

GQ2113

CMOS Positive Voltage Regulator

Description

The GQ2113 series of positive, linear regulators feature low quiescent current (30 μ A typ.) with low dropout voltage, making them ideal for battery applications.

These rugged devices have both Thermal Shutdown, and Current Fold-back to prevent device failure under the "Worst" of operating conditions.

The GQ2113 is stable with an output capacitance of 2.2 μ F or greater.

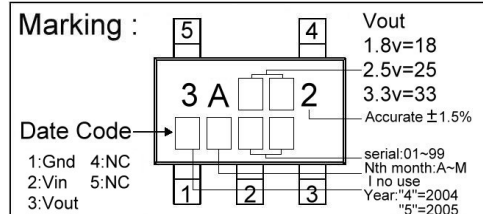
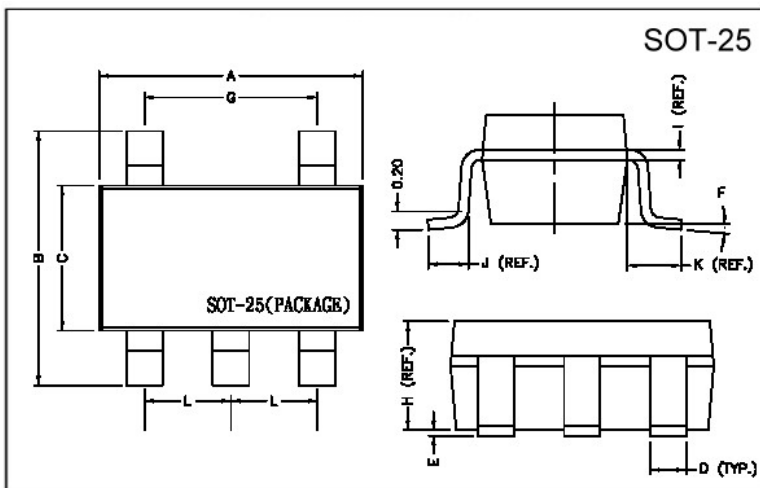
Features

- Very Low Dropout Voltage
- Guaranteed 300mA output
- Over-Temperature Shutdown
- Current Limiting
- Short Circuit Current Fold-back
- Factory Pre-set Output Voltage
- Highly Accurate $\pm 1.5\%$
- Low Temperature Coefficient

Applications

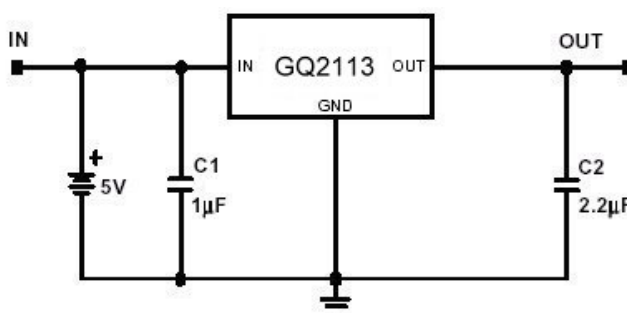
- Battery Powered Widgets
- Instrumentation
- Wireless Devices
- Cordless Phones
- PC Peripherals
- Portable Electronics
- Electronic Scales

Package Dimensions



REF.	Millimeter		REF.	Dimensions
	Min.	Max.		Millimeter
A	2.70	3.10	G	1.90 REF.
B	2.60	3.00	H	1.20 REF.
C	1.40	1.80	I	0.12 REF.
D	0.30	0.55	J	0.37 REF.
E	0	0.10	K	0.60 REF.
F	0°	10°	L	0.95 REF.

Typical Application Circuit



Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Input Voltage	V _{IN}	8	V
Output Current	I _{OUT}	PD/(V _{IN} -V _O)	mA
Output Voltage	V _{OUT}	1.5~3.8	V
Operating Ambient Temperature	T _{opr}	-40 ~ +85	°C
Junction Temperature	T _j	-40 ~ +125	°C
Maximum Junction Temperature	T _{j Max}	150	°C
Thermal Resistance	θ _{jc}	81	°C/W
	θ _{ja}	260	°C/W
Power Dissipation(ΔT=100°C)	PD	380	mW
EDS Classification		B	

Electrical Characteristics Ta=25°C

Parameter	Symbol	Condition	Min	TYP	Max	Unit
Output Voltage	V _{OUT(E)} (Note1)	V _{IN} =V _{OUT(T)} +1V, I _O =1mA	-1.5%	V _{OUT(T)} (Note2)	1.5%	V
Output Current	I _O	V _{IN} =V _{OUT(T)} +2V, V _{OUT} ≥V _{OUT(E)} *0.96	300	-	-	mA
Current Limit	I _{LIM}	V _O >1.2V	300	450	-	mA
Load Regulation	REG _{LOAD}	V _{IN} =V _{OUT(T)} +2V, I _O =1mA to 300mA	-1	0.2	1	%
Dropout Voltage	V _{DROPOUT}	I _O =300mA V _O =V _{OUT(E)} -2%	1.3V≤V _{OUT(T)} ≤2.0V	-	-	1300
			2.0V<V _{OUT(T)} ≤2.8V	-	-	400
			2.8V<V _{OUT(T)}	-	-	300
Quiescent Current	I _Q	V _{IN} =V _{OUT(T)} +1V	-	30	50	μA
Line Regulation	REG _{LINE}	I _O =1mA V _{IN} =V _{OUT(T)} +1 to V _{OUT(T)} +2	1.3V≤V _{OUT(T)} ≤1.4V	-0.2	-	0.2
			1.4V<V _{OUT(T)} ≤2.0V	-0.15	-	0.15
			2.0V<V _{OUT(T)} <4.0V	-0.1	0.02	0.1
			4.0V≤V _{OUT(T)}	-0.4	0.2	0.4
Input Voltage	V _{IN}		Note3	-	7	V
Over Temperature Shutdown	OTS		-	150	-	°C
Over Temperature Hysteresis	OTH		-	30	-	°C
Output Voltage Temperature Coefficient	TC		-	30	-	ppm/°C
Short Circuit Current(Note4)	I _{SC}	V _{IN} =V _{OUT(T)} +1V V _{OUT} =0V	-	150	300	mA
Power Supply Rejection	PSRR	I _O =100mA C _O =2.2μF	f=1kHz	-	50	-
			f=10kHz	-	20	-
			f=100kHz	-	15	-
Output Voltage Noise	e _N	f=10Hz~100kHz I _O =10mA	C _O =2.2μF	-	30	-

Note 1: V_{OUT(E)} =Effective Output Voltage (i.e. the output voltage when "V_{OUT(T)} +1.0V" is provided at the V_{IN} pin while maintaining a certain I_{OUT} value).

2: V_{OUT(T)} =Specified Output Voltage

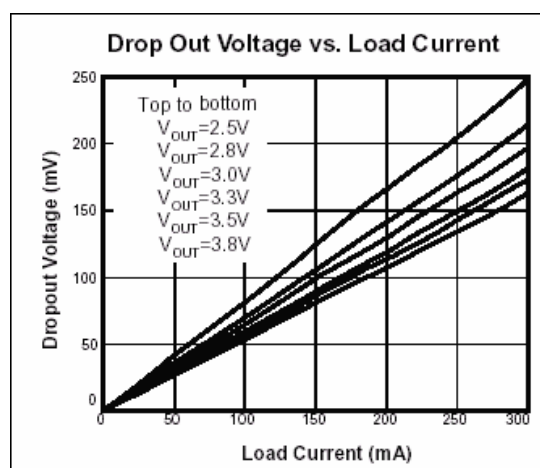
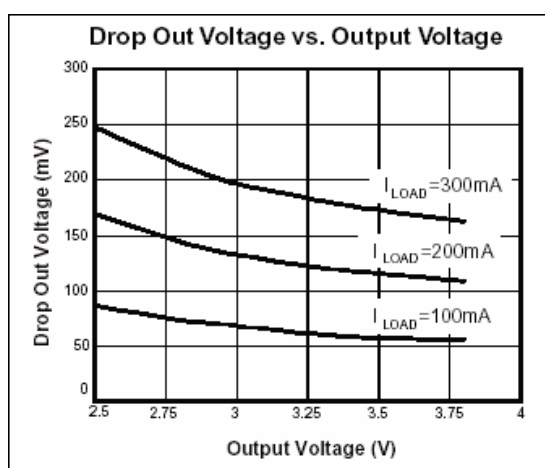
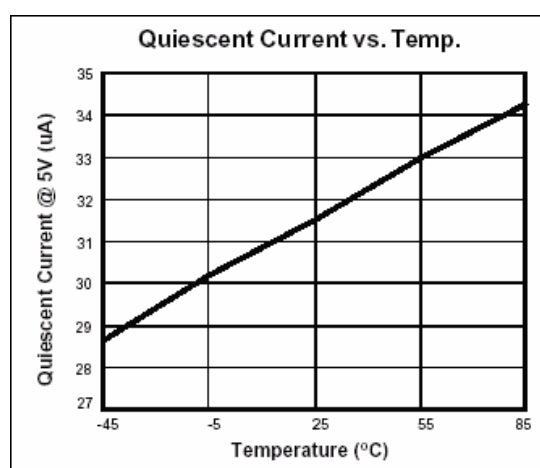
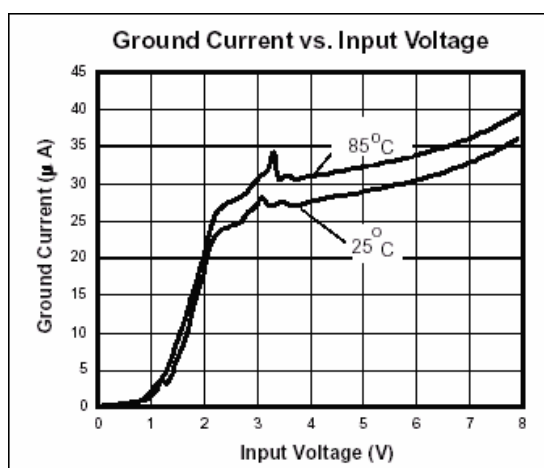
3: V_{IN(MIN)} =V_{OUT}+V_{DROPOUT}

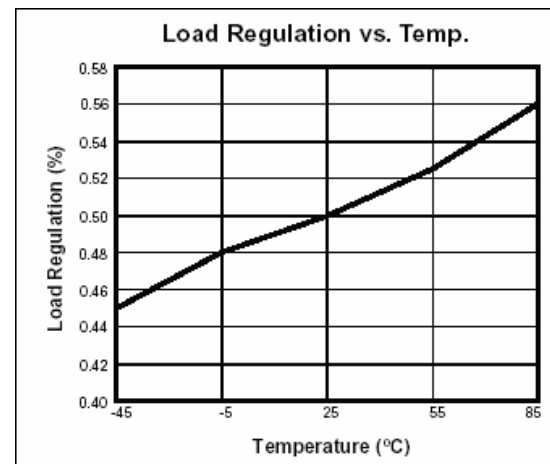
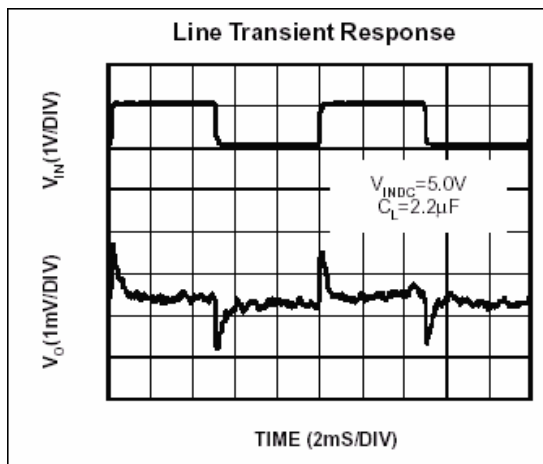
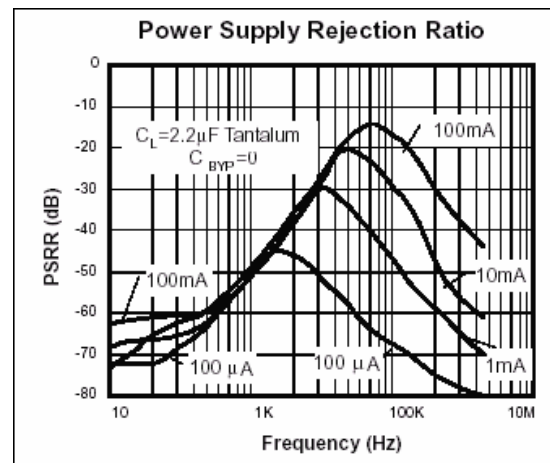
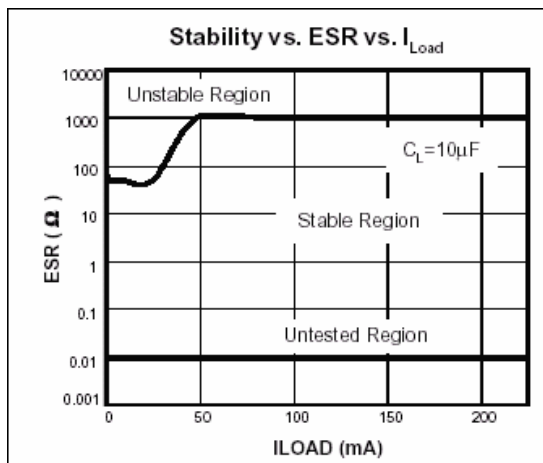
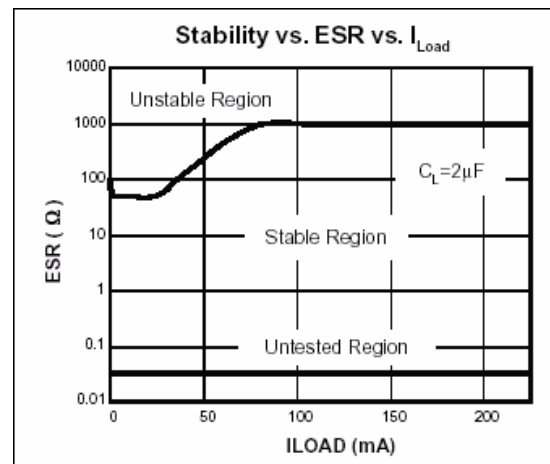
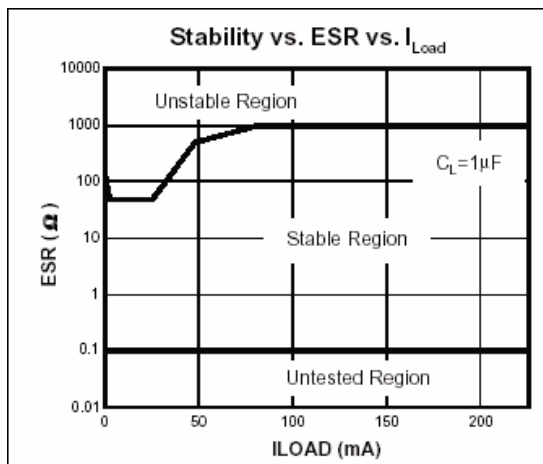
4: To prevent the Short Circuit Current protection feature from being prematurely activated, the input voltage must be applied before a current source load is applied.

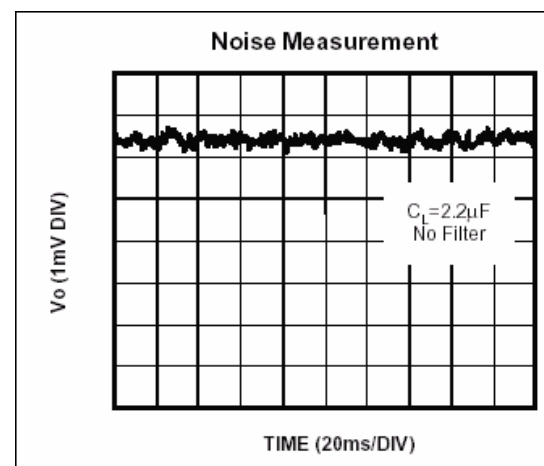
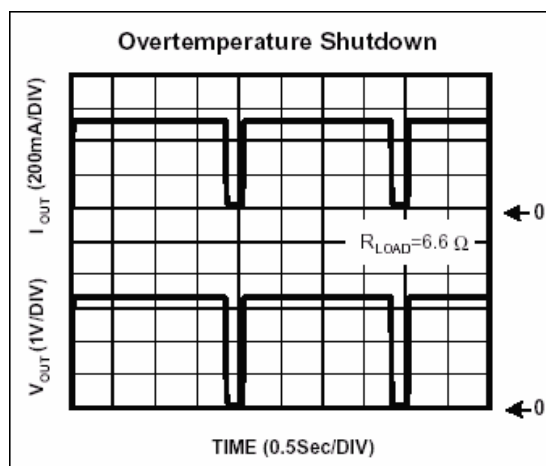
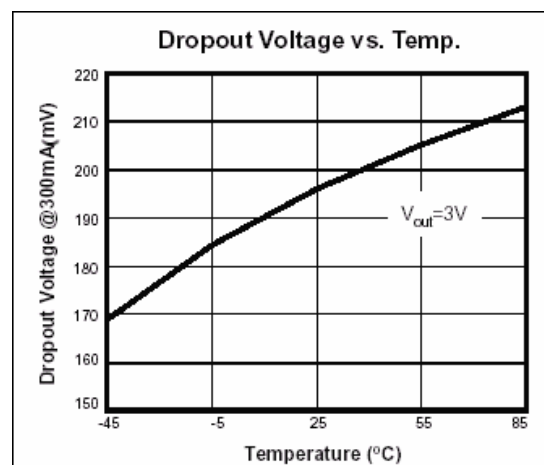
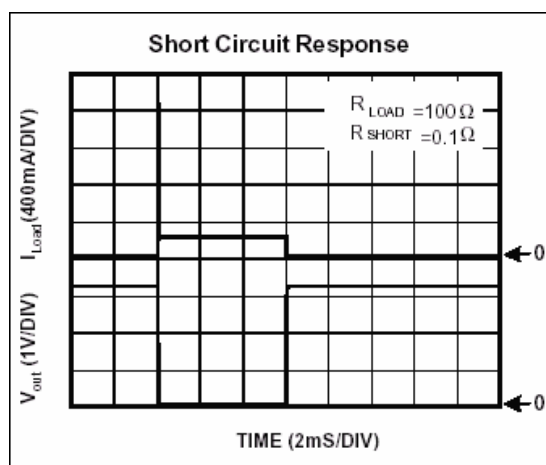
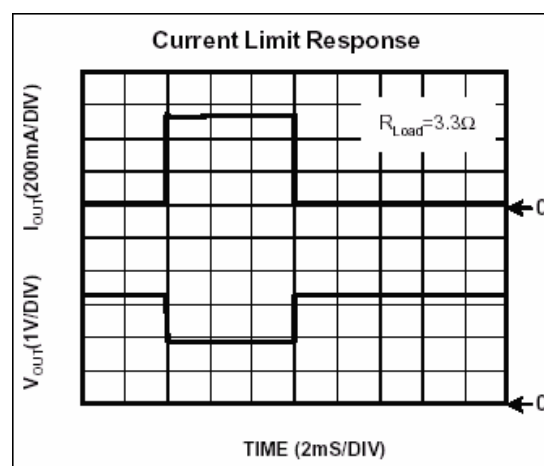
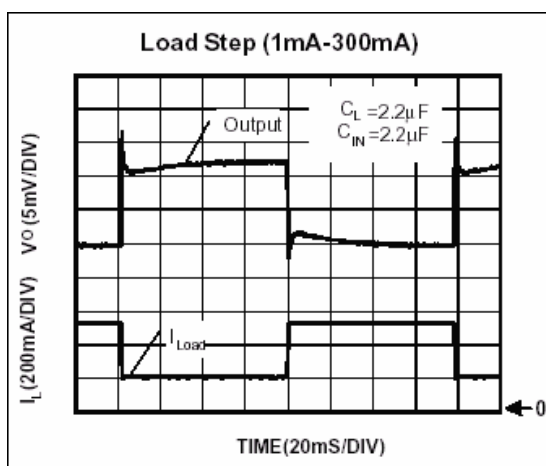
Ordering Information (contd.)

Part Number	Marking	Output Voltage	Part Number	Marking	Output Voltage
GQ2113-15	3A152 XXXX	1.5V	GQ2113-18	3A182 XXXX	1.8V
GQ2113-19	3A192 XXXX	1.9V	GQ2113-20	3A202 XXXX	2.0V
GQ2113-25	3A252 XXXX	2.5V	GQ2113-27	3A272 XXXX	2.7V
GQ2113-28	3A282 XXXX	2.8V	GQ2113-2H	3A2H2 XXXX	2.85V
GQ2113-29	3A292 XXXX	2.9V	GQ2113-30	3A302 XXXX	3.0V
GQ2113-31	3A312 XXXX	3.1V	GQ2113-33	3A332 XXXX	3.3V
GQ2113-34	3A342 XXXX	3.4V	GQ2113-35	3A352 XXXX	3.5V
GQ2113-36	3A362 XXXX	3.6V	GQ2113-37	3A372 XXXX	3.7V
GQ2113-38	3A382 XXXX	3.8V			

Characteristics Curve







Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of GTM.
- GTM reserves the right to make changes to its products without notice.
- GTM semiconductor products are not warranted to be suitable for use in life-support Applications, or systems.
- GTM assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.

Head Office And Factory:

- Taiwan: No. 17-1 Tatung Rd. Fu Kou Hsin-Chu Industrial Park, Hsin-Chu, Taiwan, R. O. C.
- TEL : 886-3-597-7061 FAX : 886-3-597-9220, 597-0785
- China: (201203) No.255, Jang-Jiang Tsai-Lueng RD. , Pu-Dung-Hsin District, Shang-Hai City, China
- TEL : 86-21-5895-7671 ~ 4 FAX : 86-21-38950165