



# H-Bridge DC Brushed and Stepper Low Voltage Motor Driver Portfolio



# Low Voltage DC Brushed & Stepper Motor Drivers Portfolio

Fully Integrated H-Bridge small motor driver portfolio for low voltage DC Brushed and Stepper Motors applications for forward and reverse operation featuring integrated protection, fast PWM operation within a small footprint

## Differentiating Points

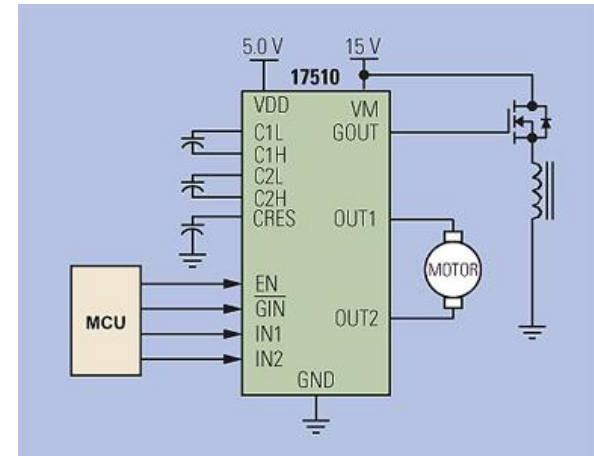
- **Gate Drive:** Available MOSFET gate drive for solenoid, LED or power switch applications.
- **MCU Attach:** Freedom Kinetics V and Tower evaluation boards and PEX software available from FSL
- **Higher Current for Robust Operation** than offered in an integrated micro-processor solution (up to 3.8 A peak current)

## Features

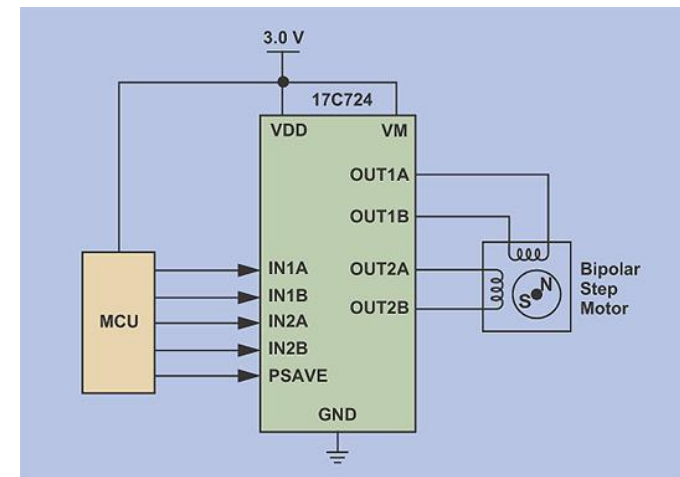
- **PWM operation to 200 kHz:** High speed Pulse Width Modulation enables fine pitched micro-stepping
- **Sleep mode:** < 1  $\mu$ A for prolonged battery life
- **Integrated protection:** Shoot through current limit, under voltage detection and automatic shut down

## Commercial & Industrial Applications

- Digital and SLR Camera Lens Aperture & Focus
- Gas Meters
- Medical Pumps
- Security (PTZ) / Video Conferencing



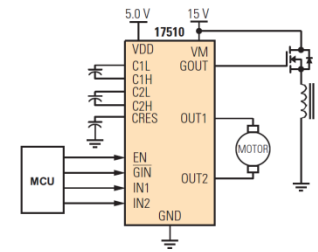
Single H-Bridge Application



Dual H-Bridge Stepper Motor Application

# Low Voltage Motor Driver Selector Guide

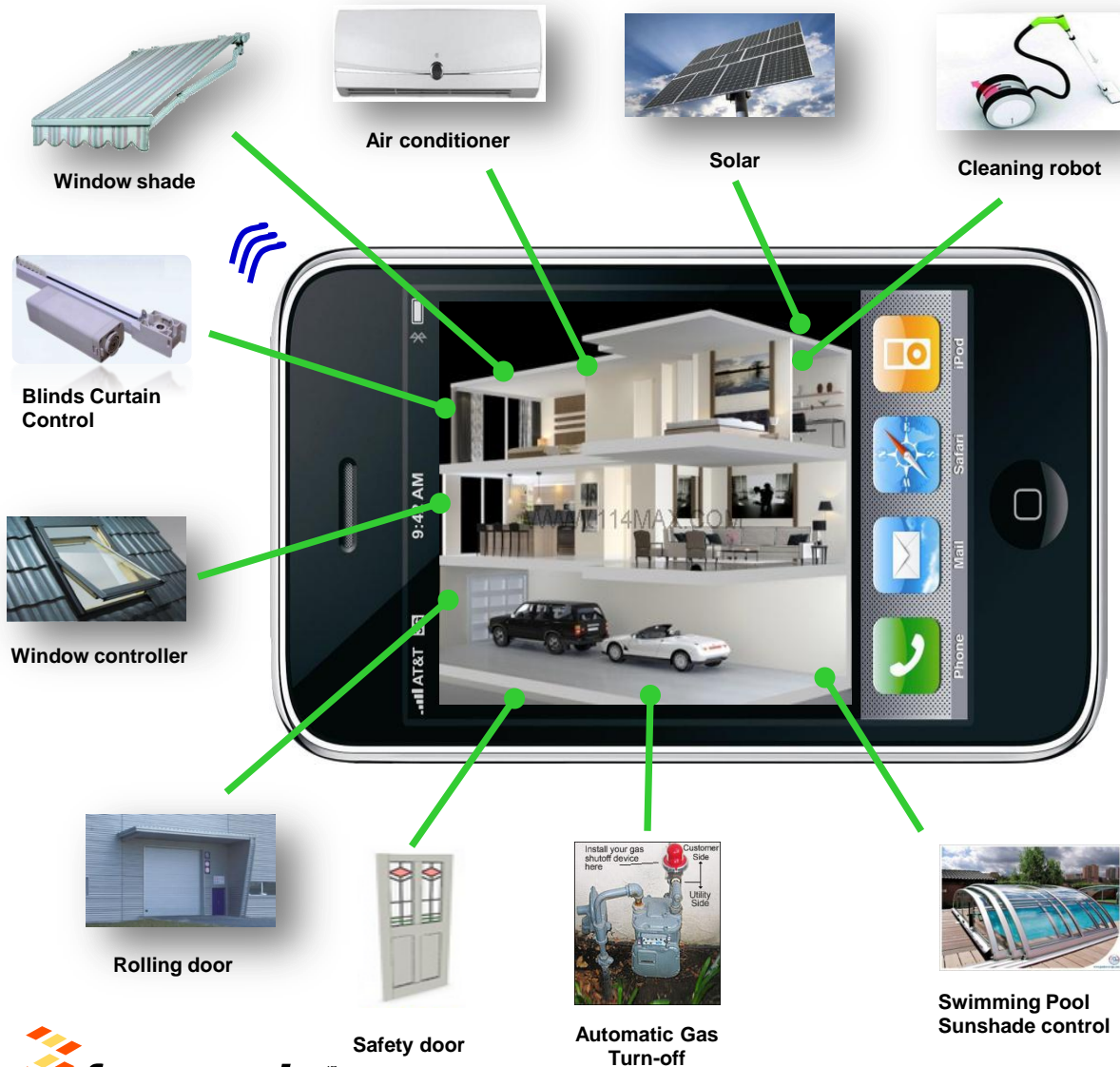
## Targeting Battery or 5 & 12 Volt Bus Applications



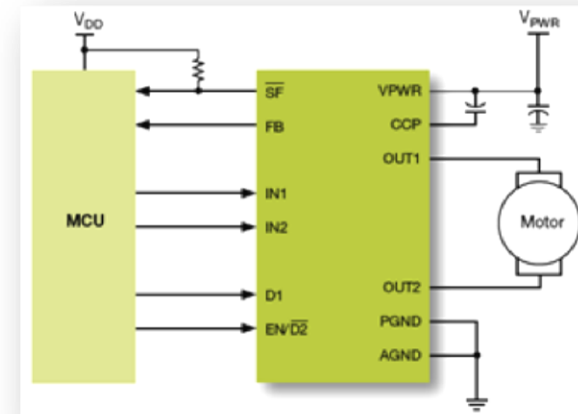
Base Part #	Motor type	Out	Operation Voltage (V)	Peak Current (A)	LL (V)	Sleep (μA)	Freq (kHz)	Temp Range (°C)	Package (LxW mm) Footprint
MPC17510EJ	Brushed DC / Actuator Drive	2+1	2.0-15	3.8	4.0-5.5	-	200	-30 to 65	TSSOPW 24 (7.8x7.6)
MPC17511EP	Brushed DC / Actuator Drive	2+1	2.0-6.8	3.0	2.7-5.7	-	200	-20 to 65	QFN 24 (4x4)
MPC17511EV	Brushed DC / Actuator Drive	2+1	2.0-6.8	3.0	2.7-5.7	-	200	-20 to 65	SOIC 16 (5.4x8.1)
MC34933EP	Stepper / Brushed DC	4	2.0-7.0	1.4	2.7-5.5	-	200	-20 to 85	QFN 16 (3x3)
MPC17529EV	Stepper / Brushed DC	4	2.0-6.8	1.4	2.7-5.6	-	200	-20 to 65	SOIC 20 (7.4x8.1)
MPC17531ATEV	Stepper / Brushed DC	4	2.0-8.6	1.4	2.7-3.6	2	200	-20 to 65	SOIC 20 (7.4x8.1)
MPC17531ATEP	Stepper / Brushed DC	4	2.0-8.6	1.4	2.7-3.6	2	200	-20 to 65	QFN 24 (4x4)
MPC17533EV	Stepper / Brushed DC	4	2.0-6.8	1.4	2.7-5.7	-	200	-20 to 65	SOIC 16 (5.4x8.1)
MPC17C724EP	Stepper / Brushed DC	4	2.7-5.5	0.8	2.7-5.5	1	200	-20 to 85	QFN 16 (3x3)

# H-Bridge DC Brushed and Stepper Motor Drivers

## Home Automation Applications



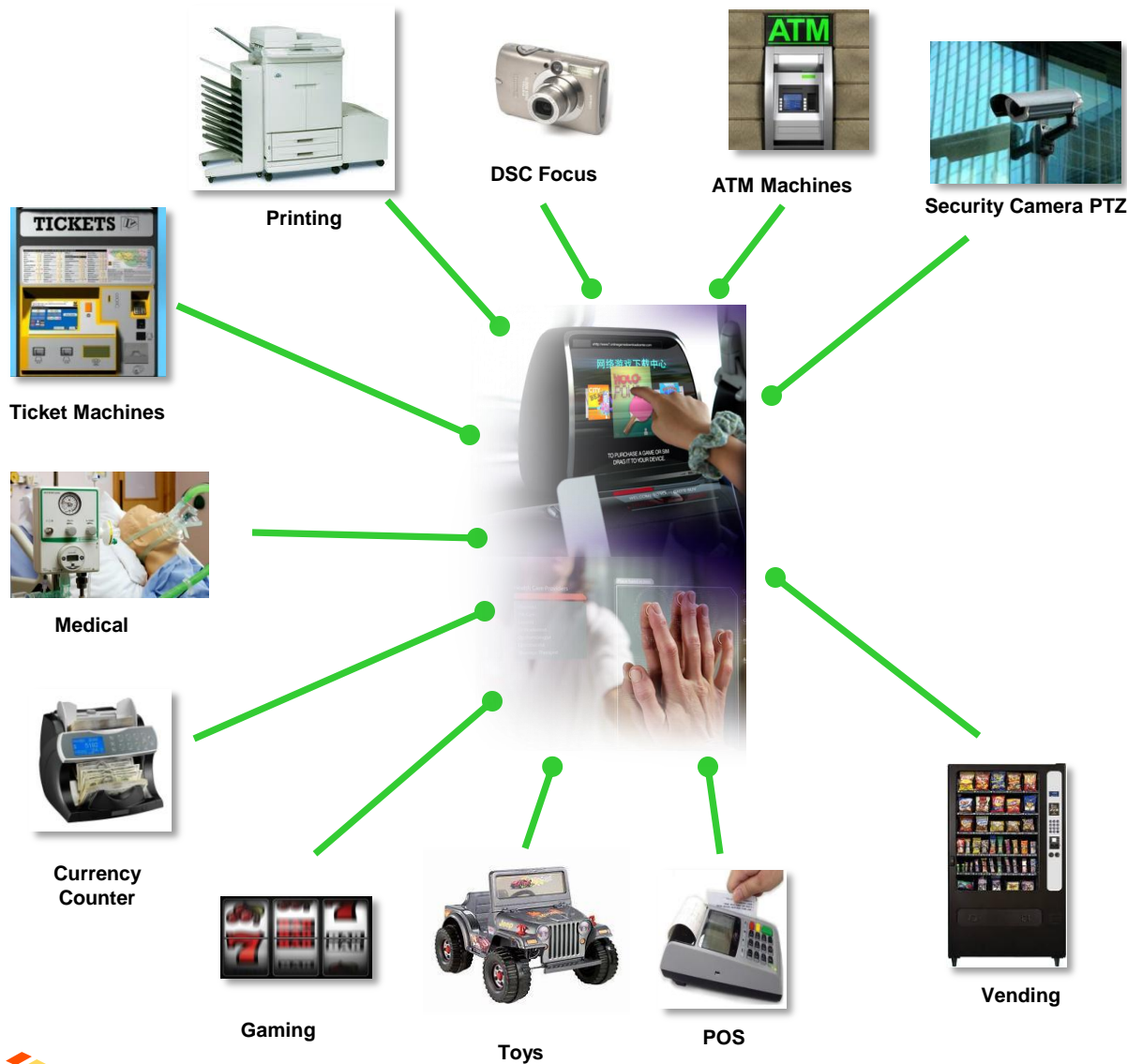
MC34931  
MC34932



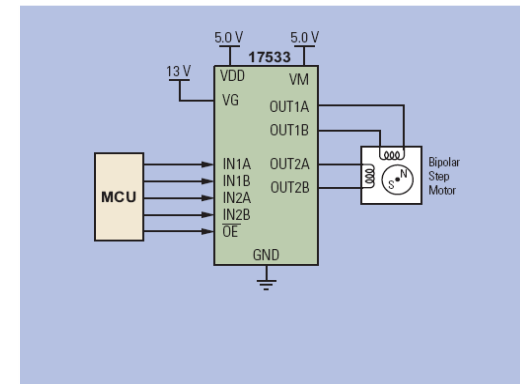
- DC Brushed
- Tubular motor
- Stepper motor

# H-Bridge DC Brushed & Stepper Motor Drivers

## Consumer / Performance Consumer Applications



**MPC17529**  
**MPC17531**  
**MPC17533**  
**MC34932**



- Brushed DC motor
- Stepper motor
- Tubular motor

# Low Voltage DC Brushed & Stepper Drivers

## Product Differentiation

Fully Integrated H-Bridge small motor driver portfolio for low voltage DC Brushed and Stepper Motors applications for forward and reverse operation featuring integrated protection, fast PWM operation within a small footprint

### Performance

Optimized for portable applications

- **Ultra-small package:** 3X3 mm
- **Large PWM range** allows PWM range up to 200kHz for precision micro-stepping accuracy and smooth movement
- **Sleep Mode** automatic default with low current draw  $< 1 \mu\text{A}$  to prolong battery life
- **3.8 Amp Peak** the MPC17510 provides both low voltage and high peak current operation

### Flexibility

Easy to use flexibility

- **Choice of Packages** from ultra-small QFN, SOIC and TSSOP
- **GateDrive Output** provides unique control of extra switch
- **Wide Range of drive Current** from 800 mA to 3.8A peak

### Integration

Feature set for easy system integration

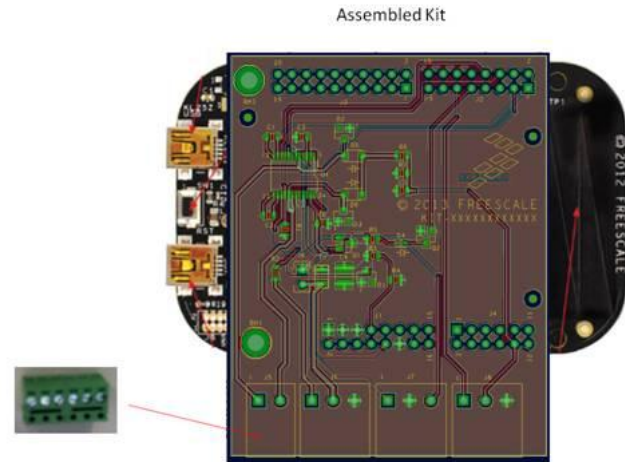
- **Integrated** overshoot protection, overvoltage, charge pump and MOSFETs in monolithic die
- **Protected** against over-shoot and over-voltage fault conditions
- **Sleep Mode** automatic default with low current draw  $< 1 \mu\text{A}$  to prolong battery life



# LV H-Bridge Motor Drivers EcoSystem

## Development Kits with Evaluation Board

- FRDM-KL25Z Freedom board
- Motor drive evaluation board
- Software with GUI interface
- User Manual
- Schematic and Bill-of-Material
- Available now at: [www.freescale.com](http://www.freescale.com)



## Complete Technical Documentation available to ease Design

- Datasheets and Application notes
- Power Dissipation prediction tool
- Technical Training and hands on training on demand

**Production: NOW**

**Evaluation Boards: Q3/14**

FSL part	Kit name	Associated boards
MPC17510EJ	FRDM17510EJEVEB	FRDM - KL25Z
MPC17511EP	FRDM17511EPEVEB	FRDM - KL25Z
MPC17511EV	FRDM17511EVEVEB	FRDM - KL25Z
MC34933EP	FRDM34933EPEVEB	FRDM - KL25Z
MPC17529EV	FRDM17529EVEVEB	FRDM - KL25Z
MPC17531ATEV	FRDM17531ATEVEVEB	FRDM - KL25Z
MPC17531ATEP	MPC17531ATEP	FRDM - KL25Z
MPC17533EV	MPC17533EV	FRDM - KL25Z
MPC17C724EP	MPC17C724EP	FRDM - KL25Z