

TC78B041FNG, TC78B042FTG

Three-phase brushless motor controller ICs with sine-wave drive—Realizes high efficiency in a wide range of rotations without phase adjustment—

Toshiba Electronic Devices & Storage Corporation ("Toshiba") has released two three-phase brushless motor controller ICs "TC78B041FNG" housed in an SSOP30 package and "TC78B042FTG" in a VQFN32 package. Both adopt InPAC[Note 1], Toshiba's original automatic phase adjustment function, to eliminate phase adjustment and achieve high level efficiency at a wide range of motor rotation speeds. This allows their use with motor drivers of various voltages and current capacities, and they also can be used in combination with intelligent power devices at the output stages. The controllers are suited for use in home appliances such as air-conditioners and air purifiers, and industrial equipment.



TC78B041FNG : SSOP30



TC78B042FTG : VQFN32

Three features

- Incorporating InPAC secures high-level efficiency for a wide range of rotation speeds without any need for phase adjustment**
 Simple phase adjustment of the Hall signal and output motor current realizes high efficiency driving.
- Low noise and low vibration**
 Use of a sine wave drive system with a smooth current waveform reduces noise, and generates less noise and vibration than motors with a rectangular wave drive system.
- Small package and board space saving**
 TC78B042FTG adopts a VQFN32 (5mm × 5mm × 1mm) package that can be mounted in limited spaces. The popular SSOP30 package is added to the line-ups as the TC78B041FNG.

Applications

- Fans for home appliances (air conditioners, air purifiers, water heaters, ventilation fans, and electric fans)
- Fans for industrial equipment (Refrigerated showcase)

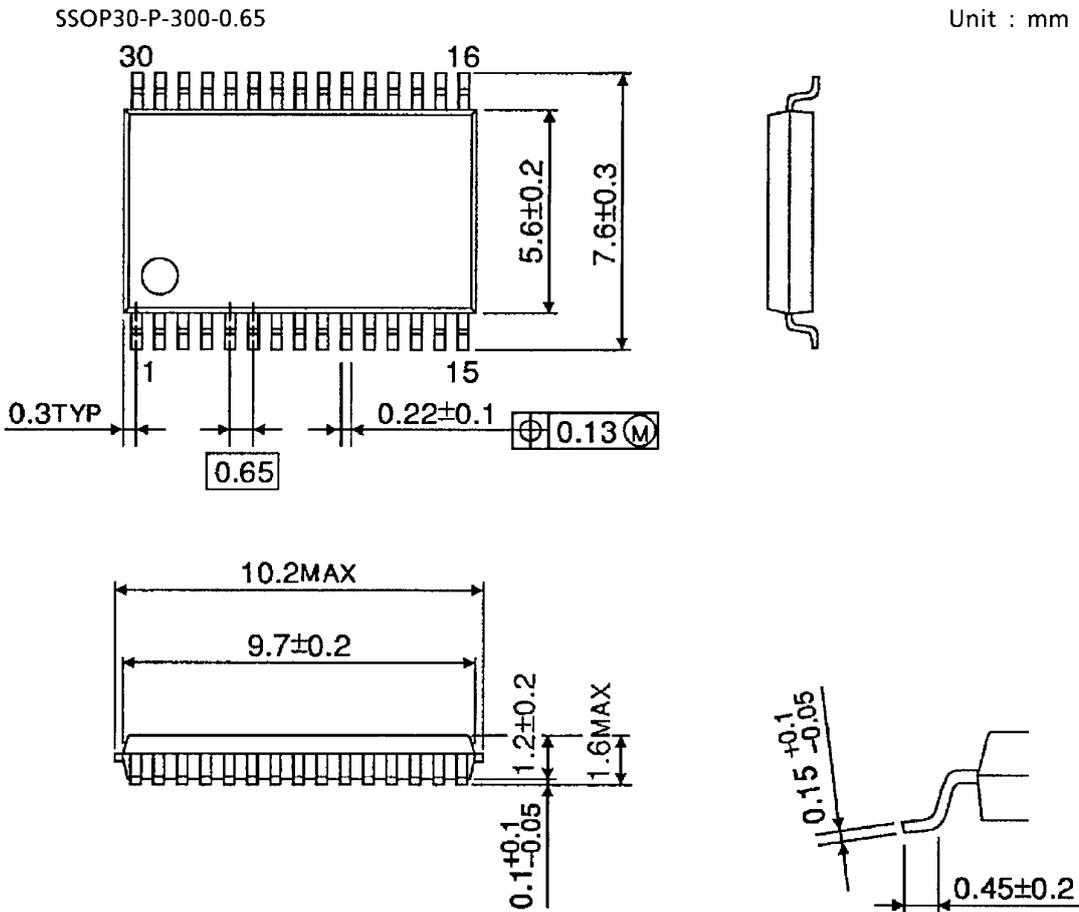
[Note 1] InPAC: Intelligent Phase Control, Toshiba's original automatic phase adjustment function

Product specifications

Part number	TC78B041FNG	TC78B042FTG
Package	SSOP30 (7.6mm×10.2mm×1.6mm)	VQFN32 (5mm×5mm×1mm)
Supply voltage (operating range)	6 to 16.5V	
Driving method	Sine-wave drive	
Other features	Automatic phase adjustment function (InPAC)	
	Hall element input / Hall IC input available	
	Forward rotation / Reverse rotation switch	
	Motor lock detection	
	Number of pulses of rotation pulse signal is selectable.	
	5V regulator included VREF pin	5V regulator included VREF pin / VREF2 pin
	Error detection positive input (RES pin)	Error detection positive input (RES pin) Error detection negative input (RESX pin)

Package

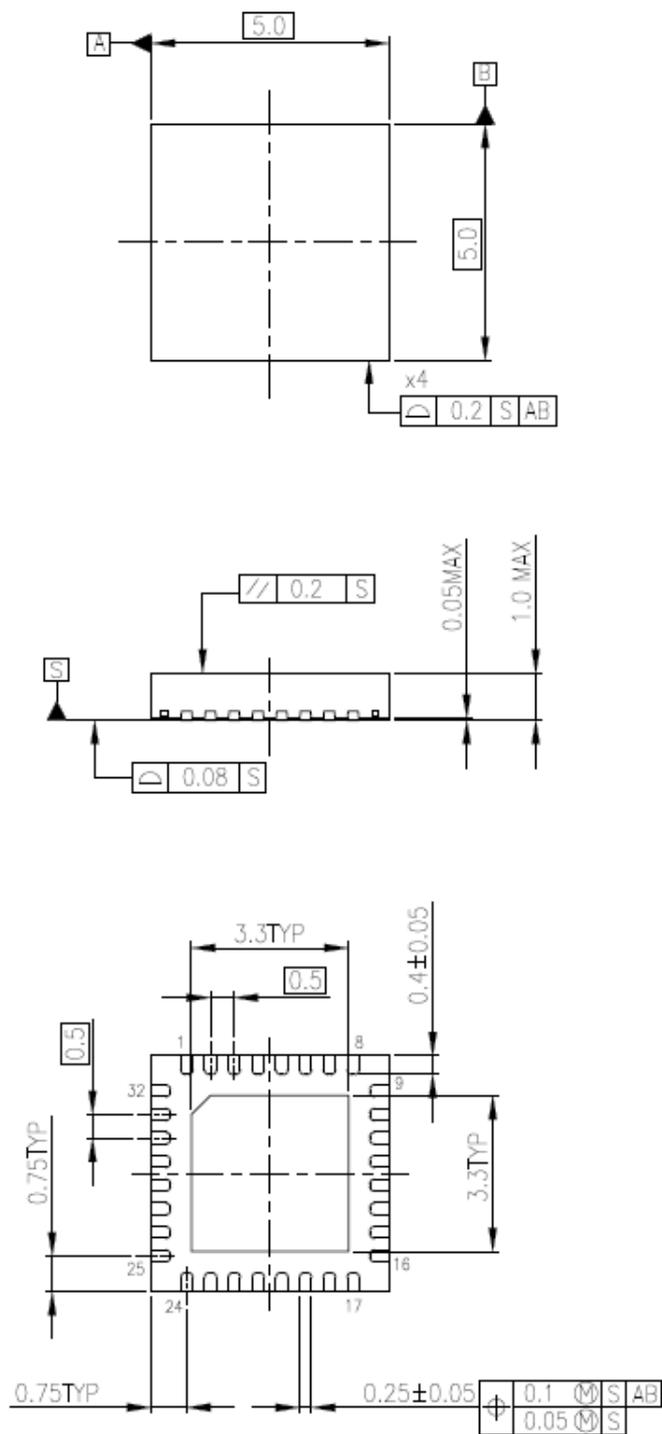
Package dimensions of TC78B041FNG



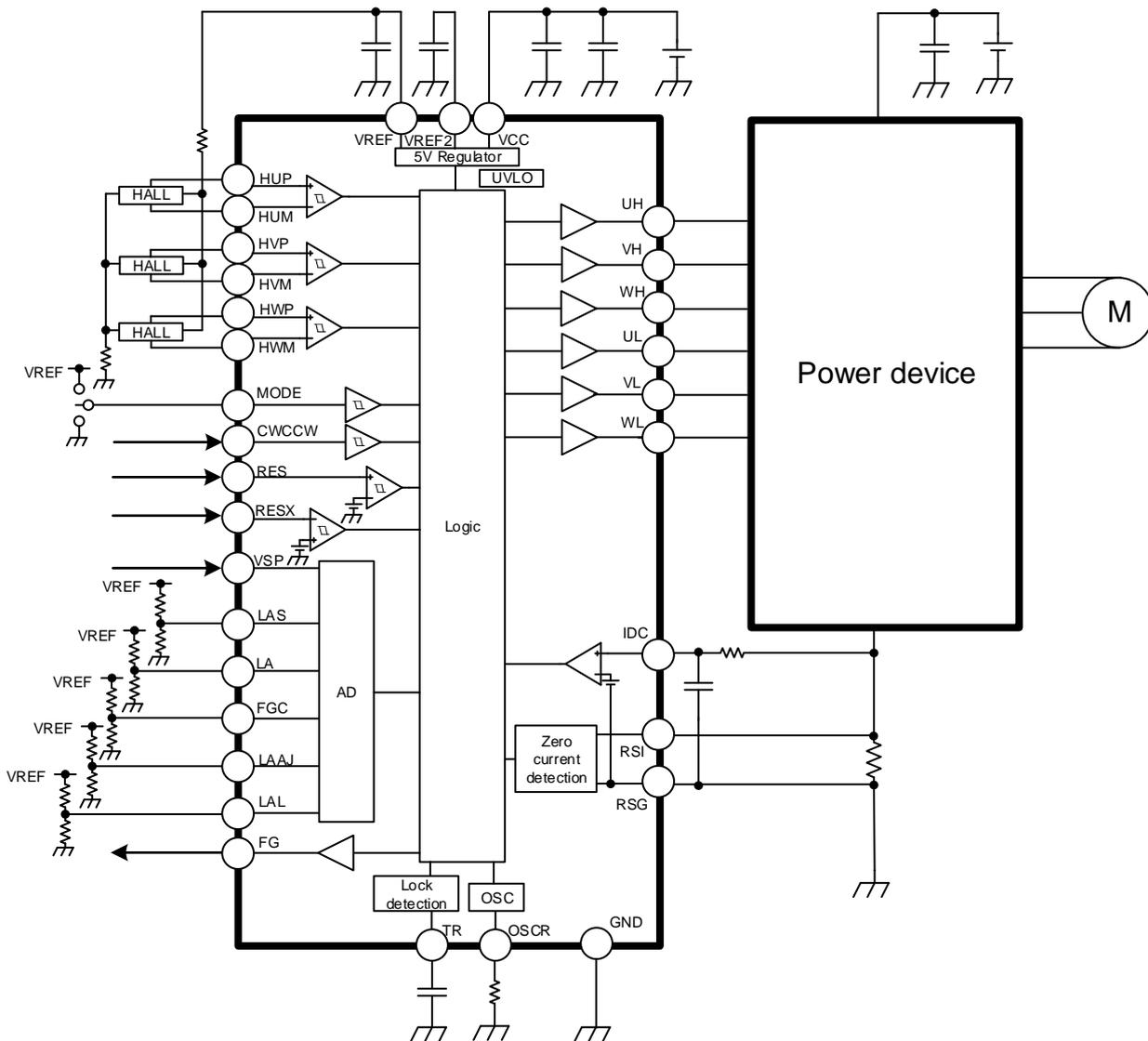
Package dimension of TC78B042FTG

P-VQFN32-0505-0.50-005

"Unit:mm"



Example of Application Circuit



Note: The RESX pin and VREF pin are only in TC78B042FTG.

Note: The application circuit is provided for reference purposes only. Especially, thorough evaluation is required on the phase of mass production design. Providing these application circuit examples does not grant a license for industrial property rights.

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