Three Phase BLDC, PMSM Motor Kit with DRV8301, Encoder and TMS570 Safety MCU

(ACTIVE) DRV8301-LS12-KIT

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Key Document

- MotorWare Software Projects for Hercules Safety MCUs v1.03.03.03 (ZIP 120636 KB) 18 Sep 2012 540 views

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Description

The DRV8301-LS12 Kit is a motor control evaluation kit for spinning three phase brushless DC and brushless AC (BLAC) - often referred to as permanent magnet synchronous (PMSM) - motors with examples of both sensorless Field Oriented / Vector Control (FOC) and TI's InstaSPIN-BLDC sensorless BLDC solution. The DRV8301-LS12 Kit is a high-performance, power-efficient, cost-effective platform that speeds development for quicker time to market. Applications include Electric Power Steering, Power Door/Roof/Lift, EV/HEV/Traln Propulsion, Dual Clutch Transmissions, Electronic Throttle Control, Fuel/Coolant/Oil pumps, A/C Compressor, and Wipers.

Features

Software Support:
- Encoder based FOC with redundant sensorless speed estimation
- Sensorless InstaSPIN™-BLDC
- Speed & torque control loops
- Follows TI motor software & HALCoGen conventions
- Leverages ARM CMSIS Math Library

Teknic Motor:
- 6,000 rpm
- 7.1 A motor with built-in encoder

Hercules controlCARD includes:
- TPS65381 Safety Power Management Companion
- Isolated xds100v2 and external JTAG connector
- RJ45 Ethernet connector

DRV8301 EVM:
- 1.7A Pre-driver with 2x Internal programmable gain amplifiers for shunt current sensing
- 1.5A buck converter & 60A+ FETs

What's Included

- DRV8301 EVM
- Teknic Motor with built-in Encoder and wire harness
- 24 V International wall power supply
- Hercules TMS570LS12 Isolated controlCARD
- USB Cable
- Quick Start Guide
- One DVD that includes TI Code Composer Studio 5
- One DVD that includes: TI MotorWare motor control CCS5 example projects for redundant SMO and Encoder based FOC and InstaSPIN™-BLDC
- TI GUIComposer runtime environment with GUI applications demonstrating the MotorWare projects
- MotorWare Documentation
- Hardware Documentation
- HALCoGen GUI Chip and Driver configuration tool
- High End Timer Integrated Development Environment
- nowFlash
- nowECC

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Part Number	Buy from Texas Instruments or Third Party	Buy from Authorized Distributor	Status	Version Date	Host	OS	Description
DRV8301-LS12 KIT: Three Phase BLDC, PMSM Motor Kit with DRV8301, Encoder and TMS570 Safety MCU	$599.00(USD) In Stock Typically Ships in 1 to 3 Business Days Buy from TI	Pricing may vary. Buy from distributor	ACTIVE	18-Sep	PC	XP, Vista, Windows 7	Motor Control Development Kit TMS570LS1227

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Technical Documents

Application Notes (8)

Title	Abstract	Type	Size (KB)	Date	Views
Initialization of Hercules ARM Cortex-R4F Microcontrollers (Rev. D)	Read Abstract	PDF	119	29 May 2013	1,257
Interfacing the Embedded 12-Bit ADC in a TMS570LS31x/21x and RM4x Series MCUs	Read Abstract	PDF	726	16 Feb 2012	646
Understanding Motor Driver Current Ratings	Read Abstract	PDF	153	06 Feb 2012	2,146
Calculating Motor Driver Power Dissipation	Read Abstract	PDF	56	06 Feb 2012	1,837
Execution Time Measurement for Hercules ARM Safety MCUs (Rev. A)	Read Abstract	Multiple Files		04 Nov 2011	679
Compatibility Considerations: TMS570,520x/10x to TMS570LS31x/21x (Rev. A)	Read Abstract	PDF	138	20 Oct 2011	552
Use of All 1's and All 0's Valid in Flash EEPROM Emulation	Read Abstract	PDF	81	27 Sep 2011	520
Optimizing Digital Motor Control Libraries	Read Abstract	PDF	365	15 Mar 2007	1,727

User Guides (1)

Title	Abstract	Type	Size (KB)	Date	Views
TMS570LS31x/21x 16/32 Bit RISC Flash Microcontroller Technical Reference Manual (Rev. B)	Read Abstract	PDF	11009	02 Aug 2013	1,142

Solution Guides (1)

Title	Abstract	Type	Size (KB)	Date	Views
Motor Control Solutions Brochure (Rev. G)		PDF	2102	31 Oct 2014	17,319

White Papers (2)

Title	Abstract	Type	Size (KB)	Date	Views
An Introduction to Software Development for Functional Safety on TI Processors		PDF	1662	16 Sep 2011	1,729
Hercules™ Microcontrollers: Real-time MCUs for safety-critical products		PDF	1680	02 Sep 2011	1,350

More Literature (1)

Title	Abstract	Type	Size (KB)	Date	Views
Hercules TMS570 Microcontrollers (Rev. A)		PDF	226	14 May 2014	2,627

Related Products

Software (4)

Name	Part Number	Software Type
Hercules™ Safety MCU Cortex™-R4 CMSIS DSP Library	HERCULES-DSPLIB	Software Libraries
InstaSPIN™-BLDC Solution	INSTASPIN-BLDC	Application Software & Frameworks

DRV8301 Hardware Development Package (ZIP, 2454.4 KB) 167 views, 08 Jul 2013

MotorWare Software Projects for Hercules Safety MCUs v1.03.03.03 (ZIP, 120636 KB) 540 views, 18 Sep 2012

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Development Tools (4)

Name	Part Number	Tool Type
ECC generation tool	NOWECC	Flash Programming Tools
FMDPLL Configuration Tool	FMDPLL_CALCULATOR	Calculation Tools
HAL Code Generator tool	HALCOGEN	SW Development Tools: IDEs, Compilers
HET IDE	HET_IDE	SW Development Tools: IDEs, Compilers

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Design Kits & Evaluation Modules (2)

Name	Part Number	Tool Type
RM46 Hercules Safety MCU controlCARD	TMDXRM46CNCD	Development Kits
TMS570LS12x/11x Hercules Development Kit	TMDXS570LS12HDK	Development Kits

TI Devices (9)

Part Number	Name	Product Family
DRV8301	3-Phase Brushless Motor Pre-Driver with Dual Current Sense Amps and Buck Converter (PWM Ctrl w/ SPI)	Brushless DC (BLDC) Drivers
TMS570LS0714	TMS570LS0714 16/32 BIT RISC Flash Microcontroller	Safety
TMS570LS0914	TMS570LS0914 16/32 BIT RISC Flash Microcontroller	Safety
TMS570LS1114	16- and 32-Bit RISC Flash Microcontroller	Safety
TMS570LS1115	16- and 32-Bit RISC Flash Microcontroller	Safety
TMS570LS1224	16- and 32-Bit RISC Flash Microcontroller	Safety
TMS570LS1225	16- and 32-Bit RISC Flash Microcontroller	Safety
TMS570LS1227	16- and 32-Bit RISC Flash Microcontroller	Safety
TPS65381-Q1	Multi-Rail Automotive Power Supply for Microcontrollers in Safety-Critical Applications	Power Management

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