RICOH

R1293K Series

Multi power supply IC with Amplifier for LCD

The R1293K Series are multi power supply ICs dedicated for mid-size TFT LCD panels. Each of the IC consists of a PWM control step-up DC/DC converter, an LDO regulator, a VCOM amplifier and six GAMMA amplifiers. The output noise can be reduced by SEL pin. (SEL pin "H": normal mode, SEL pin "L": low noise mode.) The MOSFET for step-up DC/DC converter is built-in and, low power operation is realized by standby mode. The package is 4mm square DFN(PLP)0404-32.

FEATURES

- Supply Current (I_{IN}) ····· Typ. 300μA (No switching)
- Standby Current (I_{STB}) ····· Typ. 60μA (In standby)

(DC/DC Part)

- Input Voltage Range (V_{IN}) ····· 2.2V to 5.5V (Absolute maximum rating : 6.5V)
- Feedback Voltage (V_{FB}) ····· 1.0V (The output voltage is adjustable up to 16.0V with external resistors.)
- Feedback Voltage Accuracy ····· ± 15mV
- Oscillator Frequency (f_{osc}) ····· 300kHz to 1MHz with an external resistor
- Oscillator Maximum Duty Cycle (Maxduty) ·· Set with an external resistor. (Limit typ.90%)
- OVP Voltage (V_{OVP1}) ····· Typ. 21.0V
- UVLO Detect Voltage (V_{UVLO1}) ····· Typ. 1.9V
- Soft Start Time (t_{start}) ····· Typ. 10ms
- Coil-current Limit Circuit ····· Current Limit Typ. 3A
- Latch Protection Circuit ····· Delay time for protection adjustable with an external capacitor.

(LDO Part)

- Input Voltage Range (V_{IN_LDO}) ····· 2.2V to 5.5V (Absolute maximum rating : 6.5V)
- Peak Current Limit Circuit ····· Min. 350mA
- Output Voltage Range (V_{OUT}) ····· 1.8V to 2.5V (Internally fixed)
- Output Voltage Accuracy ····· ± 1%
- Output Current ····· 300mA
- Dropout Voltage (V_{DIF}) ····· Typ. 0.4V (V_{SET}≥2.4V, I_{OUT}=250mA)
- Ripple Rejection (RR) ····· Typ. 65dB (f=1kHz)
- Fold-back Protection Circuit ····· Current limit Typ. 70mA

(Buffer Amplifier Part)

- Input Voltage Range for Amplifiers (V_{BUFF}) ····· 5.0V to 16.0V (Absolute maximum rating : 24V)
- Input Voltage Range for VCOM Amplifier ····· 1.5V to V_{BUFF}-1.5V
- Output Current Range for VCOM Amplifier ····· -100mA to 100mA
- Input Voltage Range for GAMMA Amplifier ····· 0V to V_{BUFF}
- Output Current Range for GAMMA Amplifier ····· -10mA to 10mA

- Thermal Shutdown Circuit ····· Stops at 150°C
- Package ····· QFN(PLP)0404-32

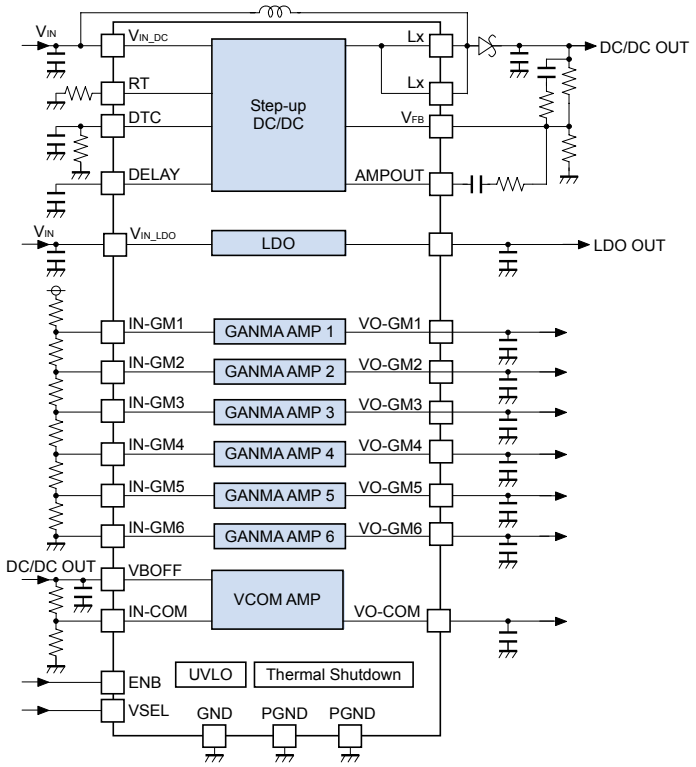
SELECTION GUIDE

Halogen Free	Package	Quantity per Reel	Part No.
H/F	QFN(PLP)0404-32	2,000 pcs	R1293Kxx1A-E2

xx : Specify the LDO output voltage within the range of 1.8V (18) to 2.5V (25) in 0.1V steps.

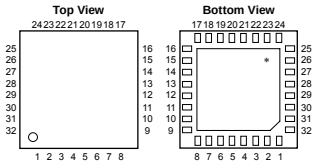
BLOCK DIAGRAM

R1293K



PACKAGE

QFN(PLP)0404-32



1	PGND	Power GND pin
2	PGND	Power GND pin
3	V_{O_LDO}	LDO output pin
4	V_{IN_LDO}	LDO power input pin
5	$IN_{\_GM1}$	GAMMA1 input pin
6	$IN_{\_GM2}$	GAMMA2 input pin
7	$IN_{\_GM3}$	GAMMA3 input pin
8	$IN_{\_GM4}$	GAMMA4 input pin
9	$IN_{\_GM5}$	GAMMA5 input pin
10	$IN_{\_GM6}$	GAMMA6 input pin
11	V_{O_GM1}	GAMMA1 output pin
12	V_{O_GM2}	GAMMA2 output pin
13	V_{O_GM3}	GAMMA3 output pin
14	V_{O_GM4}	GAMMA4 output pin
15	V_{O_GM5}	GAMMA5 output pin
16	V_{O_GM6}	GAMMA6 output pin
17	GND	GND pin
18	V_{BUFF}	Buffer Amplifier power source pin
19	I_{N_COM}	VCOM input pin
20	V_{O_COM}	VCOM output pin
21	GND	GND pin
22	RT	Oscillator frequency setting pin
23	DTC	Maxduty / soft start time setting pin
24	SEL	Noise reduction level selection pin
25	DELAY	Short protection delay setting pin
26	ENB	Chip enabled pin (DC/DC or Buffer Amplifier)
27	V_{FB}	DC/DC feedback pin
28	AMPOUT	DC/DC phase compensation pin
29	GND	GND pin
30	V_{IN_DC}	DC/DC power source pin
31	Lx	DC/DC switching pin
32	Lx	DC/DC switching pin

*) The tab is substrate level (GND).

APPLICATION

- Power source for mid-size TFT LCD panels

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RoHS Compliant
Halogen Free

Ricoh is committed to reducing the environmental loading materials in electrical devices with a view to contributing to the protection of human health and the environment.
Ricoh has been providing RoHS compliant products since April 1, 2006 and Halogen-free products since April 1, 2012.

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