DESCRIPTION

The devices are full bridge drivers to control power devices like MOS-transistors or IGBTs in 3-phase systems with a maximum blocking voltage of +600 V.
The six independent drivers are controlled at the low-side using CMOS and LSTTL compatible signals, down to 3.3V logic. The device includes an under -voltage detection unit with hysteresis characteristic and over -current detection. The over -current level is adjusted by choosing the resistor value and the threshold level at pin ITRIP. Both error conditions (under-voltage and over-current) lead to a definite shut down of all six switches. An error signal is provided at the $\overline{\text{FAULT}}$ open drain output pin. The blocking time after over -current can be adjusted with an RC-network at pin RCIN. Therefore, the resistor R_{RCIN} is optional. The typical output current can be given with 200mA for pull-up and 400mA for pull down. Because of system safety reasons a 0.29us dead time has been realized. The function of inputs EN and ITRIP can optionally be extended with over-temperature detection, using an external NTC resistor, diodes and resistor network.

APPLICATIONS

- Three phase motor drives
- Industrial inverters.
- General purpose three phase inverters

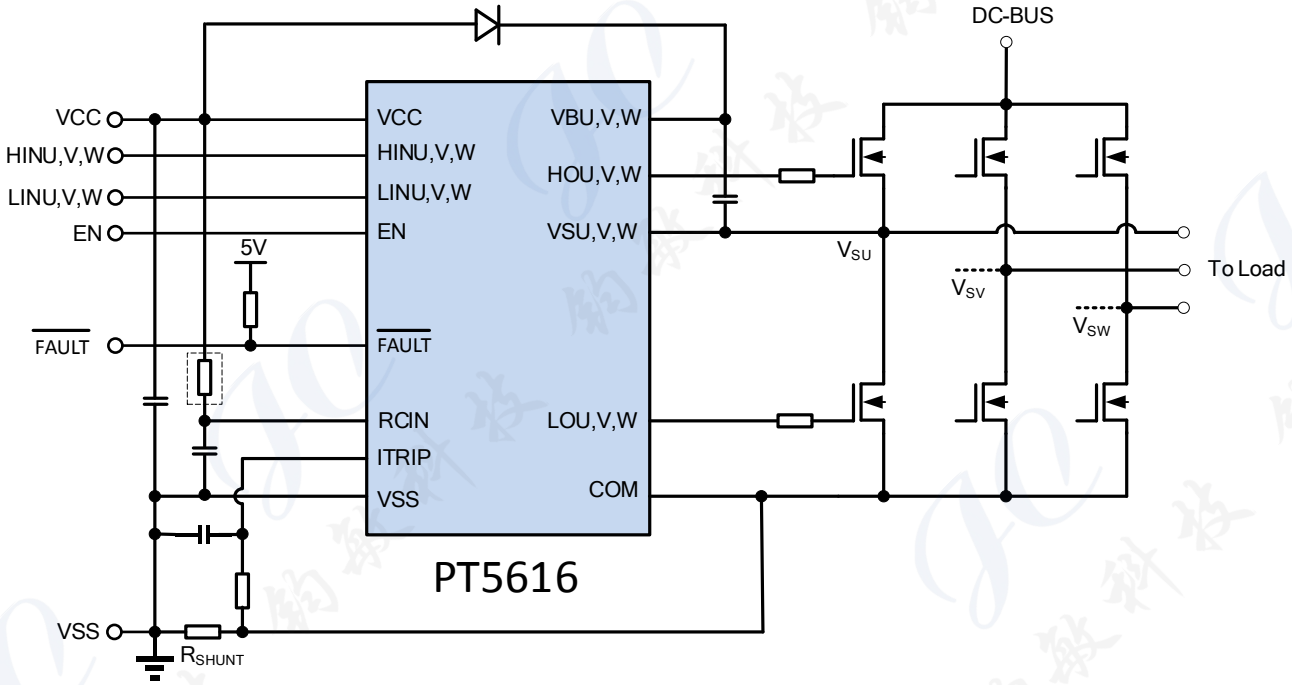
FEATURES

- Drives up to six IGBT/MOSFET power devices
- All high side channels fully operate up to +600V
- Gate drive supplies up to 18 V per channel
- Under-voltage lockout for all channels
- Over-current protection
- Flexible over-temperature shutdown input
- Advanced input filter
- Built-in dead-time protection
- Shoot-through (cross-conduction) protection
- Independent Enable/disable input and fault reporting
- Shutdown all switches during error conditions
- Adjustable fault clear timing
- Separate logic and power grounds
- 3.3 V/5V input logic compatible
- Designed for use with bootstrap power supplies
- Matched propagation delays for all channels
- Matched dead time
- -40˚C to 125˚C operating range
- SOP28 Package available
- Lead-free

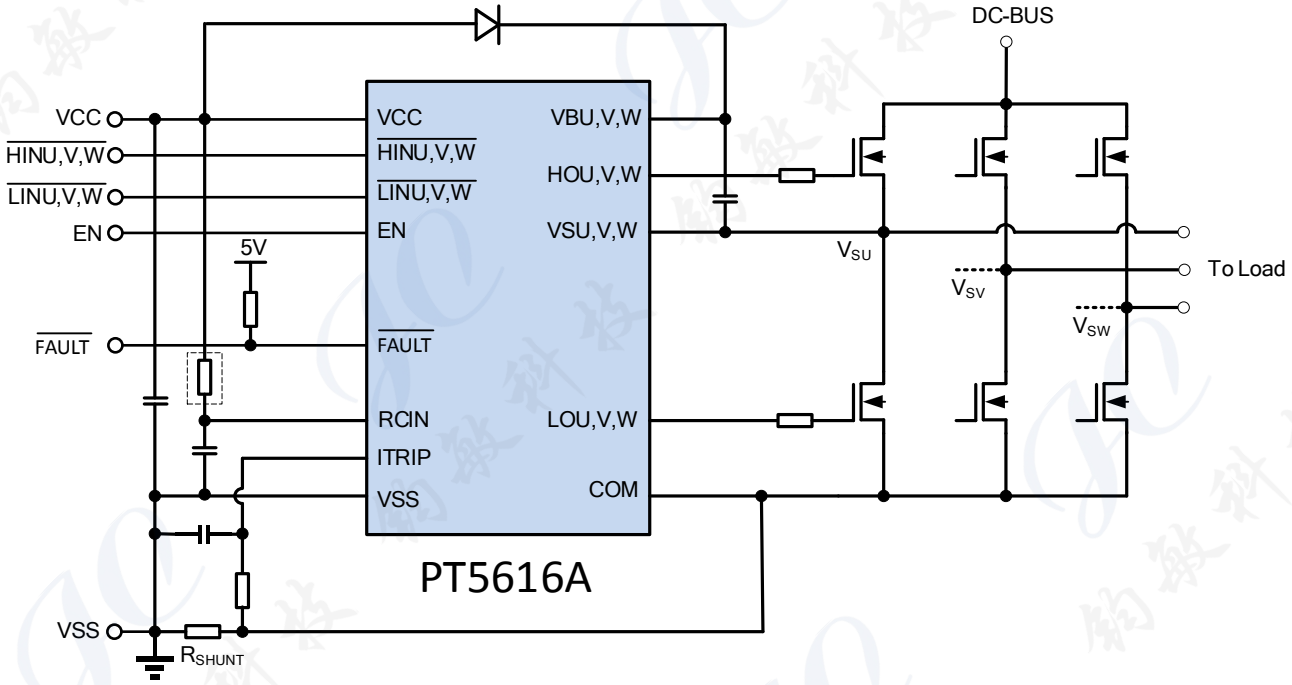
INPUT LOGIC

Part	Input Logic
PT5616	LIN / HIN
PT5616A	$\overline{\text{LIN}}$ / $\overline{\text{HIN}}$

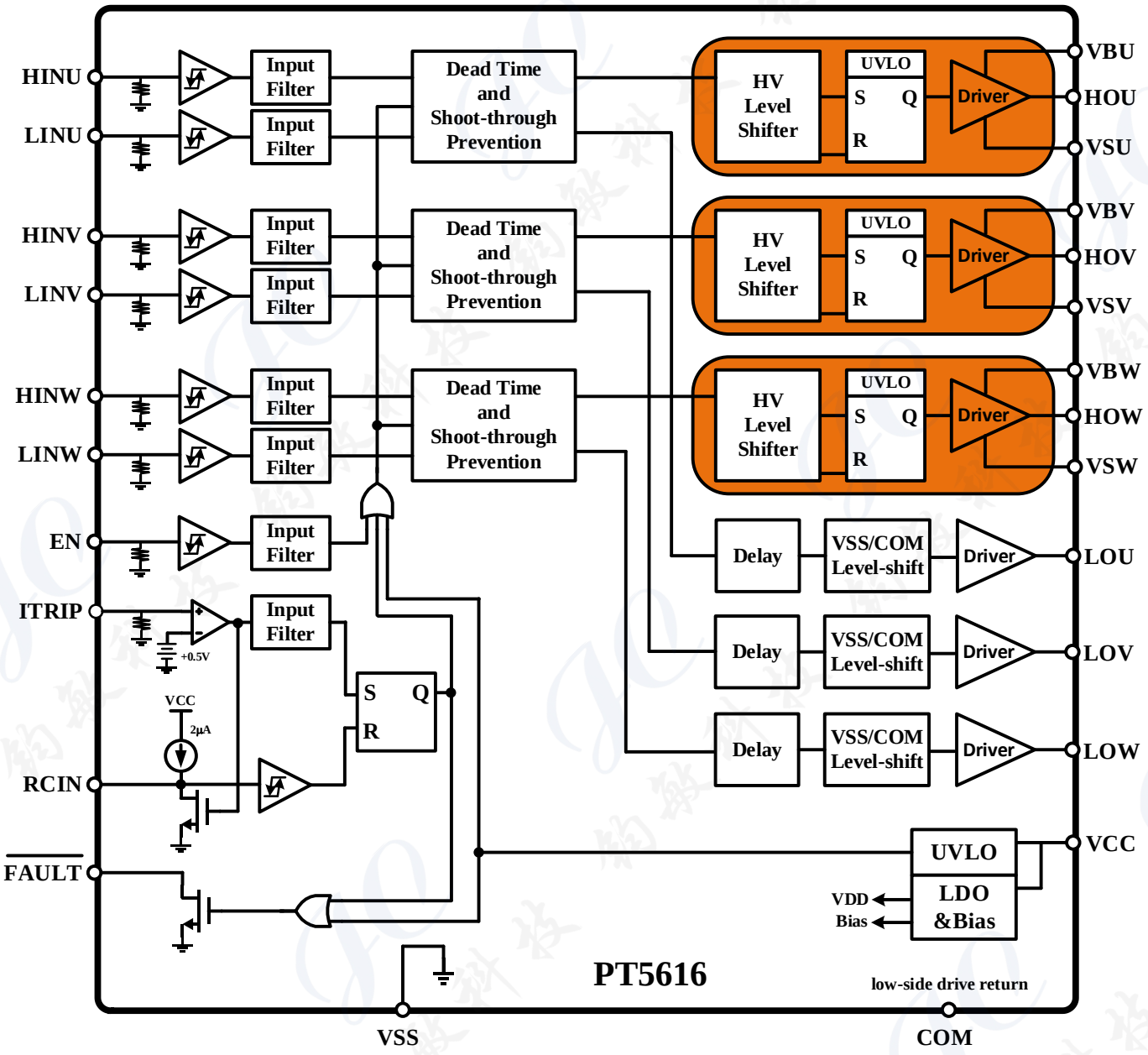
PT5616 TYPICAL APPLICATION



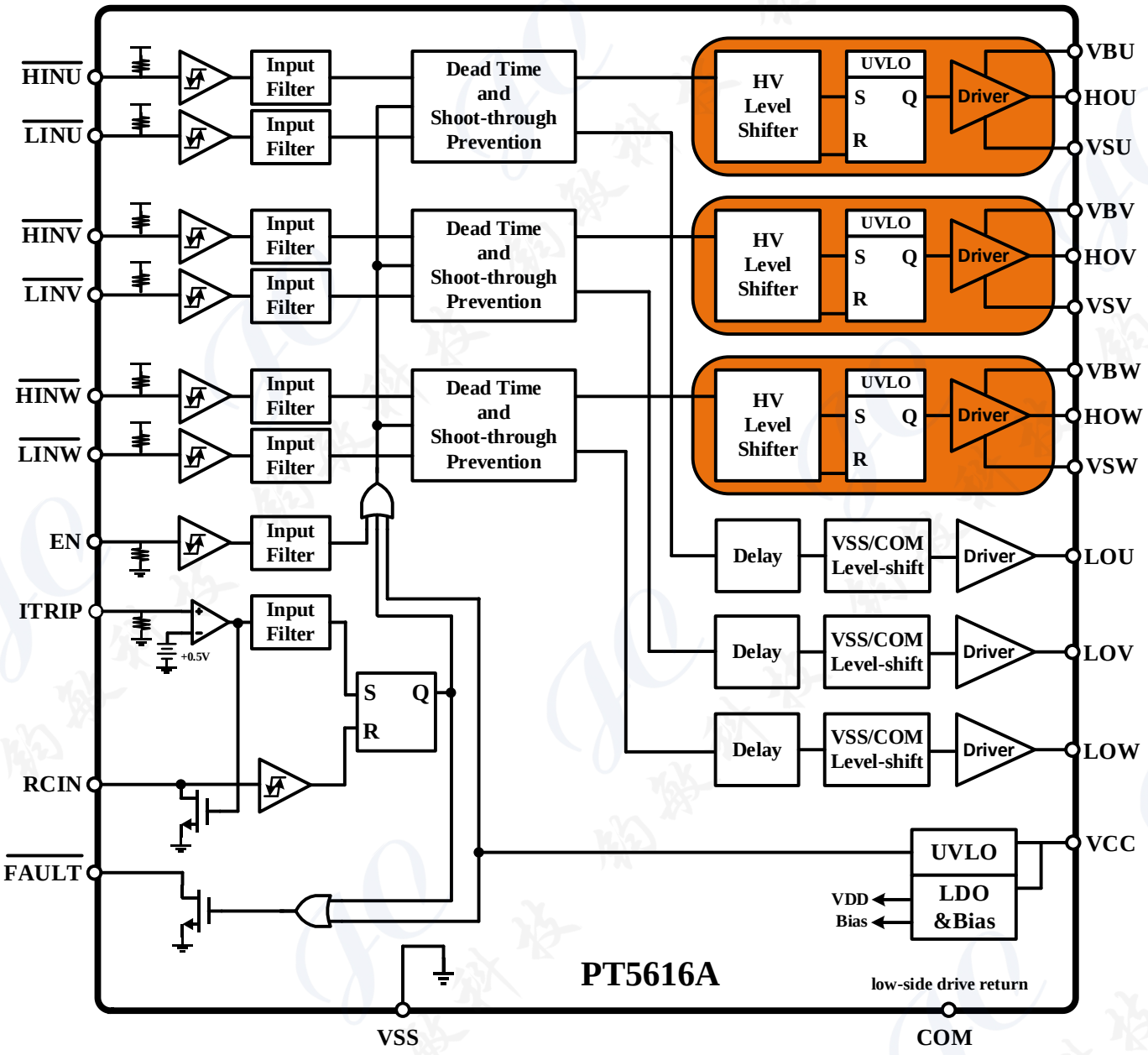
PT5616A TYPICAL APPLICATION



PT5616 BLOCK DIAGRAM



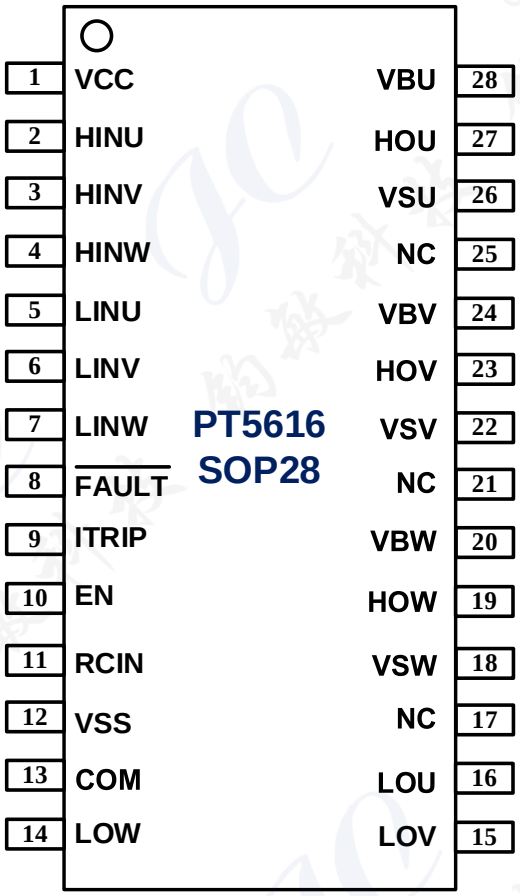
PT5616A BLOCK DIAGRAM

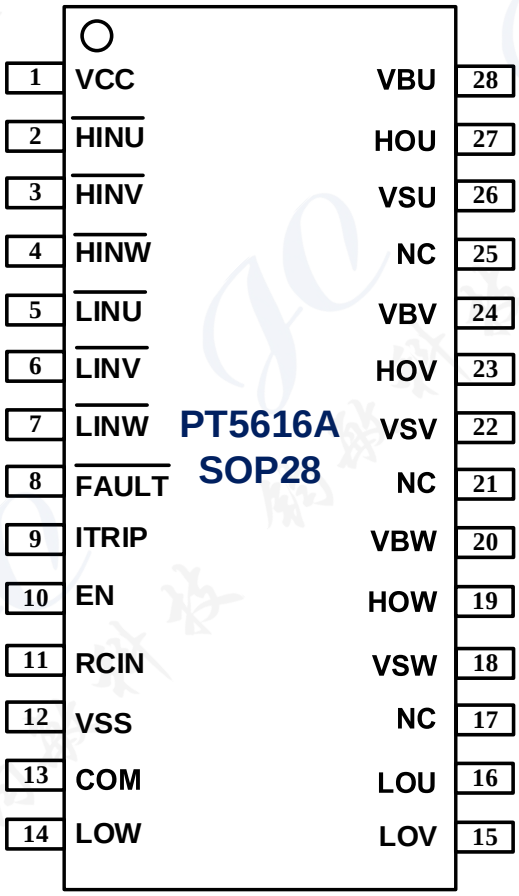


ORDER INFORMATION

Valid Part Number	Package Type	Top Code
PT5616-S	28-SOP, 300MIL	PT5616-S
PT5616A-S	28-SOP, 300MIL	PT5616A-S

PIN CONFIGURATION





PIN DESCRIPTION

Pin Name	Description	Pin No.
VCC	Logic and low-side gate drivers power supply voltage	1
HINU $\overline{\text{HINU}}$	Logic inputs for high-side gate driver outputs (phase U); PT5616A input is out-phase with output	2
HINV $\overline{\text{HINV}}$	Logic inputs for high-side gate driver outputs (phase V); PT5616A input is out-phase with output	3
HINW $\overline{\text{HINW}}$	Logic inputs for high-side gate driver outputs (phase W); PT5616A input is out-phase with output	4
LINU $\overline{\text{LINU}}$	Logic inputs for low-side gate driver outputs (phase U); PT5616A input is out-phase with output	5
LINV $\overline{\text{LINV}}$	Logic inputs for low-side gate driver outputs (phase V); PT5616A input is out-phase with output	6
LINW $\overline{\text{LINW}}$	Logic inputs for low-side gate driver outputs (phase W); PT5616A input is out-phase with output	7
$\overline{\text{FAULT}}$	Indicates over-current, over-temperature (ITRIP), or low-side under-voltage lockout has occurred. This pin has negative logic and an open-drain output. The use of over-current and over-temperature protection requires the use of external components.	8
ITRIP	Analog input for over-current shutdown. When active, ITRIP shuts down outputs and activates $\overline{\text{FAULT}}$and RCIN low. When ITRIP becomes inactive, $\overline{\text{FAULT}}$ stays active low for an externally set time t_{FLTCLR}, then automatically becomes inactive (open-drain high impedance).	9
EN	Logic input to shutdown functionality. Logic functions when EN is high (i.e., positive logic). No effect on $\overline{\text{FAULT}}$ and not latched. EN can also be extended as input of over-temperature protection when equipped with an external NTC resistor.	10
RCIN	An external RC network input used to define the FAULT CLEAR delay (t_{FLTCLR}) approximately equal to R*C. When RCIN > 8 V, the $\overline{\text{FAULT}}$ pin goes back into an open-drain high-impedance state.	11
VSS	Logic ground	12
COM	Low-side gate drive return	13
LOW	Low-side gate driver W-phase output	14
LOV	Low-side gate driver V-phase output	15
LOU	Low-side gate driver U-phase output	16
NC.	Not Connected	17
VSW	High-side driver W-phase floating supply offset voltage	18
HOW	High-side driver W-phase gate driver output	19
VBW	High-side driver W-phase floating supply	20
NC.	Not Connected	21
VSV	High-side driver V-phase floating supply offset voltage	22
HOV	High-side driver V-phase gate driver output	23
VBV	High-side driver V-phase floating supply	24
NC.	Not Connected	25
VSU	High-side driver U-phase floating supply offset voltage	26
HOU	High-side driver U-phase gate driver output	27
VBU	High-side driver U-phase floating supply	28