



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

Optoelectronics - AEC-Q101 Qualified Parts



VISHAY OPTOELECTRONICS – AUTOMOTIVE GRADE BY DESIGN

This catalog lists our AEC-Q101 qualified optoelectronics components, including LEDs, infrared emitters, photo detectors, ambient light sensors, and optical interrupters. It provides real-life application examples. Vishay strictly adheres to the Automotive Electronics Council's Q101 Stress Test Qualification for Automotive Grade Discrete Semiconductors. The minimum operating temperature range for discrete semiconductors per this specification is - 40 °C to + 85 °C ambient, but could go up to the range of - 40 °C to + 125 °C based on the respective application and requirements (e.g. most LED applications require at least up to + 100 °C). In addition to these parts, Vishay also manufactures custom optical sensors for the automotive market, including rain-light-tunnel sensors, steering angle sensors, climate control sensors, and infrared emitter arrays for occupant sensing and driver assistance systems.

RESOURCES

- To view the full Optoelectronics portfolio - <http://www.vishay.com/optoelectronics>
- To view Optoelectronics videos - <http://www.vishay.com/videos/>
- For technical questions contact: Photodetector - detectortechsupport@vishay.com
 Emitter - emittertechsupport@vishay.com
 LED - LED@Vishay.com

One of the World's Largest Manufacturers of
Discrete Semiconductors and Passive Components



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Applications

A number of automotive applications using Vishay components are described in the following pages. The use of Vishay standard and custom optical sensors and components is increasing. Take a look at what we have done and think about what we can do for you.

- **Position Sensors:** gear shift position, steering angle, ignition key, door lock, control knob encoders and switches
- **Convenience and Climate:** rain sensor, tunnel sensor, daylight sensor, solar angle sensor
- **Backlight Control:** instrument panel, indicator lamps, center console and navigation LCD
- **Safety:** occupant detection, drowsy driver detection, night vision, optical immobilizer, remote keyless entry
- **Lighting:** instrument panel, center control console, brake lights, truck

Table of Contents

Application Examples..... 3 - 5

Infrared Emitters 6

Photo Detectors 6 - 7

Ambient Light Sensors 7

Transmissive Sensors (Slotted Interrupters)..... 7

LEDs..... 8 - 16





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TCPT1300X01



TCUT1300X01



VSMB1940X01
TEMT7000X01



PLCC-2



TFBS2711X01



Climate Control
Sensor

Steering Angle

One of the most critical position sensors in an automobile is the steering angle sensor. For cars equipped with electronic power steering, drive by wire, and rollover avoidance, the position of the steering wheel, the direction of steering, and the velocity at which the wheel is being turned are paramount input data. An encoding wheel is connected to the steering wheel and a transmissive sensor, also known as a slotted interrupter, is used. Key features of the sensor include dual channels to provide both rate of change and direction of steering, a wide gap to account for the tolerances commonly associated with steering assemblies, and a moisture sensitivity level that allows for long durations on the plant floor.

- [TCPT1300X01](#), [TCUT1300X01](#)



Center Console Knobs and Switches

Similar to steering angle sensors, the knobs and switches used for climate control, radio/cd, navigation, and other entertainment systems feature encoding wheels to determine the position as the knob is turned. Transmissive sensors are used with knobs and switches.

- [TCPT1300X01](#), [TCUT1300X01](#)



Ignition Switch

Insert the key, turn it, and the car starts. Sounds simple, but in that tight area of the ignition switch a small transmissive sensor is used to not only determine if a key is inserted, but also initiates the immobilizer function and determines the position of the key. The sensor needs to be rugged and accurate with a wide gap to account for mechanical tolerances of the switch.

- [TCPT1300X01](#), [TCUT1300X01](#)



Gear Shift

As the gear shift is moved through Park, Neutral, Reverse, Low 1, Low 2, and Drive, a transmissive sensor is used to determine its position. The data is sent to the transmission control unit where the gear selected is engaged.

- [TCPT1300X01](#) / [TCUT1300X01](#) or discrete emitter detector pair like:
PLCC-2: [VSMB3940X01](#) / [VEMT3700FX01](#)
0805: [VSMB1940X01](#) / [TEMT7100X01](#)



Solar Sensor

On a sunny day with a driver and passenger in the car, invariably one person will be in the sun. The angle and position of the sun can be used by dual zone climate control systems to boost the speed or lower the temperature of the air directed toward the sunny side of the car. Vishay's unique packaging, which combines a photodiode and thermocouple in a custom molded lens, can be used to determine the position and angle of the sun.



Remote Keyless Entry

Working with a leading keyless entry Tier-1 supplier, Vishay manufactures an infrared keyless entry and immobilizer system. The key fob uses the line-of-sight feature of infrared to avoid pinching or trapping fingers and hands while the windows are being raised or the convertible top is being closed. RF is used for traditional unlock and lock operations. The optical key fob is also used as an immobilizer where it sends and receives an infrared security code each time the car is started.

- [TFBS2711X01](#)





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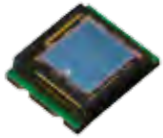
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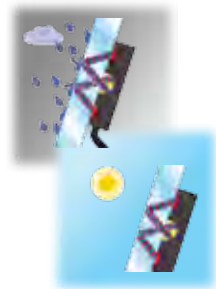
Tunnel Sensor

The change in ambient light when driving into and out of a tunnel can be jarring. The last thing a driver needs to be doing while adjusting to the ambient light is to be fiddling with the light switch. A tunnel sensor measures the ambient light at two forward angles. Depending on the difference in these values, the cars, headlights will be automatically turned on or off. A tunnel sensor often does double duty as an ambient light sensor.

- [TEMD5510FX01](#), [TEMD6200FX01](#), [TEMD7000X01](#)



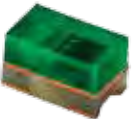
TEMD5510FX01



Rain Sensor

When water hits the windshield, there is a change in the index of refraction and the amount of light being reflected off the windshield from a sensor mounted on the inside glass. The degree of change helps determine the rate of rain falling. Vishay works with several Tier-1 suppliers in providing custom rain sensors that use our infrared emitters and phototransistor, photo diode, and PIN photodiode chips. We provide chip-on-board assembly, lensing design, and molding.

- Detectors: [TEMD5110X01](#) / [TEMD7100X01](#)
Emitters: [VSMB1940X01](#) (0805)
[VSMB3940X01](#), [VSMF3710](#), [VSMG3700](#) (PLCC-2)



TEMT6200FX01
TEMD6200FX01



Ambient Light Sensor

The simplest example of the use of an ambient light sensor is to control the daytime running lights and headlights. Sun goes down, lights come on. But there are many more applications as described below. Vishay is a leading supplier of ambient light sensors with a wide range of packaging and outputs.

- [TEMD5510FX01](#), [TEMD6200FX01](#), [TEMT6200FX01](#), [TEMT6000X01](#)



TEMD7000X01



Auto Dimming Rearview Mirrors

Nighttime driving will soon get a little easier with ultra-sensitive light sensors located in rearview mirrors. The mirrors will be able to automatically reduce the glare to the driver's eyes based on the intensity of the light hitting the mirror surface.

- [TEMT6200FX01](#) / [TEMD5510FX01](#)



TEMT6000FX01
TEMD6000FX01



Instrument Panel Backlight Intensity

The days of the knob used to adjust the intensity of the instrument panel backlights are over, even on the least expensive models. An ambient light sensor is used to adjust the backlights automatically.

- [TEMD5510FX01](#), [TEMD6200FX01](#), [TEMT6200FX01](#), [TEMT6000X01](#)



LCD Displays

Whether it is the center console control LCD, the navigation display, or the entertainment LCD displays, an ambient light sensor is used to automatically adjust the backlight of the display for optimal viewing. Vishay's ambient light sensors are used by several of the world's largest display manufacturers to do just this.

- [TEMD5510FX01](#), [TEMD6200FX01](#), [TEMT6200FX01](#), [TEMT6000X01](#)



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TELUX®

Brake Lights

Just as the bulbs in traffic signals in cities around the world are being replaced by LEDs, so too are the bulbs traditionally used for brake lights, center high-mount stop lights, and interior overhead and door lights in cars. AEC-Q101-qualified packages, a broad array of red, orange, and amber colors, and appropriate binning options have made Vishay one of the largest suppliers of LED truck brake lights in the world.

- TELUX®: [VLWR9630](#), [VLWW9900](#), [TLWY9630](#)
- PLCC-2: [VLMR51Y1Z1](#), [VLMY51Y2Z2](#), [VLMK51Y1Z1](#), [VLMW51P2Q3](#)



PLCC-2

Occupant Sensing

Vishay has been on the leading edge of research and development of optical occupant sensing. Given that weight has become insufficient for the automotive industry to determine the presence of a passenger, optical arrays have been adopted to 'profile' the contents of the passenger seat, deploying the airbag only when a person is present.

- PLCC-2: [VSMF4720](#) / [VSMB3940X01](#)



miniLED

Drowsy Driver

Vishay's development of a drowsy driver sensor, which determines the blink rate of the driver and sets off an audible tone when the rate goes below a threshold, is ongoing. Working with several Tier-1 suppliers, fully functional prototypes are in review.

- PLCC-2: [VSMF4720](#) / [VSMB3940X01](#)



Heads-Up Display / Night Vision

Using Vishay's high-powered infrared emitters allows a driver to see much farther than their headlights illuminate; presenting the driver with the ability to avoid life-altering collisions. Using the near-infrared wavelength of 850 nm, Vishay's portfolio of emitting diodes includes the industry's highest intensity package.

- PLCC-2: [VSMY7850X01](#)



LED Backlight

Whether it is a Volkswagen blue, a Mercedes Benz white, or a BMW red, Vishay has hundreds of automotive-qualified LEDs for backlighting instrument panels, control panels, window and door lock switches, and cabin lighting. Vishay is a top-5 supplier to the automotive industry. We have what it takes to be successful in this quality-intensive market. And, as the industry migrates to consumer selected lighting colors, Vishay is ready with a broad portfolio of multi-die products including RGB LEDs.

- PLCC-2: [VLMK31x](#), [VLME31x](#), [VLMW4x](#), [VLMD3x](#), [VLMF3x](#)
- mini LED: [VLMK20x](#), [VLME20x](#), [VLMK23x](#)
- RGB: [VLMRGB343x](#)





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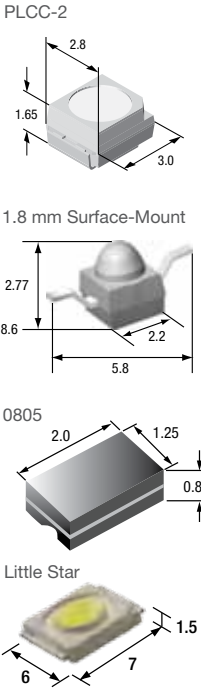
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Infrared Emitters

Vishay offers automotive qualified emitters in wavelengths from 830 nm to 940 nm with fast response times. Vishay has a broad selection of double hetero infrared emitters — the industry’s highest power infrared emitters with the lowest forward voltages. Applications include occupant sensing arrays, nighttime illumination for head-up displays, rain sensors, and driver assist systems

IR Emitter						
Package	Part Number	Peak Wavelength (nm)	Angle of Half Intensity (±°)	Radiant Intensity, I _e (mW/sr)	Rise and Fall Time, t _r /t _f (ns)	Remark
PLCC-2	VSMB3940X01	940	60	13	15	
	VSMF3710	890	60	10	30	
	VSMF4710	870	60	10	15	
	VSMF4720	870	60	16	15	
	VSMG2700	830	60	10	20	
	VSMG2720	830	60	14	20	
	VSMG3700	850	60	10	20	
	VSML3710	940	60	6	800	
1.8 mm	VSMS3700	950	60	4.5	800	
	VSMB2000X01	940	12	40	15	Reverse gullwing
	VSMB2020X01	940	12	40	15	Gullwing
	VSMF2890GX01	890	12	40	30	Gullwing
	VSMF2890RGX01	890	12	40	30	Reverse Gullwing
	VSMG2000X01	850	12	40	20	Reverse gullwing
0805	VSMG2020X01	850	12	40	20	Gullwing
	VSMB1940X01	940	60	6	15	
Little Star	VSMY1850X01	850	60	10	10	
	VSMY7850X01	850	60	1702	15	pulsed up to 5 A
Little Star	VSMY7852X01	850	60*	423	15	pulsed up to 5 A

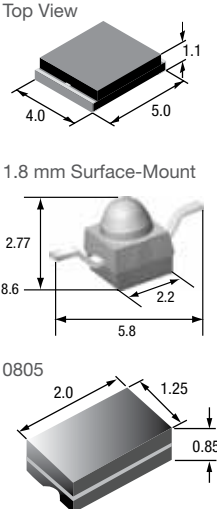


2I_F=1 A, 3I_F=250 mA

Photo Detectors

Vishay has the broadest portfolio of PIN photodiodes on the market. In addition to low capacitance, they provide high-speed response, low noise, low dark current, and excellent sensitivity. Vishay also provides the industry’s widest selection of phototransistors. Offered in more than 12 different packages, Vishay’s phototransistors are exceptionally sensitive and simplify circuit design by eliminating the need for a separate amplifier.

PIN Photo Diodes								
Package	Part Number	Peak Wavelength (nm)	Bandwidth λ _{0.5} (nm)	Sensitivity I _{ra} (μA) ⁽¹⁾	Angle of Half Sensitivity (±°)	Photo Area (nm) ⁽²⁾	Rise/Fall Time, t _r /t _f (ns) ⁽²⁾	Remark
Top View	TEMD5080X01	940	350 to 1100 ⁽⁵⁾	60	65	7.5	40 ⁽⁴⁾	
	TEMD5020X01	940	430 to 1100 ⁽⁵⁾	35	65	4.4	100	
	TEMD5120X01	940	790 to 1050	35	65	4.4	100	
	TEMD5010X01	940	430 to 1100 ⁽⁵⁾	55	65	7.5	100	
	TEMD5110X01	940	790 to 1050	55	65	7.5	100	
1.8 mm	VEMD2000X01	940	750 to 1050	12	15	0.23	100	Reverse gullwing
	VEMD2020X01	940	750 to 1050	12	15	0.23	100	Gullwing
	VEMD2500X01	900	350 to 1120 ⁽⁵⁾	12	15	0.23	100	Reverse gullwing
	VEMD2520X01	900	350 to 1120 ⁽⁵⁾	12	15	0.23	100	Gullwing
0805	TEMD7000X01	900	350 to 1120 ⁽⁵⁾	3	60	0.23	100	
	TEMD7100X01	950	750 to 1050	3	60	0.23	100	





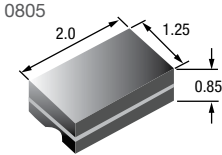
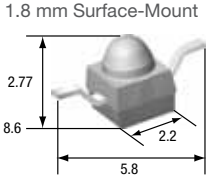
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Photo Detectors continued

Photo Transistors							
Package	Part Number	Peak Wave-length (nm)	Band-width $\lambda_{0.5}$ (nm)	Collector Light Current, I_{ca} (mA) ⁽¹⁾	Angle of Half Sensitivity (\pm°)	Rise and Fall Time, t_r/t_f (ns) ⁽²⁾	Remark
1.8 mm	VEMT2000X01	860	790 to 970	6	15	2	Reverse gullwing
	VEMT2020X01	860	790 to 970	6	15	2	Gullwing
	VEMT2500X01	850	470 to 1090 ⁽³⁾	6	15	2	Reverse gullwing
	VEMT2520X01	850	470 to 1090 ⁽³⁾	6	15	2	Gullwing
0805	TEMT7000X01	850	470 to 1090 ⁽³⁾	0.45	60	2	
	TEMT7100X01	870	750 to 1010	0.45	60	2	

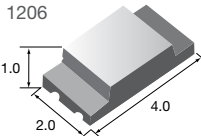
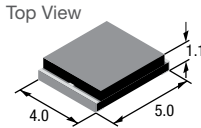
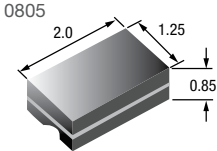


Notes: (1) Sensitivity: $V_R = 5\text{ V}$, $E_o = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$; (2) Speed: $R_L = 1\text{ k}\Omega$, $I = 820\text{ nm}$, $V_R = 10\text{ V}$; (3) $V_R = 50\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 820\text{ nm}$; (4) $R_L = 50\text{ }\Omega$; (5) Bandwidth 10.1 (nm)

Ambient Light Sensors

Ambient light sensors from Vishay enable headlights, display backlighting, and other automotive systems to sense and respond to light in ways similar to the human eye. With a unique, patent-pending filtering material, interference from infrared and ultraviolet light is virtually eliminated.

Package	Part Number	Peak Wave-length (nm)	Band-width $\lambda_{0.5}$ (nm)	Angle of Half Sensitivity (\pm°)	Light Current ⁽¹⁾ Incandescent (μA)	Light Current ⁽²⁾ Fluorescent (μA)	Remark
PIN Diodes							
0805	TEMD6200FX01	540	430 to 610	60	0.04	0.03	Stand-off
1206	TEMD6010FX01	540	430 to 610	60	0.04	0.03	
Top View	TEMD5510FX01	540	430 to 610	65	1	0.7	
Phototransistors							
0805	TEMT6200FX01	550	450 to 610	60	12	7	
1206	TEMT6000X01	570	430 to 800	60	50	21	

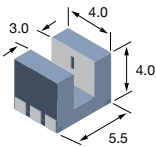


Notes: (1) $E_v = 100\text{ lux}$, $V_{CE} = 5\text{ V}$, CIE illuminant A, typical (2) $E_v = 100\text{ lux}$, $V_{CE} = 5\text{ V}$, e.g. Sylvania color abbrev. D830, typical

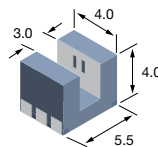
Optical Sensors

Vishay offers interrupter sensors used for steering wheel sensors, radio and climate control knobs, and gear shift position sensors

Part Number ⁽¹⁾	Gap (mm)	Aperture (mm)	Typical Output Current (mA)	On / Off Time t_{on} / t_{off} (μs)
TCPT1300X01	3.0	0.3	0.6	20 / 30
TCUT1300X01⁽²⁾	3.0	0.3	0.6	20 / 30



TCPT1300X01



TCUT1300X01

Notes: (1) All optical sensors have phototransistor output (2) Dual channel



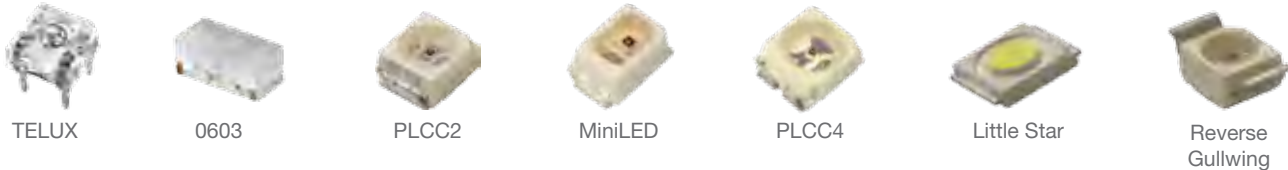
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AEC-Q101 Qualified Parts

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LEDs

Vishay offers LEDs in a variety of surface-mount packages. Standard and power LEDs are offered in packages with standard PLCC-2 dimensions. Mini-LED products feature a small white surface-mount package measuring just 2.3 mm (L) x 1.3 mm (W) x 1.4 mm (H) with a viewing angle of 120°. The new 0603 LED series, with industry-standard 0603 compatible dimensions of 1.6 mm (L) x 0.8 mm (W) x 0.6 mm (H) mm and a viewing angle of 160°, is now the smallest surface-mount LED in the Vishay portfolio. Vishay offers a number of new high-brightness SMD LED packages such as the PLCC-2 Plus and Little Star®. The 1 W Little Star features footprint dimensions of 6 mm by 6 mm and a height profile of < 1.5 mm — even thinner than a typical PLCC-6 package with a 1.8 mm package height. Vishay LEDs are ideal for applications such as instruments, switches, and icon backlighting. Designed for operation with an extended - 40 °C to + 100 °C temperature range, these surface-mount devices provide a high level of reliability which is crucial for automotive applications.



TELUX

Part Number	Description	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Min. / Max. (V)
			Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
TLWR7600	Standard	Red	611	618	634	70	± 30	1500	2100	-	1.83 / 2.67
TLWY7600	Standard	Yellow	585	592	597	70	± 30	1000	1400	-	1.83 / 2.67
TLWR7900	Standard	Red	611	618	634	70	± 45	1500	2100	-	1.83 / 2.67
TLWY7900	Standard	Yellow	585	592	597	70	± 45	1000	1400	-	1.83 / 2.67
TLWR8600	Power	Red	611	615	634	70	± 30	2000	3000	-	1.83 / 2.67
TLWY8600	Power	Yellow	585	590	597	70	± 30	2000	3000	-	1.83 / 2.67
TLWR8900	Power	Red	611	615	634	70	± 45	2000	3000	-	2.0 / 2.7
TLWR8901	Power	Red	611	615	634	70	± 45	2000	3000	4800	1.83 / 2.67
TLWY8900	Power	Yellow	585	590	597	70	± 45	2000	3000	-	1.83 / 2.67
TLWR9000	Power	Red	611	615	634	70	± 55	2500	3200	-	1.83 / 2.67
TLWR9600	Power	Red	611	615	634	70	± 30	2500	3200	-	1.83 / 2.67
TLWR9900	Power	Red	611	615	634	70	± 45	2500	3200	-	1.83 / 2.67
VLWR9630	Power	Red	611	615	634	70	± 30	4000	-	12200	1.83 / 3.03
VLWR9930	Power	Red	611	615	634	70	± 45	4000	-	12200	1.83 / 3.03
VLWR9931	Power	Red	611	615	634	70	± 45	5000	-	12200	1.83 / 3.03
VLWR9932	Power	Red	611	615	634	70	± 45	6000	-	12200	1.95 / 2.67
VLWY9630	Power	Yellow	585	592	597	70	± 30	4000	-	12200	1.83 / 3.03
VLWY9930	Power	Yellow	585	592	597	70	± 45	4000	-	12200	1.83 / 3.03
VLWY9932	Power	Yellow	587	-	597	70	± 45	6000	-	12200	1.95 / 2.67
VLWR9430	Power, oval	Red	611	615	634	70	25 x 68	5000	8000	-	1.83 / 3.03
VLWR9530	Power, oval	Red	611	615	634	70	40 x 90	5000	8000	-	1.83 / 3.03
VLWB9600	Power	Blue	462	470	476	50	± 30	800	1200	-	3.9 (< 4.7)
VLWB9900	Power	Blue	462	470	476	50	± 45	800	1200	-	3.9 (< 4.7)
VLWTG9600	Power	True green	509	523	535	50	± 30	2000	2500	-	3.9 (< 4.7)
VLWTG9900	Power	True green	509	523	535	50	± 45	2000	2500	-	3.9 (< 4.7)



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

TELUX continued

TELUX											
Part Number	Description	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Min. / Max. (V)
			Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLWW8605	Power	White	-	5500	-	50	± 30	630	1000	-	4.3 (< 5.2)
VLWW9600	Power	White	-	5500	-	50	± 30	1500	2200	-	4.3 (< 5.2)
VLWW9900	Power	White	-	5500	-	50	± 45	1500	2200	-	4.3 (< 5.2)

SMD LEDs 0603

Standard 0603											
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)	
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)		
TLMO1100	Orange	600	606	609	30	± 80	50	80	-	2.1 (< 3)	
TLMG1100	Green	564	570	575	30	± 80	12.5	35	-	2.1 (< 3)	
TLMS1100	Red	627	633	639	30	± 80	32	63	-	2.1 (< 3)	
TLMY1100	Yellow	580	587	595	30	± 80	50	80	-	2.1 (< 3)	
TLMB1100	Blue	-	466	-	30	± 80	4	5	-	3.9 (< 4.5)	
TLMP1100	Pure green	551	558	566	30	± 80	6.3	15	-	2.1 (< 3)	
VLMW11R2S2-5K8L	White	-	0.33 / 0.33	-	20	± 80	140	-	280	2.9 / 4.0	

Low-Current 0603

Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
TLMS1000	Red	624	628	636	15	± 80	1.8	4	-	1.8 (< 2.6)
TLMY1000	Yellow	580	588	595	15	± 80	3.55	7.5	-	1.8 (< 2.6)
TLMO1000	Soft orange	600	605	609	15	± 80	3.55	7.5	-	1.8 (< 2.6)

SMD PLCC2 Plus

PLCC2 Plus										
Part Number	Description	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)		V _F Min. / Max. (V)
			Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Max. (mcd)	
VLMR51Z1AA	1/2 W power	Red	620	-	630	200	± 60	2850	5600	1.9 / 2.65
VLMK51Z1AA	1/2 W power	Amber	610	-	621	200	± 60	2850	5600	2.2 / 2.8
VLMY51Z1AA	1/2 W power	Yellow	585	-	594	200	± 60	3550	7150	2.2 / 2.8

PLCC2 Plus white

Part number	Description	Color	Chromaticity Coordinates			I _F Max. (mA)	φ (°)	φV	φV	V _F Min. / Max. (V)
			Min.	Typ.	Max.			Min. (lm)	Max. (lm)	
VLMW51P2Q3	1/2 W power	White	-	0.33/0.33	-	350	± 60	23.5	39.8	3.0 / 4.1



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

SMD LEDs Mini

Standard Mini										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMG21J2L1	Green	562	568	575	30	± 60	5.6	-	14	2.1 (< 2.8)
VLMG21J2M1	Green	562	568	575	30	± 60	5.6	-	22.4	2.1 (< 2.8)
VLMG21K1L2	Green	562	568	575	30	± 60	7.1	-	18	2.1 (< 2.8)
VLMG21K2M1	Green	562	568	575	30	± 60	9	-	22.4	2.1 (< 2.8)
VLMO2100	Soft orange	598	605	611	30	± 60	3.55	7.1	-	2.1 (< 3)
VLMO21H2K1	Soft orange	598	605	611	30	± 60	3.55	-	9	2.1 (< 3)
VLMO21H2L1	Soft orange	598	605	611	30	± 60	3.55	-	14	2.1 (< 3)
VLMO21J2L1	Soft orange	598	605	611	30	± 60	5.6	-	14	2.1 (< 3)
VLMS2100	Red	624	628	636	30	± 60	2.8	7.1	-	2.1 (< 3)
VLMS21H2K1	Red	624	628	636	30	± 60	3.55	-	9	2.1 (< 3)
VLMS21H2L1	Red	624	628	636	30	± 60	3.55	-	14	2.1 (< 3)
VLMS21J2L1	Red	624	628	636	30	± 60	5.6	-	14	2.1 (< 3)
VLMY2100	Yellow	581	588	594	30	± 60	3.55	7.1	-	2.2 (< 3)
VLMY21H2K1	Yellow	581	588	594	30	± 60	3.55	-	9	2.2 (< 3)
VLMY21H2L1	Yellow	581	588	594	30	± 60	3.55	-	14	2.2 (< 3)
VLMY21J2L1	Yellow	581	588	594	30	± 60	5.6	-	14	2.2 (< 3)

Low-Current Mini										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMK2000	Amber	612	622	624	15	± 60	7.1	16	-	1.8 (< 2.2)
VLMK20J2L1	Amber	612	622	624	15	± 60	5.6	-	14	1.8 (< 2.2)
VLMK20J2L2	Amber	612	622	624	15	± 60	18	5.6	-	1.8 (< 2.2)
VLMK20K1L2	Amber	612	622	624	15	± 60	7.1	-	18	1.8 (< 2.2)
VLMO2000	Soft orange	598	605	611	15	± 60	4.5	9	-	1.8 (< 2.2)
VLMO20J2M1	Soft orange	598	605	611	15	± 60	5.6	-	22.4	1.8 (< 2.2)
VLMO20K2L2-35	Soft orange	602	-	609	15	± 60	9	-	18	1.8 (< 2.2)
VLMP20E2G1	Pure green	555	-	565	15	± 60	0.9	-	2.24	1.8 (< 2.2)
VLMS2000	Super red	-	630	-	15	± 60	2.24	4.5	-	1.8 (< 2.2)
VLMS20H2K1	Super red	-	630	-	15	± 60	3.55	-	9	1.8 (< 2.2)
VLMS20H2L1	Super red	-	630	-	15	± 60	3.55	-	14	1.8 (< 2.2)
VLMS20J2L1	Super red	-	630	-	15	± 60	5.6	-	14	1.8 (< 2.2)
VLMY2000	Yellow	581	588	594	15	± 60	3.55	7.1	-	1.8 (< 2.2)
VLMY20J1L2	Yellow	581	588	594	15	± 60	4.5	-	18	1.8 (< 2.2)
VLMY20K1L2	Yellow	581	588	594	15	± 60	7.1	-	18	1.8 (< 2.2)



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

SMD LEDs Mini continued

Power Mini										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMS233T1V	Super red	626	630	639	50	± 60	280	450	900	2 (<2.6)
VLMR233T2V2	Red	619	625	631	50	± 60	355	650	1120	2 (<2.6)
VLMK233U1AA	Amber	611	616	622	50	± 60	450	760	1400	2 (<2.6)
VLMO233U1AA	Soft orange	600	605	611	50	± 60	450	760	1400	2 (<2.6)
VLMO233U2V2-35	Soft orange	605	605	609	50	± 60	560	760	1120	2 (<2.6)
VLMY233T2V2	Yellow	583	589	594	50	± 60	355	650	1120	2 (<2.6)
VLME2300	Yellow	581	588	594	30	± 60	25	112	-	2 (< 2.6)
VLME2302	Yellow	581	588	594	30	± 60	28	-	56	2 (< 2.6)
VLME23Q2S1	Yellow	581	588	594	30	± 60	-	-	-	2 (< 2.6)
VLME23Q2T1	Yellow	581	588	594	30	± 60	-	-	-	2 (< 2.6)
VLME23R2T1	Yellow	581	588	594	30	± 60	-	-	-	2 (< 2.6)
VLMF2300	Soft orange	598	605	611	30	± 60	56	112	-	2 (< 2.6)
VLMF23Q2S1	Soft orange	598	605	611	30	± 60	90	-	224	2 (< 2.6)
VLMF23Q2T1	Soft orange	598	605	611	30	± 60	90	-	355	2 (< 2.6)
VLMF23R2T1	Soft orange	598	605	611	30	± 60	140	-	355	2 (< 2.6)
VLMK2300	Red	-	630	-	30	± 60	35.5	90	-	1.9 (< 2.6)
VLMK23P2R1	Red	-	630	-	30	± 60	56	-	140	1.9 (< 2.6)
VLMK23P2S1	Red	-	630	-	30	± 60	56	-	224	1.9 (< 2.6)
VLMK23Q2S1	Red	-	630	-	30	± 60	90	-	224	1.9 (< 2.6)
VLMK23R1S1	Red	-	630	-	30	± 60	112	-	224	1.9 (< 2.6)
VLMP232M2N2	Pure green	555	558	565	40	± 60	22.4	-	45	2.2 (< 2.6)
VLMP232M2P1	Pure green	555	558	565	40	± 60	22.4	-	56	2.2 (< 2.6)
VLMP232N1P1	Pure green	555	558	565	40	± 60	28	-	56	2.2 (< 2.6)
VLMP23K2M2	Pure green	555	560	565	40	± 60	9	-	28	2.2 (< 2.6)

SMD LEDs PLCC2

Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMB31J2K2	Blue	458	-	472	20	± 60	5.6	-	11.2	3.9 (< 4.5)
VLMB31J2L2	Blue	458	-	472	20	± 60	5.6	-	18	3.9 (< 4.5)
VLMB31K2L2	Blue	458	-	472	20	± 60	9	-	18	3.2 (< 4.2)
VLMB41P1Q2	Blue	462	-	476	20	± 60	45	-	112	3.2 (< 4.2)
VLMB41P2Q2	Blue	462	-	476	20	± 60	56	-	112	1.8 (< 2.2)
VLMD3200	Red	-	648	-	30	± 60	11.2	-	-	1.8 (< 2.2)
VLMD3201	Red	-	648	-	30	± 60	18	-	45	1.8 (< 2.2)
VLMD3205	Red	-	648	-	30	± 60	11.2	-	28	1.8 (< 2.2)
VLMD31L2N1	Red	-	648	-	30	± 60	14	-	35.5	1.8 (< 2.2)



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

SMD LEDs PLCC2 continued

Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMD31L2P1	Red	-	648	-	30	± 60	14	-	56	1.8 (< 2.2)
VLMD31M2P1	Red	-	648	-	30	± 60	22.4	-	56	2 (< 2.6)
VLME3200	Yellow	581	588	594	30	± 60	28	45	-	2 (< 2.6)
VLME3201	Yellow	581	588	594	30	± 60	35.5	-	90	2 (< 2.6)
VLME3205	Yellow	581	588	594	30	± 60	56	-	140	2 (< 2.6)
VLME31Q2T1	Yellow	581	588	594	30	± 60	90	-	355	2 (< 2.6)
VLME31R1S2	Yellow	581	588	594	30	± 60	112	-	280	2 (< 2.6)
VLME31S1T1	Yellow	581	588	594	30	± 60	180	-	355	2 (< 2.6)
VLMF3200	Soft orange	598	605	611	30	± 60	28	90	-	2 (< 2.6)
VLMF31Q2T1	Soft orange	598	605	611	30	± 60	90	-	355	2 (< 2.6)
VLMF31Q2T1	Soft orange	598	605	611	30	± 60	90	-	355	2 (< 2.6)
VLMF31R1S2	Soft orange	598	605	611	30	± 60	112	-	280	2 (< 2.6)
VLMF31S1T1	Soft orange	598	605	611	30	± 60	180	-	355	2.2 (< 2.8)
VLMG3200	Green	562	-	575	30	± 60	4.5	16	-	2.2 (< 2.8)
VLMG3202	Green	562	-	575	30	± 60	11.2	-	18	2.2 (< 2.8)
VLMG3205	Green	562	-	575	30	± 60	7.1	-	18	2.2 (< 2.8)
VLMG31K1L2	Green	562	-	575	30	± 60	7.1	-	18	2.2 (< 2.8)
VLMG31K1M2	Green	562	-	575	30	± 60	7.1	-	28	2.2 (< 2.8)
VLMG31L1M2	Green	562	-	575	30	± 60	11.2	-	28	2 (< 2.8)
VLMH3200	Red	612	-	625	30	± 60	2.8	20	-	2 (< 2.8)
VLMH3201	Red	612	-	625	30	± 60	4.5	-	11.2	2 (< 2.8)
VLMH3202	Red	612	-	625	30	± 60	7.1	-	18	1.9 (< 2.6)
VLMK3200	Red	-	630	-	30	± 60	11.2	50	-	1.9 (< 2.6)
VLMK3202	Red	-	630	-	30	± 60	22.4	-	56	1.9 (< 2.6)
VLMK3205	Red	-	630	-	30	± 60	35.5	-	90	1.9 (< 2.6)
VLMK31P2S1	Red	-	630	-	30	± 60	56	-	224	1.9 (< 2.6)
VLMK31Q1R2	Red	-	630	-	30	± 60	71	-	180	1.9 (< 2.6)
VLMK31R1S1	Red	-	630	-	30	± 60	112	-	224	1.9 (< 2.6)
VLMK31R1S2	Red	-	630	-	30	± 60	112	-	280	1.9 (< 2.6)
VLMK31R2S2	Red	-	630	-	30	± 60	140	-	280	2 (< 2.8)
VLMO3200	Soft orange	598	-	611	30	± 60	2.8	8	-	2 (< 2.8)
VLMO3201	Soft orange	598	-	611	30	± 60	4.5	-	11.2	2 (< 2.8)
VLMO31J1K2	Soft orange	598	-	611	30	± 60	4.5	-	11.2	2 (< 2.8)
VLMO31J1L2	Soft orange	598	-	611	30	± 60	4.5	-	18	2 (< 2.8)
VLMO31K1L2	Soft orange	598	-	611	30	± 60	7.1	-	18	2.1 (< 2.8)
VLMP3200	Pure green	555	-	565	30	± 60	1.12	4	-	2.1 (< 2.8)
VLMP3201	Pure green	555	-	565	30	± 60	1.8	-	4.5	2.1 (< 2.8)
VLMP3202	Pure green	555	-	565	30	± 60	2.8	-	7.1	2.1 (< 2.8)
VLMP3207	Pure green	555	-	565	30	± 60	2.8	-	5.6	2.1 (< 2.8)

Optoelectronics - AEC-Q101 Qualified Parts



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

SMD LEDs PLCC2 continued

Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMP31G2J1	Pure green	555	-	565	30	± 60	2.24	-	5.6	2.1 (< 2.8)
VLMP31G2J2	Pure green	555	-	565	30	± 60	2.24	-	7.1	2.1 (< 2.8)
VLMP31H2J2	Pure green	555	-	565	30	± 60	3.55	-	7.1	2 (< 2.6)
VLMPG31L1M2	Pure green	555	-	565	30	± 60	11.2	-	28	2 (< 2.6)
VLMS3200	Red	624	630	636	30	± 60	2.8	7.1	-	2 (< 2.6)
VLMS3201	Red	624	630	636	30	± 60	4.5	-	11.2	1.9 (< 2.6)
VLMS31J1K2	Red	624	630	638	30	± 60	4.5	-	11.2	1.9 (< 2.6)
VLMS31J1L2	Red	624	630	638	30	± 60	4.5	-	18	1.9 (< 2.6)
VLMS31J2L1	Red	624	630	638	30	± 60	5.6	-	14	1.9 (< 2.6)
VLMS31K1L2	Red	624	630	638	30	± 60	7.1	-	18	3.3 (< 4.2)
VLMW41R1T1-7K8L	White	-	0.345 / 0.352	-	20	± 60	112	-	355	3.3 (< 4.2)
VLMW41S1T1-5K8L	White	-	0.33 / 0.33	-	20	± 60	180	-	355	3.3 (< 4.2)
VLMWS1T2-JKPL	White	0.30/0.28	-	0.35/0.36	20	± 60	180	-	450	3.3 (< 4.2)
VLMW42T2U2-6K6L	White	-	0.32 / 0.32	-	2	± 60	355	-	720	3.3 (< 4.2)
VLMW42T2V1-6K7L	White	-	0.32 / 0.32	-	20	± 60	355	-	900	2.1 (< 2.8)
VLMY3200	Yellow	581	-	594	30	± 60	2.8	20	-	2.1 (< 2.8)
VLMY3201	Yellow	581	-	594	30	± 60	4.5	-	11.2	2.1 (< 2.8)
VLMY3202	Yellow	581	-	594	30	± 60	7.1	-	18	2.4 (< 3)
VLMY3191	Yellow	583	588	592	30	± 60	7.1	-	18	2.1 (< 2.8)
VLMY31J1K2	Yellow	581	588	594	30	± 60	4.5	-	11.2	2.1 (< 2.8)
VLMY31J1L2	Yellow	581	588	594	30	± 60	4.5	-	18	2.1 (< 2.8)
VLMY31K1L2	Yellow	581	588	594	30	± 60	7.1	-	18	2.1 (< 2.8)

Low Current

Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMB40L1M2-34	Blue	462	-	472	20	± 60	11.2	-	28	3.2 (< 4.2)
VLMO3000	Orange	600	-	609	15	± 60	5.6	-	-	1.8 (< 2.2)
VLMO30K1L2	Orange	600	-	609	15	± 60	7.1	-	18	1.8 (< 2.2)
VLMO30K1M2	Orange	600	-	609	15	± 60	7.1	-	28	1.8 (< 2.2)
VLMO30L1M2	Orange	600	-	609	15	± 60	11.2	-	28	1.8 (< 2.2)
VLMC3100	Green	562	-	575	7	± 60	0.71	1.6	-	1.9 (< 2.4)
VLMC3101	Green	562	-	575	7	± 60	1.12	1.6	-	1.9 (< 2.4)
VLMPG30E1F2	Pure green	555	560	565	20	± 60	0.71	-	1.8	< 2.2
VLMPG30E1G2	Pure green	555	560	565	20	± 60	0.71	-	2.8	< 2.2



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

SMD LEDs PLCC2 continued

Low Current										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMPG30F1G2	Pure green	555	560	565	20		1.12	-	2.8	< 2.2
VLMYG30G2J1	Yellow, green	566	574	575	20		2.24	-	5.6	< 2.2
VLMYG30G2K1	Yellow, green	566	574	575	20		2.24	-	9	< 2.2
VLMYG30H2K1	Yellow, green	566	574	575	20		3.55	-	9	< 2.2
VLMS3000	Red	624	-	636	15		2.8	-	-	1.8 (< 2.2)
VLMS30J1K2	Red	624	-	636	15		4.5	-	11.2	1.8 (< 2.2)
VLMS30J1L2	Red	624	-	636	15		4.5	-	18	1.8 (< 2.2)
VLMS30J2K2	Red	624	-	636	15		5.6	-	11.2	1.8 (< 2.2)
VLMS30K1L2	Red	624	-	636	15		7.1	-	18	1.8 (< 2.2)
VLMS30K2L2	Red	624	-	636	15		9	-	18	1.8 (< 2.2)
VLMT3100	Red	612	-	625	7		0.28	1.1	-	2.2 (< 2.9)
VLMY3000	Yellow	581	-	594	7		4.5	-	-	1.8 (< 2.2)
VLMY3001	Yellow	581	-	594	7		7.1	-	18	1.8 (< 2.2)
VLMY30J2L1	Yellow	581	-	594	15		5.6	-	14	1.8 (< 2.2)
VLMY30J2M1	Yellow	581	-	594	15		5.6	-	22.4	1.8 (< 2.2)
VLMY30K2M1	Yellow	581	-	594	15		9	-	22.4	1.8 (< 2.2)
VLMA3100	Yellow	581	-	594	7		0.28	2.5	-	2.2 (< 2.9)
VLMK33Q2T1	Red	612	617	622	20		90	-	355	1.9 (< 2.5)
VLMK33R1S2	Red	612	617	622	20		112	-	280	1.9 (< 2.5)
VLMK33R2T2-2	Red	614	-	622	20		140	-	450	1.9 (< 2.5)
VLMK33S1T1	Red	612	617	622	20		180	-	355	1.9 (< 2.5)

Power										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. Min. / Max. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMO33R2U2	Soft orange	600	605	611	50	± 60	140	-	710	1.7 / 2.5
VLMO33S1T2	Soft orange	600	605	611	50	± 60	180	-	450	1.7 / 2.5
VLMO33T1U2	Soft orange	600	605	611	50	± 60	280	-	710	1.7 / 2.5
VLMPG33N1P2	Pure green	555	560	565	50	± 60	28	-	71	2 (< 2.5)
VLMR33R2U2	Amber	611	617	622	50	± 60	140	-	710	1.7 / 2.5
VLMR33T1U2	Amber	611	617	622	50	± 60	280	-	710	1.7 / 2.5
VLMS33S1T2	Super red	626	630	638	50	± 60	180	-	450	1.7 / 2.5
VLMS33S1U1	Super red	626	630	638	50	± 60	180	-	560	1.7 / 2.5
VLMW33S2V1-5K8L	White	-	0.33 / 0.33	-	50	± 60	224	-	900	3.7 (< 4.2)
VLMW33T2AA-5K8L	White	-	0.33 / 0.33	-	50	± 60	355	-	1400	3.7 (< 4.2)



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

SMD LEDs PLCC2 continued

Power										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. Min. / Max. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMW33T2U2-5K8L	White	-	0.33 / 0.33	-	50	± 60	355	-	710	3.7 (< 4.2)
VLMK33Q2T1	Red	612	617	622	50	± 60	90	-	355	1.9 (< 2.5)
VLMK33R1S2	Red	612	617	622	50	± 60	112	-	280	1.9 (< 2.5)
VLMK33R2T2-2	Red	614	-	622	50	± 60	140	-	450	1.9 (< 2.5)
VLMK33S1T1	Red	612	617	622	50	± 60	180	-	355	1.9 (< 2.5)
VLMO33R2U2	Soft orange	600	605	611	50	± 60	140	-	710	1.7 / 2.5
VLMO33S1T2	Soft orange	600	605	611	50	± 60	180	-	450	1.7 / 2.5
VLMO33T1U2	Soft orange	600	605	611	50	± 60	280	-	710	1.7 / 2.5
VLMPG33N1P2	Pure green	555	560	565	50	± 60	28	-	71	2 (< 2.5)
VLMR33R2U2	Amber	611	617	622	50	± 60	140	-	710	1.7 / 2.5
VLMR33T1U2	Amber	611	617	622	50	± 60	280	-	710	1.7 / 2.5
VLMS33S1T2	Super red	626	630	638	50	± 60	180	-	450	1.7 / 2.5
VLMS33S1U1	Super red	626	630	638	50	± 60	180	-	560	1.7 / 2.5
VLMW33S2V1-5K8L	White	-	0.33 / 0.33	-	50	± 60	224	-	900	3.7 (< 4.2)
VLMW33T2AA-5K8L	White	-	0.33 / 0.33	-	50	± 60	355	-	1400	3.7 (< 4.2)
VLMW33T2U2-5K8L	White	-	0.33 / 0.33	-	50	± 60	355	-	710	3.7 (< 4.2)
VLMW33U2AA-5K8L	White	-	0.33 / 0.33	-	50	± 60	560	-	1400	3.7 (< 4.2)
VLMY33R2U2	Yellow	583	588	594	50	± 60	140	-	710	1.7 / 2.5
VLMY33T1U2	Yellow	583	588	594	50	± 60	280	-	710	1.7 / 2.5
VLMY33T2U2-46	Yellow	587	-	594	50	± 60	355	-	710	1.7 / 2.5
VLMY33P1Q2	Yellow, green	566	-	577	50	± 60	45	-	112	1.7 / 2.5

SMD LEDs PLCC4

Power										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMO322U1V2	Soft orange	600	605	612	70	± 60	450	750	1120	1.7 / 2.6
VLMPG32P1Q1	Pure green	555.5	-	564.5	70	± 60	45	-	90	2.1 (< 2.6)
VLMK322U1V2	Amber	610	-	621	70	± 60	450	750	1125	1.7 / 2.6
VLMK32ABBB	Amber	610	-	621	70	± 60	1400	-	2850	1.85 / 3.03
VLMS322T2V1	Super red	625	630	940	70	± 60	355	450	900	1.7 / 2.6
VLMW321ABBB5K8L	White	-	0.33 / 0.33	-	50	± 60	1400	2200	2850	2.9 / 4
VLMW321BACA5K8L	White	-	0.33 / 0.33	-	50	± 60	1800	2800	3550	2.9 / 4



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

SMD LEDs PLCC4 continued

Specials Multi Color										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLMW322ABBB5K8L	White	-	0.33 / 0.33	-	50	± 60	1400	2200	2850	2.9 / 4
VLMW322BACA5K8L	White	-	0.33 / 0.33	-	50	± 60	1800	2800	3550	2.9 / 4
VLMY32ABBB	Yellow	585	588	594	70	± 60	1400	-	2850	1.85 / 3.03
VLMY322U1V2	Yellow	582	588	594	70	± 60	450	750	1125	1.7 / 2.6
VLMKE3400	Red, yellow	581	630 / 588	594	30	± 60	56 / 90	- / -	180 / 280	1.9 (< 2.6) / 2 (< 2.6)
VLMKE3401	Red, yellow	581	630 / 588	594	30	± 60	71 / 112	- / -	140 / 224	1.9 (< 2.6) / 2 (< 2.6)
VLMKG3400	Red, green	627 / 564	633 / 570	639 / 575	30	± 60	56 / 35.5	- / -	140 / 90	1.9 (< 2.6) / 2 (< 2.6)
VLSY3420	Super red, yellow	581	630 / 588	594	50	± 60	224 / 280	- / -	900 / 1120	2.1 (< 2.6)
VLMRY3420	Amber, yellow	581	617 / 588	594	50	± 60	355 / 560	- / -	900 / 1120	2.1 (2.6)
VLMRGB343	Red, green, blue	625	525	470	30	± 60	285	560	200	1.85 to 2.45
VLMV3100	Red, green	612 / 562	- / -	625 / 575	30	± 60	2.8	6	-	2.4 (< 3)

Reverse Gullwing

Standard										
Part Number	Color	Wavelength			I _F Max. (mA)	φ (°)	Intensity (at I _F Max.)			V _F Typ. (V)
		Min. (nm)	Typ. (nm)	Max. (nm)			Min. (mcd)	Typ. (mcd)	Max. (mcd)	
VLRE31R1S1-GS08	Yellow	581	588	594	30	± 60	112	-	224	2.1 (< 2.3)
VLRE31R1S2-GS08	Yellow	581	588	594	30	± 60	112	-	285	2.1 (< 2.3)
VLRE31R2S2-GS08	Yellow	581	588	594	30	± 60	140	-	285	2.1 (< 2.3)
VLRK31Q1R2-GS08	Red	620	630	635	30	± 60	71	-	180	2.1 (< 2.3)
VLRK31Q2R1-GS08	Red	620	630	635	30	± 60	90	-	140	2.1 (< 2.3)
VLRK31R1R2-GS08	Red	620	630	635	30	± 60	112	-	180	2.1 (< 2.3)
VLRK31R1S2-GS08	Red	620	630	635	30	± 60	112	-	285	2.1 (< 2.3)



AUTOMOTIVE GRADE OPTOELECTRONICS

AEC-Q101 Qualified Parts

Optoelectronics - AEC-Q101 Qualified Parts

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