SPM® MODULE DESIGN GUIDE

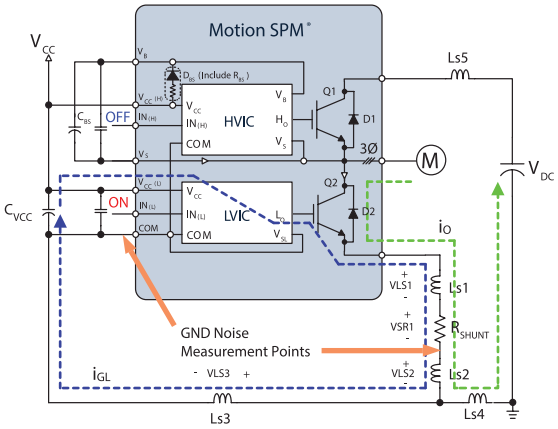
Fairchild Semiconductor has the integrated and discrete devices for your consumer and industrial motor control applications.

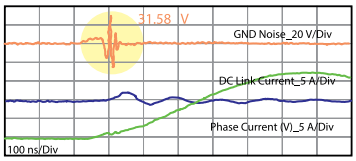
Our solutions deliver high integration, power efficiency, system reliability and functionality while reducing engineering development time.

Achieve High Efficiency and System Reliability with These Design Guidelines

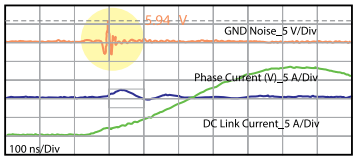
Recommendations for better board design provide significant reduction in electrical over-stress (EOS), consequently achieving improved system reliability without sacrificing efficiency.

- Minimized stray inductance (Ls1 + Ls2 + Ls4) can reduce ground noise (surge voltage)
- Non-inductive resistor should be used for shunt resistor
- Connect the power ground terminal with the signal ground at a single point, using non-loop ground pattern

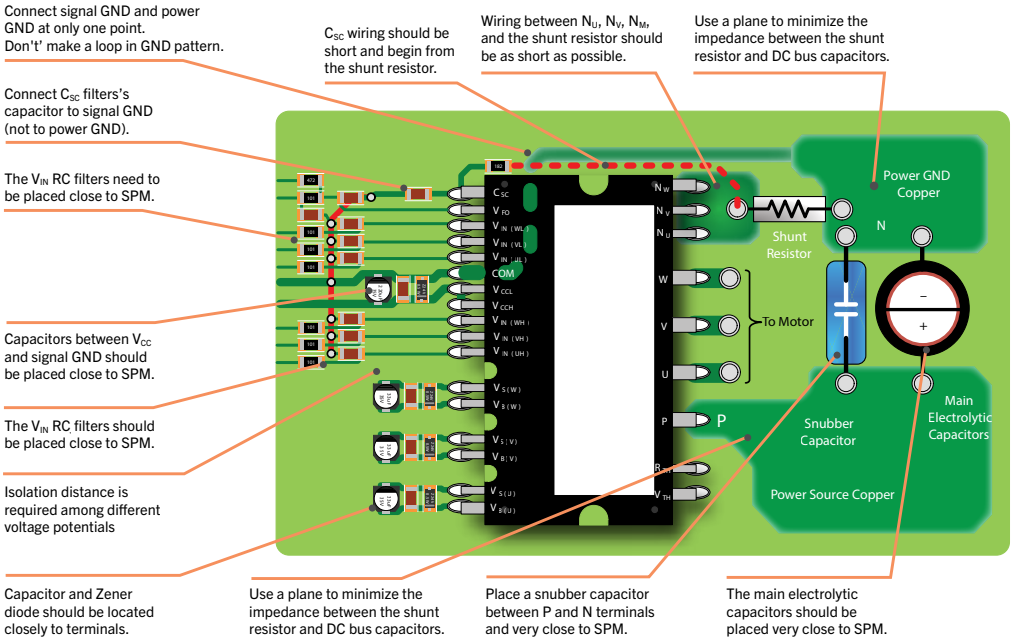




Surge Voltage @ Ls1 + Ls2 + Ls4 = 120 nH



Surge Voltage @ Ls1 + Ls2 + Ls4 = 35 nH



MOTION SPM® MODULE PACKAGE REFERENCE

Dimensions (mm xmm)	Features	Packages 1:1 Ratio
SPM 5 Series (29 x 12 x 3.1) Substrate: Full-pack Lead Options: Different lead options available	• 500 V/250 V • UVLO, BSD, TSU • MOSFETs solution	SPM5P-022 SPM5Q-023 SPM5N-023
SPM 45 Series (39 x 23 x 4.5) Substrate: Ceramic Lead Options: Different lead options available	• 600 V, 5-20 A • NTC, UVLO, OCP, BSD • IGBTs solution • PFC SPM solution is also available in SPM 45 package	SPMAA-A26
SPM 3 Series (44 x 26.8 x 5.5) Substrate: DBC, full-pack	• 600 V, 5-30 A • UVLO, OCP, BSD, TSD • IGBTs solutionis also available in SPM 3 package	SPMCA-027 SPMJA-027
SPM 2 Series (60 x 31 x 7.2) Substrate: DBC	• 600 V, ~75 A • NTC, UVLO, OCP • Current sensing with sensing IGBTs • IGBTs solution • PFC SPM solution is also available in SPM 2 package	SPMCA-B33
SPM 1 Series (96 x 55 x 7.2) Substrate: DBC	• 600 V, ~75 A • NTC, UVLO, OCP • IGBTs solution • PFC and inverter merged solution is also available in SPM 1 package	S40CD-040

Description of Integrated Functions in SPM Solution - BSD: Boot Strap Diode, OCP: Over Current Protection, TSD: Thermal Shut Down, TSU: Thermal Sensing Unit, NTC: Negative Temperature Coefficient Thermistor

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