

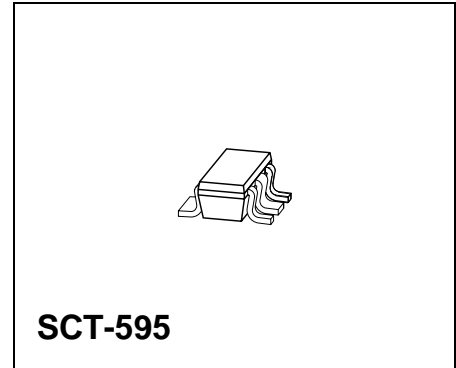
SIEMENS

5-V Voltage Regulator

TLE 4286 G

Features

- Wide operation range: 6.2 V to 42 V
- Wide temperature range: – 40 °C to 150 °C
- Low quiescent current consumption: 50 µA
- Output protected against short circuit
- Over-temperature protection
- Inhibit input
- Very low current consumption in stand-by (Inhibit) mode
- Very small SMD-Package SCT-595



Type	Ordering Code	Package
TLE 4286 G	Q67006-A9304	SCT-595 (SMD)

Functional Description

The **TLE 4286 G** is a 5-V low-drop fixed voltage regulator in the very small SMD package SCT-595. The maximum input voltage is 42 V. The output is able to drive a load of more than 10 mA while it regulates the output voltage within a 4% accuracy.

The device can be switched in stand-by mode via an inhibit input which causes the current consumption to drop below 1 µA.

A temperature protection that disables the circuit at over temperature is incorporated.

Pin Configuration

(top view)

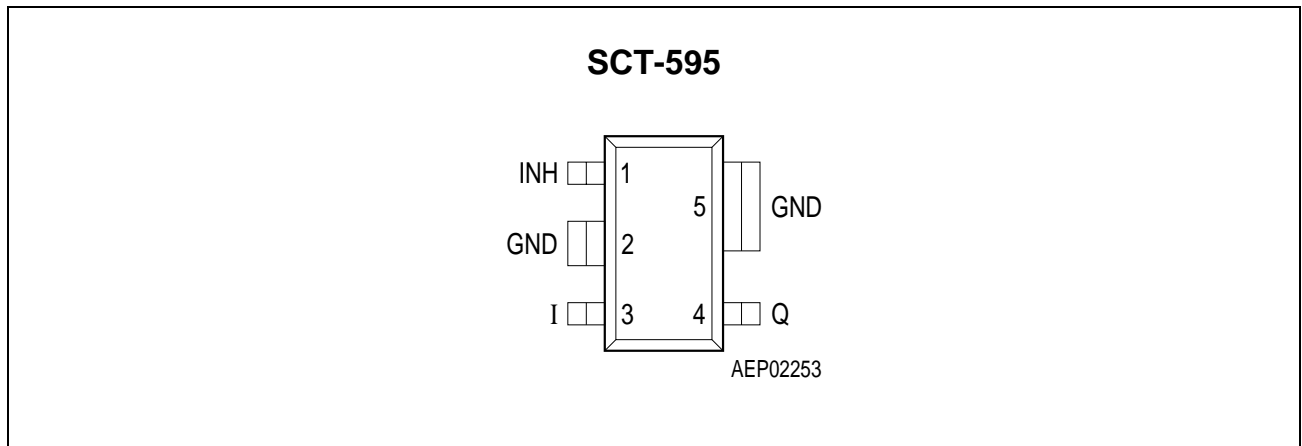


Figure 1

Pin Definitions and Functions

Pin No.	Symbol	Function
1	INH	Inhibit input ; H for active ($V_Q = 5\text{ V}$) and L for stand-by
2	GND	Ground ; internally connected to pin 5
3	I	Input voltage
4	Q	Output voltage ; must be blocked by a capacitor $C_Q \geq 1\ \mu\text{F}$, $\text{ESR} \leq 10\ \Omega$ to GND
5	GND	Ground ; internally connected to pin 2

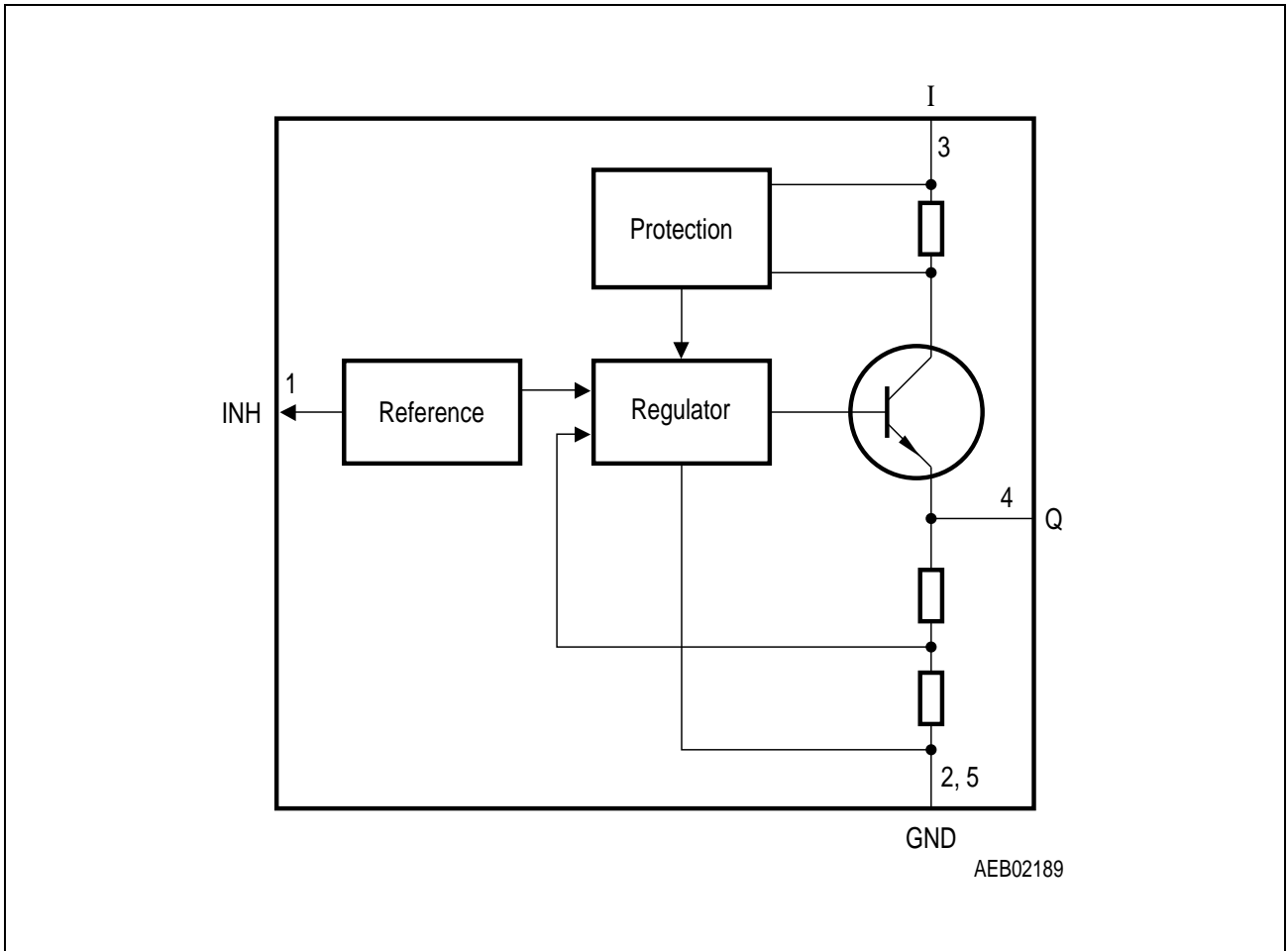


Figure 2
Block Diagram

Absolute Maximum Ratings
 $-40\text{ °C} < T_j < 150\text{ °C}$

Parameter	Symbol	Limit Values		Unit	Remarks
		min.	max.		

Input

Voltage	V_I	- 0.3	45	V	–
Current	I_I	- 20	*	mA	* internally limited

Output

Voltage	V_Q	- 0.3	16	V	–
Current	I_Q	- 20	*	mA	* internally limited

Inhibit

Voltage	V_{INH}	- 40	45	V	–
Current	I_{INH}	- 500	*	μA	* internally limited
Current	I_{INH}	- 5	5	mA	$-0.3\text{ V} < V_I < 45\text{ V};$ $t_p < 1\text{ ms}$

Temperatures

Junction temperature	T_j	- 40	150	$^{\circ}\text{C}$	–
Storage temperature	T_{stg}	- 50	150	$^{\circ}\text{C}$	–

Thermal Resistances

Junction pin	$R_{thj-pin}$	–	30	K/W	measured to pin 5
Junction ambient	R_{thja}	–	55	K/W	¹⁾

Note: Maximum ratings are absolute ratings; exceeding any one of these values may cause irreversible damage to the integrated circuit.

¹⁾ Package mounted on PCB 40 mm × 40 mm × 1.5 mm / 6 cm² Cu (thickness Cu = 35 μm)

Operating Range

Parameter	Symbol	Limit Values		Unit	Remarks
		min.	max.		
Input voltage	V_I	6.0	42	V	–
Logic input voltage (INH)	V_{INH}	– 0.3	40	V	–
Junction temperature	T_j	– 40	150	°C	–

Electrical Characteristics

6.2 V < V_I < 36 V; $V_{INH} > V_{INH, ON}$; $-40\text{ °C} < T_j < 150\text{ °C}$; unless otherwise specified

Parameter	Symbol	Limit Values			Unit	Test Condition
		min.	typ.	max.		

Output

Output voltage	V_Q	4.85	5.0	5.15	V	$T_j = 25\text{ °C}$; $1\text{ mA} < I_Q < 10\text{ mA}$
Output voltage	V_Q	4.8	5.0	5.20	V	$1\text{ mA} < I_Q < 10\text{ mA}$
Drop voltage	V_{dr}	0.6	0.8	1.1	V	$I_Q = 10\text{ mA}$
Output capacitor	C_Q	1	–	–	μF	ESR $\leq 10\ \Omega$ at 10 kHz
Output current	I_Q	10	–	40	mA	–

Current Consumption

Quiescent current	I_q	–	60	100	μA	$I_Q < 10\text{ mA}$; $V_I = 13.5\text{ V}$
Quiescent current (stand-by)	I_q	–	–	1	μA	$V_{INH} < V_{INH, OFF}$; $T_j < 85\text{ °C}$
Quiescent current (stand-by)	I_q	–	–	5	μA	$V_{INH} < V_{INH, OFF}$

Regulator Performance

Load regulation	ΔV_Q	–	5	10	mV	$0\text{ mA} < I_Q < 10\text{ mA}$; $V_I = 6.2\text{ V}$; $T_j \leq 85\text{ °C}$
Line regulation	ΔV_Q	–	5	10	mV	$I_Q = 5\text{ mA}$; $T_j \leq 85\text{ °C}$
Power supply ripple rejection	$PSRR$	–	60	–	dB	$f_r = 100\text{ Hz}$; $V_r = 0.5 V_{SS}$

Electrical Characteristics (cont'd)

$6.2\text{ V} < V_I < 36\text{ V}$; $V_{INH} > V_{INH, ON}$; $-40\text{ }^\circ\text{C} < T_j < 150\text{ }^\circ\text{C}$; unless otherwise specified

Parameter	Symbol	Limit Values			Unit	Test Condition
		min.	typ.	max.		

Logic Inhibit Input

Inhibit ON-threshold	$V_{INH, ON}$	–	–	3.5	V	$V_Q \geq 4.8\text{ V}$
Inhibit OFF-threshold	$V_{INH, OFF}$	0.3	–	–	V	$V_Q \leq 0.8\text{ V}$
H-input current	$I_{INH, ON}$	–	10	15	μA	$V_{INH} = 5\text{ V}$
L-input current	$I_{INH, OFF}$	– 2	0	2	μA	$V_{INH} = 0\text{ V}$

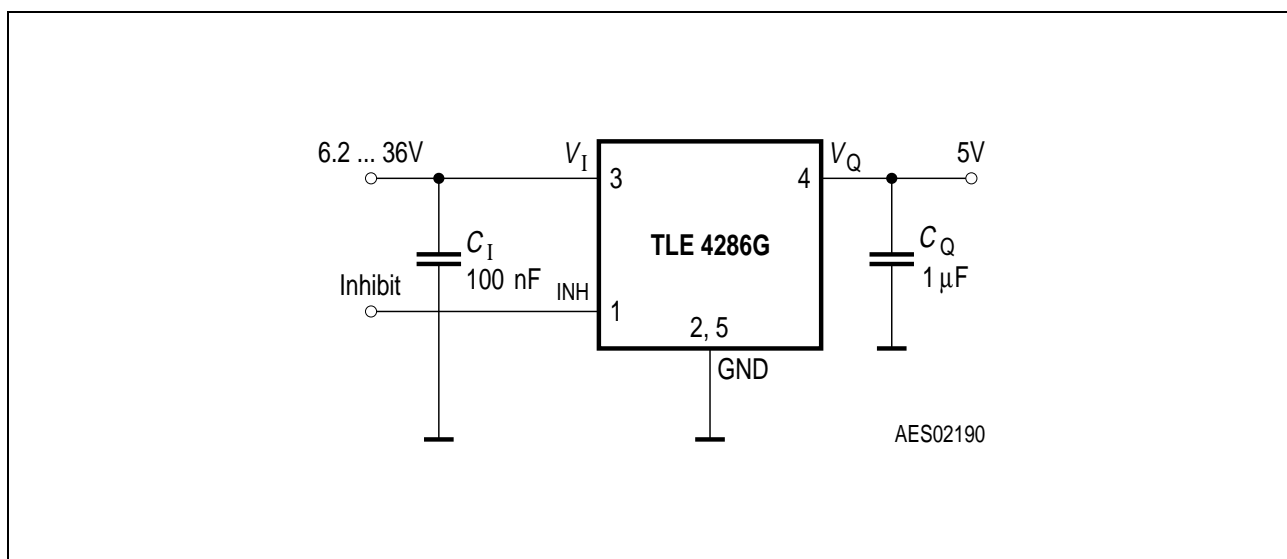
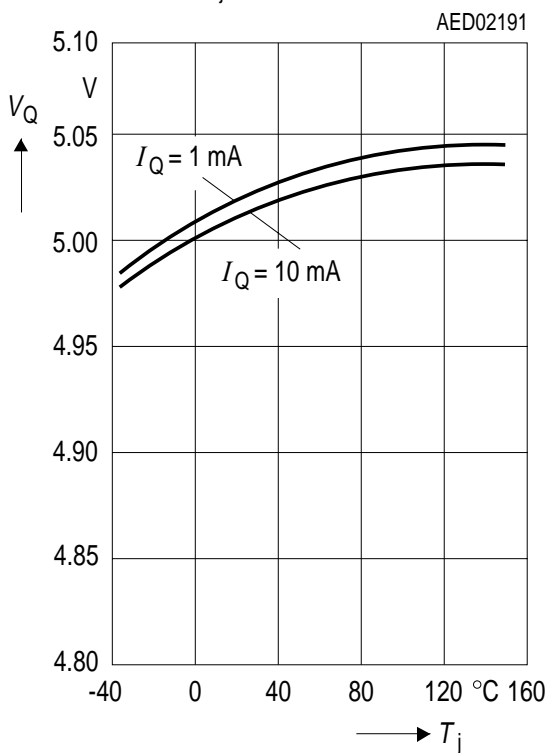
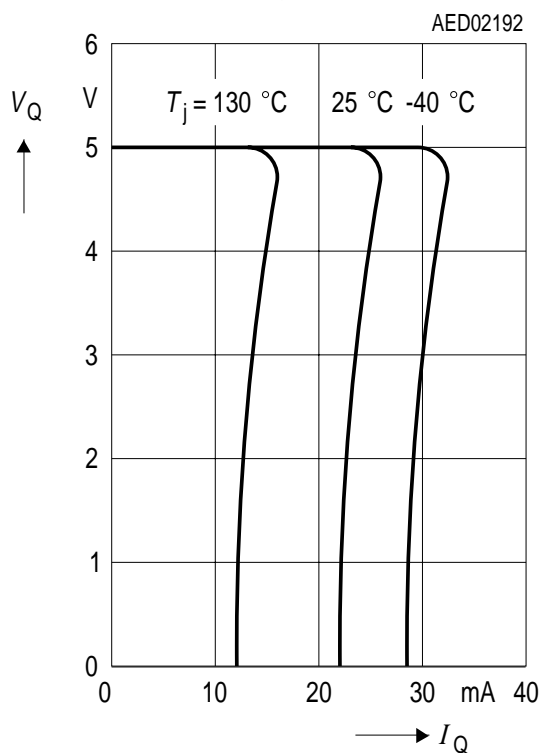


Figure 3
Application Circuit

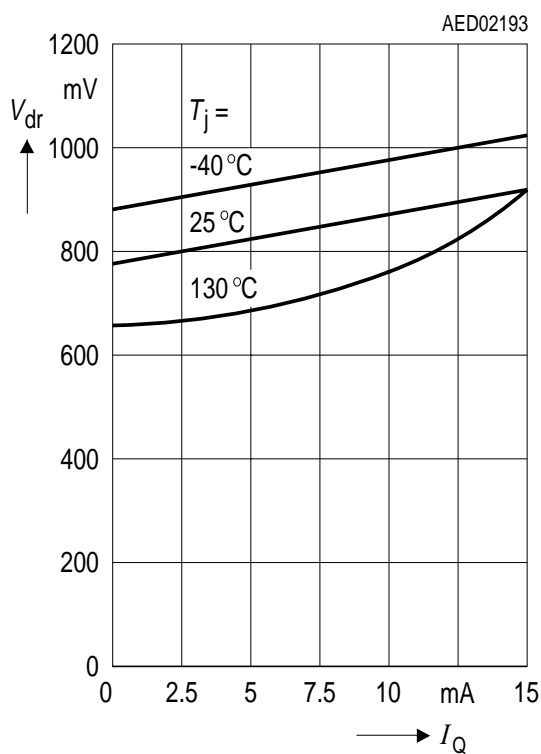
Output Voltage V_Q versus Temperature T_j



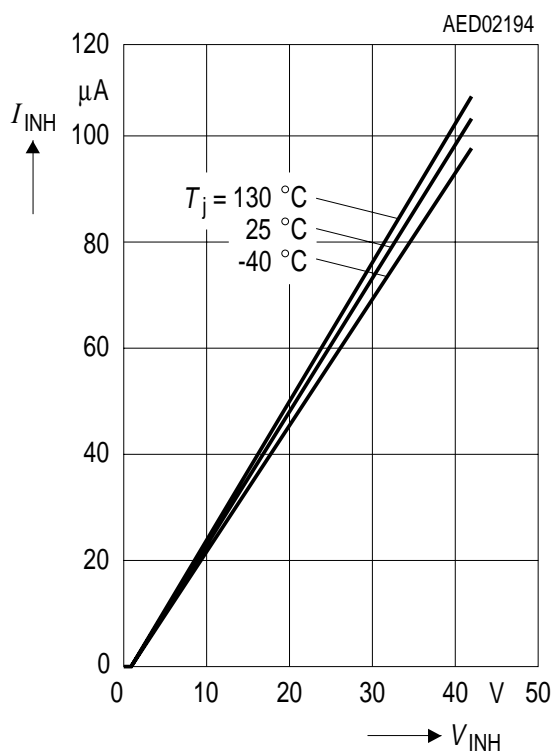
Output Voltage V_Q versus Output Current I_Q



Drop Voltage V_{dr} versus Output Current I_Q

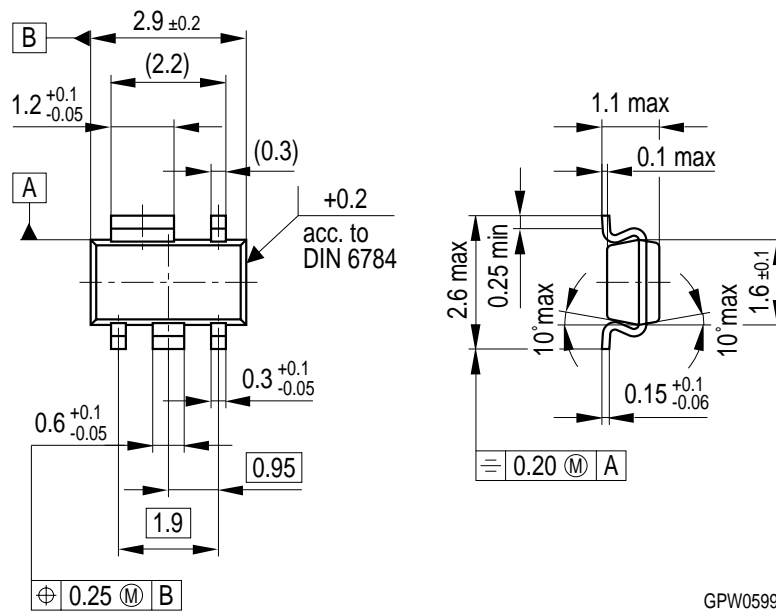


Inhibit Voltage V_{INH} versus Inhibit Current I_{INH}



Package Outlines

SCT-595
(Plastic Dual Small Outline)



GPW05997

Sorts of Packing

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

SMD = Surface Mounted Device

Dimensions in mm