

DESCRIPTION

PT2513 is an integrated three-phase sensorless BLDC motor driver chip with advanced protection functions, including soft-start circuit, thermal shutdown, lock on protection and output current protection. PT2513 uses sine wave current control to reduce electromagnetic noise during operation, and is suitable for fan motor drives that require high efficiency. On the speed control interface, it supports PWM or VSP (DC) commands, so that the motor can be controlled smoothly from low speed to high speed.

PT2513 adopts the BCD process, only a single VDD power supply is needed for use, and only a few parts are needed around it. The chip package is HTSSOP16, HTSSOP20 and QFN20 with bottom heat dissipation, which can achieve excellent energy efficiency, making it compact, low-cost, and ideal solution for sensor BLDC motor drive.

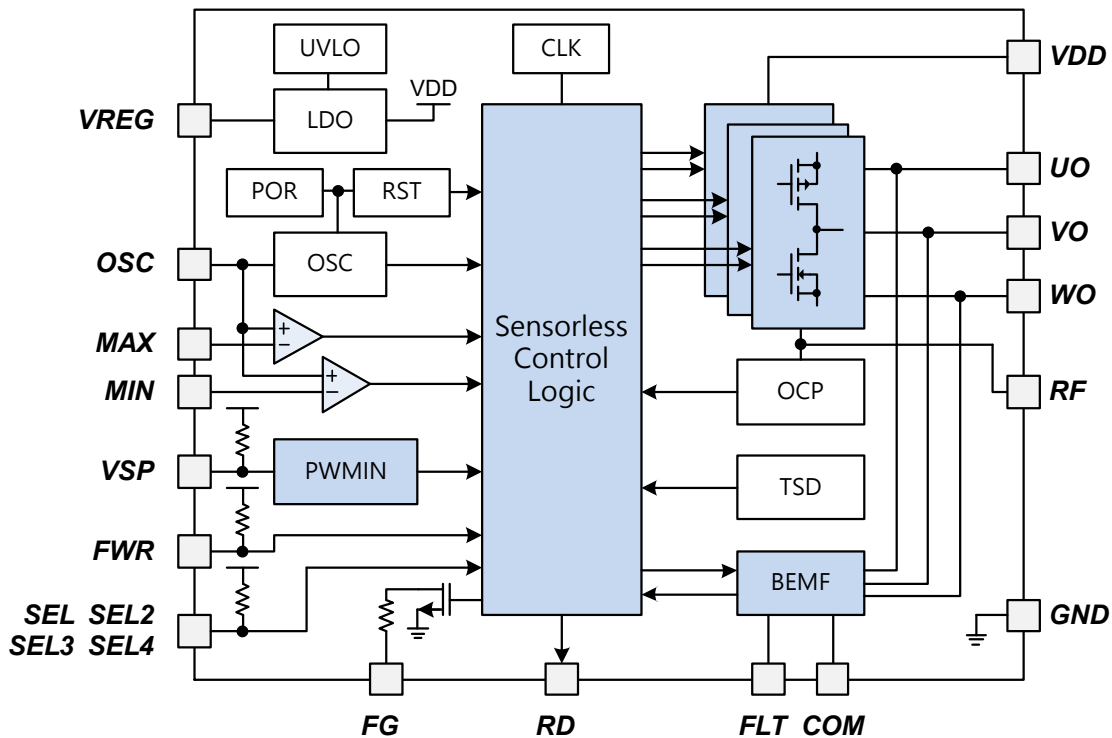
FEATURES

- Three-phase sensorless driver IC
- 6V ~ 16V voltage operating range
- 180 degree sine wave current operation
- Soft start control function
- PWM or VSP (DC) input speed control
- Maximum and minimum duty cycle limit settings
- Lock on and over-temperature protection
- Current limit protection function
- FG or 1/2FG speed signal output

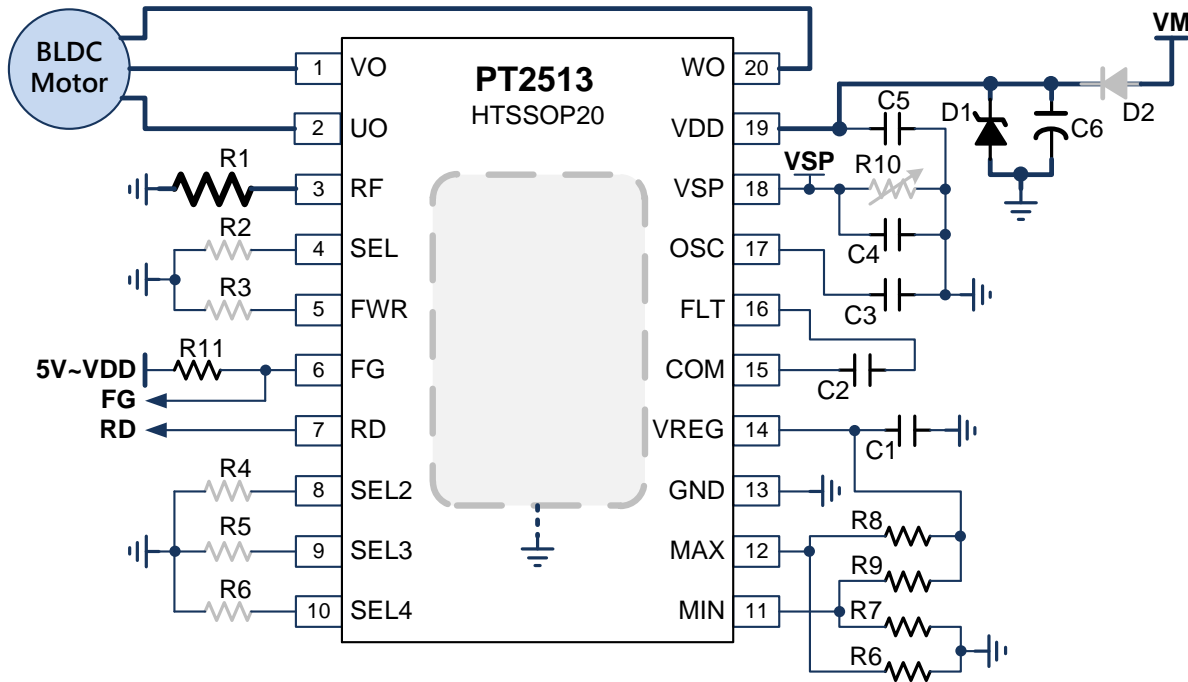
APPLICATIONS

- Three phase sensorless BLDC driver
- CPU, GPU, or server cooling fan
- Refrigerator fan

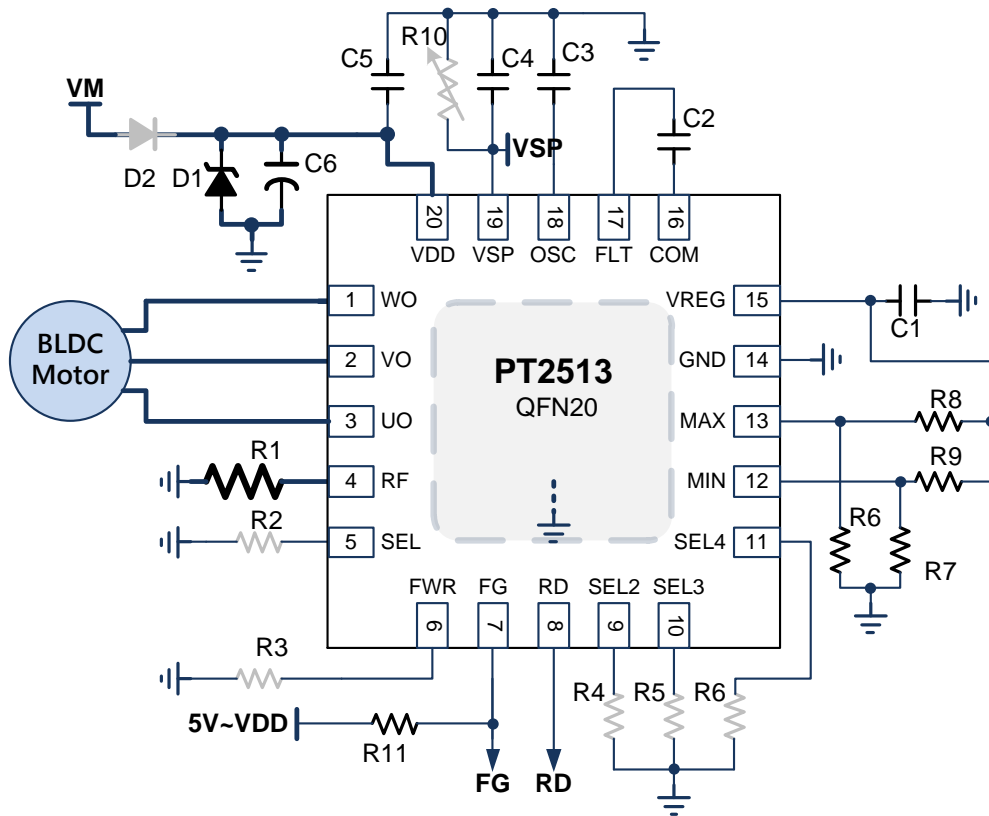
BLOCK DIAGRAM



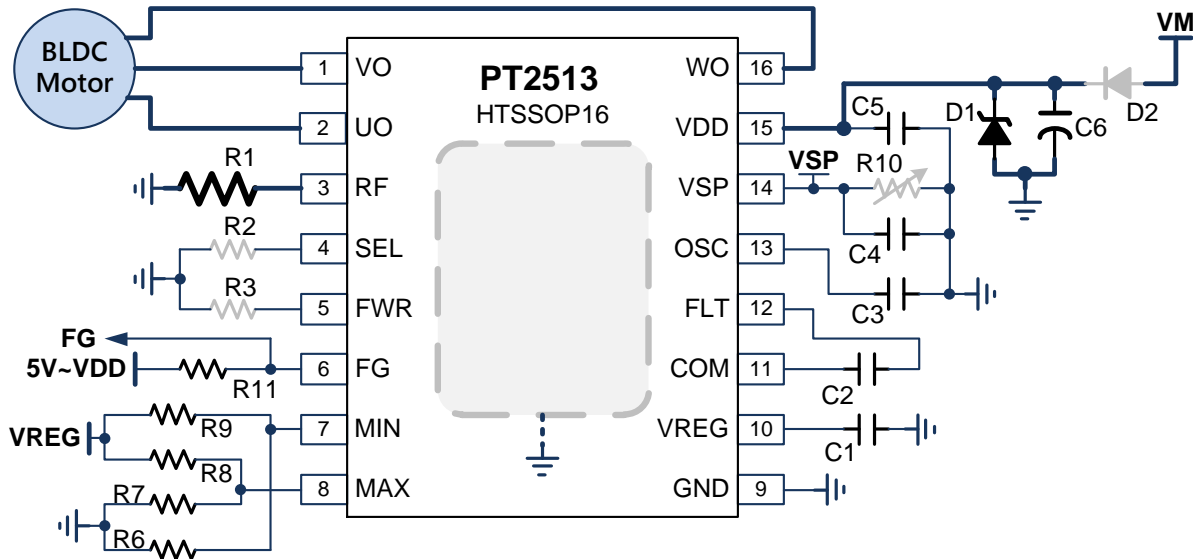
HTSSOP20 APPLICATION CIRCUIT



QFN20 APPLICATION CIRCUIT



HTSSOP16 APPLICATION CIRCUIT



APPLICATION CIRCUIT BOM

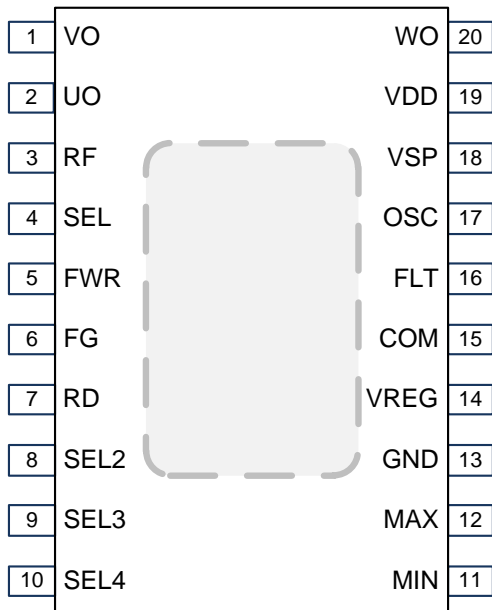
Parts	Value	Unit	Description
R1	0.1 ~ 0.5	Ω	Motor phase current limit reference, use more than 1206, type and power > 1/4W, if the temperature rise is too high, it can be paralleled or enlarged
R2/R4/R5/R6	0/~250K/ NC	Ω	SEL setting, please refer to the pin description, SEL=H can be kept floating, SEL=L can be short to GND, SEL=M, can be connected 220K Ω ~ 270K Ω to GND.
R3	0~10K/ NC	Ω	Forward and reverse settings, when not in use, it can be kept floating or short to GND
R6/R7/R8/R9	0~100K	Ω	MAX and MIN settings. It is recommended that the resistance value of R6+R8 or R7+R9 is between 100K Ω ~ 500K Ω , and it can also be set by external input voltage.
R10	0 ~ 1M	Ω	When a potentiometer is needed to adjust the speed, a 1M Ω adjustable resistor can be connected. Or connect >100K Ω three-terminal adjustable resistance to VREG/GND. It is no needed when using external VSP or PWM input
R11	10K	Ω	FG Open Drain pull high resistor
C1	100n	F	VREG bypass capacitor
C2	10p ~ 10n	F	ZC detection filter capacitor
C3	10p ~ 10n	F	Startup capacitor, Set start step and acceleration /deceleration

C4	1n ~ 100n	F	VSP input bypass capacitor
C5	~100n	F	DC power input high frequency (like PWM switching) rejection capacitor
C6	22u ~ 47u	F	DC power input voltage stabilized capacitor, use >25V electrolytic capacitor. In addition to voltage stabilization, it can also reduce abnormal voltage bounce when the motor is decelerated or locked.
D1	15 ~ 18	V	Zener diode to prevent excessive back-EMF or voltage surge
D2	50	V	Anti-voltage reverse connection diode, used when needed, it will consume power and generate heat

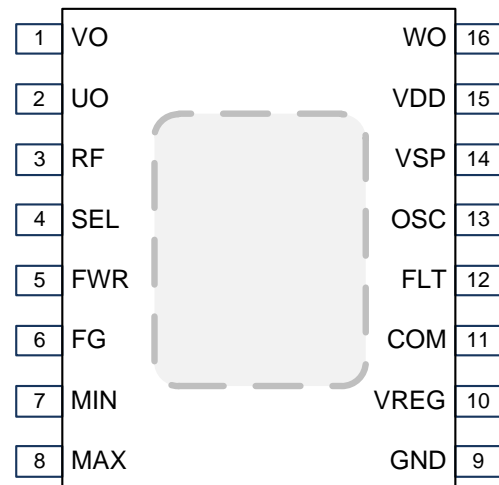
ORDER INFORMATION

Valid Part Number	Package Type	Top Code
PT2513-HT	16-PIN, HTSSOP, 173MIL	PT2513-HT
PT2513	20-PIN, HTSSOP, 173MIL	PT2513
PT2513-QF	20-PIN, QFN	PT2513-QF

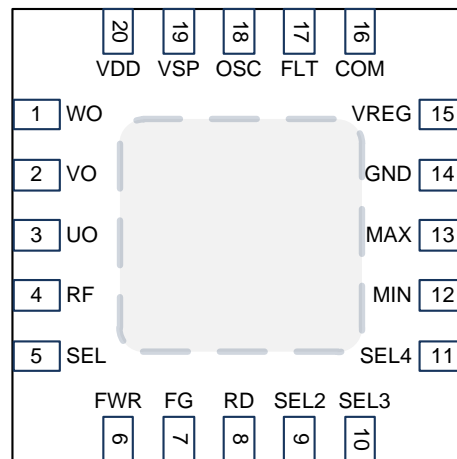
PIN DESCRIPTION



PT2513
HTSSOP20



PT2513
HTSSOP16



PT2513
QFN20

IMPORTANT NOTICE

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