

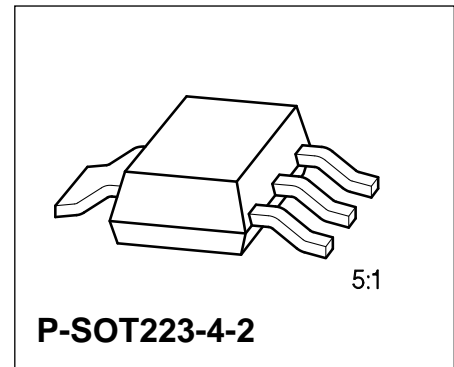
5-V Low-Drop Voltage Regulator

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

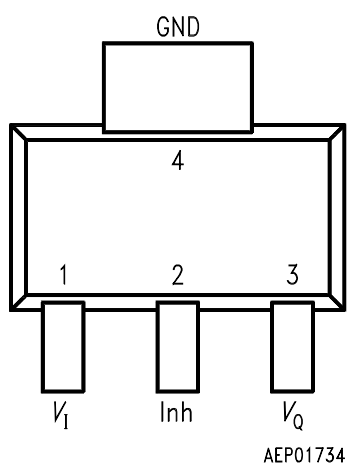
Functional Description

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 μA . 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 Ω 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)



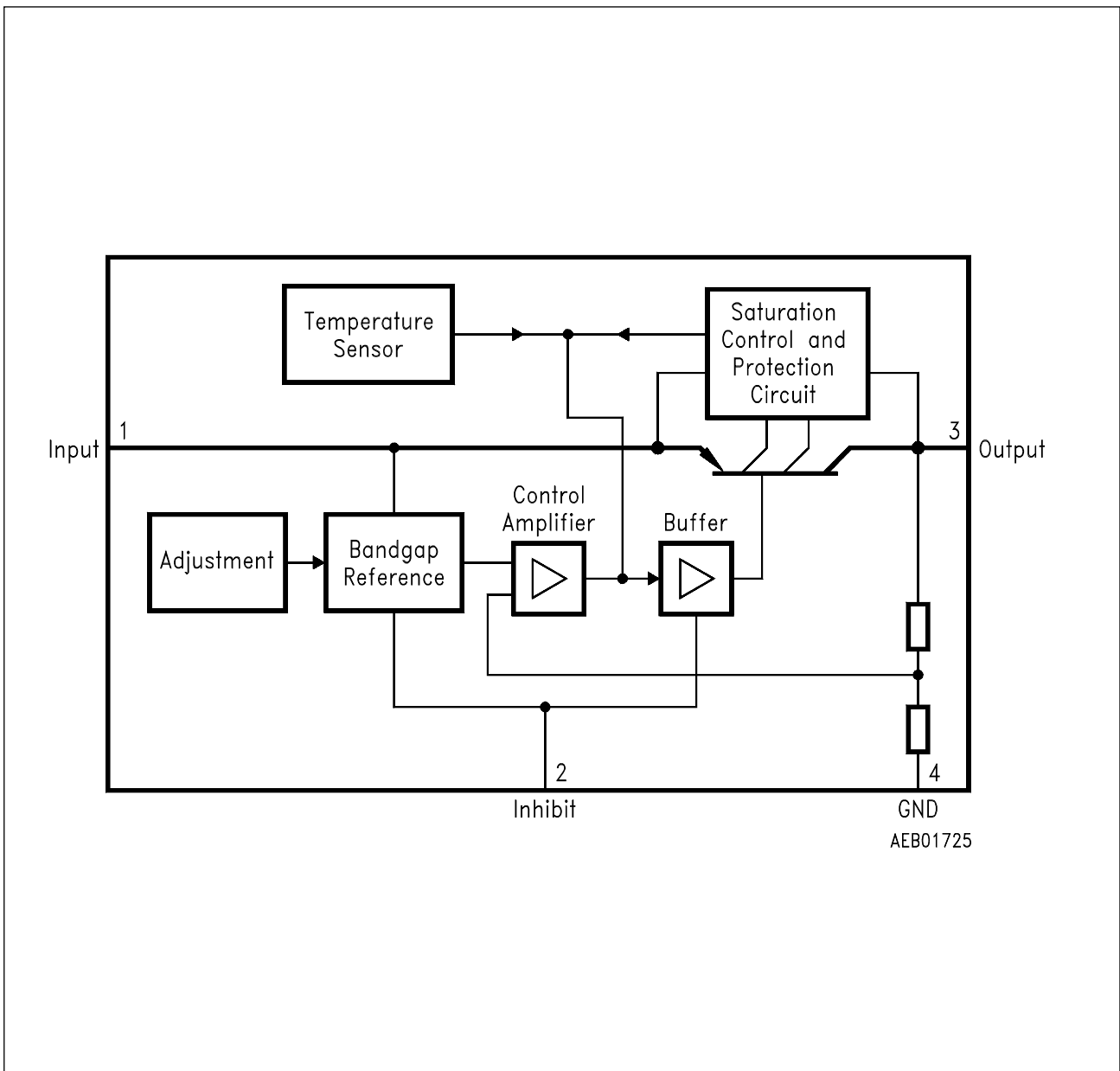
Pin Definitions and Functions

Pin	Symbol	Function
1	V_I	Input voltage ; block to ground directly at the IC with a ceramic capacitor.
2	Inh	Inhibit ; low-active input.
3	V_Q	5-V output voltage ; block to ground with a $\geq 10 \mu\text{F}$ capacitor.
4	GND	Ground

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

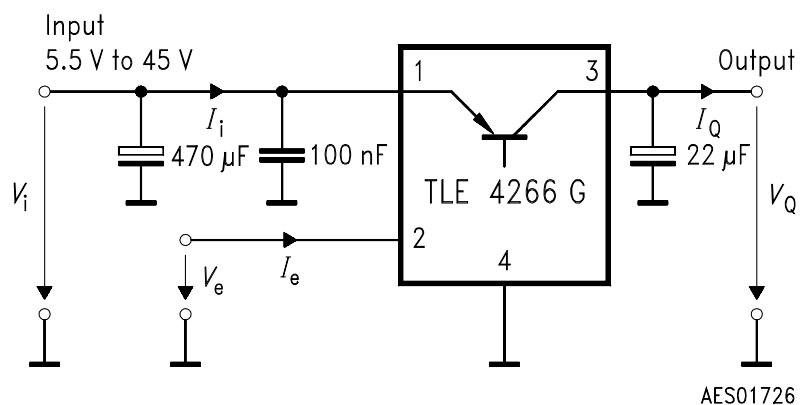
$V_i = 13.5 \text{ V}; -40 \text{ °C} \leq T_j \leq 125 \text{ °C}$

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	μA	$V_e = 0 \text{ V}; T_j \leq 100 \text{ °C}$
Current consumption $I_q = I_i - I_Q$	I_q			400	μA	$I_Q = 1 \text{ mA}$
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	ΔV_Q			40	mV	$I_Q = 5 \text{ to } 100 \text{ mA}$ $V_i = 6 \text{ V}$
Supply-voltage regulation	ΔV_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

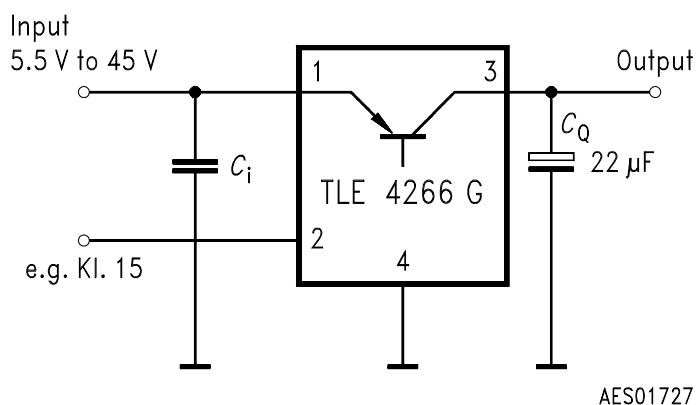
Inhibit on voltage	$V_{e, on}$			3.5	V	
Inhibit off voltage	$V_{e, off}$	0.8			V	
Inhibit current	I_e	5	15	25	μA	$V_e = 5 \text{ V}$

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



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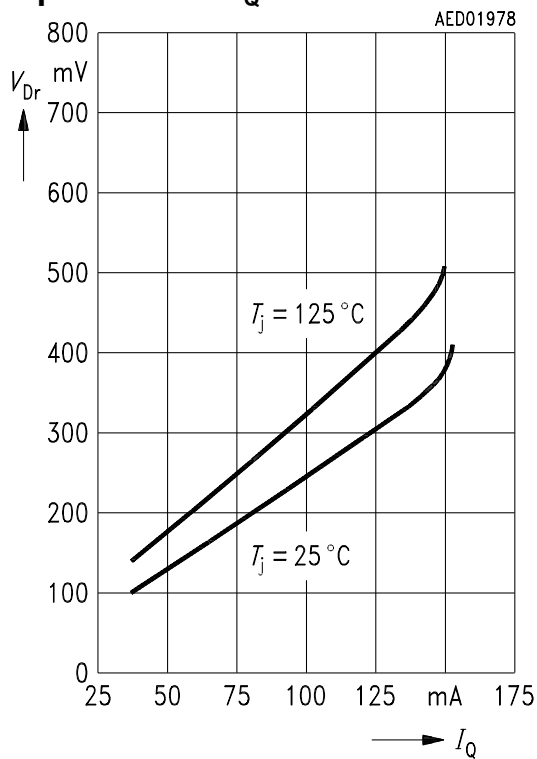
Measuring Circuit



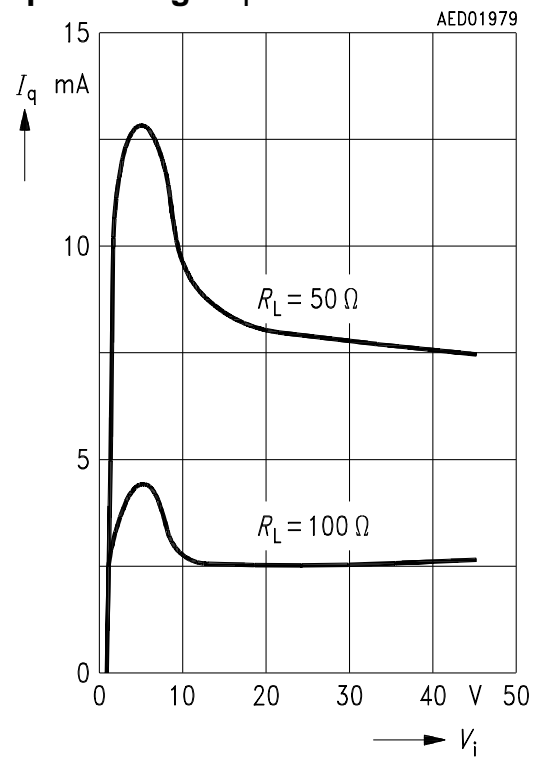
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Application Circuit

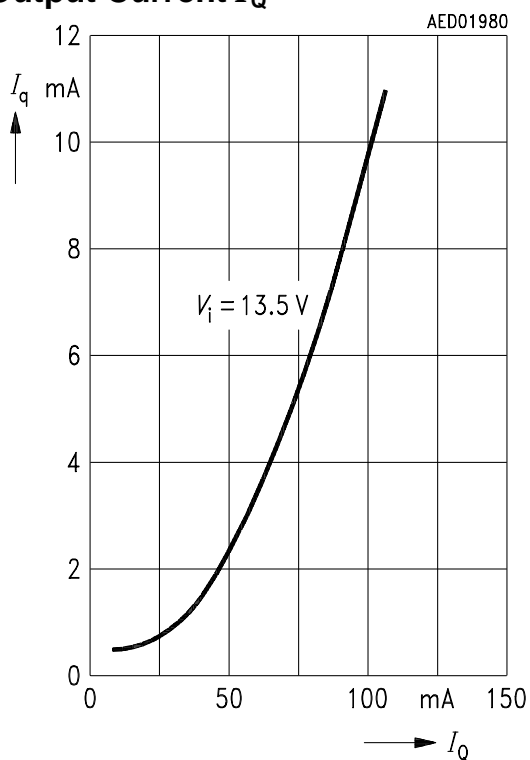
Drop Voltage V_{Dr} versus Output Current I_Q



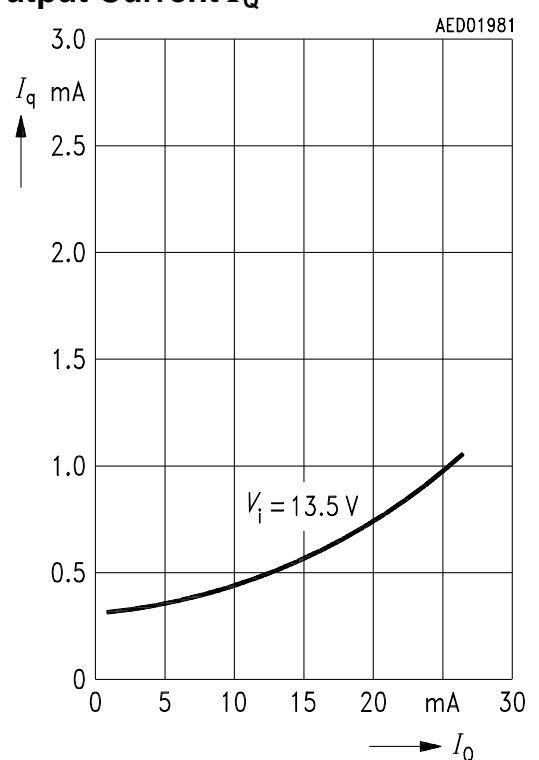
Current Consumption I_q versus Input Voltage V_i



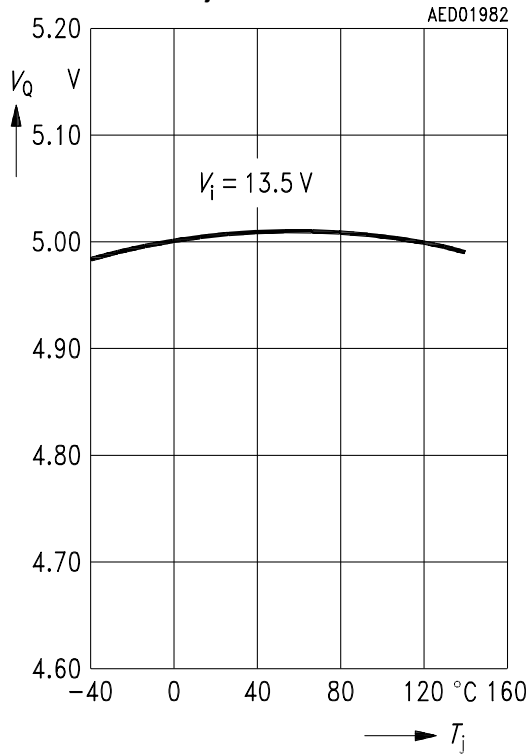
Current Consumption I_q versus Output Current I_Q



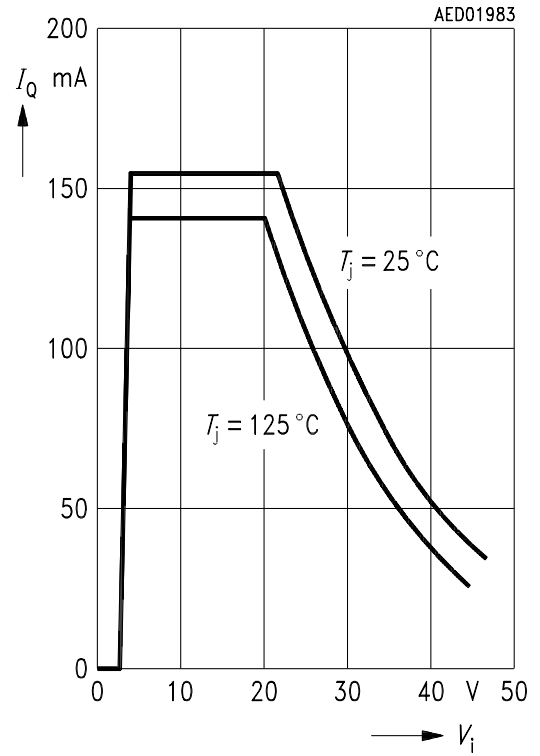
Current Consumption I_q versus Output Current I_Q



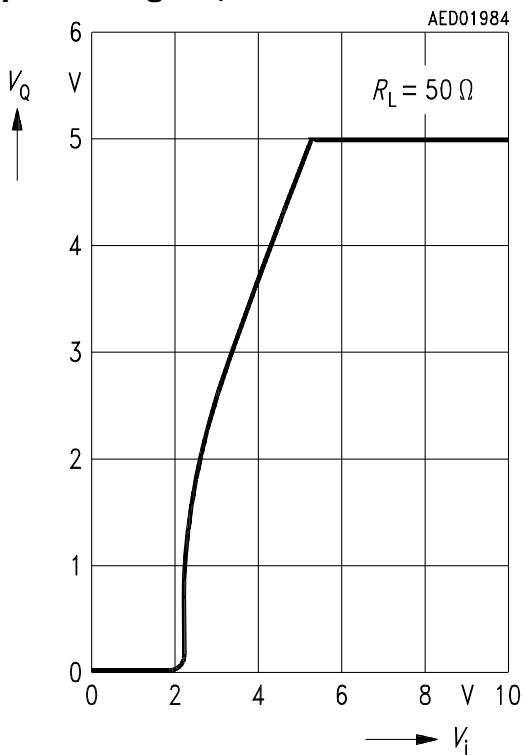
Output Voltage V_Q versus Temperature T_j



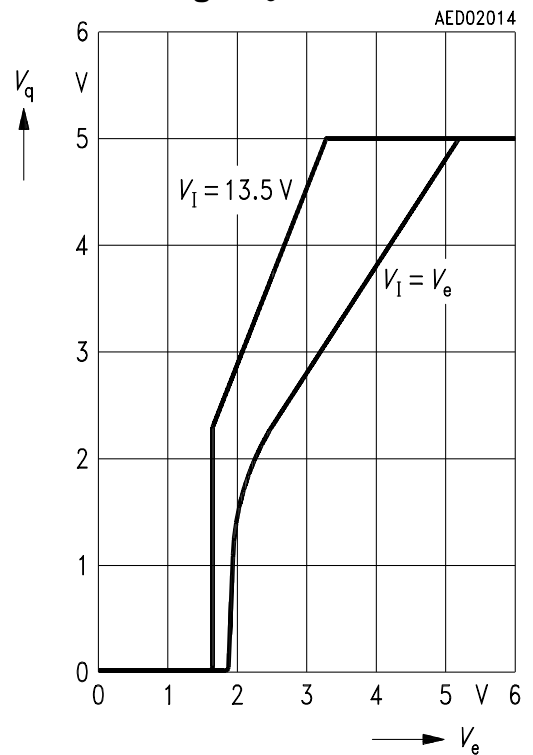
Output Current I_Q versus Input Voltage V_i



Output Voltage V_Q versus Input Voltage V_i

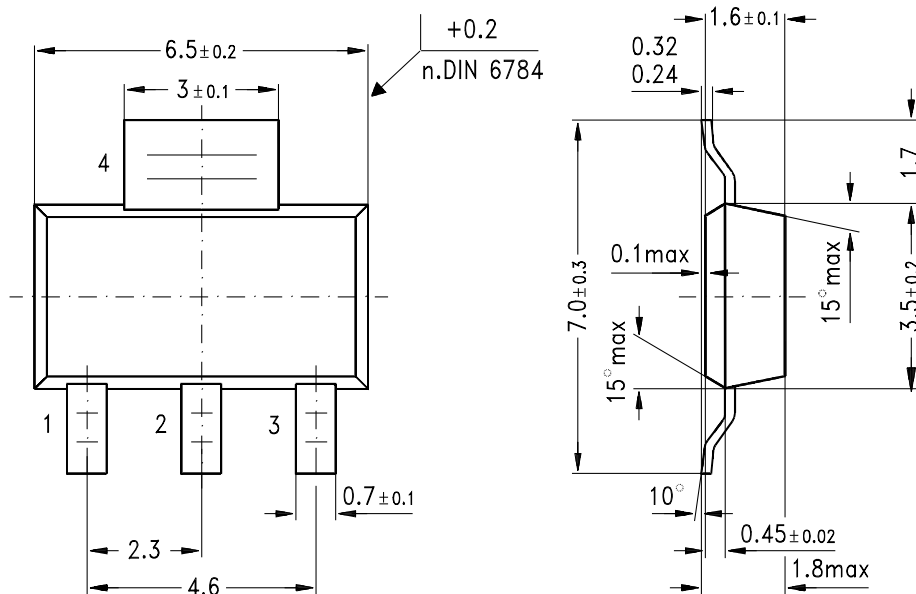


Output Voltage V_Q versus Inhibit Voltage V_e



Package Outlines

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



GPS05560

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