

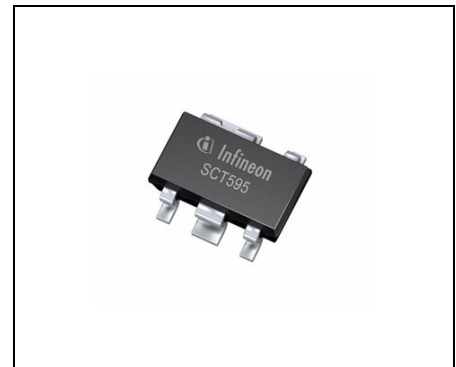
5-V Voltage Regulator

TLE 4286 G



Features

- 15 mA output current capability
- 1 μ A current consumption in standby mode
- Low quiescent current consumption
60 μ A 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.

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

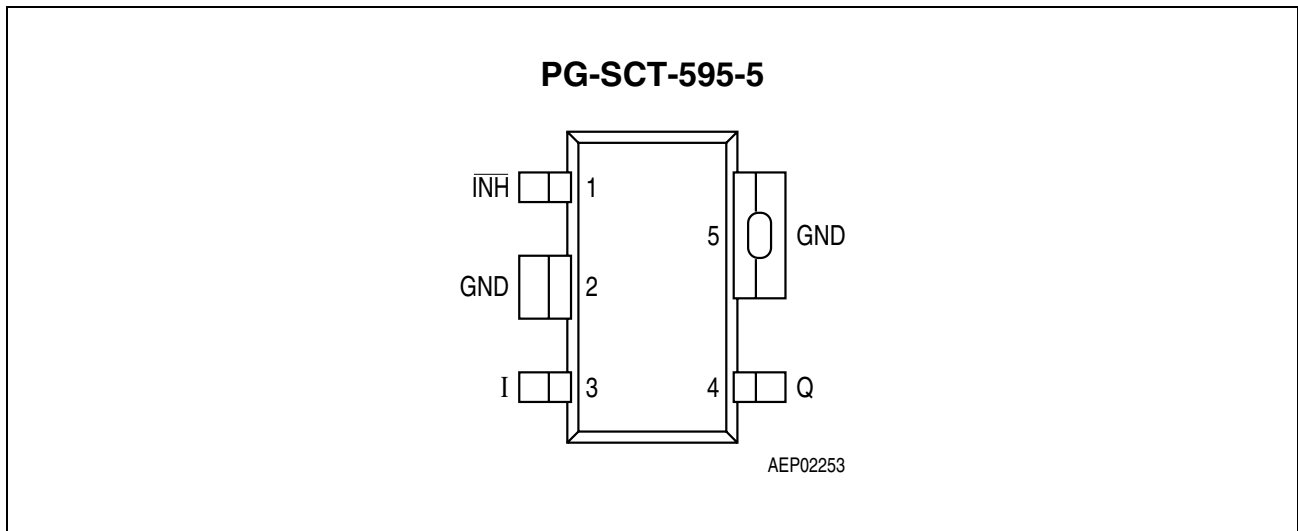


Figure 1 Pin Configuration (top view)

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 $C_Q \geq 1\text{ }\mu\text{F}$, $\text{ESR} \leq 10\text{ }\Omega$ to GND
5	GND	Ground; internally connected to pin 2

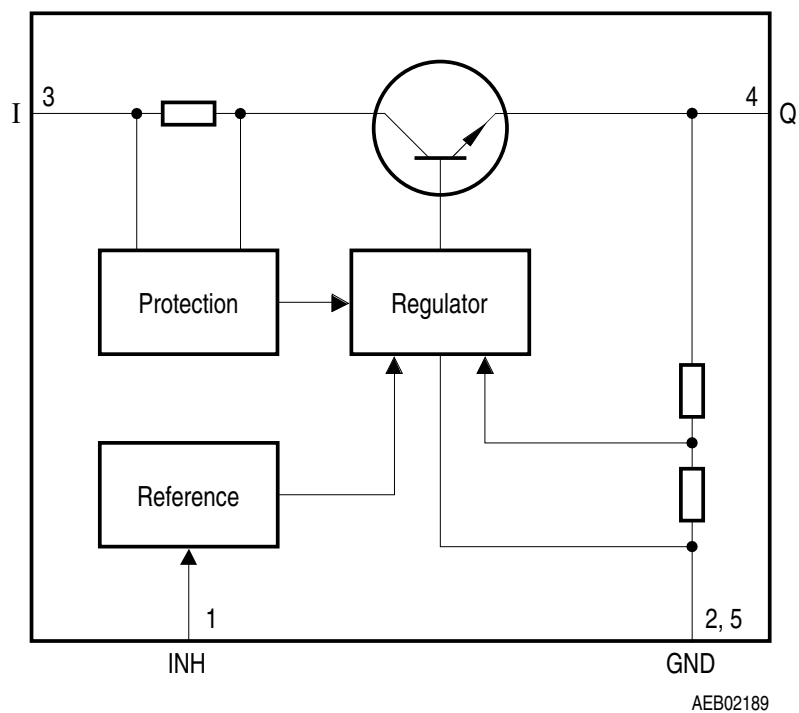


Figure 2 **Block Diagram**

Table 2 Absolute Maximum Ratings
 $-40\text{ }^{\circ}\text{C} < T_j < 150\text{ }^{\circ}\text{C}$

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 V < V_I < 45 V; t < 1 ms
Temperatures					
Junction temperature	T_j	-40	150	°C	—
Storage temperature	T_{stg}	-50	150	°C	—
Thermal Resistances					
Junction pin	$R_{thj-pin}$	—	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_I	6.0	42	V	–
Inhibit input voltage	V_{INH}	-0.3	40	V	–
Junction temperature	T_j	-40	150	$^{\circ}\text{C}$	–

Table 4 Electrical Characteristics
 $6.2\text{ V} < V_I < 36\text{ V}$; $V_{INH} > V_{INH, ON}$; $-40\text{ °C} < T_j < 150\text{ °C}$; 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	$T_j = 25\text{ }^{\circ}\text{C}$; $1\text{ mA} < I_Q < 10\text{ mA}$
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	$\text{ESR} \leq 10\text{ }\Omega$ at 10 kHz
Output current	I_Q	15	–	70	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	$V_{\text{INH}} < V_{\text{INH, OFF}}$; $T_j < 85\text{ }^{\circ}\text{C}$
Quiescent current (stand-by)	I_q	–	–	5	μA	$V_{\text{INH}} < V_{\text{INH, OFF}}$
Regulator Performance						
Load regulation	ΔV_Q	–	5	10	mV	$0\text{ mA} < I_Q < 10\text{ mA}$; $V_I = 6.2\text{ V}$; $T_j \leq 85\text{ }^{\circ}\text{C}$
Line regulation	ΔV_Q	–	5	10	mV	$I_Q = 5\text{ mA}$; $T_j \leq 85\text{ }^{\circ}\text{C}$
Power supply ripple rejection	$PSRR$	–	60	–	dB	$f_r = 100\text{ Hz}$; $V_r = 0.5\text{ V}_{\text{pp}}$
Logic Inhibit Input						
Inhibit ON-threshold	$V_{\text{INH, ON}}$	–	–	3.5	V	$V_Q \geq 4.8\text{ V}$
Inhibit OFF-threshold	$V_{\text{INH, OFF}}$	0.3	–	–	V	$V_Q \leq 0.8\text{ V}$
Inhibit input current H-state	$I_{\text{INH, ON}}$	–	10	15	μA	$V_{\text{INH}} = 5\text{ V}$
Inhibit input current L-state	$I_{\text{INH, OFF}}$	-2	0	2	μA	$V_{\text{INH}} = 0\text{ V}$

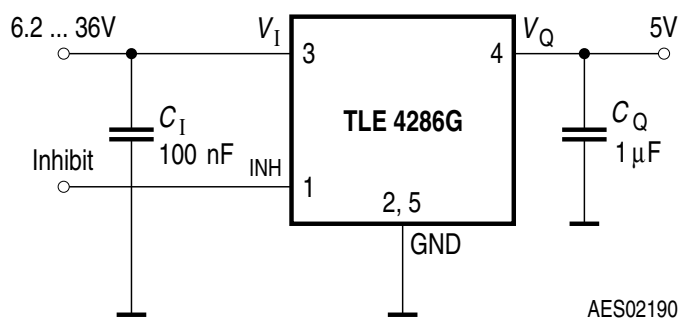
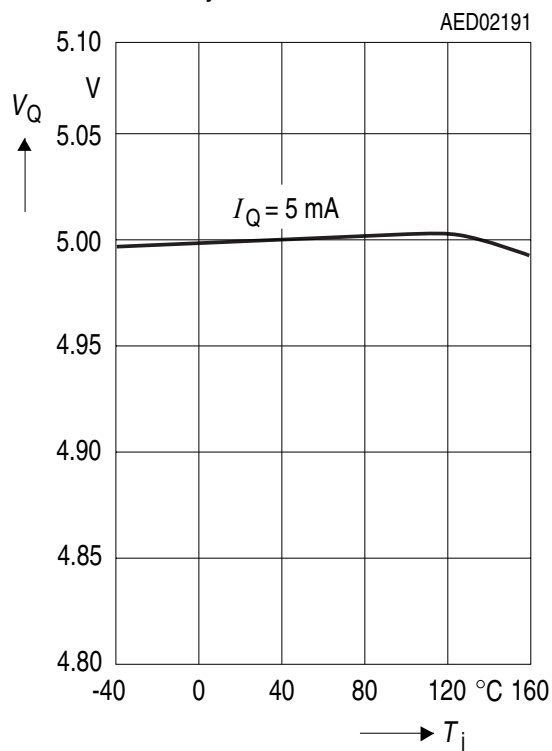


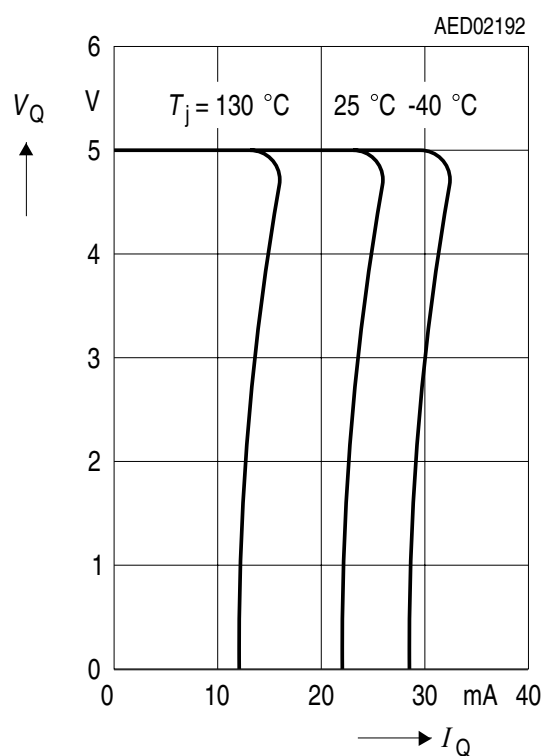
Figure 3 Application Circuit

Typical Performance Characteristics

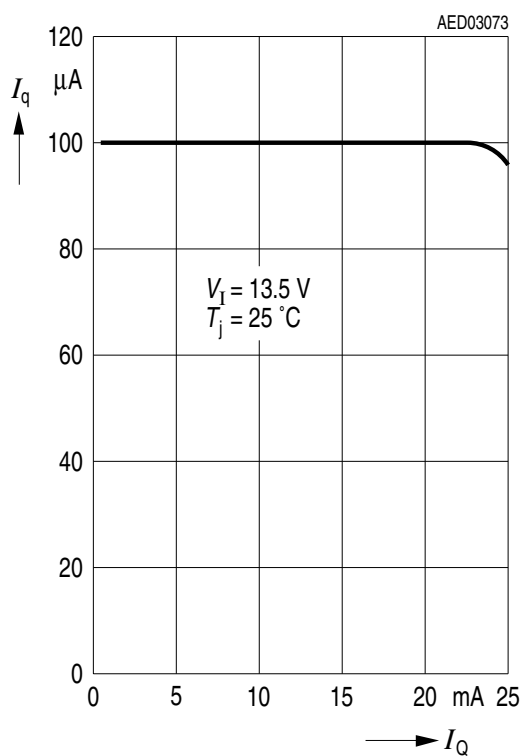
Output Voltage V_Q versus Temperature T_j



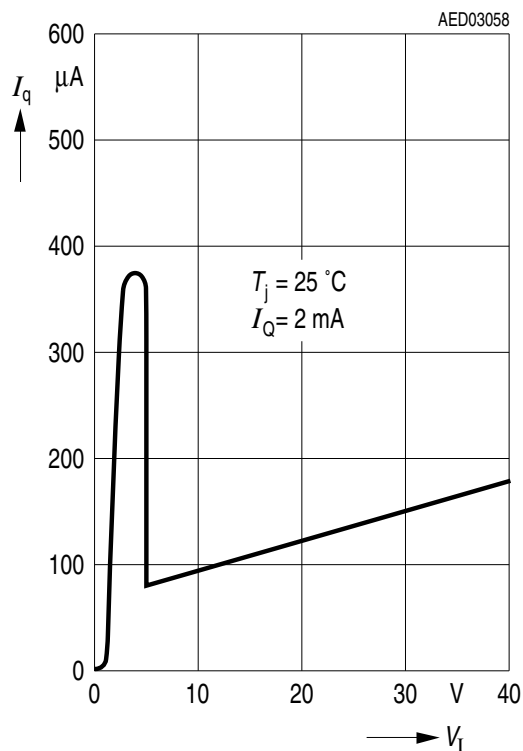
Output Voltage V_Q versus Output Current I_Q



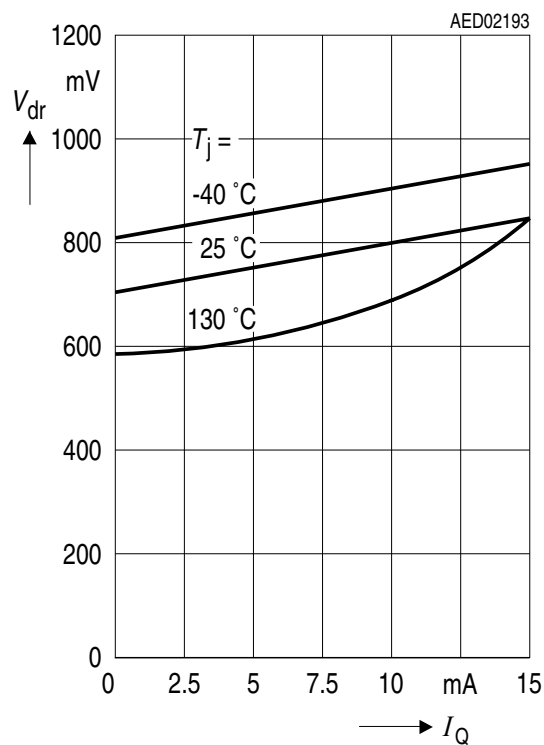
Current Consumption I_q versus Output Current I_Q



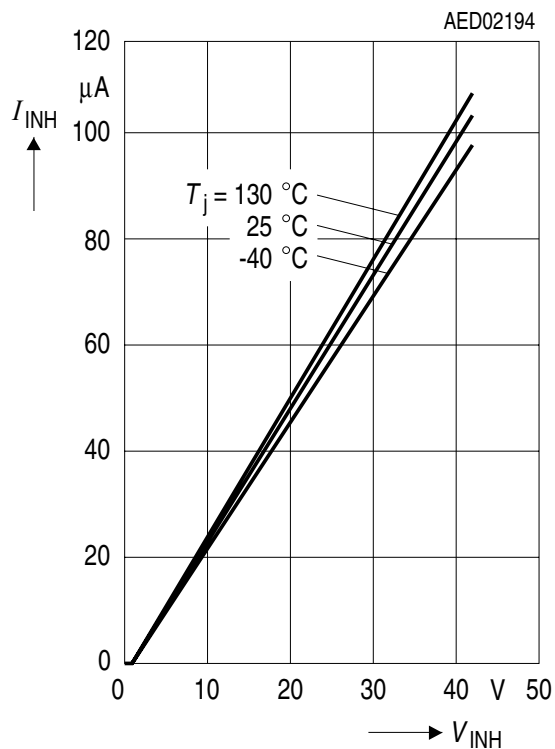
Current Consumption I_q versus Input Voltage V_I



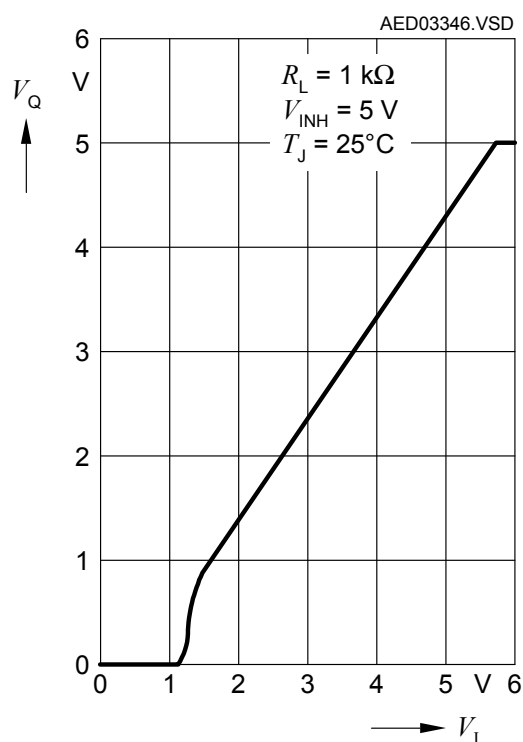
Drop Voltage V_{dr} versus Output Current I_Q



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



Output Voltage V_Q versus Input Voltage V_I



Package Outlines

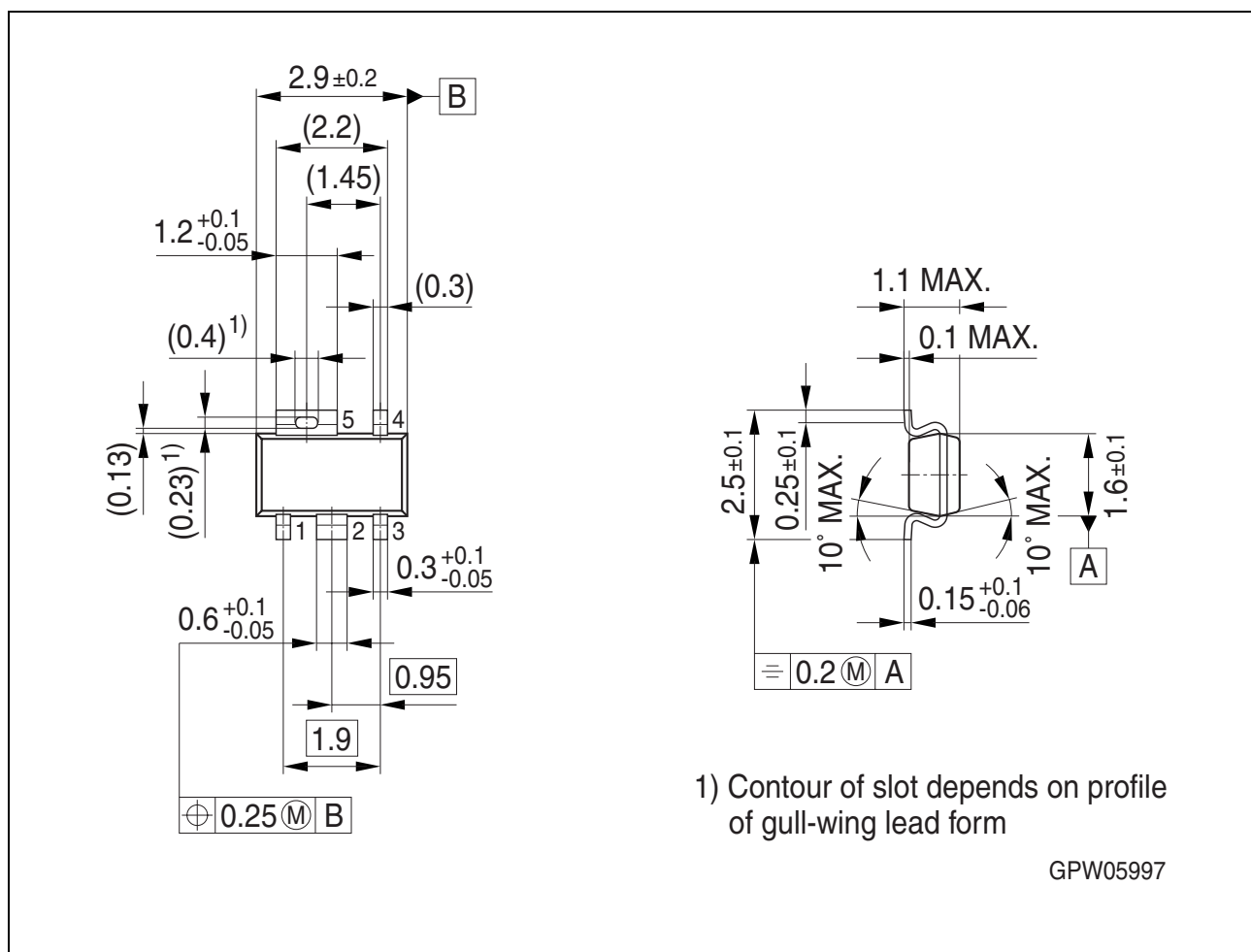


Figure 4 Outline PG-SCT-595-5

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

Edition 2008-04-21

**Published by
Infineon Technologies AG
81726 Munich, Germany**

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