Vishay Introduces New Die Technology for VLMP31… Series

In PCN OMV1184-2021, Vishay announced new dies for the PLCC2 and MiniSMD series featuring GaP and GaAsP chip technology.

For the pure green VLMP31… PLCC2 SMD LED series, the replacement die has now been obsoleted due to unavailability of the GaP EPI material. The short term discontinuation announcement by our chip supplier makes it impossible for us to continue using the old chip technology and to adhere to the prescribed obsoletion time window of one year for last time shipment.

The PCN OMV1184-2021 stated the following changes for the devices using new dies:

- Considering the capabilities of these long term established die technologies regarding electrical life performance, the maximum allowed forward current will be limited to 20 mA
- The qualification is not extended for AEC-Q10x release

The new solution will be to change to an already qualified AlInGaP die with slightly higher brightness. To keep the existing device names and brightness ranges, the specification current for luminous intensity and wavelength will be reduced from 10 mA to 6 mA.

Contrary to the original announcement, the existing AEC-Q101 qualification will remain for the VLMP31... series and the maximum DC forward current of 30 mA will still be supported.

The datasheets need to be changed as follows:

- The VLMP3100… and VLMP3102… will be removed from the collective datasheet doc. no.: 84789. They will be shown in the doc. no. 81328, together with the VLMP31G2J1… and VLMP31H2J2…
- The …-GS18 versions with no demand will be deleted

Old parts tables:

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			at I_F (mA)	WAVELENGTH (nm)			at I_F (mA)	FORWARD VOLTAGE (V)			at I_F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMP3100-GS08	Pure green	1.12	4	-	10	555	560	565	10	-	2.1	2.8	20	GaP on GaP
VLMP3100-GS18	Pure green	1.12	4	-	10	555	560	565	10	-	2.1	2.8	20	GaP on GaP
VLMP3102-GS08	Pure green	2.8	3.8	5.6	10	555	560	565	10	-	2.1	2.8	20	GaP on GaP
VLMP3102-GS18	Pure green	2.8	3.8	5.6	10	555	560	565	10	-	2.1	2.8	20	GaP on GaP

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			at I_F (mA)	WAVELENGTH (nm)			at I_F (mA)	FORWARD VOLTAGE (V)			at I_F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMP31G2J1-GS08	Pure green	2.24	3.6	5.6	10	555	560	565	10	-	2.1	2.8	20	GaP on GaP
VLMP31G2J1-GS18	Pure green	2.24	3.6	5.6	10	555	560	565	10	-	2.1	2.8	20	GaP on GaP
VLMP31H2J2-GS08	Pure green	3.55	4.3	7.1	10	555	560	565	10	-	2.1	2.8	20	GaP on GaP
VLMP31H2J2-GS18	Pure green	3.55	4.3	7.1	10	555	560	565	10	-	2.1	2.8	20	GaP on GaP

New parts table:

PARTS TABLE														
PART	COLOR	LUMINOUS INTENSITY (mcd)			at I_F (mA)	WAVELENGTH (nm)			at I_F (mA)	FORWARD VOLTAGE (V)			at I_F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMP3100-GS08	Pure green	1.12	4	5.6	6	555	560	565	6	-	2.1	2.8	20	AlInGaP on GaP
VLMP3102-GS08	Pure green	2.8	4	5.6	6	555	560	565	6	-	2.1	2.8	20	AlInGaP on GaP
VLMP31G2J1-GS08	Pure green	2.24	3.6	5.6	6	555	560	565	6	-	2.1	2.8	20	AlInGaP on GaP
VLMP31H2J2-GS08	Pure green	3.55	4.3	7.1	6	555	560	565	6	-	2.1	2.8	20	AlInGaP on GaP

Brief description of datasheet changes:

Parameter	**From**	**To**
Specification current for luminous intensity and wavelength (see details in parts tables shown above)	I_F = 10 mA	I_F = 6 mA
Corner points of derating diagram	T_a = 60 °C / I_F = 30 mA and T_a = 100 °C / I_F = 0 mA	T_a = 80 °C / I_F = 30 mA and T_a =100 °C / I_F = 17 mA
Maximum junction temperature	$T_{j\ max.}$ = 100 °C	$T_{j\ max.}$ = 125 °C
Maximum surge forward current	I_{FSM} = 0.5 A at t_p = 10 µs	I_{FSM} = 0.2 A at t_p = 300 µs
Reverse voltage	$V_{R\ max.}$ = 6 V	$V_{R\ max.}$ = 5 V
Typ. peak wavelength	$\lambda_{p\ typ.}$ = 555 nm at I_F = 10 mA	$\lambda_{p\ typ.}$ = 562 nm at I_F = 6 mA
Relative luminous intensity vs. ambient temperature	I_{Vrel} (100 °C) ~ 80 % I_{Vrel} (25 °C)	I_{Vrel} (100 °C) ~ 40 % I_{Vrel} (25 °C)

The typical diagrams will be updated accordingly

Useful Links

- www.vishay.com/leds/pure-green/

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