

5-V Voltage Regulator

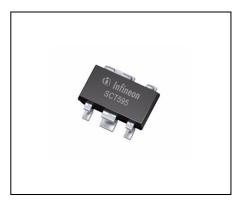
TLE 4286 G





Features

- 15 mA output current capability
- 1 μA current consumption in standby mode
- Low quiescent current consumption 60 μA in ON mode
- Inhibit input
- Very small SMD-Package PG-SCT-595-5
- Wide operation range: 6.2 V to 42 V
- Wide temperature range: -40 °C to 150 °C
- Output protected against short circuit
- Overtemperature protection
- Green product (RoHS compliant)
- AEC qualified.



PG-SCT-595-5

Functional Description

The **TLE 4286 G** is a 5-V low-drop fixed voltage regulator in the very small SMD package PG-SCT-595-5. 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 μ A.

A temperature protection disables the IC at over temperature.

Туре	Package	Marking
TLE 4286 G	PG-SCT-595-5	A1



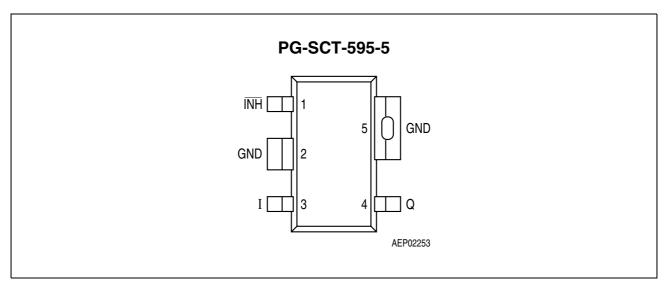


Figure 1 Pin Configuration (top view)

Table 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 $C_{\rm Q} \ge$ 1 $\mu \rm F$, ESR \le 10 Ω to GND
5	GND	Ground; internally connected to pin 2



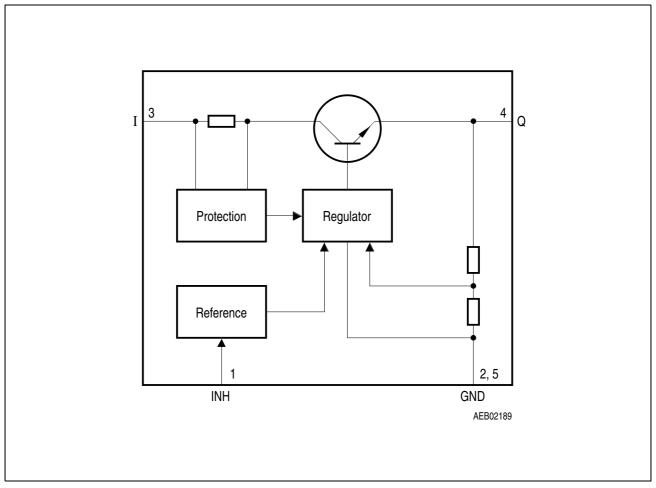


Figure 2 Block Diagram



Table 2 Absolute Maximum Ratings

-40 $^{\circ}$ C < $T_{\rm j}$ < 150 $^{\circ}$ C

Parameter	Symbol	Limit Values		Unit	Remarks
		Min.	Max.		
Input		1		1	
Voltage	V_{I}	-0.3	45	V	_
Current	I_{I}	-20	*	mA	* internally limited
Output				1	
Voltage	V_{Q}	-0.3	16	V	_
Current	I_{Q}	-20	*	mA	* internally limited
Inhibit		1		1	
Voltage	V_{INH}	-40	45	V	_
Current	I_{INH}	-500	*	μΑ	* internally limited
Current	I_{INH}	-5	5	mA	$-0.3 \text{ V} < V_{\text{I}} < 45 \text{ V};$ t < 1 ms
					1 < 1 1113
Junction temperature	T_{j}	-40	150	°C	_
Storage temperature	$T_{ m stg}$	-50	150	°C	_
Thermal Resistances		•	•		•
Junction pin	$R_{ m thj\text{-pin}}$	_	30	K/W	measured to pin 5
Junction ambient ¹⁾	R_{thja}	_	179	K/W	zero airflow zero heat sink area

¹⁾ Worst case regarding peak temperature.

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

Table 3 Operating Range

Parameter	Symbol	Limit Values		Unit	Remarks
		Min.	Max.		
Input voltage	V_{l}	6.0	42	V	_
Inhibit input voltage	V_{INH}	-0.3	40	V	-
Junction temperature	T_{j}	-40	150	°C	_



 Table 4
 Electrical Characteristics

6.2 V < $V_{\rm I}$ < 36 V; $V_{\rm INH}$ > $V_{\rm INH,~ON}$; -40 °C < $T_{\rm j}$ < 150 °C; unless otherwise specified

Parameter	Symbol	Limit Values			Unit	Test Condition
		Min.	Тур.	Max.		
Output	1	1				1
Output voltage	V_{Q}	4.85	5.0	5.15	V	$T_{\rm j}$ = 25 °C; 1 mA < $I_{\rm Q}$ < 10 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	٧	$I_{\rm Q}$ = 10 mA
Output capacitor	C_{Q}	1	_	_	μF	ESR ≤ 10 Ω at 10 kHz
Output current	I_{Q}	15	_	70	mA	_
Current Consumption		-1	•	1	•	
Quiescent current	I_{q}	_	60	100	μΑ	$I_{\rm Q}$ < 10 mA; $V_{\rm I}$ = 13.5 V
Quiescent current (stand-by)	I_{q}	_	_	1	μΑ	$V_{\text{INH}} < V_{\text{INH, OFF}};$ $T_{\text{j}} < 85 ^{\circ}\text{C}$
Quiescent current (stand-by)	I_{q}	_	_	5	μΑ	$V_{\text{INH}} < V_{\text{INH, OFF}}$
Regulator Performance						
Load regulation	ΔV_{Q}	_	5	10	mV	$ \begin{array}{l} \text{0 mA} < I_{\text{Q}} < \!\! 10 \text{ mA}; \\ V_{\text{I}} = 6.2 \text{ V}; \\ T_{\text{j}} \! \leq \! 85 ^{\circ}\text{C} \end{array} $
Line regulation	ΔV_{Q}	_	5	10	mV	$I_{\rm Q}$ = 5 mA; $T_{\rm j}$ ≤ 85 °C
Power supply ripple rejection	PSRR	_	60	_	dB	$f_{\rm r}$ = 100 Hz; $V_{\rm r}$ = 0.5 Vpp
Logic Inhibit Input						
Inhibit ON-threshold	$V_{INH,ON}$	_	_	3.5	V	$V_{\rm Q} \ge 4.8 \ { m V}$
Inhibit OFF-threshold	$V_{INH,OFF}$	0.3	_	_	V	$V_{\rm Q} \le 0.8 \ { m V}$
Inhibit input current H-state	$I_{INH,ON}$	_	10	15	μΑ	V_{INH} = 5 V
Inhibit input current L-state	$I_{INH,OFF}$	-2	0	2	μΑ	$V_{INH} = 0 \; V$



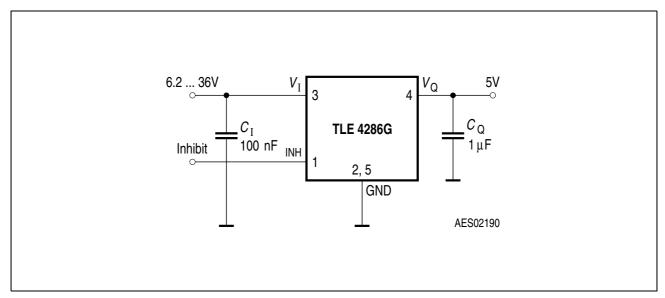
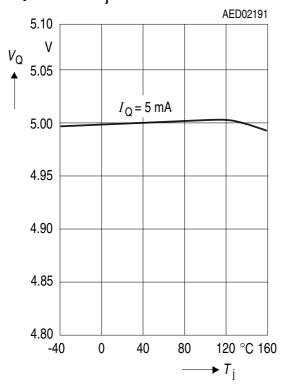


Figure 3 Application Circuit

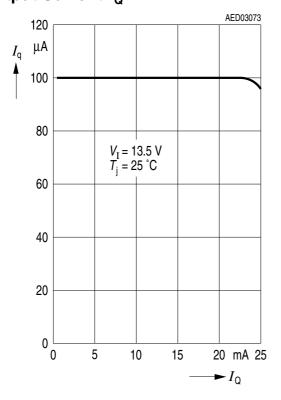


Typical Performance Characteristics

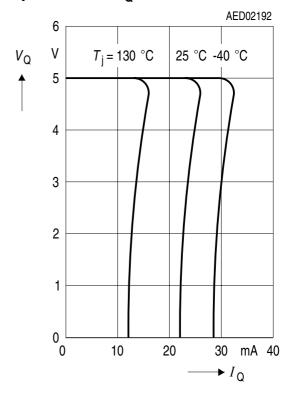
Output Voltage $V_{\rm Q}$ versus Temperature $T_{\rm i}$



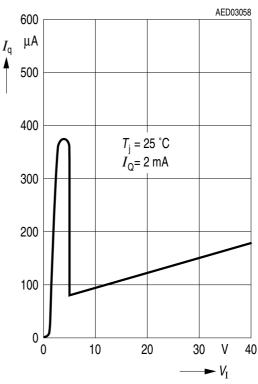
Current Consumption $I_{\rm q}$ versus Output Current $I_{\rm Q}$



Output Voltage $V_{\rm Q}$ versus Output Current $I_{\rm Q}$

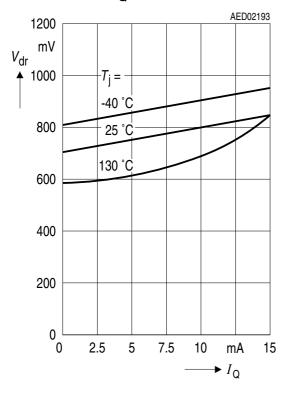


Current Consumption $I_{\rm q}$ versus Input Voltage $V_{\rm I}$

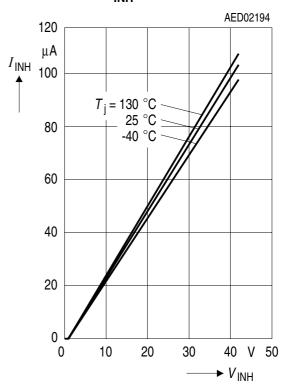




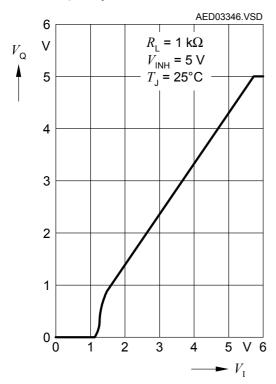
Drop Voltage $V_{\rm dr}$ versus Output Current $I_{\rm O}$



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



Output Voltage $V_{\rm Q}$ versus Input Voltage $V_{\rm I}$





Package Outlines

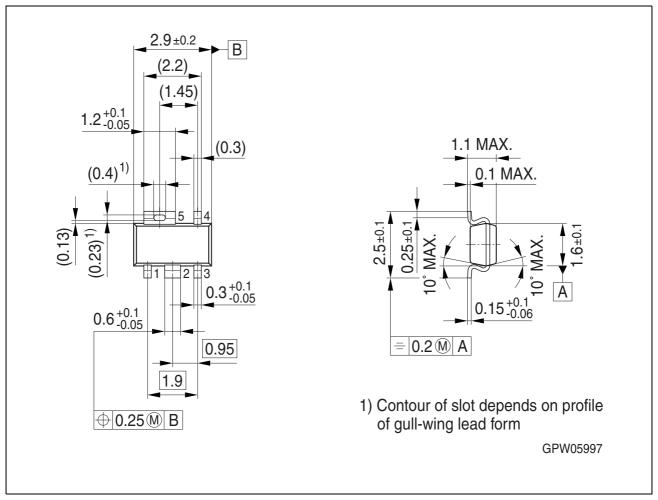


Figure 4 Outline PG-SCT-595-5

Green Product (RoHS compliant)

To meet the world-wide customer requirements for environmentally friendly products and to be compliant with government regulations the device is available as a green product. Green products are RoHS-Compliant (i.e Pb-free finish on leads and suitable for Pb-free soldering according to IPC/JEDEC J-STD-020).

You can find all of our packages, sorts of packing and others in our Infineon Internet Page "Products": http://www.infineon.com/packages.

SMD = Surface Mounted Device

Dimensions in mm



Revision History

Version	Date	Changes
Rev. 2.3	2008-04-21	Initial version of RoHS-compliant derivate of TLE 4286 G. Page 1: AEC certified statement added. Page 1 and Page 9: RoHS compliance statement and Green product feature added. Page 1 and Page 9: Package changed to RoHS compliant version. Page 1: Marking information added. Page 1: Adapted description to values given on Page 5. Not a change of electrical characteristics. Legal Disclaimer updated
Rev. 2.2	2004-01-01	Final datasheet

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