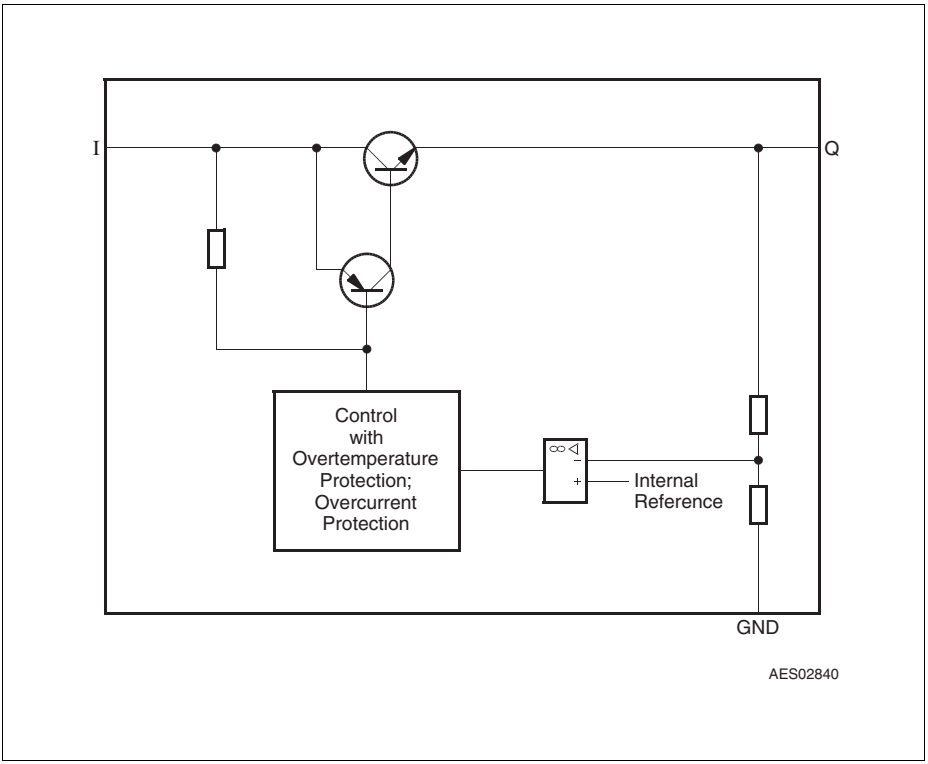


Figure 1 Block Diagram for Fixed Output Voltage IFX1117ME V33

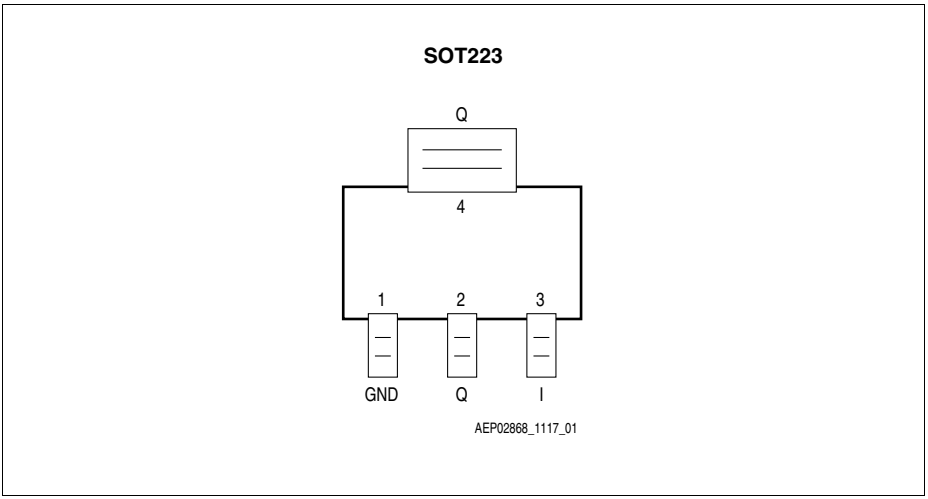


Figure 2 **Pin Configuration IFX1117ME V33** (top view)

Table 1 **Pin Definitions and Functions IFX1117ME V33**

Pin No.	Symbol	Function
1	GND	**Ground**
2	Q	**Output;** Connect output pin to GND via a capacitor $C_Q \geq 10\ \mu F$ with ESR $\leq 20\ \Omega$ (see also graph “Region of Stability”)
3	I	**Input**
4 (TAB)	Q	**Output;** Connect to pin 2 and heatsink area on PCB

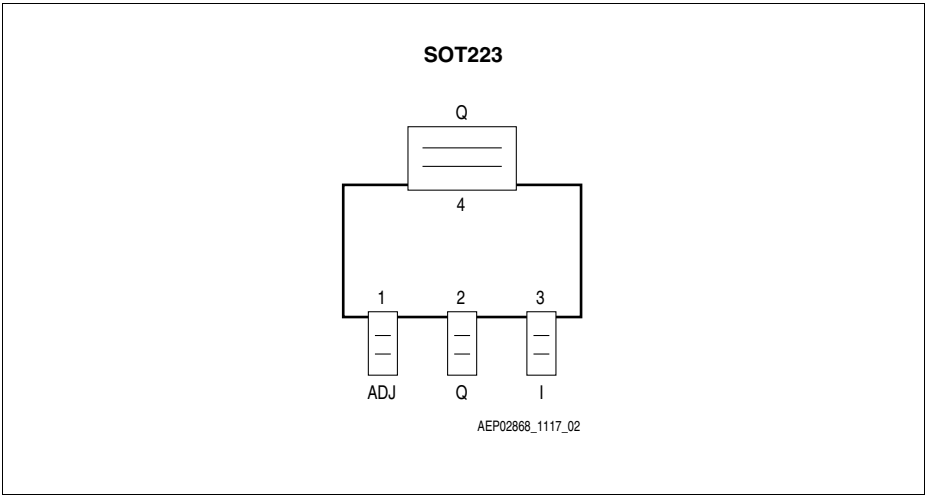


Figure 3 **Pin Configuration IFX1117ME V** (top view)

Table 2 **Pin Definitions and Functions IFX1117ME V**

Pin No.	Symbol	Function
1	ADJ	**Adjust;** defines output voltage level by external voltage divider between Q, ADJ and GND.
2	Q	**Output;** Connect output pin to GND via a capacitor $C_Q \geq 10\ \mu F$ with ESR $\leq 20\ \Omega$ (see also graph “Region of Stability”).
3	I	**Input**
4 (TAB)	Q	**Output;** Connect to pin 2 and heatsink area on PCB

Table 3 Absolute Maximum Ratings

Parameter	Symbol	Limit Values		Unit	Test Condition
		Min.	Max.		
Input - Output Voltage Difference (variable device only)					
Voltage	V_I - V_Q	-0.3	20	V	–
Input Voltage (fixed voltage version only)					
Voltage	V_I	-0.3	20	V	–
Output					
Voltage	V_Q	-0.3	20	V	–
Current	I_Q	–	–	–	Internally limited
ESD Rating					
Electrostatic discharge voltage	V_{ESD}	-2	2	kV	Human Body Model
Temperature					
Storage temperature	T_{stg}	-50	150	°C	–
Junction temperature	T_j	-40	150	°C	–

Note: Stresses above those listed here may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Table 4 Operating Range

Parameter	Symbol	Limit Values		Unit	Remarks
		Min.	Max.		
Input Voltage	V_I	V_Q + V_{DR}	15	V	–
Junction temperature	T_j	0	125	°C	–
Table 5 Thermal Resistance					
Junction ambient	R_{thja}	–	164	K/W	PG-SOT223, footprint only.
		–	81	K/W	PG-SOT223, 300 mm^2 heat sink area
Junction case	R_{thjc}	–	4	K/W	–

Note: In the operating range, the functions given in the circuit description are fulfilled.

Characteristics 3.3 V Fixed Output Voltage Device IFX1117ME V33
0 °C < T_j < 125 °C; V_I = 5 V, I_Q = 10 mA; unless otherwise specified.

Parameter	Symbol	Limit Values			Unit	Measuring Conditions
		min.	typ.	max.		
Output voltage	V_Q	3.235	3.300	3.365	V	0 mA ≤ I_Q ≤ 800 mA 4.7 V ≤ V_I ≤ 10 V
Output voltage	V_Q	–	3.300	–	V	0 mA ≤ I_Q ≤ 1000 mA; 4.7 V ≤ V_I ≤ 15V
Line regulation	ΔV_Q	–	1	6	mV	4.7 V ≤ V_I ≤ 15V
Load regulation	ΔV_Q	–	1	10	mV	0 mA ≤ I_Q ≤ 800 mA;[1]
		–	2	–	mV	0 mA ≤ I_Q ≤ 1.0 A[1]
Drop voltage	V_{DR}	–	1.00	1.10	V	I_Q = 100 mA[2]
Drop voltage	V_{DR}	–	1.05	1.15	V	I_Q = 500 mA[2]
Drop voltage	V_{DR}	–	1.10	1.20	V	I_Q = 800 mA[2]
Drop voltage	V_{DR}	–	1.30	1.40	V	I_Q = 1.0 A[2]
Current consumption; $I_q = I_I - I_Q$	I_q	–	5	10	mA	I_Q = 10 mA
Temperature stability	ΔV_Q	–	16.5	–	mV	[3]
Long Term Stability	–	–	0.3	–	%	[3]
Current limit	I_{Qmax}	1100	–	2250	mA	V_Q = 0.5 V
RMS Output Noise	–	–	30	–	ppm	ppm of V_Q, T_j = 25 °C 10 Hz ≤ f ≤ 10 kHz[3]
Power Supply Ripple Rejection	$PSRR$	60	65	–	dB	f_r = 120 Hz, V_r = 1 V_{PP}[3]

1) Measured at constant junction temperature
2) Drop voltage measured when the output voltage has dropped 100 mV from the nominal value obtained at V_I = 5.0 V.
3) Specified by design; not subject to production test.

Characteristics Adjustable Output Voltage Device IFX1117ME V
0 °C < T_j < 125 °C; V_I = 5 V, I_Q = 10 mA; unless otherwise specified.

Parameter	Symbol	Limit Values			Unit	Measuring Conditions
		min.	typ.	max.		
Reference voltage	V_Q	1.225	1.250	1.270	V	10 mA ≤ I_Q ≤ 800 mA; 1.4 V ≤ (V_I-V_Q) ≤ 10 V
Output voltage	V_Q	–	1.250	–	V	10 mA ≤ I_Q ≤ 1000 mA; 2.65 V ≤ V_I ≤ 15 V
Line regulation	ΔV_Q	–	0.035	0.2	%[1]	1.5 V ≤(V_I-V_Q)≤ 13.75 V
Load regulation	ΔV_Q	–	0.2	0.4	%[1]	10 mA ≤ I_Q ≤ 800 mA;[2]
		–	0.25	–	%[1]	10 mA ≤ I_Q ≤ 1.0 A [2]
Drop voltage	V_{DR}	–	1.00	1.10	V	I_Q = 100 mA [3]
Drop voltage	V_{DR}	–	1.05	1.15	V	I_Q = 500 mA [3]
Drop voltage	V_{DR}	–	1.10	1.20	V	I_Q = 800 mA [3]
Drop voltage	V_{DR}	–	1.30	1.40	V	I_Q = 1.0 A [3]
Minimum Load Current [4]	I_q	–	1.7	5.0	mA	V_I = 15 V
Adjust Current	I_{ADJ}	–	100	120	µA	I_Q = 10 mA
Adjust Current Change	ΔI_{ADJ}	–	2	5	µA	1.4 V ≤(V_I-V_Q)≤ 13.6 V; 10 mA ≤ I_Q ≤ 800 mA
Temperature stability	ΔV_Q	–	0.5	–	%[1]	[5]
Long Term Stability	–	–	0.3	–	%[1]	[5]
Current limit	I_{Qmax}	1100	–	2250	mA	V_Q = 0.5 V
RMS Output Noise	–	–	30	–	ppm	ppm of V_Q, T_j = 25 °C 10 Hz ≤ f ≤ 10 kHz [5]
Power Supply Ripple Rejection	$PSRR$	65	70	–	dB	f_r = 120 Hz, V_r = 1 V_{PP} [5]

1) Related to V_Q
2) Measured at constant junction temperature
3) Drop voltage measured when the output voltage has dropped 100 mV from the nominal value obtained at V_I = 5.0 V.
4) Minimum load current required to maintain regulation
5) Specified by design; not subject to production test.

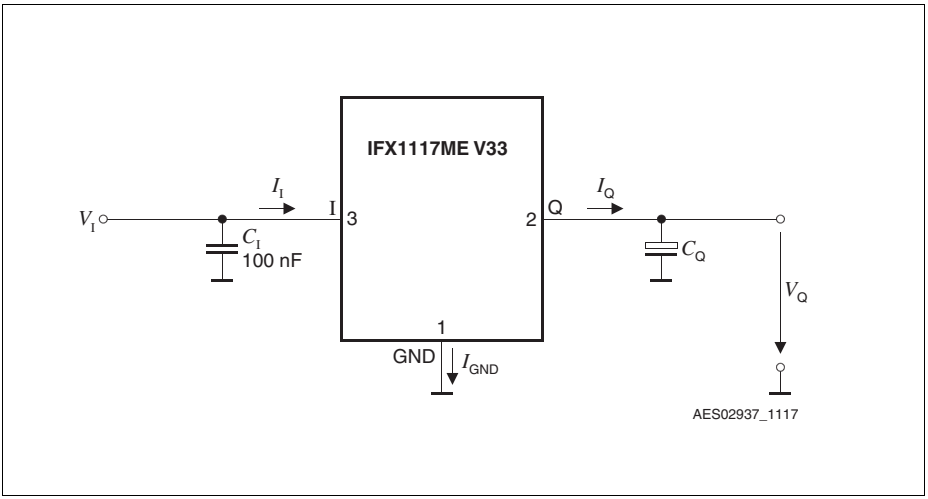


Figure 4 Measuring Circuit

Application Information

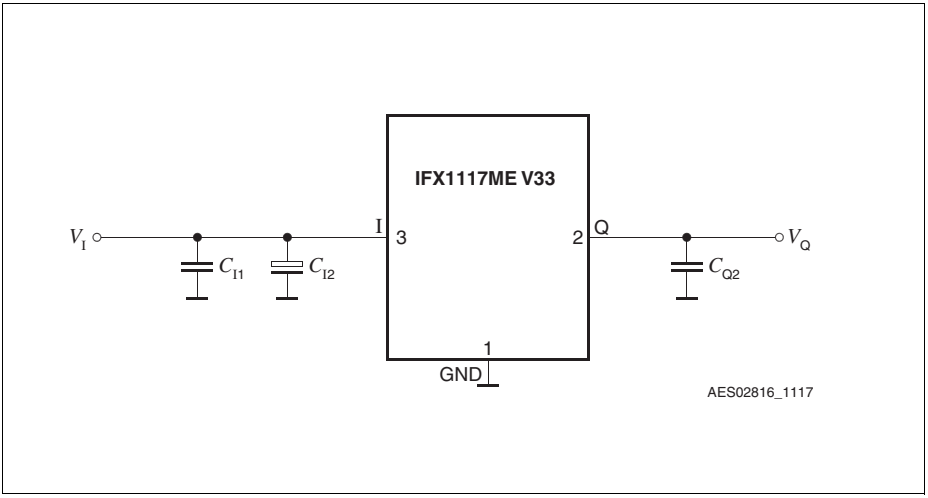


Figure 5 Typical Application Circuit IFX1117ME V33

Output

The IFX1117 requires a 10 µF output capacitor with ESR ≤ 20 Ω for the stability of the regulation loop. The use of a tantalum output capacitor is recommended.

For the adjustable device IFX1117ME V the output voltage level can be defined by a voltage divider between Q, ADJ and GND.

The output voltage calculates:

$$V_Q = V_{REF} \times \left(1 + \frac{R_2}{R_1}\right) + I_{ADJ} \times R_2 \quad (1)$$

At the input of the regulator a capacitor is recommended to compensate line influences. As a minimum a 100 nF ceramic input capacitor should be used. If the regulator is used in an environment with long input lines an input capacitance of 10 µF is suggested.

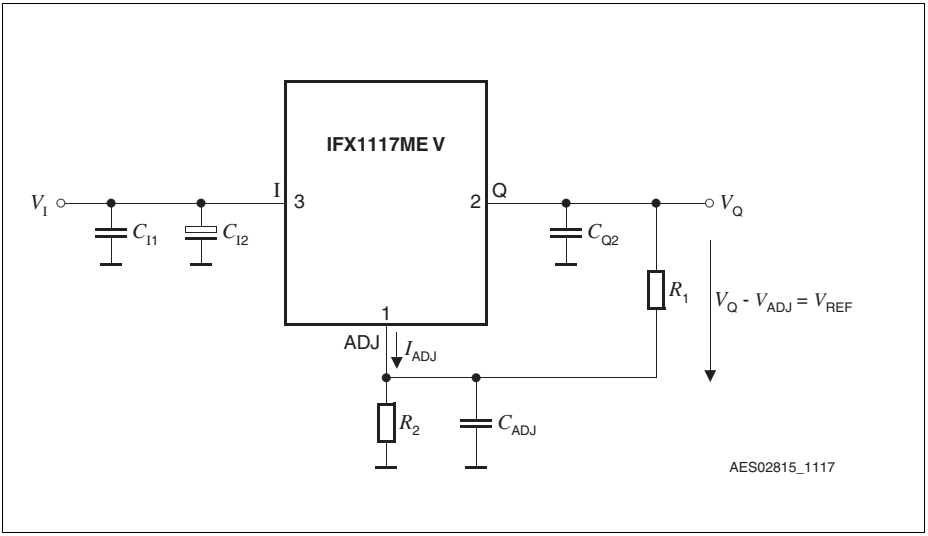
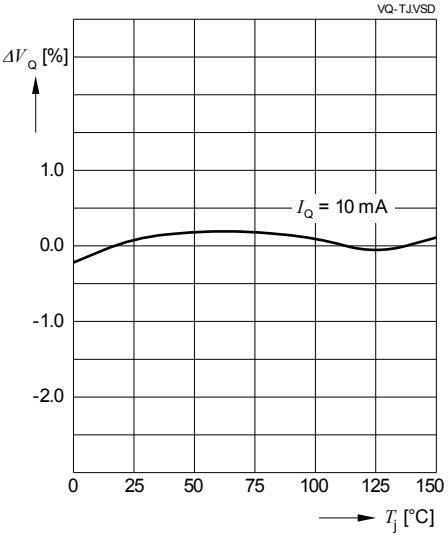


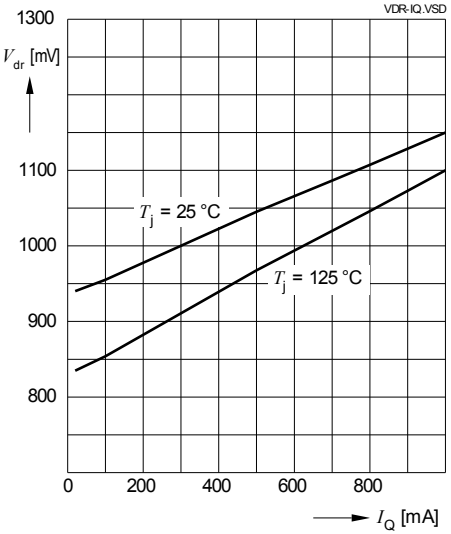
Figure 6 Typical Application Circuit IFX1117ME V

Typical Performance Characteristics

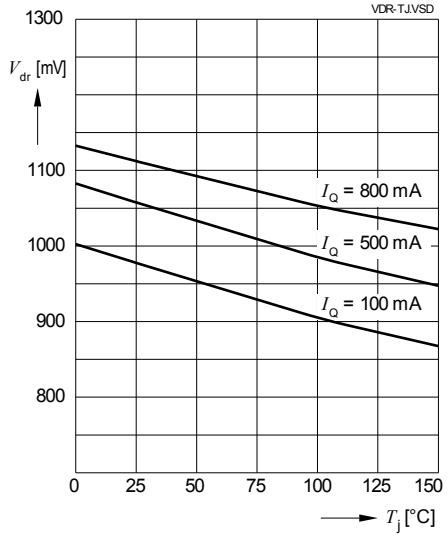
Output Voltage V_Q versus Junction Temperature T_j



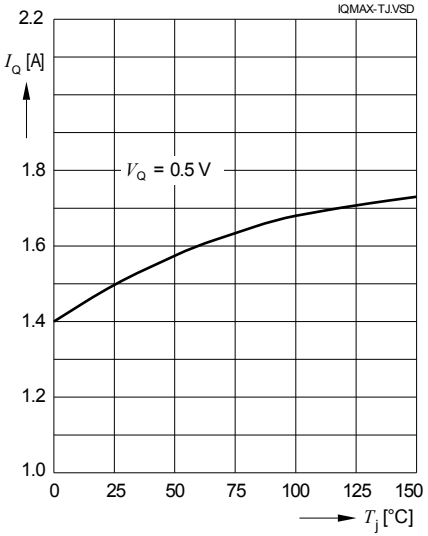
Dropout Voltage V_{dr} versus Output Current I_Q



Dropout Voltage V_{dr} versus Junction Temperature T_j

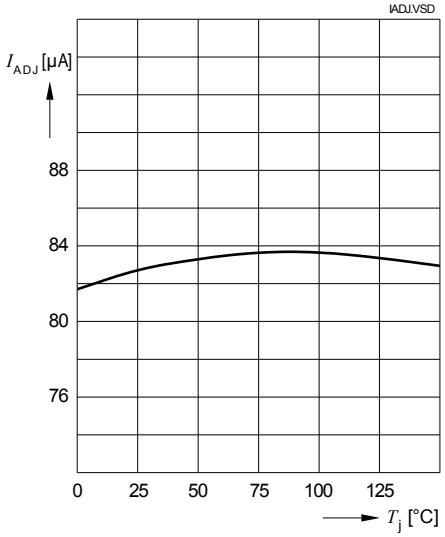


Maximum Output Current I_Q versus Junction Temperature T_j

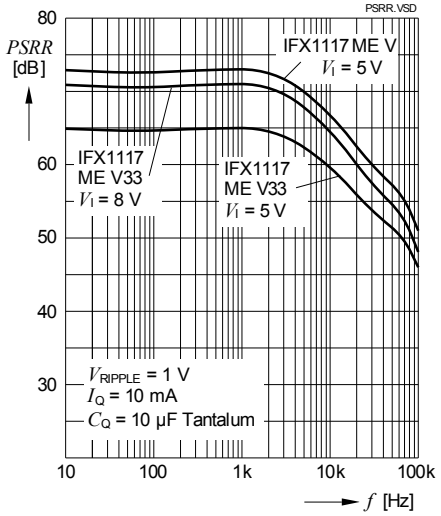


Typical Performance Characteristics

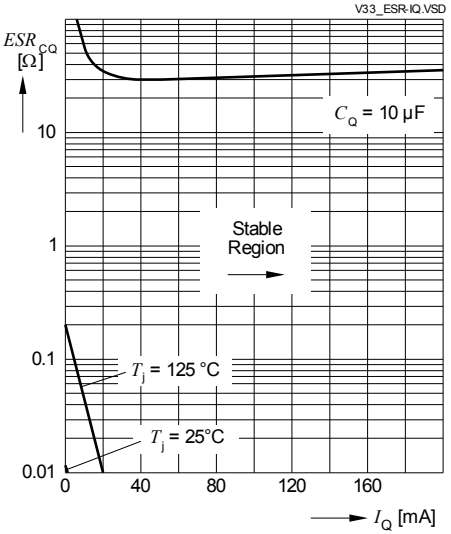
Adjust Pin Current I_{ADJ} versus Junction Temperature T_j



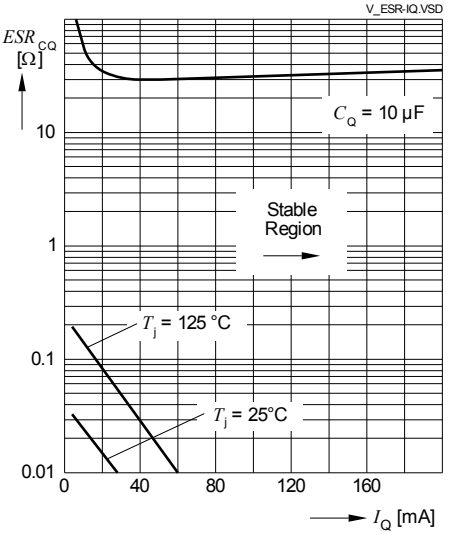
Power Supply Ripple Rejection $PSRR$ versus Frequency f



Region of Stability Version ME V33

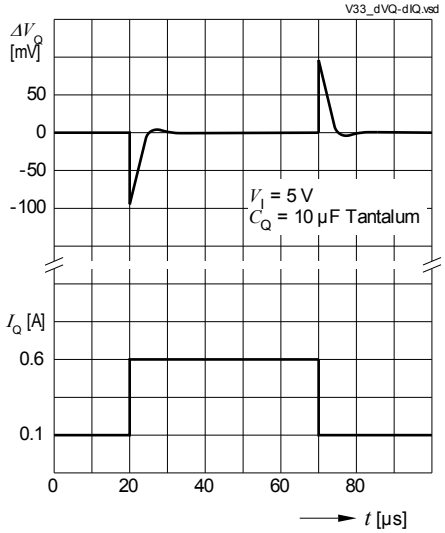


Region of Stability Version ME V

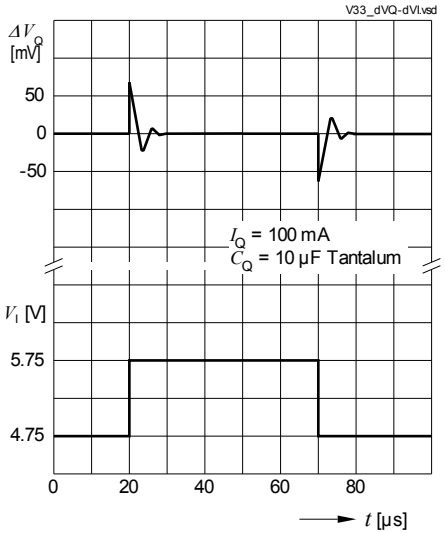


Typical Performance Characteristics

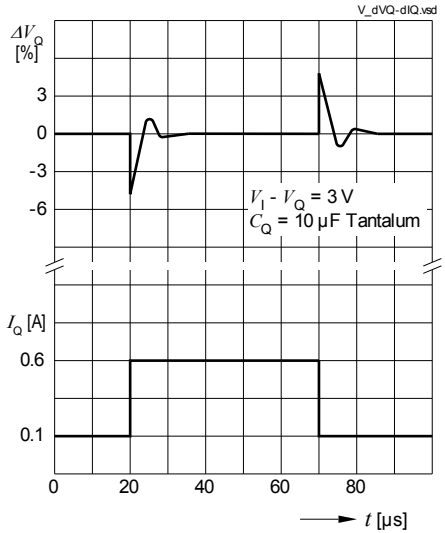
Load Transient Response Version ME V33



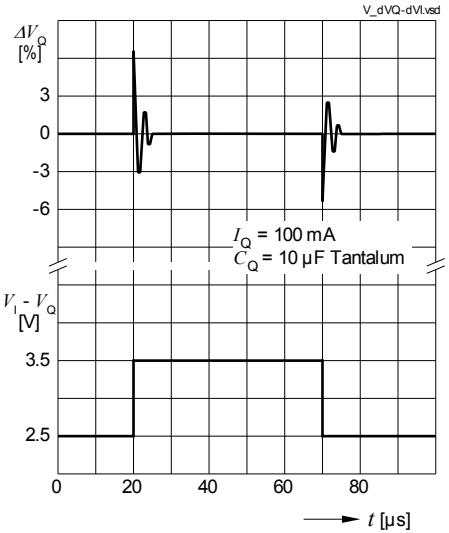
Line Transient Response Version ME V33



Load Transient Response Version ME V



Line Transient Response Version ME V



Package Outline

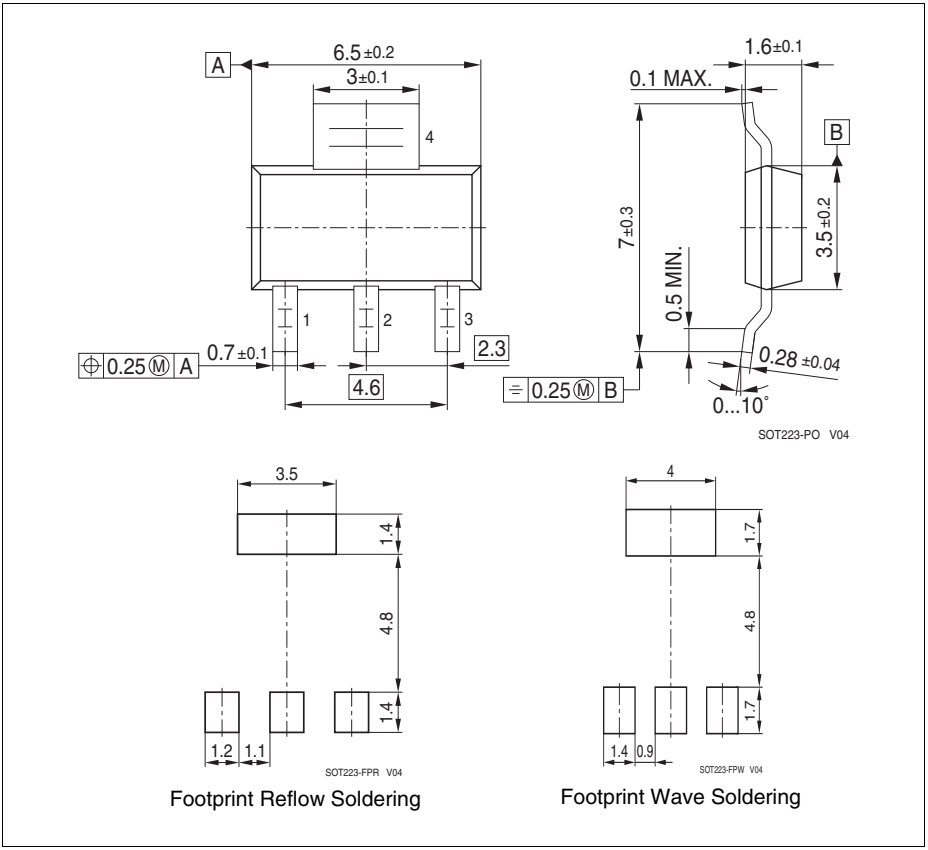


Figure 7 Outline and footprint PG-SOT223

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/products**.

SMD = Surface Mounted Device

Dimensions in mm

Version	Date	Changes
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