

Laser Lighting

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Laser Lighting

VISHAY COMPONENTS USED:

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

Application Overview

Laser lighting is used as additional high beam in combination with LED frontlighting. The beam of a blue laser diode converted by phosphor to white light. Vishay power components ensure you have the constant current source to stay within the tight tolerances for the laser diode. For safety reason it is very important blue laser beam may not shine out of the lighting unit. For this reason a complex optical sensing is used. This safety concept is set up with Vishay automotive qualified RGBW sensor and enhanced blue photodiode.

Laser Lighting : constant current source, buck boost converter

Diodes

Product Name	Status	Description	Features	Package	Q-Level
SS5P6HM3		High Current Density Surface Mount Schottky Barrier Rectifiers	If=5A; Vf=0.56V; Vrrm=60V	SMPC	

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHL-4040DZ-5A		Low Profile, High Current High Transient Current Spike Capable Shielded, Low DCR	0.47uH...47uH Idc=2.5A...30A	4040	

MOSFET

Product Name	Status	Description	Features	Package	Q-Level
SQJA460EP		N-Channel 60-V (D-S) 175°C MOSFET	Rdson=8.7mOhm	PowerPAK SO-8L	

Laser Lighting : constant current source, EMI filter

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP-3232DZ-5A		Low Profile, High Current High Transient Current Spike Capable Shielded, Low DCR	0,22uH...33uH Idc=36A...3.1A	3232	

Laser Lighting : constant current source, reverse polarity protection

MOSFET

Product Name	Status	Description	Features	Package	Q-Level
SQJQ402E		N-Channel 40-V (D-S) 175°C MOSFET	Rdson=1.7mOhm	PPAK 8x8L	

Laser Lighting : constant current source, transient protection

TVS Diode

Product Name	Status	Description	Features	Package	Q-Level
TPSMP6.8 thru TPSMP43A		surface mounteTransZorb Transient Voltage Suppressor	250W	SMP	

Laser Lighting : input conditioning, ESD Protection

ESD Diode

Product Name	Status	Description	Features	Package	Q-Level
GSOT03 to GSOT36		Single-line ESP Protection	Ippm=30A, Ppp=369W	SOT-23	

Laser Lighting : input conditioning, Filter

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP2020CZ-5A		Low Profile, High Current High Transient Current Spike Capable Shielded, Low DCR	0,1uH...10uH Idc=25A...2.25A	2020	
IHLP2525CZ-5A		Low Profile, High Current High Transient Current Spike Capable Shielded, Low DCR	0,1uH...4.7uH Idc=18A...3A	'2525	

MLCC

Product Name	Status	Description	Features	Package	Q-Level
VJ...31X RoHS Automotive MLCC		Surface Mount Multilayer Ceramic Chip Capacitors for Automotive Applications	120pF...1uF; 16V...1000V	0402 to 1812	

Laser Lighting : input conditioning, pull-up/down resistor

Resistor

Product Name	Status	Description	Features	Package	Q-Level
ACAS AT		Precision Thin Film Chip Resistor Array	47Ohm...150Ohm relative tolerance: +/-0.05%	0606 and 0612	

Laser Lighting : laser lighting, blue light sensor

optical sensor

Product Name	Status	Description	Features	Package	Q-Level
TEMD5080X01		Silicon PIN photodiode blue enhanced	peak sensitivity 400nm	5x4.24x1.12mm	

Laser Lighting : laser lighting, current sensor

shunt resistor

Product Name	Status	Description	Features	Package	Q-Level
WSK2512		Power Metal Strip® Resistors Low Value (down to 0.0005 #) Surface Mount, 4-Terminal	10mOhm...200mOhm 0.1%	2512	

Laser Lighting : laser lighting, position sensor

optical sensor

Product Name	Status	Description	Features	Package	Q-Level
TCUT1350X01		Subminiature Dual Channel Transmissive Optical Sensor with Phototransistor Outputs	gap: 3mm	5.5x4x4mm	

Laser Lighting : laser lighting, RGBW sensor

optical sensor

Product Name	Status	Description	Features	Package	Q-Level
VEML6045X01		RGBW Color Sensor with I2C Interface	peak sensitivity 650nm, 550nm, 450nm	2x1.25x1mm	

Laser Lighting : power supply, EMI filter

Al Cap

Product Name	Status	Description	Features	Package	Q-Level
260 CLA-V		Alumimum Capacitor SMD vibration proof high temperature	150...3300uF; 16V...80V	16x16x16 to 18x18x21	

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP-3232DZ-5A		Low Profile, High Current High Transient Current Spike Cabable Shielded, Low DCR	0,22uH...33uH Idc=36A...3.1A	3232	
IHLP-4040DZ-5A		Low Profile, High Current High Transient Current Spike Cabable Shielded, Low DCR	0,47uH...47uH Idc=30A...2.5A	4040	

MLCC

Product Name	Status	Description	Features	Package	Q-Level
VJ...31X RoHS Automotive MLCC		Surface Mount Multilayer Ceramic Chip Capacitors for Automotive Applications	120pF...1uF; 16V...1000V	0402 to 1812	

Laser Lighting : power supply, reverse polarity protection

MOSFET

Product Name	Status	Description	Features	Package	Q-Level
SQJQ402E		N-Channel 40-V (D-S) 175°C MOSFET	Rdson=3.4mOhm	PPAK 8x8L	

Laser Lighting : power supply, SMPS buck converter

Inductors

Product Name	Status	Description	Features	Package	Q-Level
IHLP2020CZ-5A		Low Profile, High Current High Transient Current Spike Capable Shielded, Low DCR	0,1uH...10uH Idc=25A...2.25A	2020	
IHLP2525CZ-5A		Low Profile, High Current High Transient Current Spike Capable Shielded, Low DCR	0,1uH...4.7uH Idc=18A...3A	'2525	

MOSFET

Product Name	Status	Description	Features	Package	Q-Level
SQJ148EP		N-Channel 80-V (D-S) 175°C MOSFET	Rdson=3.4mOhm	PPAK 8x8L	

Schottky Diode

Product Name	Status	Description	Features	Package	Q-Level
SS2P4		High Current Density Surface Mount Schottky Barrier Rectifier	If=2A; Vf=0.5V; Vrrm=40V	'DO-220AA (SMP)	

Laser Lighting : power supply, transient protection

TVS Diode

Product Name	Status	Description	Features	Package	Q-Level
TPSMP6.8 thru TPSMP43A		surface mounted TransZorb Transient Voltage Suppressor	250W	SMP	