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MPQ7920

5V Power Management IC with Four
2A/2.5A/4.5A/4.5A Buck Converters, 5 LDOs,
and Flexible System settings via I2C and MTP

PRELIMINARY SPECIFICATIONS SUBJECT TO CHANGE

DESCRIPTION

The MPQ7920 is a complete power management solution which integrates four high efficiency step-down DC/DC converters, five low dropout regulators and flexible logic interface.

COT control DC/DC converter provides fast transient response. Up to 2.2MHz fixed switching frequency during CCM mode greatly reduces external inductor and capacitor value. Full protection features include UVLO, OCP, OVP and thermal shutdown.

Output voltage is adjustable through I2C bus or preset by MTP (Multi Time Programmable). The power on/off sequence is also programmable by MTP or can be controlled through I2C bus online.

The MPQ7920 requires a minimal number external components, and is available in space-saving 26-pin QFN-26 (3.5mmx4.5mm) package.

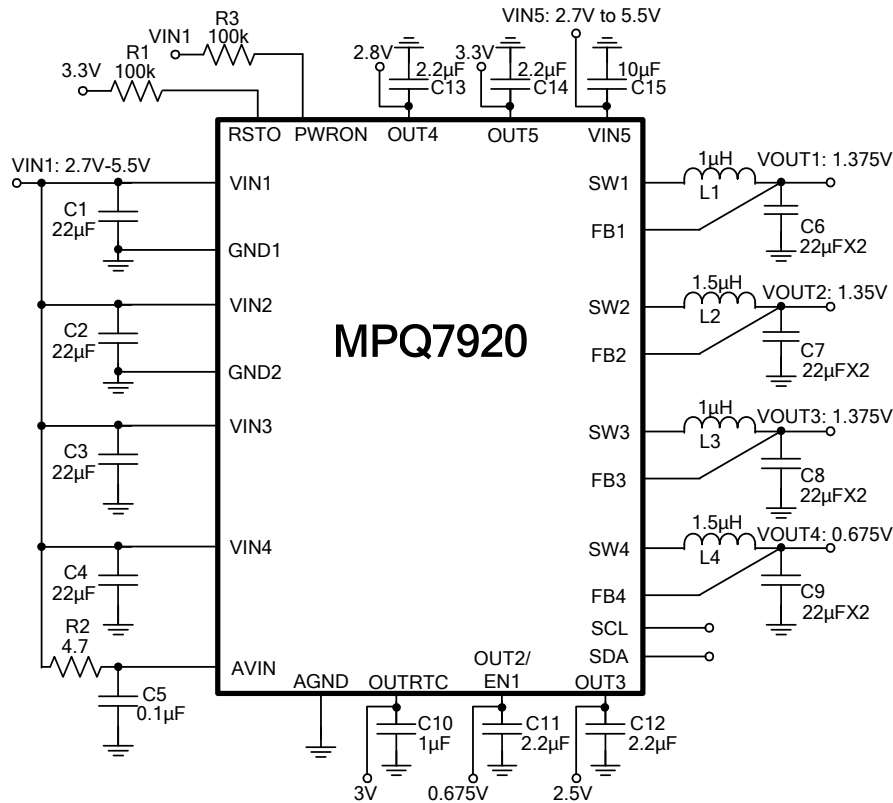
FEATURES

- **High Efficiency Step-Down Converters**
 - Buck1: 4.5A DC/DC Converter
 - Buck2: 2.5A DC/DC Converter
 - Buck3: 4.5A DC/DC Converter
 - Buck4: 2A DC/DC Converter
 - Buck1 and Buck3 can Work in Parallel
 - Buck2 and Buck4 can Work in Parallel
 - 2.7V to 5.5V Operating Input Range
 - 0.4V to 3.58V or Vin Output Range
 - Adjustable Switching Frequency
 - Adjustable Soft-start Time
 - Adjustable Phase Delay
 - Programmable Forced PWM/Auto PFM/PWM Mode
 - Output OCP, OVP
- **Low Dropout Regulators**
 - One RTC Dedicate LDO
 - Four Low Noise LDOs
 - Two Separate Input Power Supplies
 - 50mV Dropout at 300mA Load
- **System**
 - I2C Bus and User Programmable MTP
 - 2 Times Programmable MTP*
 - Power On/off Control
 - Multi Function pin LDO2/EN1(EN1 input logic level<=3.3V)
 - Power On Reset Output
 - Flexible Power On/off Sequence via MTP(0.5ms/2ms/8ms/16ms time slot selectable)
 - Flexible DC/DC, LDO On/off via MTP
 - ±4kV HBM and ±2kV CDM ESD Rating for all pins

APPLICATIONS

- Automotive Infotainment
- Automotive Video Recorder
- Automotive Display Electronics

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.Note: *2 Times Programmable MTP only for standard version MPQ7920GRM-0000-AEC1.

TYPICAL APPLICATION

MTP-EFUSE SELECTED TABLE BY DEFAULT (MPQ7920GRM-0001-AEC1):

OTP Items	Buck1	Buck2	Buck3	Buck4	LDORT C	LDO2	LDO3	LDO4	LDO5
Output Voltage	1.375V	1.35V	1.375V	0.675V	3V	0.675V	2.5V	2.8V	3.3V
Initial On/off	ON	ON	ON	ON	ON	ON	ON	ON	ON
MODE	Auto PFM/PWM	Auto PFM/PWM	Auto PFM/PWM	Auto PFM/PWM	N/A				
Power On Delay	1ms	2ms	1ms	2ms	Always ON	2ms	3ms	3ms	3ms
SOFT START Time	350µs	350µs	350µs	350µs	N/A				
Automatic turn-on	Yes								
Switching Frequency	1.65MHz								
PWRON MODE	0(Level trigger)								
RSTODELAY	10ms								
Buck1 Peak Current Limit	9.3A								
Buck2 Peak Current Limit	5.2A								
Buck3 Peak Current Limit	4.6A								
Buck4 Peak Current Limit	2.8A								
I2C SLAVE ADDRESS	0x69								
MTP Configure Code	0001								