

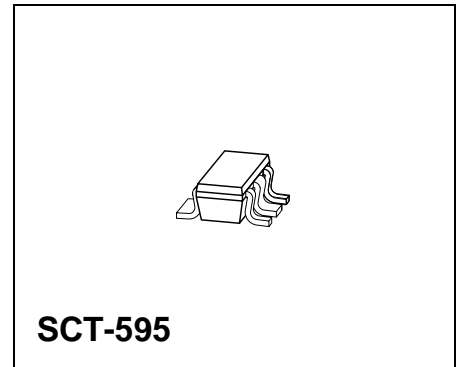
5-V Voltage Regulator

TLE 4285 G

Preliminary Data

Features

- Wide operation range: 6 V to 45 V
- Wide temperature range: – 40 °C to 150 °C
- Low quiescent current consumption: 80 μ A
- Output protected against short circuit
- Over-temperature protection
- Power fail output
- SMD-Package SCT-595
- Power Fail Output



Type	Ordering Code	Package
TLE 4285 G	Q67006-A9328	SCT-595

Functional Description

The **TLE 4285 G** is a 5-V low-drop fixed voltage regulator in a very small SMD package SCT-595. The maximum input voltage is 45 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 Power Fail Output (open collector) is switched to low in case of under-voltage at the output pin.

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

Pin Configuration

(top view)

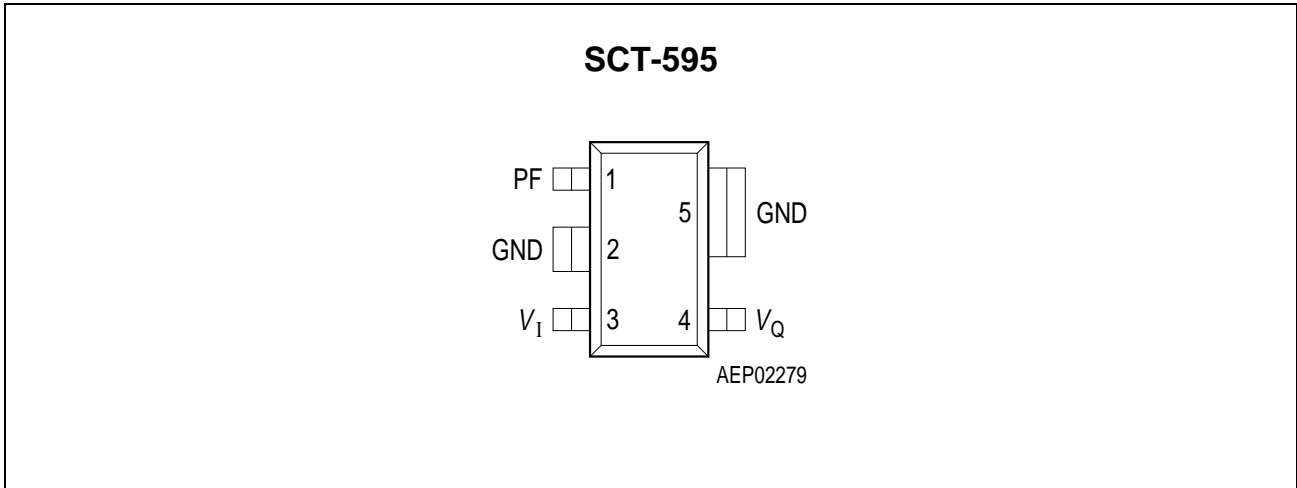


Figure 1

Pin Definitions and Functions

Pin No.	Symbol	Function
1	PF	Power Fail; L for under-voltage
2	GND	Ground; connected to pin 5
3	V_I	Input voltage
4	V_Q	Output voltage; must be blocked by a capacitor $C_Q \leq 1 \mu\text{F}$, $\text{ESR} \leq 10 \Omega$ to GND
5	GND	Ground; connected to pin 2

Functional Block Diagram

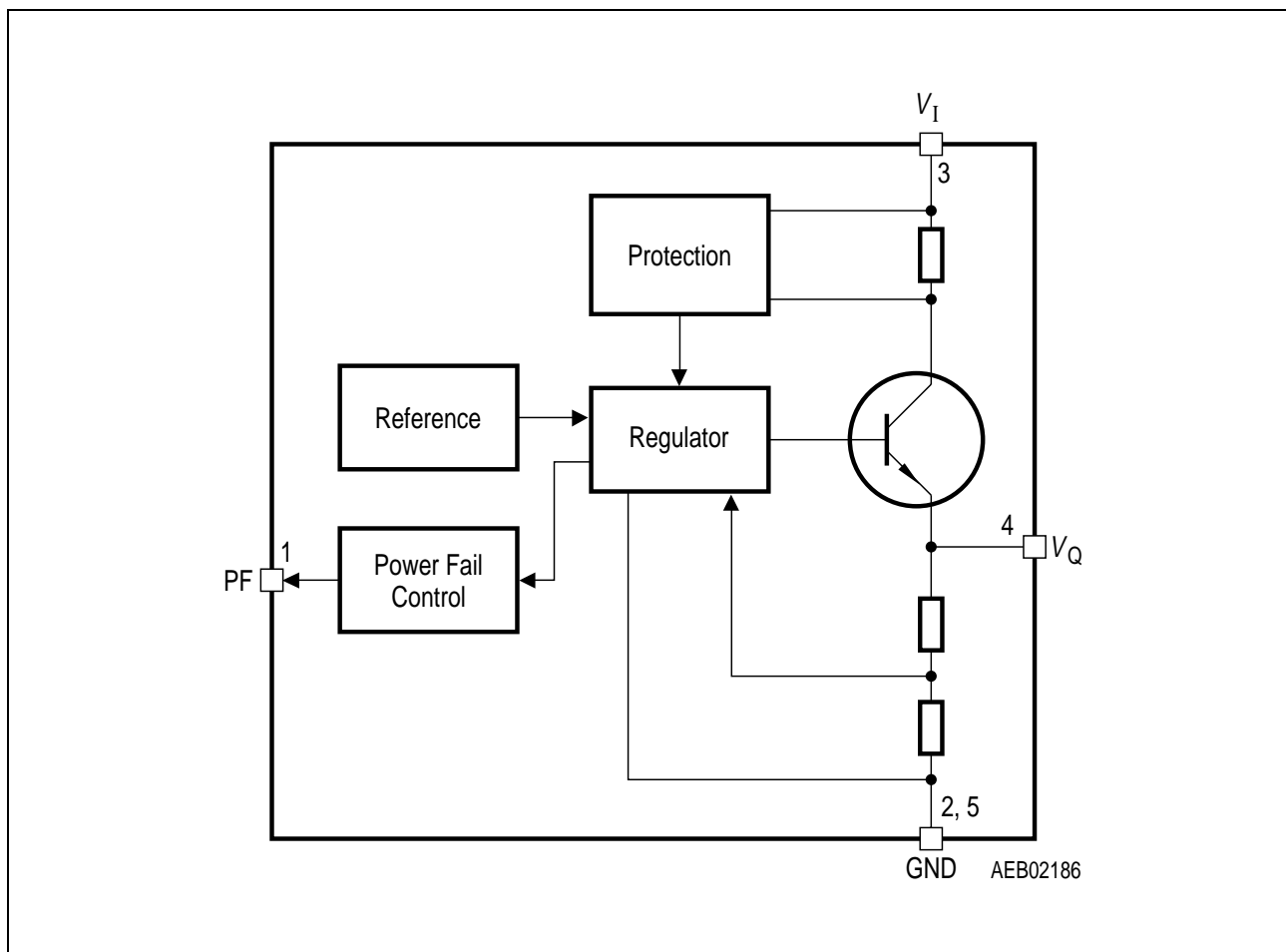


Figure 2
Block Diagram

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	¹⁾ 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	°C	–
Storage temperature	T_{stg}	- 50	150	°C	–

Thermal Resistances

Junction pin	$R_{thj-pin}$	–	30	K/W	measured to pin 5
Junction ambient	R_{thja}	–	50	K/W	¹⁾

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

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

Operating Range

Parameter	Symbol	Limit Values		Unit	Remarks
		min.	max.		
Input voltage	V_I	6	45	V	–
Output current	I_Q	–	10	mA	–
Junction temperature	T_j	– 40	150	°C	–

Electrical Characteristics

6.2 V < V_I < 36 V; - 40 °C < T_j < 150 °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}	–	0.8	–	V	$I_Q = 10\text{ mA}$
Output capacitor	C_Q	1	–	–	μF	$\text{ESR} \leq 10\ \Omega$ at 10 kHz

Current Consumption

Quiescent current	I_Q	–	80	140	μA	$I_Q < 10\text{ mA};$ $I_I = 12\text{ V}$
-------------------	-------	---	----	-----	---------------	--

Regulator Performance

Load regulation	ΔV_Q	–	5	20	mV	$0\text{ mA} < I_Q < 10\text{ mA};$ $V_I = 6\text{ V};$ $T_j = 25\text{ °C}$
Line regulation	ΔV_Q	–	5	20	mV	$I_Q = 5\text{ mA};$ $T_j = 25\text{ °C}$
Power supply ripple rejection	$PSRR$	–	60	–	dB	$f_r = 100\text{ Hz};$ $V_r = 0.5\ V_{SS}$

Power Fail Output

Power fail threshold	V_{QPF}	–	4.9	–	V	$V_{PF} < 1\text{ V}$
Power fail low voltage	$V_{PF, low}$	–	150	200	mV	$I_{PF} = 0.1\text{ mA}$
Power fail leakage current	I_{PFLK}	–	–	10	μA	$R_{\text{extern}} = 47\text{ k}\Omega$ to V_Q
Power fail pull up	R_{PF}	25	50	75	k Ω	internal connected to V_Q

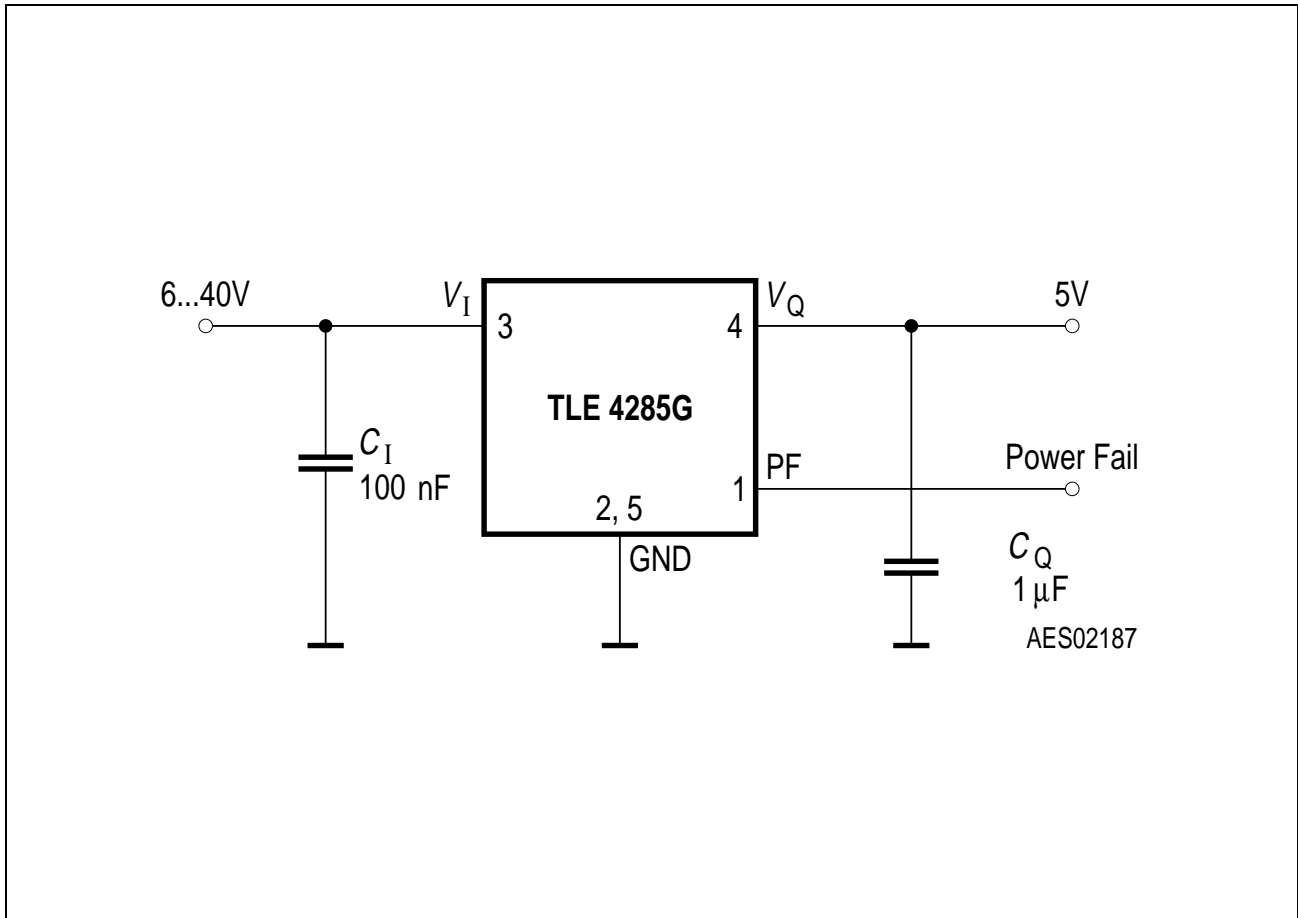
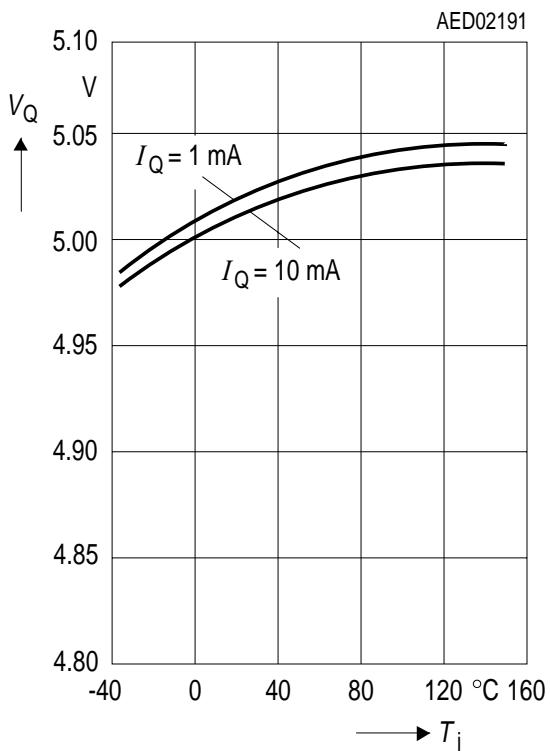
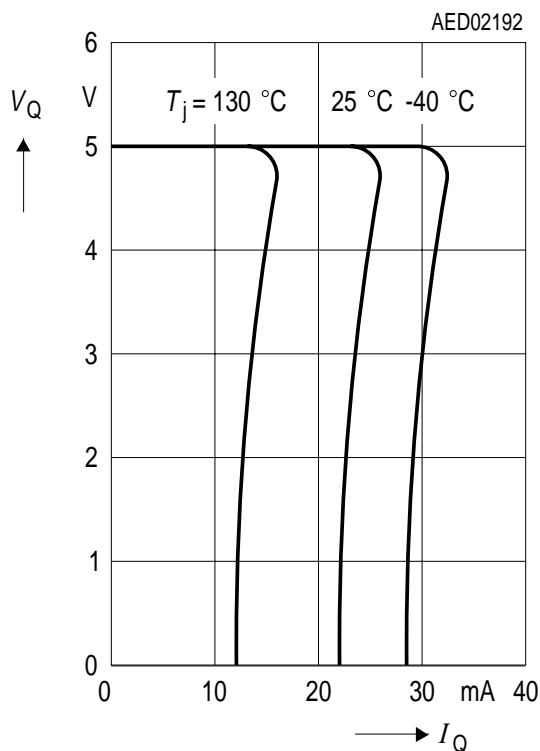


Figure 3
Application Circuit

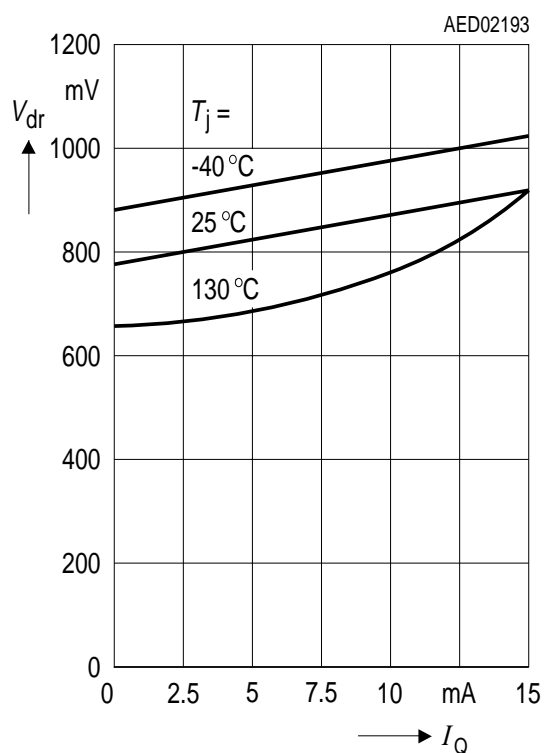
Output Voltage V_Q versus Temperature T_j



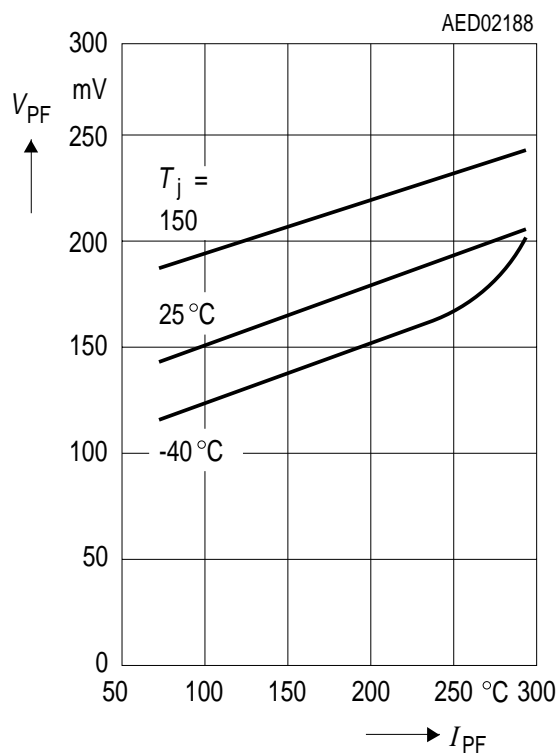
Output Voltage V_Q versus Output Current I_Q



Drop Voltage V_{dr} versus Output Current I_Q

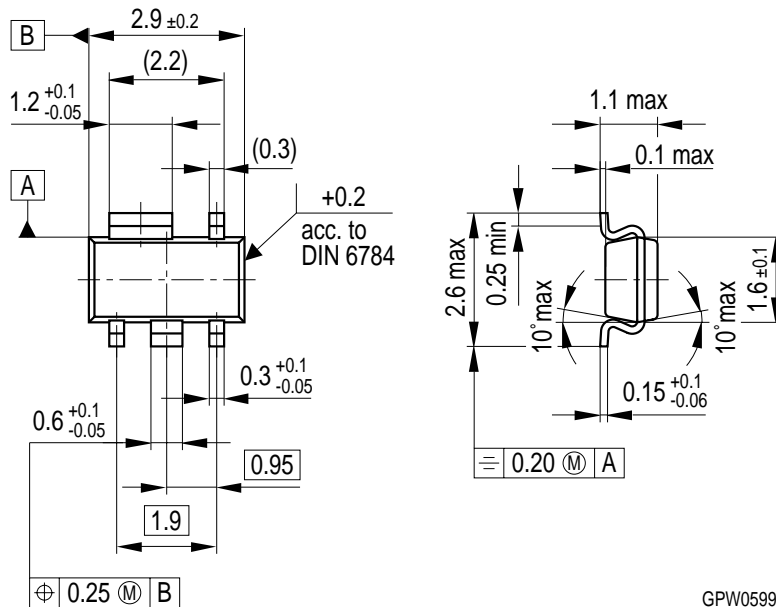


Power Fail Low Voltage V_{PF} versus Power Fail Current I_{PF}



Package Outlines

SCT-595
(Plastic Dual Small Outline)



Sorts of Packing

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

SMD = Surface Mounted Device

Dimensions in mm