DESCRIPTION

PT2432 is an integrated 12V (PT2432A: 24V) 3-phase sensor-less BLDC motor driver with advanced protections including soft-start circuitry, thermal shutdown, lock protection and output current limit. PT2432 is well -suited for sensorless motor applications and ideal for fan motor control requiring high power efficiency. The speed control interface supports both PWM and DC command allowing smooth low speed to high speed motor control. PT2432 requires few peripheral devices, enabling compact PCB layout.

PT2432 utilizes a new multi-power BCD technology, requires a single VDD power supply from 6V – 15V (PT2432A: from 6V – 28V) , uses the HTSSOP16 and QFN48 package and achieves excellent power efficiency making it the perfect solution for compact, low-cost, sensor-less BLDC motor systems.

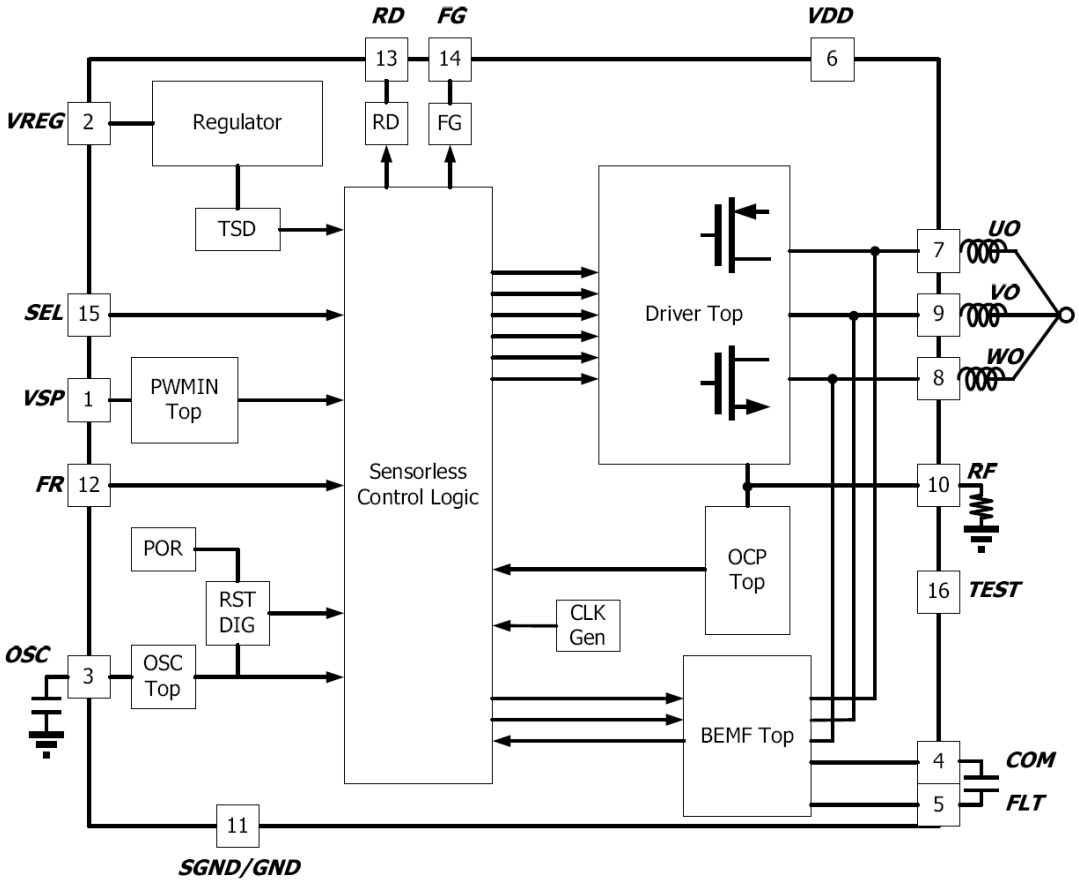
FEATURES

- Multi-power BCD technology
- 3-phase sensorless control
- Soft-start control function
- Soft-switching function for silent operation
- Lock protect function
- Thermal protection function with 30°C hysteresis window
- Supports both PWM or DC command for motor speed control
- Over-current limit set by an external precision resistor
- FG output function, providing a pulse signal similar to a Hall sensor

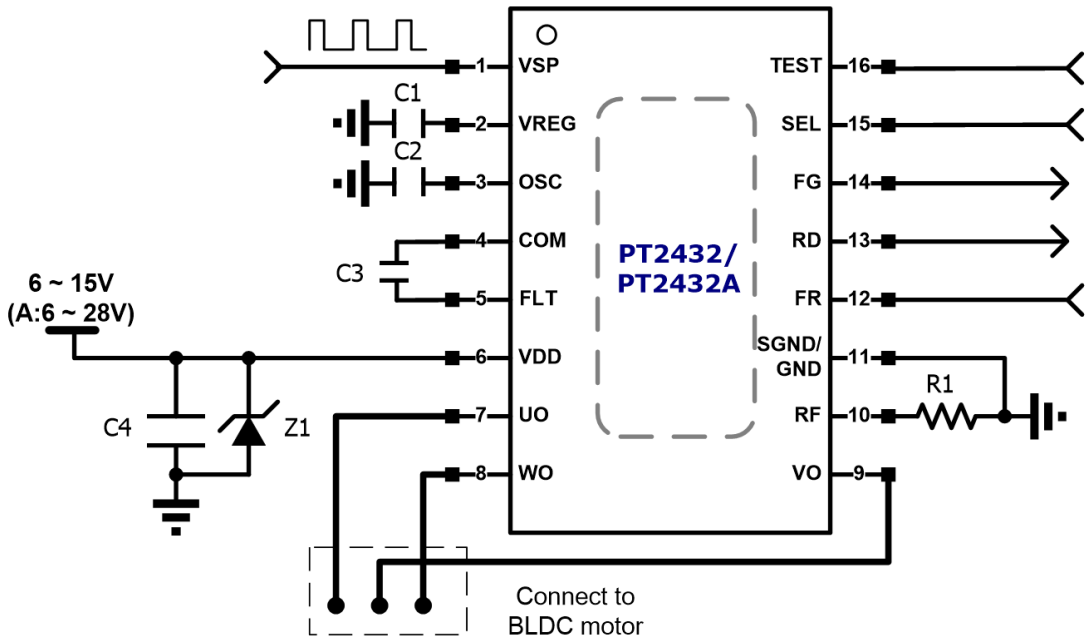
APPLICATIONS

- 3-phase sensor-less BLDC motor driver
- Fans for CPU, GPU, or server
- Pump

BLOCK DIAGRAM



APPLICATION CIRCUIT FOR HTSSOP16

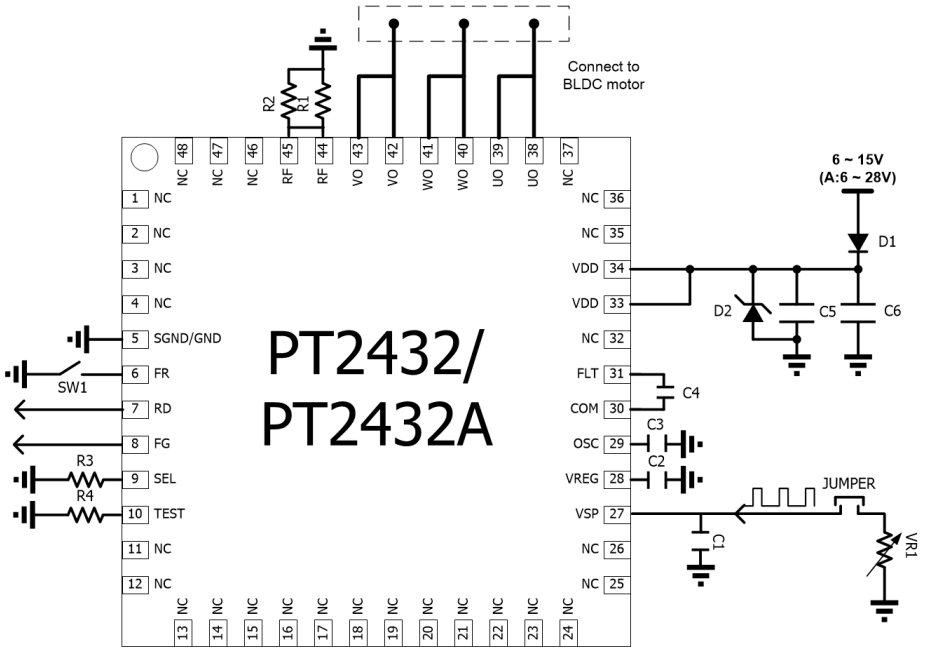


BOM FOR APPLICATION CIRCUIT

Part	Value	Unit	Description
C1	1u	F	Regulator stability capacitor
*C2	1n	F	Oscillator start-up capacitor, 100pF - 3.9nF
*C3	1n	F	ZC signal low pass filter capacitor, 100pF - 10nF
C4	10u	F	Power supply de-coupling capacitor
*R1	0.15	Ω	Reference voltage current limit resistor
Z1	15 (A: 28)	V	Large voltage spike Zener protection diode
U1	PT2432	IC	3-phase sensor-less driver IC

Notes : 1. C2 & C3 are depend on motor type.
2. R1 is depend on motor application.

APPLICATION CIRCUIT FOR QFN48



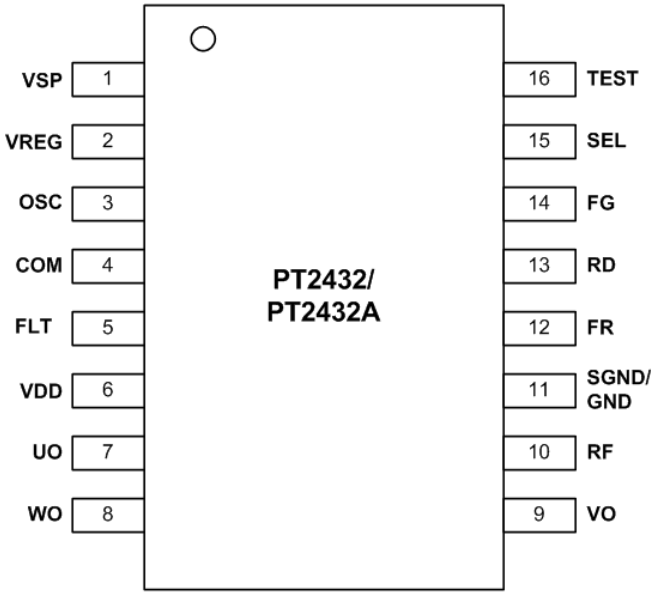
BOM FOR APPLICATION CIRCUIT

Part	Value	Unit	Description
C1	100p	F	Input noise filter capacitor
C2	1u	F	Regulator stability capacitor
C3	560p	F	Oscillator start-up capacitor, 100pF – 3.9nF
C4	1n	F	ZC signal low pass filter capacitor, 100pF – 10nF
C5	10µ	F	Power supply de-coupling capacitor
C6	100n	F	Power supply de-coupling capacitor
R1	0.39	Ω	Reference voltage current limit resistor
R2	0.39	Ω	Reference voltage current limit resistor
R3	NC	Ω	Function selection
R4	NC	Ω	Function selection
D1	1N5819	V	Prevent BEMF feedback to power supply
D2	15 (A: 28)	V	Large voltage spike Zener protection diode
VR1	500K	Ω	Control PWM analog voltage
C4	10µ	F	Power supply de-coupling capacitor
U1	PT2432	IC	3-phase sensor-less driver IC

Notes :

1. C3 & C4 are depend on motor type.
2. R1, R2 is depend on motor application.

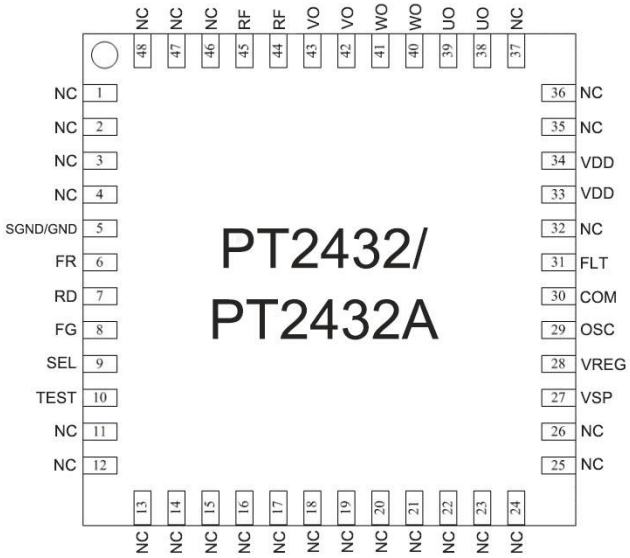
PIN CONFIGURATION FOR HTSSOP16



PIN DESCRIPTION

Pin Name	I/O	Description	Pin No.
VSP	I	Speed command input pin (accepts either DC or PWM signal). Keep floating for full speed operation.	1
VREG	IO	Regulator output pin. Connect a 2.2μF bypass capacitor to ground.	2
OSC	IO	Start-up frequency and lock mode period setting input pin. Connect a 2.2nF capacitor to ground for 10s lock time	3
COM	I	Motor middle point connection for BEMF detection reference.	4
FLT	I	BEMF signal filter input pin	5
VDD	P	High voltage power supply pin	6
UO	O	Motor driving pin U (connect to the U phase of motor coil). Current flows in the order of U, W, V.	7
WO	O	Motor driving pin W (connect to the W phase of motor coil). Current flows in the order of U, W, V.	8
VO	O	Motor driving pin V (connect to the V phase of motor coil). Current flows in the order of U, W, V.	9
RF	O	Current sense signal output pin. Connect a 0.3Ω resistor to ground for 1A output current limit.	10
GND/SGND	P	High and low voltage ground signal pins	11
FR	I	Forward or reverse select input pin. Change status when power off.	12
RD	O	Lock mode signal output pin (5V CMOS logic)	13
FG	O	Fan speed signal output pin (5V CMOS logic)	14
SEL	I	Test1 input pin	15
TEST	I	Test2 input pin	16
Heatsink	P	Backside heatsink is for heat dissipation.	back-side

PIN CONFIGURATION FOR QFN48



PIN DESCRIPTION

Pin Name	I/O	Description	Pin No.
GND/SGND	P	High and low voltage ground signal pins	5
FR	I	Forward or reverse select input pin. Change status when power off.	6
RD	O	Lock mode signal output pin (5V CMOS logic)	7
FG	O	Fan speed signal output pin (5V CMOS logic)	8
SEL	I	Test1 input pin	9
TEST	I	Test2 input pin	10
VSP	I	Speed command input pin (accepts either DC or PWM signal). Keep floating for full speed operation.	27
VREG	IO	Regulator output pin. Connect a 2.2μF bypass capacitor to ground.	28
OSC	IO	Start-up frequency and lock mode period setting input pin. Connect a 2.2nF capacitor to ground for 10s lock time	29
COM	I	Motor middle point connection for BEMF detection reference.	30
FLT	I	BEMF signal filter input pin	31
VDD	P	High voltage power supply pin	33,34
UO	O	Motor driving pin U (connect to the U phase of motor coil). Current flows in the order of U, W, V.	38,39
WO	O	Motor driving pin W (connect to the W phase of motor coil). Current flows in the order of U, W, V.	40,41
VO	O	Motor driving pin V (connect to the V phase of motor coil). Current flows in the order of U, W, V.	42,43
RF	O	Current sense signal output pin. Connect a 0.5Ω resistor to ground for 1A output current limit.	44,45
NC		No connection	1-4,11-26,32, 35-37,46-48
Heatsink	P	Backside heatsink is for heat dissipation.	back-side

IMPORTANT NOTICE

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