Issue Number | 001
March 2016

New Product Announcement

DMTH4004SPSQ & DMTH4005SPSQ

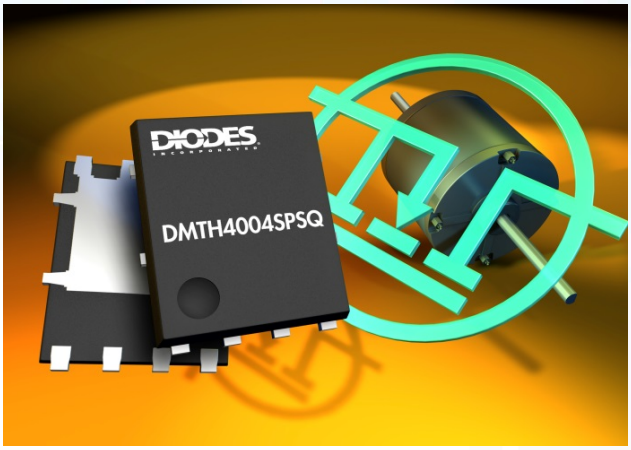
40V Automotive Compliant MOSFETs from Diodes Incorporated Target Motor Control

Rated for operation up to +175°C, the 40V DMTH4004SPSQ and DMTH4005SPSQ automotive-compliant MOSFETs introduced by Diodes Incorporated are ideally suited for use in high ambient temperature environments. The DMTH4004SPSQ has been designed to meet the requirements of high-power (>750W) brushless DC motor (BLDC) applications, such as water and fuel pumps, while the DMTH4005SPSQ is suited to lower power BLDC applications, such as auxiliary pumps and heating, ventilation and air-conditioning (HVAC) systems.

Developed to meet the rigorous demands of three phase BLDC motor control applications, the DMTH4004SPSQ and DMTH4005SPSQ are 100% avalanche tested, ensuring a robust design that is able to withstand the high pulses of reverse avalanche energy that can occur with inductive loads.

Furthermore, at a gate-source voltage of 10V, the DMTH4004SPSQ and DMTH4005SPSQ feature maximum on-state resistances of 2.7mΩ and 4mΩ respectively, which together with their low gate charge ensure that power losses are kept to a minimum.

The efficiency of these MOSFETs is further enhanced by the low thermal resistance of the POWERDI®5060-8 package. This allows for a maximum junction temperature of 175° C ensuring that these MOSFETs are able to operate in high ambient temperature environments



The Diodes Advantage

- **Low $R_{DS(ON)}$**
  Ensures conduction losses are kept to a minimum reducing overall power losses
- **100% Unclamped Inductive Switching**
  Each device is subject to a unclamped inductive switching (UIS) test to ensure that the device can withstand avalanche energy generated by inductive loads, leading to more reliable and robust designs.
- **Maximum junction temperature of 175°C**
  Ideal for use in high ambient temperature environments.
- **Automotive Grade**
  - Qualified to AEC-Q101
  - PPAP capable for full traceability
- **Thermally Efficient Package**
  The low thermal resistance of the PowerDI5060 enables cooler running applications.

Applications

- Brushless DC Motor control
- Reverse polarity protection
- Driving solenoids

Target Markets

- Automotive

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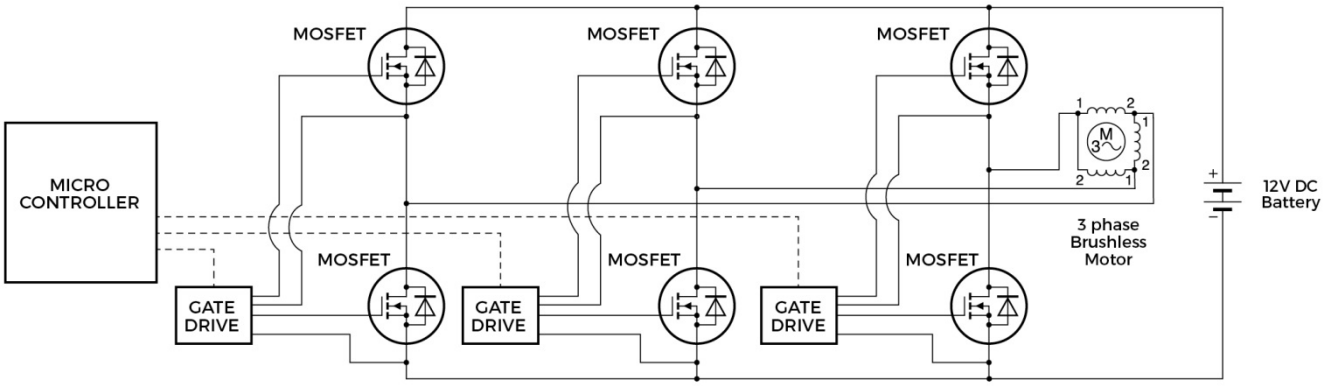
Product Table

Parts	Package	Polarity	V_{DS} (V)	V_{gss} (V)	ID (A)	Vgsth (V)	$R_{DSON\ MAX}$ (mOhm)		Qg typ @Vgs= 10V (nc)	Typ.Ciss (pf) @25V_{DS} s	E_{AS} (mJ)	I_{AS} (A)	Tj max	Availability
							@10V	@4.5V						
DMTH4004SPSQ	PowerDI5060	N	40	20	100	2 – 4	2.7	-	60.1	3714	200	45	175	Now
DMTH4005SPSQ	PowerDI5060	N	40	20	90	2 – 4	4	-	49.1	3062	52.8	32.5	175	Now

3-Phase BLDC Circuit



Cross Reference

Parts	Fairchild	Infineon	NXP	ON Semi	Vishay
DMTH4004SPSQ	FDMS9409_F085	-	-	NVMFS5C442N/NVMFS5C540N	-
DMTH4005SPSQ	FDMS9409_F085	-	BUK7Y4R4-40E	No Equivalent	-