

G3U79XXA

3-TERMINAL NEGATIVE VOLTAGE REGULATORS

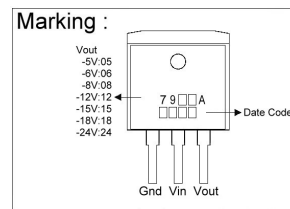
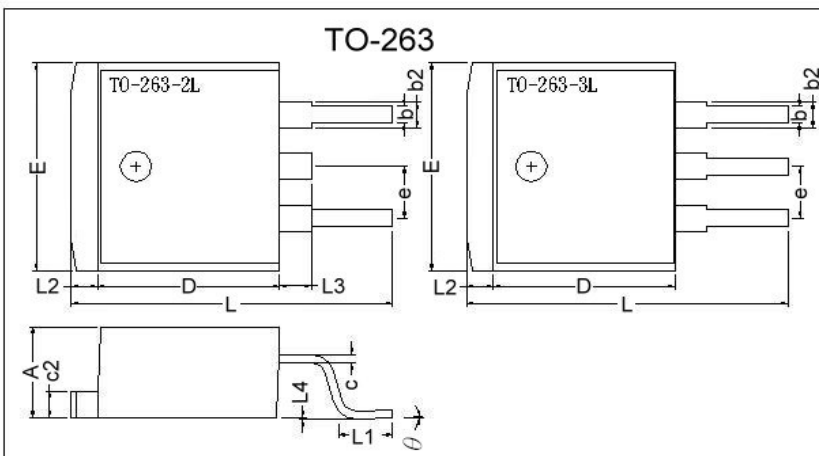
Description

The G3U79XXA series of fixed-voltage monolithic integrated-circuit voltage regulators are designed to complement Series G3U78XXA in a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 1.5 amperes of output current. The internal current limiting and thermal shutdown features of these regulators make them essentially immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltage and current and also as the power pass element in precision regulators.

Features

- -5V, -6V, -8V, -12V, -15V, -18V, -24V output voltage available
- Internal Thermal Overload Protection
- High Power Dissipation Capability
- Internal Short-Circuit Current Limiting
- No External Components
- Output Transistor Safe-Area Compensation

Package Dimensions



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c2	1.25	1.45
b	0.76	1.00	b2	1.17	1.47
L4	0.00	0.30	D	8.6	9.0
c	0.36	0.5	e	2.54 REF.	
L3	1.50 REF.		L	14.6	15.8
L1	2.29	2.79	theta	0°	8°
E	9.80	10.4	L2	1.27 REF.	

Absolute Maximum Ratings

Parameter		Ratings	Unit
Input voltage	G3U7905A ~ 18A	-35V	V
	G3U7924A	-40V	V
Output current		1.5	A
Operating junction temperature range		0 ~ 150	°C
Storage temperature range		-55 ~ 150	°C
Thermal resistance junction-air (RθJA)		65	°C/W
Thermal resistance junction-cases (RθJC)		5	°C/W

Electrical Characteristics

G3U7905A (Refer to the test circuits, T_j=0~125°C, I_o=500mA, V_{in}=-10V, C_{in}=2μF, C_o=1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
V _O	A-Rank (3%)	-4.85	-5.0	-5.15	V	V _{in} =-10V, I _o =500mA, T _j =25°C -7.5V ≤ V _{in} ≤ -20V, 5mA ≤ I _o ≤ 1A, PD ≤ 15W
	B-Rank (5%)	-4.75	-	-5.25		
ΔV _O (Line Regulation)		-	12.5	50	mV	-7V ≤ V _{in} ≤ -25V, I _o =500mA, T _j =25°C
		-	4	15		-8V ≤ V _{in} ≤ -12V, I _o =500mA, T _j =25°C
ΔV _O (Load Regulation)		-	15	100	mV	V _{in} =-10V, 5mA ≤ I _o ≤ 1.5A, T _j =25°C
		-	5	50		V _{in} =-10V, 250mA ≤ I _o ≤ 750mA, T _j =25°C
I _Q		-	-	6.0	mA	V _{in} =-10V, I _o =500mA, T _j =25°C
Δ I _Q		-	-	0.5	mA	V _{in} =-10V, 5mA ≤ I _o ≤ 1A
		-	-	0.5		-7V ≤ V _{in} ≤ -25V, I _o =500mA
V _n		-	125	-	μV	10Hz ≤ f ≤ 100KHz, T _j =25°C
RR		54	-	-	dB	-8V ≤ V _{in} ≤ -18V, f=120Hz, T _j =25°C
VD		-	1.1	-	V	I _o =1A, T _j =25°C
I _{pk}		-	2.1	-	A	T _j =25°C
ΔV _o / ΔT _j		-	-0.4	-	mV/°C	I _o =5mA, 0°C ≤ T _j ≤ 125°C

G3U7906A (Refer to the test circuits, T_j=0~125°C, I_o=500mA, V_{in}=-11V, C_{in}=2μF, C_o=1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
V _O	A-Rank (3%)	-5.82	-6.0	-6.18	V	V _{in} =-11V, I _o =500mA, T _j =25°C -8V ≤ V _{in} ≤ -21V, 5mA ≤ I _o ≤ 1A, PD ≤ 15W
	B-Rank (5%)	-5.70	-	-6.30		
ΔV _O (Line Regulation)		-	12.5	120	mV	-8V ≤ V _{in} ≤ -25V, I _o =500mA, T _j =25°C
		-	4	60		-9V ≤ V _{in} ≤ -13V, I _o =500mA, T _j =25°C
ΔV _O (Load Regulation)		-	15	120	mV	V _{in} =-11V, 5mA ≤ I _o ≤ 1.5A, T _j =25°C
		-	5	60		V _{in} =-11V, 250mA ≤ I _o ≤ 750mA, T _j =25°C
I _Q		-	-	6.0	mA	V _{in} =-11V, I _o =500mA, T _j =25°C
Δ I _Q		-	-	0.5	mA	V _{in} =-11V, 5mA ≤ I _o ≤ 1A
		-	-	1.3		-8V ≤ V _{in} ≤ -25V, I _o =500mA
V _n		-	150	-	μV	10Hz ≤ f ≤ 100KHz, T _j =25°C
RR		54	-	-	dB	-9V ≤ V _{in} ≤ -19V, f=120Hz, T _j =25°C
VD		-	1.1	-	V	I _o =1A, T _j =25°C
I _{pk}		-	2.1	-	A	T _j =25°C
ΔV _o / ΔT _j		-	-0.4	-	mV/°C	I _o =5mA, 0°C ≤ T _j ≤ 125°C

G3U7908A (Refer to the test circuits, $T_j=0\sim 125^\circ\text{C}$, $I_o=500\text{mA}$, $V_{in}=-14\text{V}$, $C_{in}=2\mu\text{F}$, $C_o=1\mu\text{F}$ unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-7.76	-8.0	-8.24	V	$V_{in}=-14\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$ $-10.5\text{V} \leq V_{in} \leq -23\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$, $PD \leq 15\text{W}$
	B-Rank (5%)	-7.60	-	-8.40		
ΔVO (Line Regulation)		-	12.5	160	mV	$-10.5\text{V} \leq V_{in} \leq -25\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
		-	4	80		$-11\text{V} \leq V_{in} \leq -17\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔVO (Load Regulation)		-	15	160	mV	$V_{in}=-14\text{V}$, $5\text{mA} \leq I_o \leq 1.5\text{A}$, $T_j=25^\circ\text{C}$
		-	5	80		$V_{in}=-14\text{V}$, $250\text{mA} \leq I_o \leq 750\text{mA}$, $T_j=25^\circ\text{C}$
IQ		-	-	6.0	mA	$V_{in}=-14\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔIQ		-	-	0.5	mA	$V_{in}=-14\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$
		-	-	1.0		$-10.5\text{V} \leq V_{in} \leq -25\text{V}$, $I_o=500\text{mA}$
Vn		-	200	-	μV	$10\text{Hz} \leq f \leq 100\text{KHz}$, $T_j=25^\circ\text{C}$
RR		54	-	-	dB	$-11.5\text{V} \leq V_{in} \leq -21.5\text{V}$, $f=120\text{Hz}$, $T_j=25^\circ\text{C}$
VD		-	1.1	-	V	$I_o=1\text{A}$, $T_j=25^\circ\text{C}$
Ipk		-	2.1	-	A	$T_j=25^\circ\text{C}$
$\Delta\text{Vo} / \Delta\text{Tj}$		-	-0.6	-	$\text{mV}/^\circ\text{C}$	$I_o=5\text{mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$

G3U7912A (Refer to the test circuits, $T_j=0\sim 125^\circ\text{C}$, $I_o=500\text{mA}$, $V_{in}=-19\text{V}$, $C_{in}=2\mu\text{F}$, $C_o=1\mu\text{F}$ unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-11.64	-12.0	-12.36	V	$V_{in}=-19\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$ $-14.5\text{V} \leq V_{in} \leq -27\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$, $PD \leq 15\text{W}$
	B-Rank (5%)	-11.40	-	-12.60		
ΔVO (Line Regulation)		-	5	80	mV	$-14.5\text{V} \leq V_{in} \leq -30\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
		-	3	30		$-16\text{V} \leq V_{in} \leq -22\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔVO (Load Regulation)		-	15	200	mV	$V_{in}=-19\text{V}$, $5\text{mA} \leq I_o \leq 1.5\text{A}$, $T_j=25^\circ\text{C}$
		-	5	75		$V_{in}=-19\text{V}$, $250\text{mA} \leq I_o \leq 750\text{mA}$, $T_j=25^\circ\text{C}$
IQ		-	-	6.0	mA	$V_{in}=-19\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔIQ		-	-	0.5	mA	$V_{in}=-19\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$
		-	-	0.5		$-14.5\text{V} \leq V_{in} \leq -30\text{V}$, $I_o=500\text{mA}$
Vn		-	300	-	μV	$10\text{Hz} \leq f \leq 100\text{KHz}$, $T_j=25^\circ\text{C}$
RR		54	-	-	dB	$-15\text{V} \leq V_{in} \leq -25\text{V}$, $f=120\text{Hz}$, $T_j=25^\circ\text{C}$
VD		-	1.1	-	V	$I_o=1\text{A}$, $T_j=25^\circ\text{C}$
Ipk		-	2.1	-	A	$T_j=25^\circ\text{C}$
$\Delta\text{Vo} / \Delta\text{Tj}$		-	-0.8	-	$\text{mV}/^\circ\text{C}$	$I_o=5\text{mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$

G3U7915A (Refer to the test circuits, $T_j=0\sim 125^\circ\text{C}$, $I_o=500\text{mA}$, $V_{in}=-23\text{V}$, $C_{in}=2\mu\text{F}$, $C_o=1\mu\text{F}$ unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-14.55	-15.0	-15.45	V	$V_{in}=-23\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$ $-17.5\text{V} \leq V_{in} \leq -30\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$, $PD \leq 15\text{W}$
	B-Rank (5%)	-14.25	-	-15.75		
ΔVO (Line Regulation)		-	5	100	mV	$-17.5\text{V} \leq V_{in} \leq -30\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
		-	3	50		$-20\text{V} \leq V_{in} \leq -26\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔVO (Load Regulation)		-	15	200	mV	$V_{in}=-23\text{V}$, $5\text{mA} \leq I_o \leq 1.5\text{A}$, $T_j=25^\circ\text{C}$
		-	5	75		$V_{in}=-23\text{V}$, $250\text{mA} \leq I_o \leq 750\text{mA}$, $T_j=25^\circ\text{C}$
IQ		-	-	6.0	mA	$V_{in}=-23\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔIQ		-	-	0.5	mA	$V_{in}=-23\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$
		-	-	0.5		$-17.5\text{V} \leq V_{in} \leq -30\text{V}$, $I_o=500\text{mA}$
Vn		-	375	-	μV	$10\text{Hz} \leq f \leq 100\text{KHz}$, $T_j=25^\circ\text{C}$
RR		54	-	-	dB	$-18.5\text{V} \leq V_{in} \leq -28.5\text{V}$, $f=120\text{Hz}$, $T_j=25^\circ\text{C}$
VD		-	1.1	-	V	$I_o=1\text{A}$, $T_j=25^\circ\text{C}$
Ipk		-	2.1	-	A	$T_j=25^\circ\text{C}$
$\Delta\text{Vo} / \Delta\text{Tj}$		-	-1.0	-	$\text{mV}/^\circ\text{C}$	$I_o=5\text{mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$

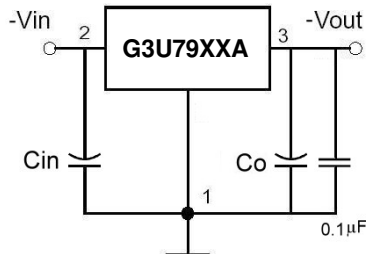
G3U7918A (Refer to the test circuits, $T_j=0\sim 125^\circ\text{C}$, $I_o=500\text{mA}$, $V_{in}=-27\text{V}$, $C_{in}=2\mu\text{F}$, $C_o=1\mu\text{F}$ unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-17.46	-18.0	-18.54	V	$V_{in}=-27\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$ $-21\text{V} \leq V_{in} \leq -33\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$, $PD \leq 15\text{W}$
	B-Rank (5%)	-17.10	-	-18.9		
ΔVO (Line Regulation)		-	5	360	mV	$-21\text{V} \leq V_{in} \leq -33\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
		-	3	180		$-24\text{V} \leq V_{in} \leq -30\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔVO (Load Regulation)		-	30	360	mV	$V_{in}=-27\text{V}$, $5\text{mA} \leq I_o \leq 1.5\text{A}$, $T_j=25^\circ\text{C}$
		-	10	180		$V_{in}=-27\text{V}$, $250\text{mA} \leq I_o \leq 750\text{mA}$, $T_j=25^\circ\text{C}$
IQ		-	-	6.0	mA	$V_{in}=-27\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔIQ		-	-	0.5	mA	$V_{in}=-27\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$
		-	-	1.0		$-21\text{V} \leq V_{in} \leq -33\text{V}$, $I_o=500\text{mA}$
Vn		-	450	-	μV	$10\text{Hz} \leq f \leq 100\text{KHz}$, $T_j=25^\circ\text{C}$
RR		54	-	-	dB	$-22\text{V} \leq V_{in} \leq -32\text{V}$, $f=120\text{Hz}$, $T_j=25^\circ\text{C}$
VD		-	1.1	-	V	$I_o=1\text{A}$, $T_j=25^\circ\text{C}$
Ipk		-	2.1	-	A	$T_j=25^\circ\text{C}$
$\Delta\text{Vo} / \Delta\text{Tj}$		-	-1.0	-	$\text{mV}/^\circ\text{C}$	$I_o=5\text{mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$

G3U7924A (Refer to the test circuits, $T_j=0\sim 125^\circ\text{C}$, $I_o=500\text{mA}$, $V_{in}=-33\text{V}$, $C_{in}=2\mu\text{F}$, $C_o=1\mu\text{F}$ unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-23.28	-24.0	-24.72	V	$V_{in}=-33\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$ $-27\text{V} \leq V_{in} \leq -38\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$, $PD \leq 15\text{W}$
	B-Rank (5%)	-22.80	-	-25.20		
ΔV_O (Line Regulation)		-	5	480	mV	$-27\text{V} \leq V_{in} \leq -38\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
		-	3	240		$-30\text{V} \leq V_{in} \leq -36\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔV_O (Load Regulation)		-	85	480	mV	$V_{in}=-33\text{V}$, $5\text{mA} \leq I_o \leq 1.5\text{A}$, $T_j=25^\circ\text{C}$
		-	25	240		$V_{in}=-33\text{V}$, $250\text{mA} \leq I_o \leq 750\text{mA}$, $T_j=25^\circ\text{C}$
IQ		-	-	6.0	mA	$V_{in}=-33\text{V}$, $I_o=500\text{mA}$, $T_j=25^\circ\text{C}$
ΔI_Q		-	-	0.5	mA	$V_{in}=-33\text{V}$, $5\text{mA} \leq I_o \leq 1\text{A}$
		-	-	1.0		$-27\text{V} \leq V_{in} \leq -38\text{V}$, $I_o=500\text{mA}$
Vn		-	600	-	μV	$10\text{Hz} \leq f \leq 100\text{KHz}$, $T_j=25^\circ\text{C}$
RR		54	-	-	dB	$-28\text{V} \leq V_{in} \leq -38\text{V}$, $f=120\text{Hz}$, $T_j=25^\circ\text{C}$
VD		-	1.1	-	V	$I_o=1\text{A}$, $T_j=25^\circ\text{C}$
Ipk		-	2.1	-	A	$T_j=25^\circ\text{C}$
$\Delta V_o / \Delta T_j$		-	-1.0	-	$\text{mV}/^\circ\text{C}$	$I_o=5\text{mA}$, $0^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$

Typical Application


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