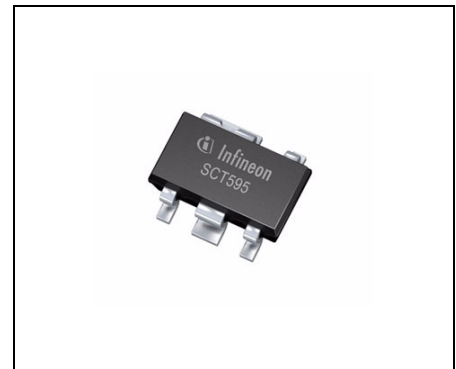




Features

- 15 mA current capability
- Low quiescent current consumption
- Power fail output
- Wide operation range: up to 45 V
- Wide temperature range: -40 °C to 150 °C
- Output protected against short circuit
- Overtemperature protection
- Very small SMD-Package PG-SCT-595-5
- Green product (RohS compliant)
- AEC qualified



PG-SCT-595-5

Functional Description

The **TLE 4285 G** is a 5-V fixed voltage regulator in a very small SMD package PG-SCT-595-5. The maximum input voltage is 45 V. The output is able to drive an output current of more than 10 mA while it regulates the output voltage within a 4% accuracy.

The Power Fail Output (open collector) is switched to low in case of under-voltage at the output pin. To reduce external components the Power Fail Output has an internal pull-up resistor of 50 kΩ which is connected to the output Q.

The device incorporates a temperature protection that disables the circuit at overtemperature.

| Type | Package | Marking |
|------------|--------------|---------|
| TLE 4285 G | PG-SCT-595-5 | B1 |

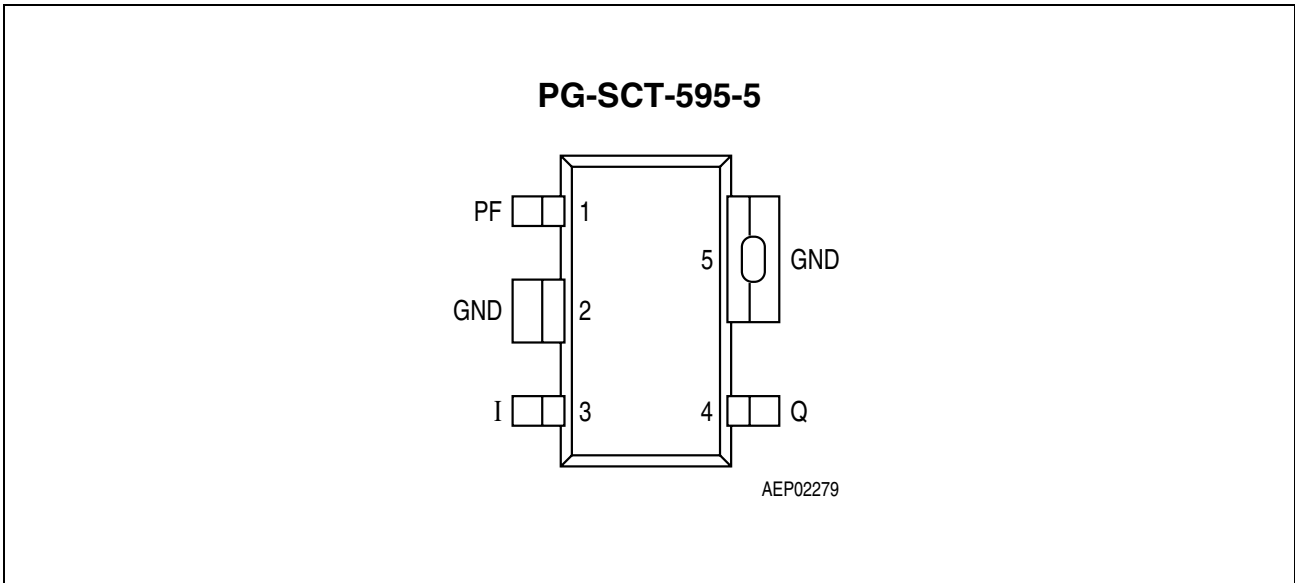


Figure 1 Pin Configuration (top view)

Table 1 Pin Definitions and Functions

| Pin No. | Symbol | Function |
|---------|--------|--|
| 1 | PF | Power Fail ; L for under-voltage; internally connected to Q via 50 kΩ pull-up resistor |
| 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 |

Functional Block Diagram

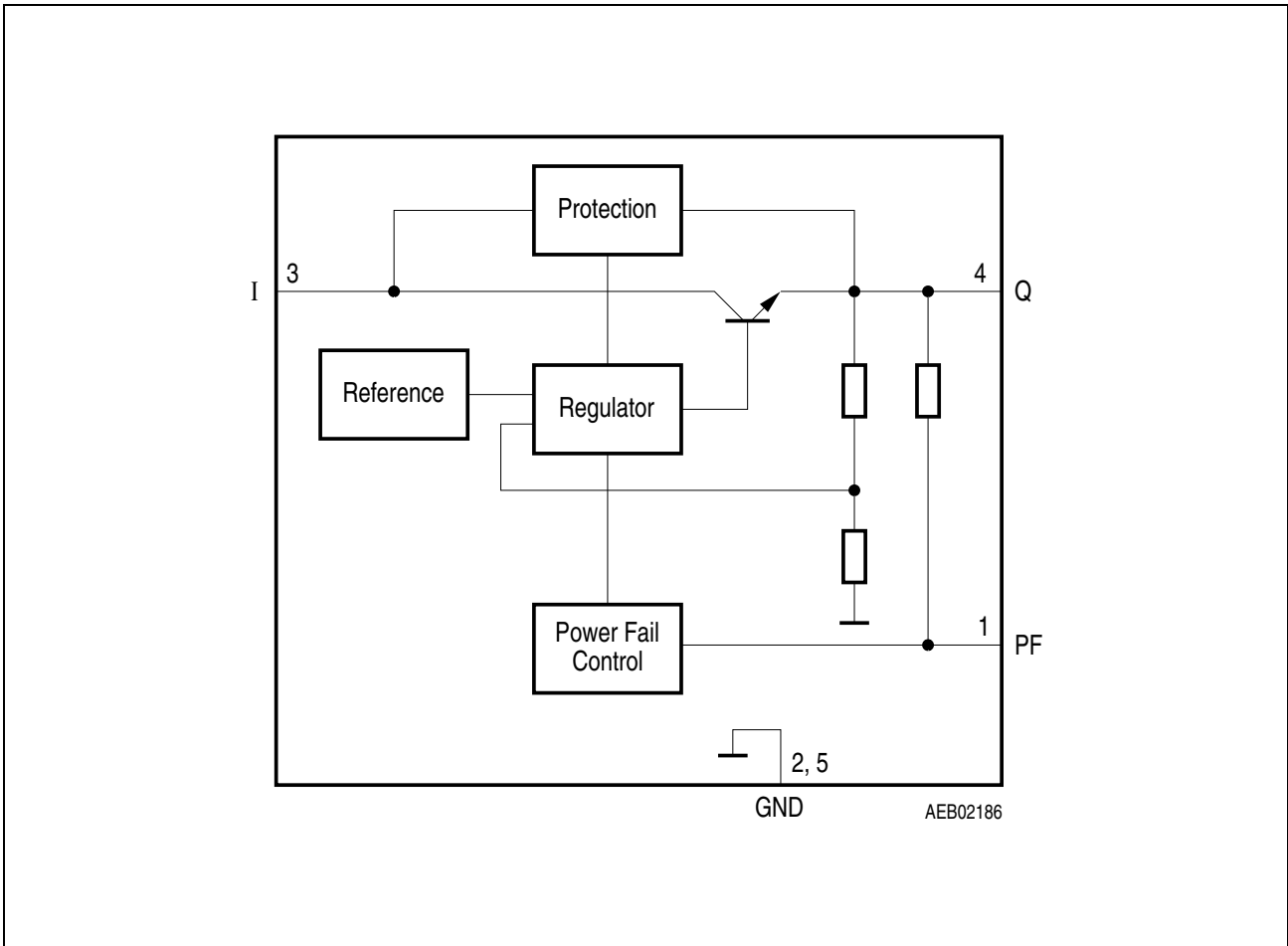


Figure 2 Block Diagram

Table 2 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 |
| Power Fail | | | | | |
| Voltage | V_{PF} | -0.3 | 45 | V | – |
| Current | I_{PF} | -500 | * | μA | * internally limited |
| 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_{thj-a} | – | 55 | K/W | ¹⁾ |

1) Package mounted on PCB $40 \times 40 \times 1.5\text{ mm}^3/6\text{ cm}^2\text{ Cu}$.

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 | 42 | V | – |
| Output current | I_Q | 15 | – | mA | – |
| Junction temperature | T_j | -40 | 150 | $^{\circ}\text{C}$ | – |

Table 4 Electrical Characteristics
 $6.2\text{ V} < V_I < 36\text{ V}$; $-40\text{ }^\circ\text{C} < T_j < 150\text{ }^\circ\text{C}$; unless otherwise specified

| Parameter | Symbol | Limit Values | | | Unit | Test Condition |
|--------------------------------|--------------|--------------|------------------|------|------------------|---|
| | | Min. | Typ. | Max. | | |
| 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 | $I_Q = 10\text{ mA}^{1)}$ |
| Output capacitor | C_Q | 1 | – | – | μF | $\text{ESR} \leq 10\ \Omega$ at 10 kHz |
| Output current | I_Q | 15 | – | 70 | mA | – |
| Current Consumption | | | | | | |
| Quiescent current | I_q | – | 100 | 150 | μA | $I_Q < 10\text{ mA}$; $V_I = 13.5\text{ V}$ |
| Regulator Performance | | | | | | |
| Load regulation | ΔV_Q | – | 5 | 10 | mV | $0\text{ mA} < I_Q < 10\text{ mA}$; $V_I = 6\text{ V}$; $T_j \leq 85\text{ }^\circ\text{C}$ |
| 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 | $f_r = 100\text{ Hz}$; $V_r = 0.5\text{ Vpp}$ |
| Power Fail Output | | | | | | |
| Power fail switching threshold | ΔV_Q | – | $V_{Q,nom} - 50$ | – | mV | $V_{PF} < 1\text{ V}$ |
| Power fail low voltage | $V_{PF,low}$ | – | 0.15 | 0.3 | V | $I_{PF} = 0.1\text{ mA}$; $V_Q = 4.5\text{ V}$ |
| Power fail leakage current | I_{PFLK} | – | – | 10 | μA | $R_{ext} = 47\text{ k}\Omega$ |
| Power fail pull-up | R_{PF} | 30 | 50 | 70 | $\text{k}\Omega$ | internally connected to V_Q |

 1) Measured when the output voltage V_Q has dropped 100 mV from the nominal value.

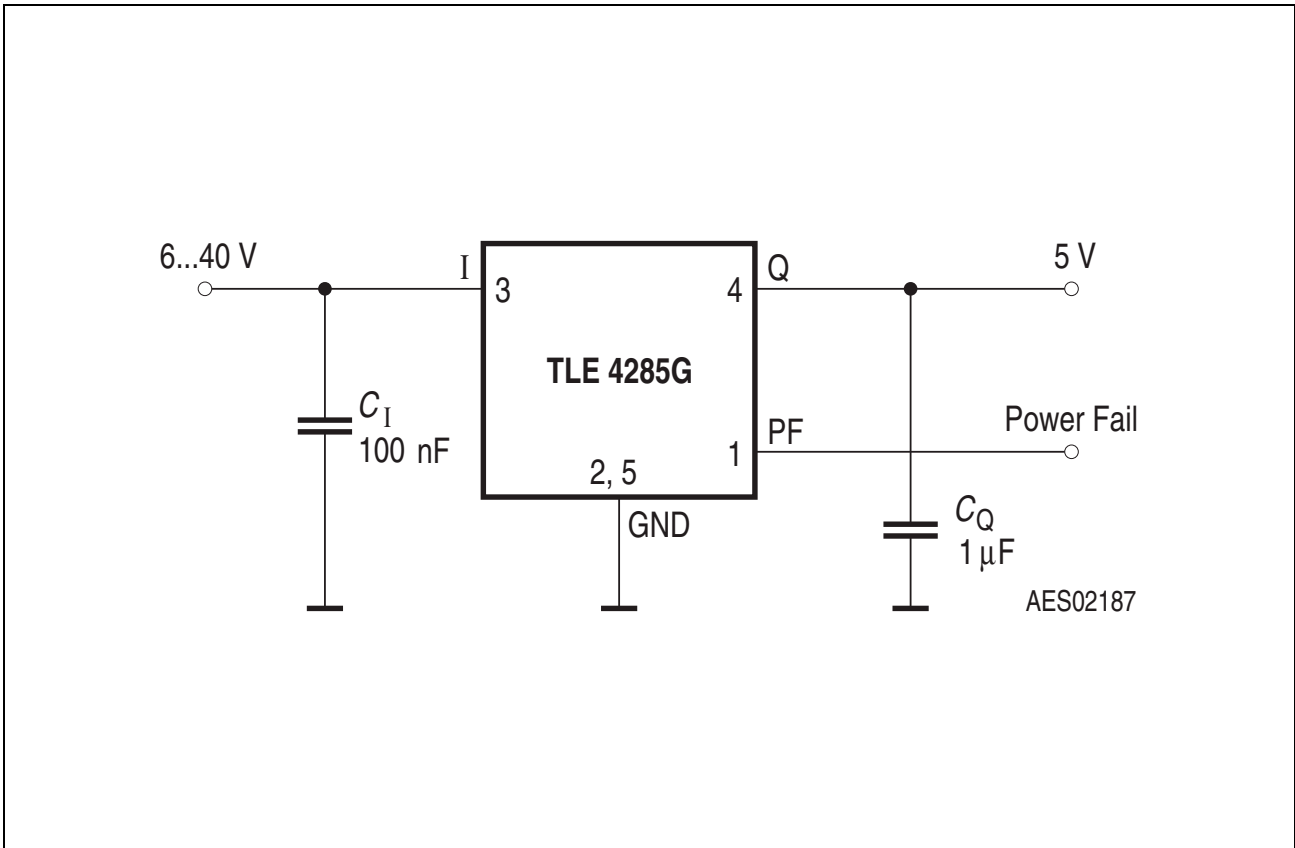
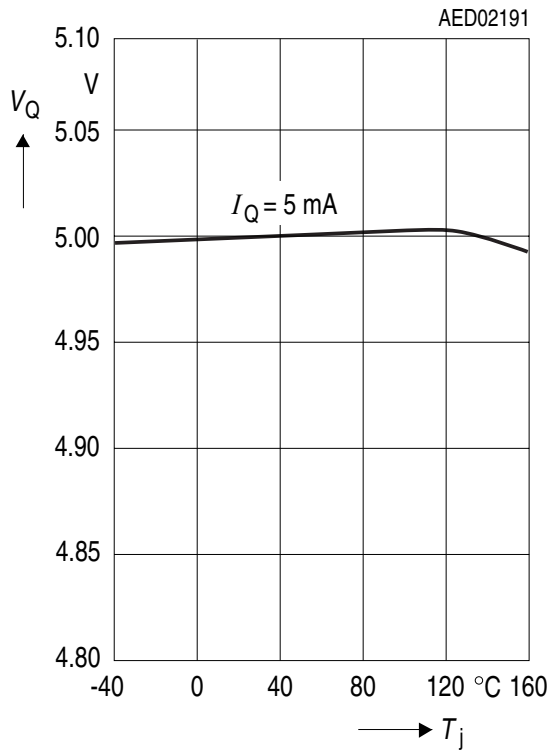


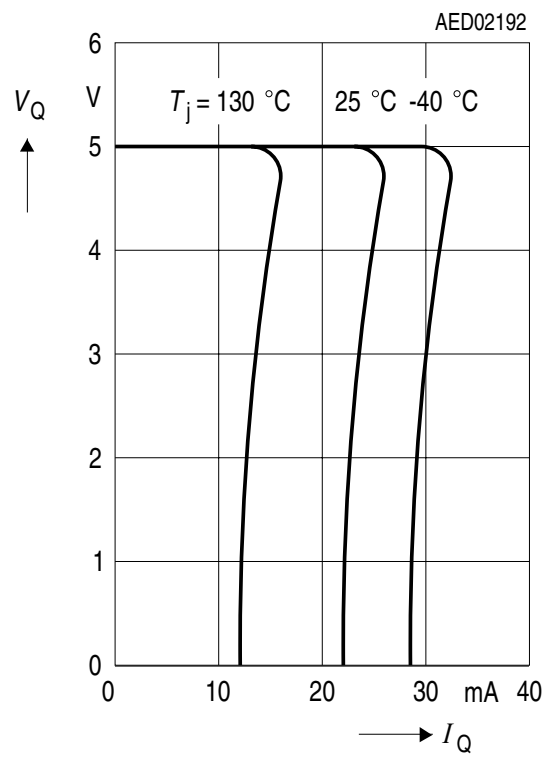
Figure 3 Application Circuit

Typical Performance Characteristics

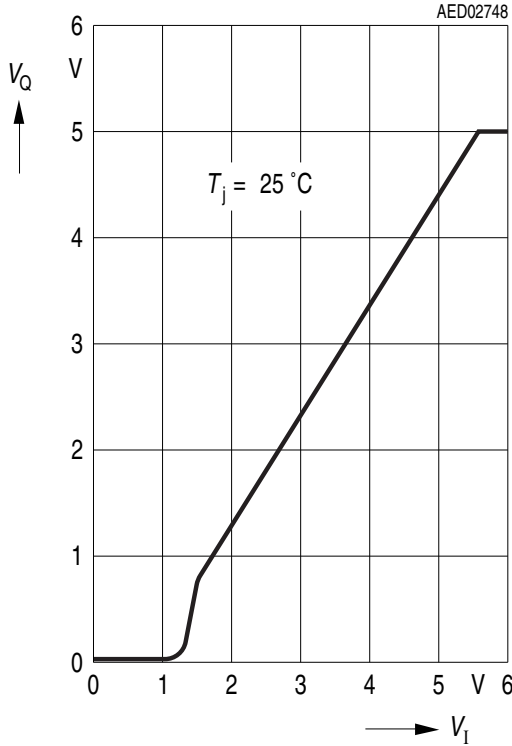
Output Voltage V_Q versus Temperature T_j



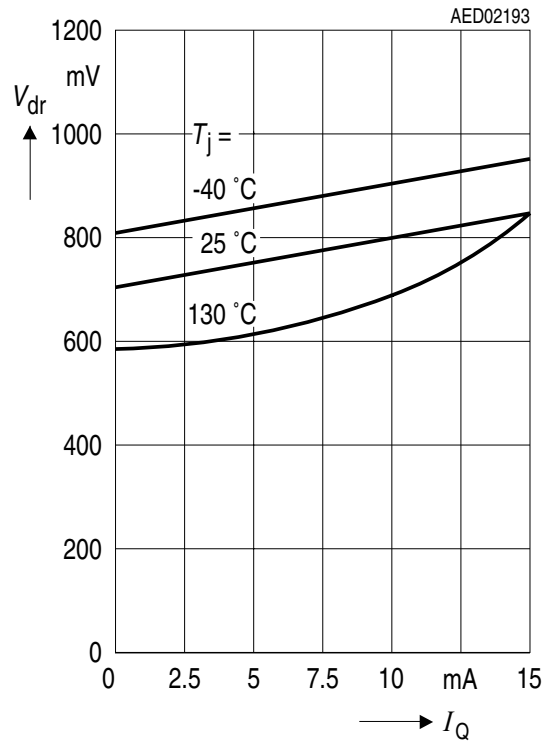
Output Voltage V_Q versus Output Current I_Q



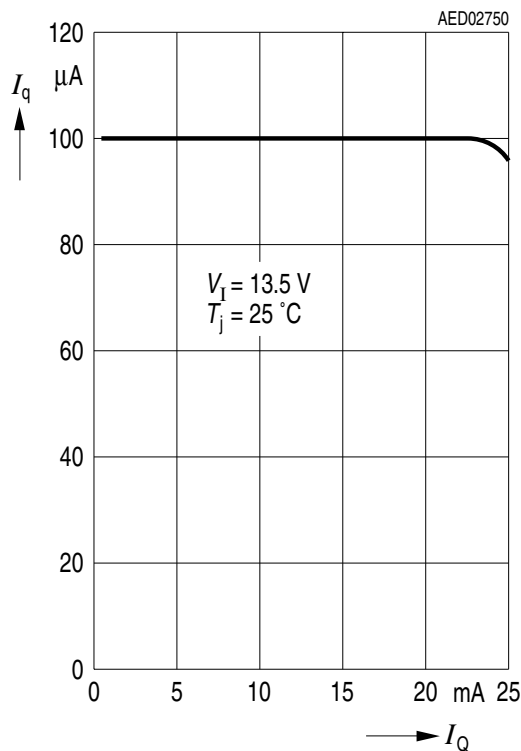
Output Voltage V_Q versus Input Voltage V_I



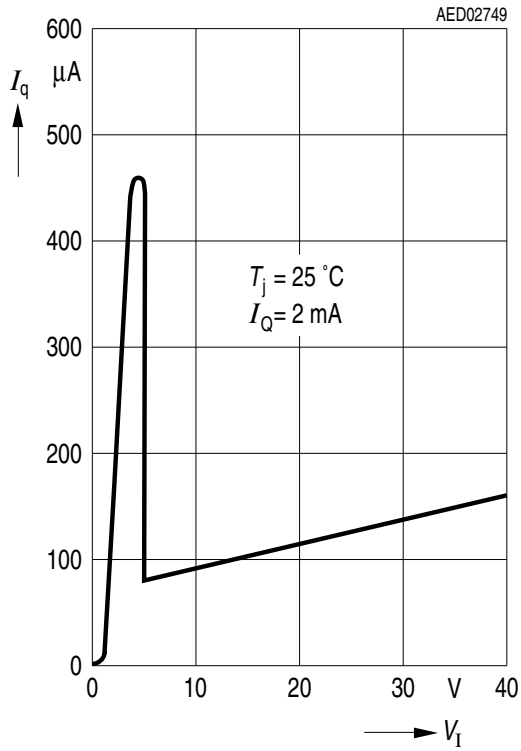
Drop Voltage V_{dr} versus Output Current I_Q



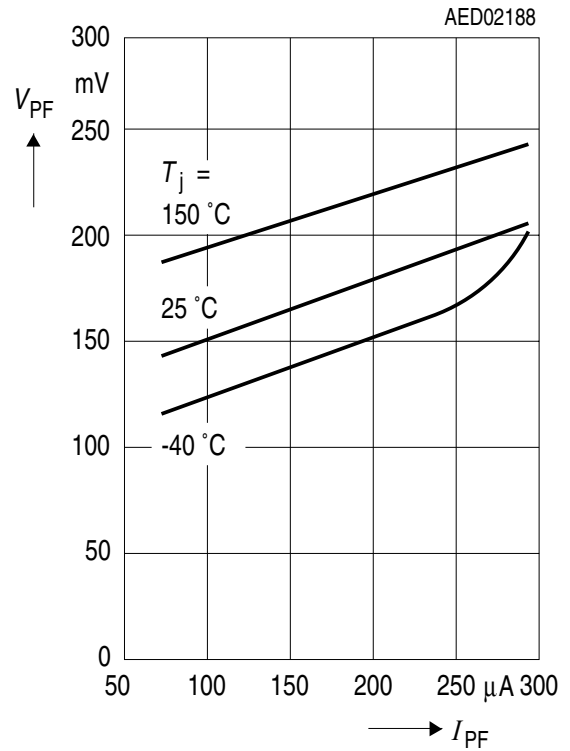
Current Consumption I_q versus Output Current I_Q



Current Consumption I_q versus Input Voltage V_I



Power Fail Low Voltage V_{PF} versus Power Fail Current I_{PF}



Package Outlines

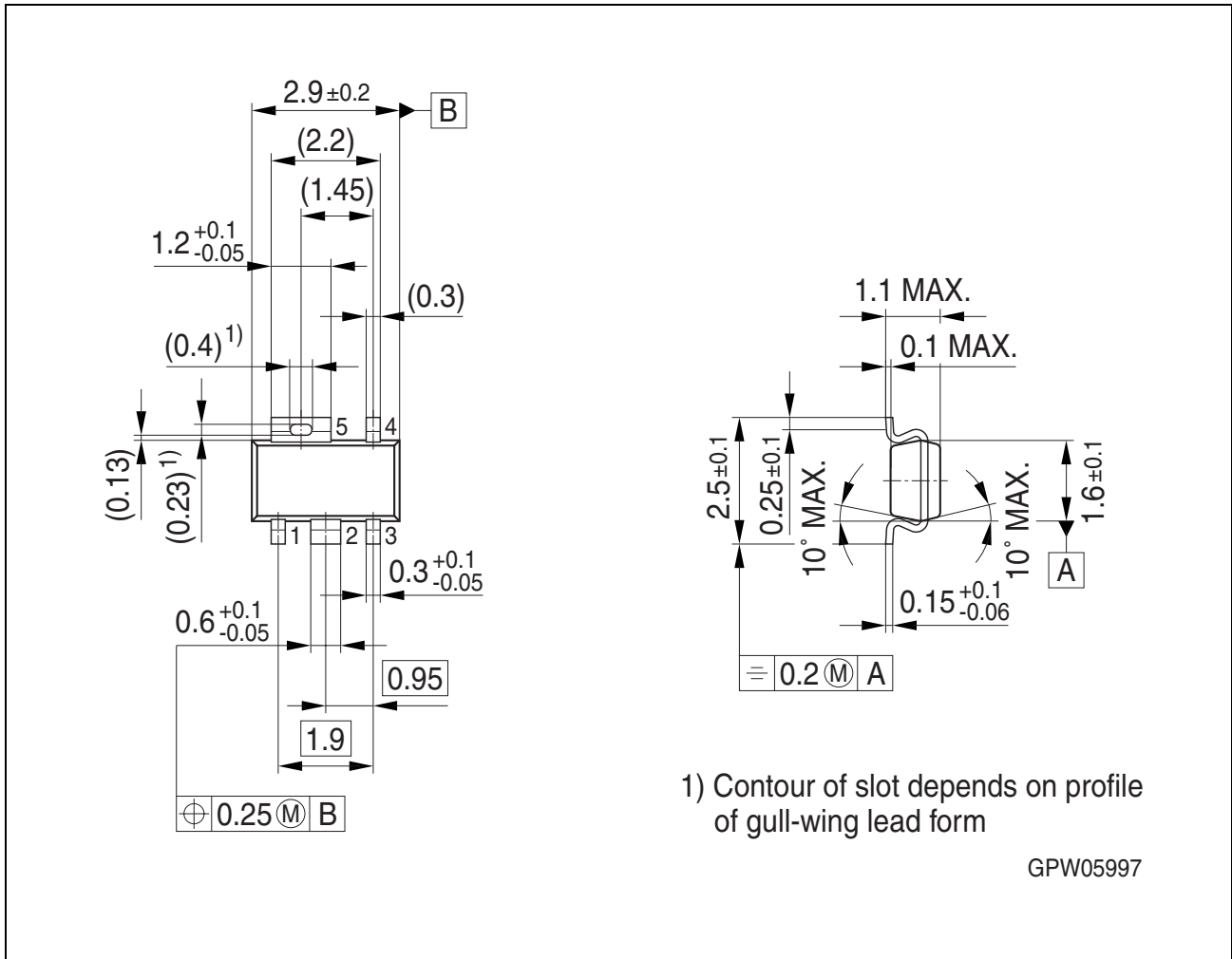


Figure 4 Outline PG-SCT-595-5

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. 2.2 | 2008-04-21 | Initial version of RoHS-compliant derivate of TLE 4285 G Page 1 : AEC certified statement added. Page 1 and Page 10 : RoHS compliance statement and Green product feature added. Page 1 and Page 10 : 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. 2.1 | 2004-01-01 | Final datasheet |

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