

EPS Electric Power Steering

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EPS Electric Power Steering

VISHAY components used for EPS include:

- Power MOSFETs
- Diodes
- Capacitors
- Inductors
- Transient Protection Devices
- ESD Protection Devices
- Reverse Polarity Protection Devices
- Precision Resistors

Application Overview

Electric power assisted steering (EPS) uses an electric motor to provide directional control to the driver, without any hydraulic systems. Sensors detect the motion and torque of the steering column and a computer module applies assistive power via an electric motor coupled directly to either the steering gear or steering column. Most EPS systems have variable assist, which provides more assistance as the speed of a vehicle decreases, and less assistance from the system during high-speed situations. This functionality requires a delicate balance of power and control that has only been available in recent years. In the event of a component failure, a mechanical linkage such as a rack and pinion serves as a back-up in a manner similar to that of hydraulic systems. The EPS system is gradually replacing the hydraulic steering system and is likely to soon become mainstream among automotive manufacturers. VISHAY's broad product line includes components for power supply (SMPS), input signal conditioning, power stage, and vehicle communication functions.

EPS Electric Power Steering : BLDC Motor, Position Sensor

Transmissive Optical Sensor

Product Name	Status	Description	Features	Package	Q-Level
TCUT1350X01		Dual Channel Transmissive optical Sensor		5.5x4x4	AECQ101

EPS Electric Power Steering : BLDC Motor, Temperature Sensor

NTC Thermistor

Product Name	Status	Description	Features	Package	Q-Level
NTCLE...E3...SB		2-Point Mini Chip Sensor, Flexible Lead	Small Diameter High stability over long lifetime		AECQ200

EPS Electric Power Steering : Input Conditioning, ESD-Protection

ESD Diode

Product Name	Status	Description	Features	Package	Q-Level
SMF12A		ESD Protection Diode	200W peak pulse Power	'SMF	AECQ101

MLCC

Product Name	Status	Description	Features	Package	Q-Level
VJ...31X		Automotive, RoHS qualified MLCC		SMD 0204 to 1812	AECQ200

EPS Electric Power Steering : Input Conditioning, Filter

MLCC

Product Name	Status	Description	Features	Package	Q-Level
VJ...31X		Automotive, RoHS qualified MLCC		SMD 0204 to 1812	AECQ200

EPS Electric Power Steering : Input Conditioning, Pull-Up/Down Resistor

Resistor Array

Product Name	Status	Description	Features	Package	Q-Level
CRAS0606		Thick Film Chip Resistor Array	10 Ohm to 1MOhm	'SMD 0606	AECQ200

EPS Electric Power Steering : Power Stage, DC Link Current Sensor

Resistor Array

Product Name	Status	Description	Features	Package	Q-Level
ACAS 0612 AT		Precision Thin Film Resistor Array	Relative TCR = 5ppm/K Relative Tol = 0.05%	SMD 0612	AECQ200

Shunt Resistor

Product Name	Status	Description	Features	Package	Q-Level
WSP4026		Power Metal Strip Very High Power	R = 0.0003Ohm P70 = 7W	SMD4026	AEC Q200

EPS Electric Power Steering : Power Stage, EMI - Filter

Aluminum Capacitor

Product Name	Status	Description	Features	Package	Q-Level
146CTI		High Temperature, Low Impedance Aluminium Electrolytic Capacitor	220uF...4700uF 6000h@125°C	8x8x10 to 18x18x21	AEC Q200

Inductor

Product Name	Status	Description	Features	Package	Q-Level
IHLP-5050FD-5A		Low Profile, High Current IHLP Inductor	0.22uH to 22uH 68A to 5.5A	13.5x12.9x6x4	AEC Q200

MLCC

Product Name	Status	Description	Features	Package	Q-Level
VJ...31X		Automotive, RoHS qualified MLCC		SMD 0204 to SMD 1812	AECQ200

EPS Electric Power Steering : Power Stage, Low Side Current Sensor

Shunt Resistor

Product Name	Status	Description	Features	Package	Q-Level
WSL2512...18		High Power Power Metal Strip Resistor	R = 0.0005Ohm P70 = 2W	SMD 2512	AECQ200

EPS Electric Power Steering : Power Stage, Motor Switch

MOSFET

Product Name	Status	Description	Features	Package	Q-Level
SQJQ100EL		Automotive N-Channel 40-V (D-S) 175°C MOSFET	RDSon = 1.2mOhm ID = 160A	PowerPAK 8x8L	AECQ101

EPS Electric Power Steering : Power Stage, Reverse Polarity Protection

MOSFET

Product Name	Status	Description	Features	Package	Q-Level
SQM120P04-04L		Automotive P-Channel 40-V (D-S) 175°C MOSFET	RDSon = 4.0mOhm ID = 120A	PPAK 8x8L	AECQ101

EPS Electric Power Steering : Power Stage, Transient Protection

TVS Diode

Product Name	Status	Description	Features	Package	Q-Level
TPSMP6.8 thru TPSMP43A		SMT PAR Transient Voltage Suppressor	400W	SMP	AECQ101

EPS Electric Power Steering : Power Supply, EMI-Filter

MLCC

Product Name	Status	Description	Features	Package	Q-Level
VJ...31X		Automotive, RoHS qualified MLCC		SMD 0204 to 1812	AECQ200

EPS Electric Power Steering : Power Supply, Reverse Polarity Protection

MOSFET

Product Name	Status	Description	Features	Package	Q-Level
SQ3419EV		Automotive P-Channel 40-V (D-S) 175°C MOSFET	RDSon = 0.058Ohm ID = 6.9A	'TSOP-6	AECQ101

Schottky Diode

Product Name	Status	Description	Features	Package	Q-Level
V8PAL45		Trench MOS Barrier Schottky Rectifier	IF = 8.0A VRR = 45V	'SMPA	AEC Q101

EPS Electric Power Steering : Power Supply, SMPS buck converter

Aluminum Capacitor

Product Name	Status	Description	Features	Package	Q-Level
146CTI		High Temperature, Low Impedance Aluminium Electrolytic Capacitor	6000h@125°C 220uF...4700uF	8x8x10 to 18x18x21	AEC Q200

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP1616BZ-A1		Low Profile; High Current; IHLP Inductor	0,1µH...2,2µH, Idc=35A...6A	4.45x4.06x2.0	AEC Q200

MOSFET

Product Name	Status	Description	Features	Package	Q-Level
SQ2318AES		Automotive N-Channel 40-V (D-S) 175°C MOSFET	RDSon = 0.0310hm ID = 8A	'SOT-23	AECQ101

Schottky Diode

Product Name	Status	Description	Features	Package	Q-Level
VSSAF3L45		Trench MOS Barrier Schottky Rectifier	IF = 3.0A VRR = 45V	'Slim SMA	AEC Q101

Shunt Resistor

Product Name	Status	Description	Features	Package	Q-Level
RCWE		Thick Film Surface Mount Chip Resistor	R = 0.010hm to 0.9760hm	SMD 0204 to 2512	AECQ200

EPS Electric Power Steering : Power Supply, Transient Protection

TVS Diode

Product Name	Status	Description	Features	Package	Q-Level
TPSMP6.8 thru TPSMP43A		SMT PAR Transient Voltage Suppressor	400W	SMP	AECQ101

EPS Electric Power Steering : Steering Wheel, Position Sensor

Transmissive Optical Sensor

Product Name	Status	Description	Features	Package	Q-Level
TCUT1350X01		Dual Channel Transmissive Optical Sensor		5.5x4x4	AECQ101

