

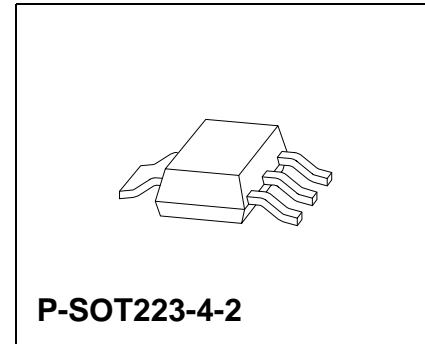
5-V Low-Drop Voltage Regulator

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

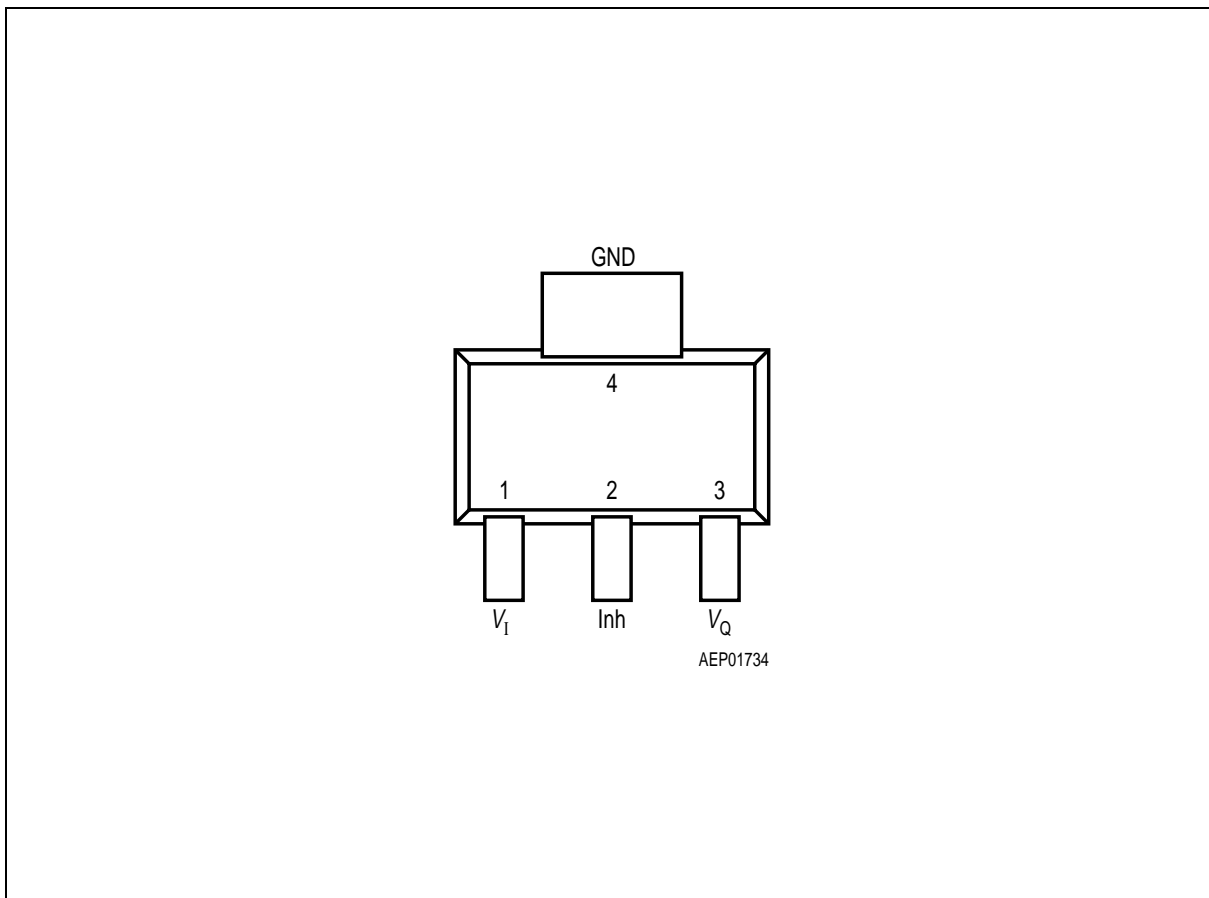
Functional Description

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 $V_{Q_{rated}} = 5 \text{ V} / 10 \text{ V}$. 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 μA . The IC is shortcircuit-proof and incorporates temperature protection that disables the IC on 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_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 operating temperature range.

Pin Configuration (top view)



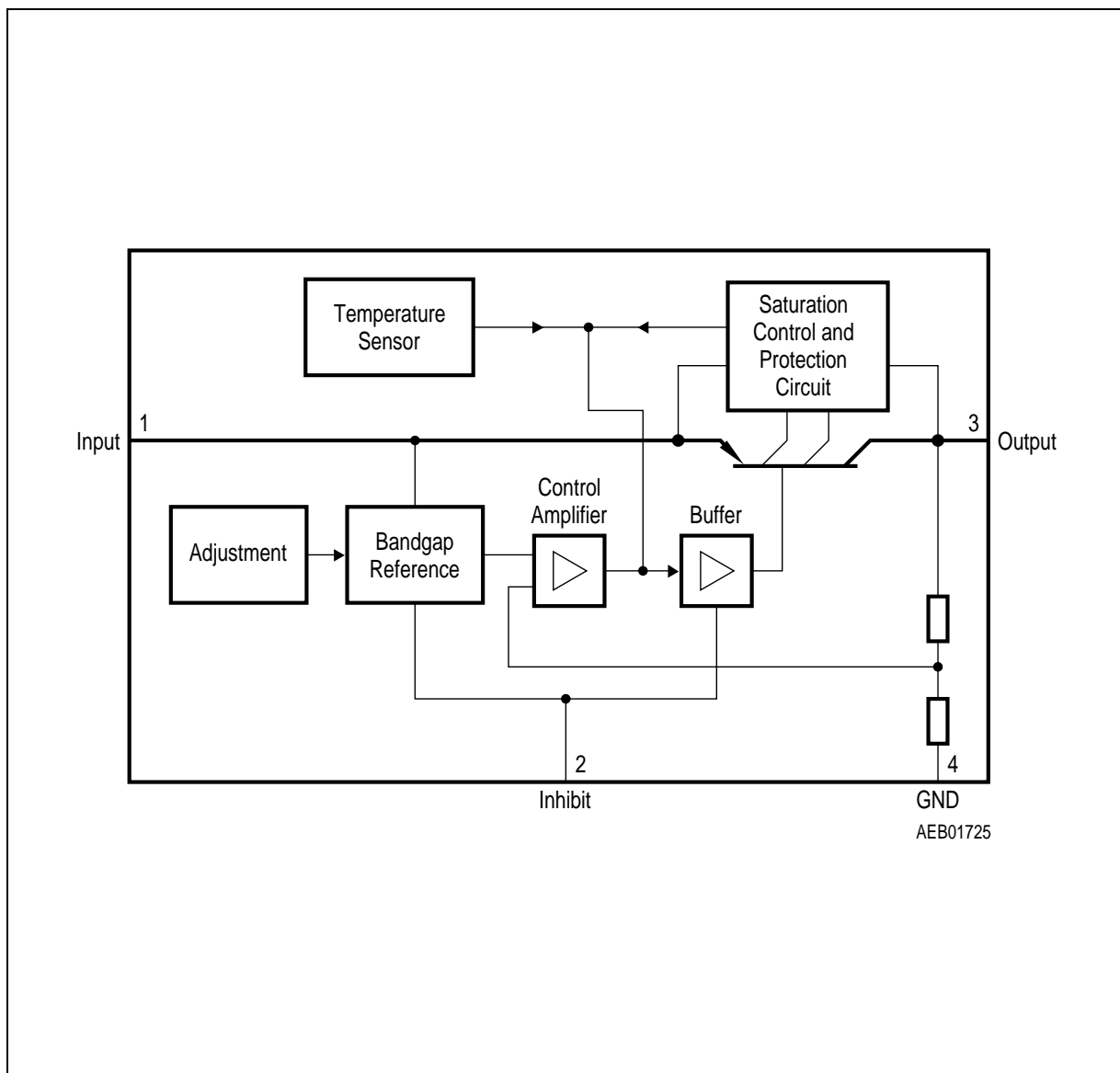
Pin Definitions and Functions

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	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	-
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	-

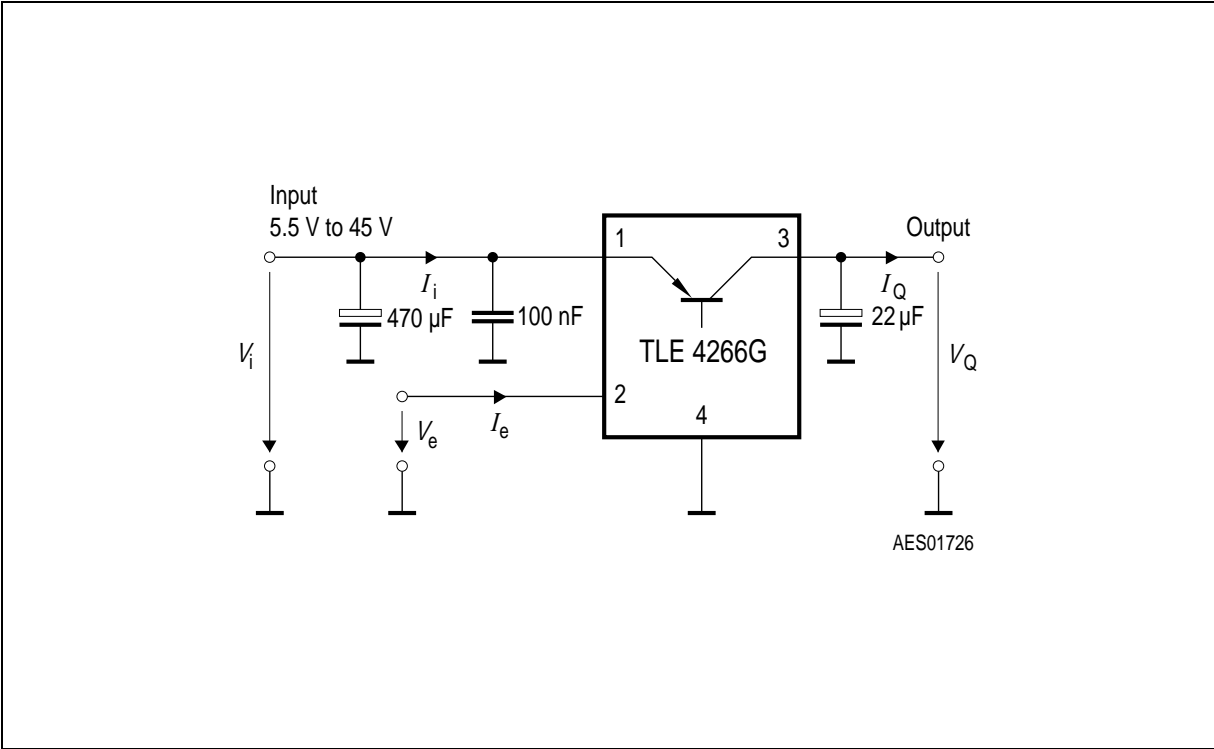
Characteristics $V_i = 13.5 \text{ V}; -40 \text{ °C} \leq T_j \leq 125 \text{ °C}$

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

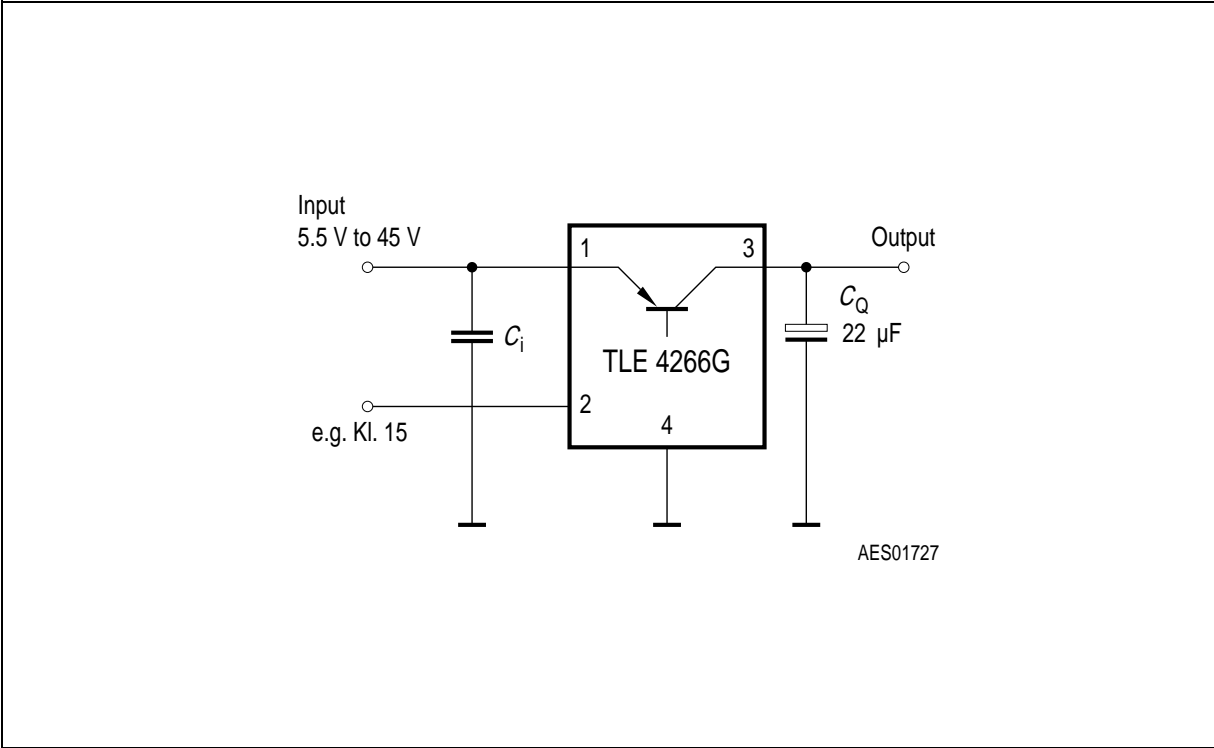
Inhibit

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

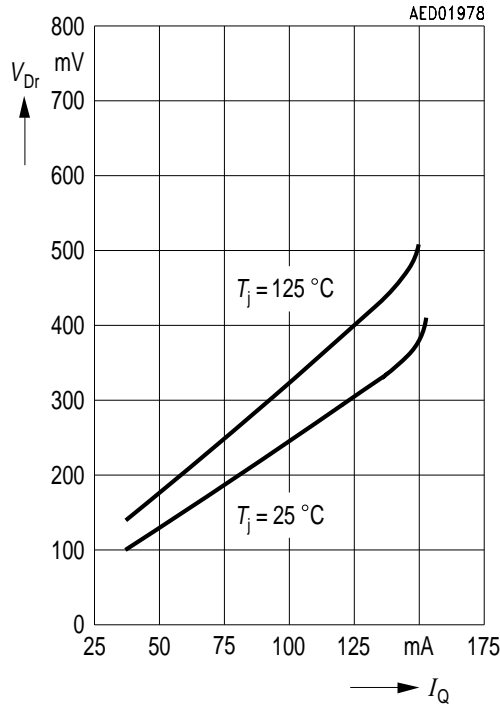


Measuring Circuit

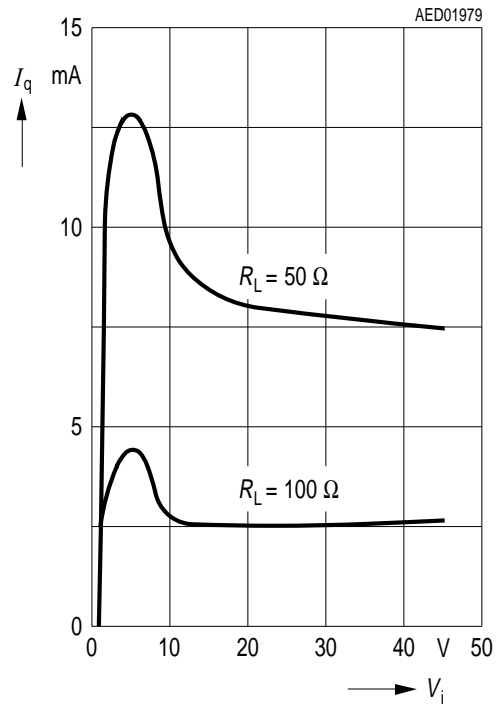


Application Circuit

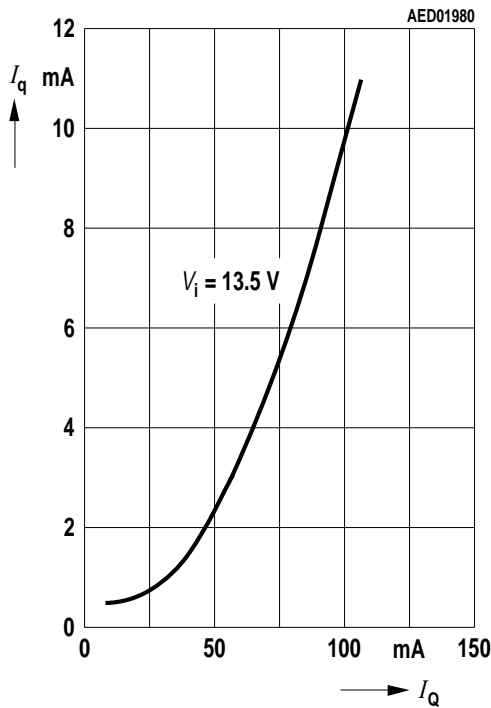
Drop Voltage V_{Dr} versus Output Current I_Q



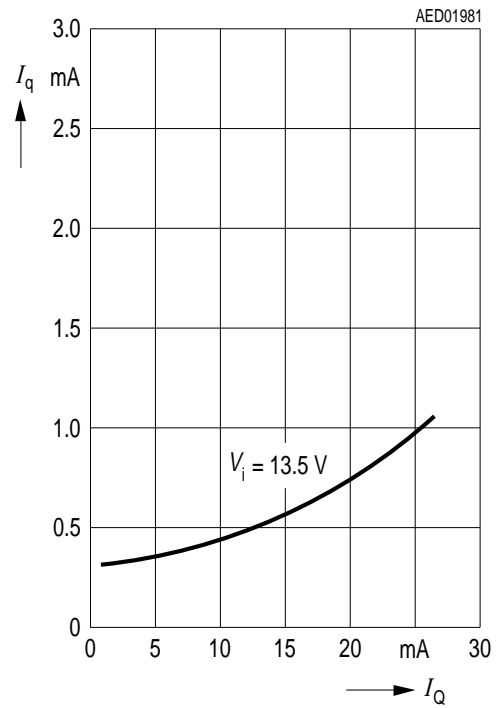
Current Consumption I_q versus Input Voltage V_i



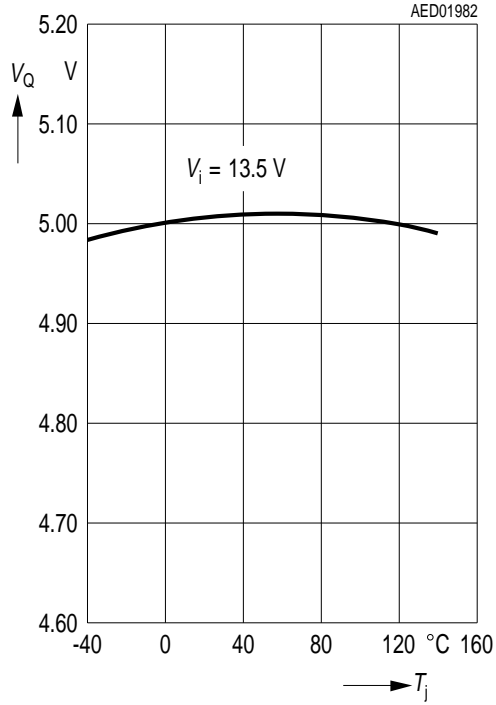
Current Consumption I_q versus Output Current I_Q



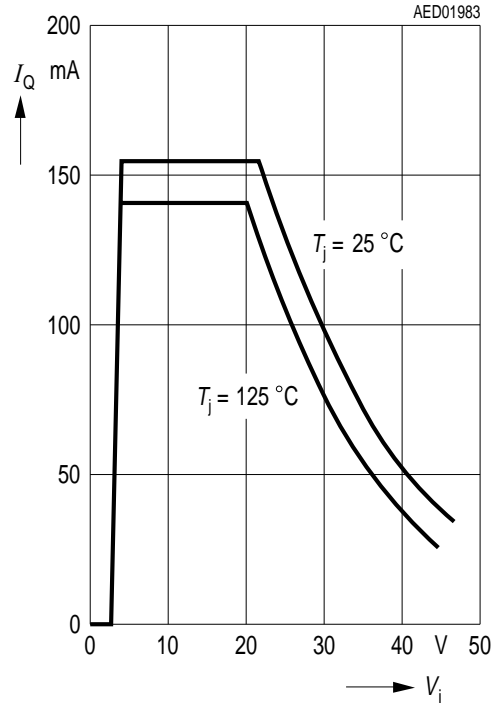
Current Consumption I_q versus Output Current I_Q



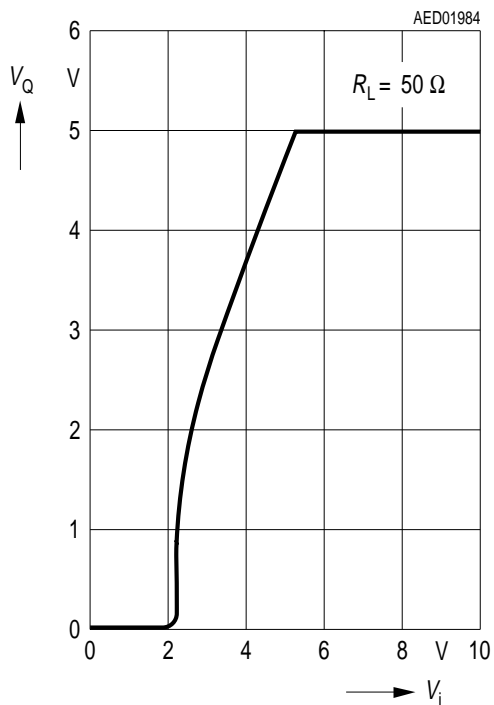
Output Voltage V_Q versus Temperature T_j (5 V-version)



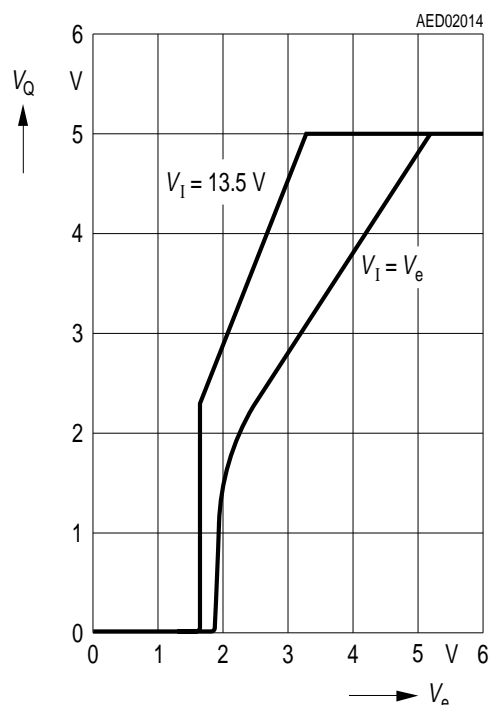
Output Current I_Q versus Input Voltage V_i



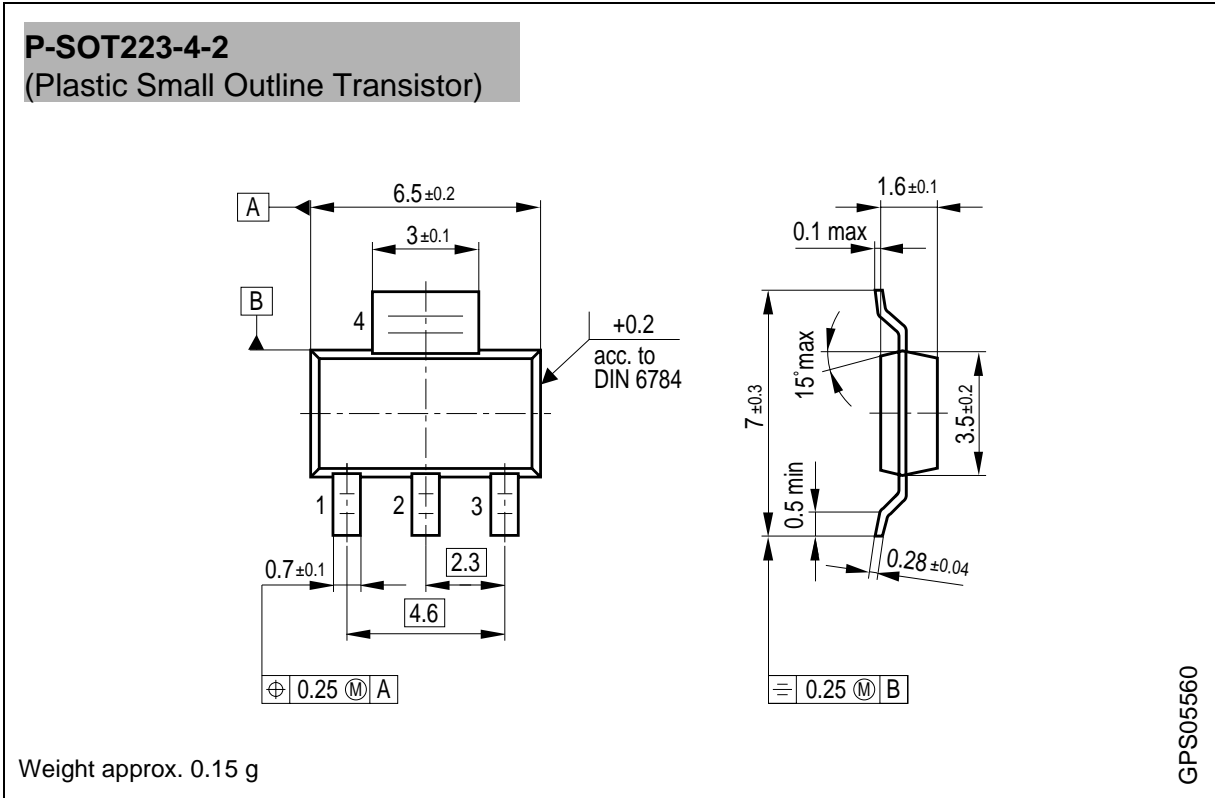
Output Voltage V_Q versus Input Voltage V_i (5 V-version)



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



Package Outlines



Sorts of Packing

Package outlines for tubes, trays etc. are contained in our Data Book "Package Information"

SMD = Surface Mounted Device

Dimensions in mm