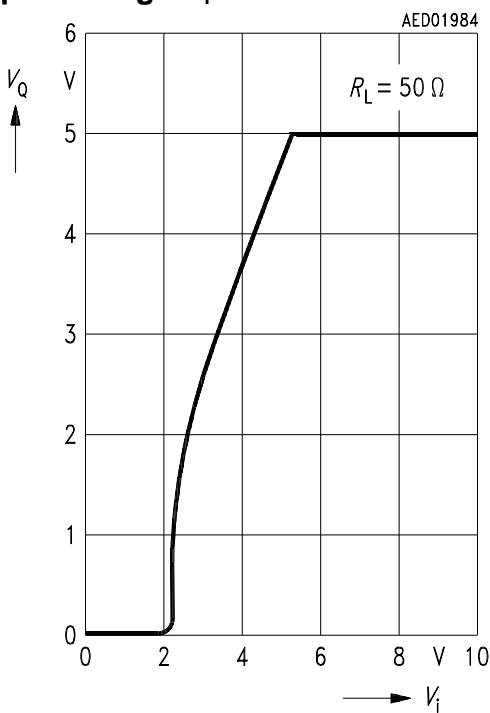
Output Voltage  $V_Q$  versus Temperature  $T_j$



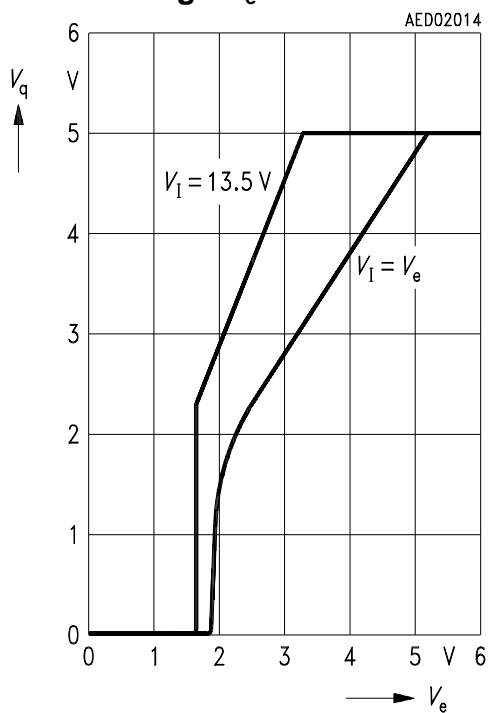
Output Current  $I_Q$  versus Input Voltage  $V_i$



Output Voltage  $V_Q$  versus Input Voltage  $V_i$



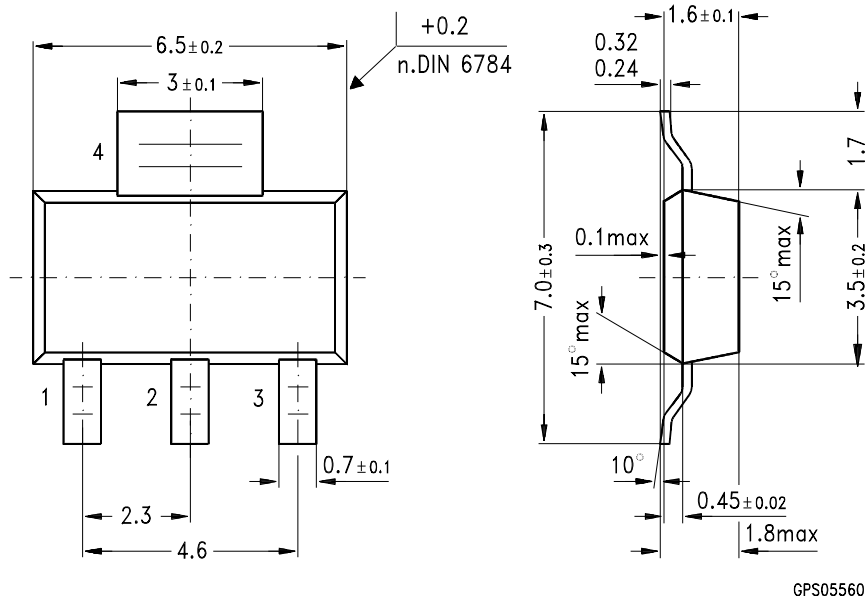
Output Voltage  $V_Q$  versus Inhibit Voltage  $V_e$





Package Outlines

**P-SOT223-4-2 (SMD)**  
(Plastic Small Outline Transistor)



Weight approx. 0.15 g

GPS05560

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