



PCN: V07- 007- 48475417- 0A

Product Change Notice

Issue Date: 1st October 2007

Change Type:

Avago Technologies has qualified an alternate dice source for GaAsP Red, GaP Yellow and Red, and Emerald Green for Subminiature Lamps.

Parts Affected:

HLMP-6000	HLMP-6405-J0031	HLMP-7019-D0021	QLMP-6116-D001T
HLMP-6000-E0010	HLMP-6405-L001L	HLMP-7020	QLMP-6116-D0040
HLMP-6000-E0011	HLMP-6405-F001S	HLMP-P005-F0011	QLMP-6116-D004T
HLMP-6000-E001S	HLMP-6600	HLMP-P005-F0031	QLMP-6135-D0010
HLMP-6000-G0000	HLMP-6600-G0010	HLMP-P202	QLMP-6135-D001T
HLMP-6000-G0010	HLMP-6600-G0011	HLMP-P205	QLMP-6135-D0040
HLMP-6300	HLMP-6620	HLMP-P205-F0011	QLMP-6135-D004T
HLMP-6300-F0010	HLMP-6620-F0010	HLMP-P205-F0031	QLMP-6380-L0010
HLMP-6300-F0011	HLMP-6620-F0011	HLMP-P302-F002S	QLMP-6381
HLMP-6300-F001S	HLMP-6620-F001S	HLMP-P305-F0000	QLMP-6392#011
HLMP-6300-F0021	HLMP-6620-F0021	HLMP-P305-F0011	QLMP-6437
HLMP-6300-F0031	HLMP-6620-F0031	HLMP-P305-F0021	QLMP-6478-M0010
HLMP-6300-KL000	HLMP-6625	HLMP-P305-F0031	QLMP-6478-M001T
HLMP-6301	HLMP-6700-G0000	HLMP-P605-F0011	QLMP-6478-M0040
HLMP-6305	HLMP-6700-G0010	HLMP-P605-F0031	QLMP-6478-M004T
HLMP-6305-L0011	HLMP-6700-G0011	HLMP-Q600-F0010	QLMP-6479
HLMP-6305-L001L	HLMP-6720	HLMP-Q605	QLMP-6481#011
HLMP-6305-L0021	HLMP-6720-F0010	HLMP-Q605-F0011	QLMP-6739-G0010
HLMP-6305-L0031	HLMP-6720-F0011	QLMP-6082-D0010	QLMP-6739-G001T
HLMP-6355-F001S	HLMP-6720-F0021	QLMP-6082-D001T	QLMP-6739-G0040
HLMP-6400	HLMP-6720-F0031	QLMP-6082-D0040	QLMP-6739-G004T
HLMP-6400-F0010	HLMP-6725	QLMP-6082-D004T	QLMP-6835-F0010
HLMP-6400-F0011	HLMP-7000	QLMP-6104-F0010	QLMP-6835-F001T
HLMP-6400-F001S	HLMP-7000-D0010	QLMP-6104-F001T	QLMP-7032-F0031
HLMP-6400-F0021	HLMP-7000-D0011	QLMP-6104-F0040	QLMP-P395
HLMP-6400-F0031	HLMP-7000-D001S	QLMP-6104-F004T	QLMP-P395#011
HLMP-6400-JK000	HLMP-7000-D0021	QLMP-6112-D0010	QLMP-Q619-F0011
HLMP-6402	HLMP-7001	QLMP-6112-D001T	QLMP-Q649-F0011
HLMP-6405	HLMP-7019	QLMP-6112-D0040	
HLMP-6405-J0011	HLMP-7019-D0011	QLMP-6112-D004T	
HLMP-6405-J0021	HLMP-7019-D001S	QLMP-6116-D0010	

Description and Extent of Change:

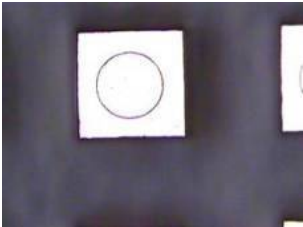
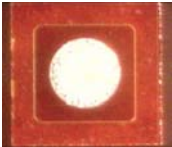
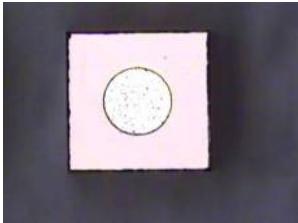
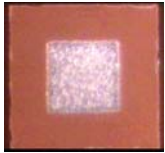
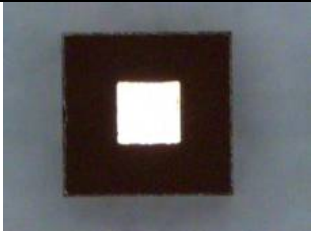
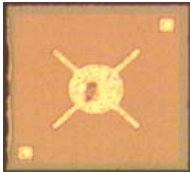
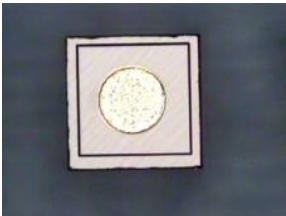
The selected dice shall be used in GaAsP Red, GaP Yellow, Red, and Emerald Green subminiature lamps, which will serve the same functionality as the existing die.

Reasons for Change:

This proposed change is to ensure continuous supply of the GaAsP Red, GaP Yellow, Red, and Emerald Green subminiature lamps.

Effect of Change on Fit, Form, Function, Quality, or Reliability:

There will be no change on form, fit, function, quality or reliability on the products. However there is a slight difference in the die top surface between the existing and alternate die. Below are the pictures showing the difference between them.

Die Type	Picture	
	Existing die	Alternate die
GaP Red		
GaP Yellow		
GaP Green		
GaAsP Red		

Effective Date of Change:

The shipment of the alternate dice source will begin from 1st January 2008 (WW01'08). From this date onwards, shipment may contain either existing parts or parts with alternate dice source.

Qualification Data:

Qualification data has been generated and approved.

These are the main qualification data for reference.

Qualification test for GaP dice :

Item	Test Type	Condition	Sample Size	Test criteria	Test Result
1	Solder on board→ temperature cycle (TMCL)	TMCL -55/100°C, 15 5 15mins (hot light up test)	100/wafer (Total =300)	No open/short LEDs	Passed 100 cycles
2	*High temperature operating life test (HTOL)	55°C, 26mA (ET@10mA)	28/wafer (Total = 84)	a) No Catastrophic failure and no parametric failure	Passed 1000 hrs
3	*Wet high temperature operating life test (WHTOL)	85°C/85%RH,13mA (ET@10mA)	28/wafer (Total = 84)		Passed 1000 hrs
4	Preconditioning→solder on board→temperature cycle (TMCL)	Preconditioning at 60°C/60%RH, 120 hours TMCL -55/100°C, 15 5 15 mins, (ET@10mA)	28/wafer (Total = 84)	b) Iv degradation <50% c) Vf shift <5%	Passed 100 cycles
5	Delco Power Temperature Cycle (DPTMCL)	-40/85°C, 15 5 15 mins, 13mA, 5 min on/off	28/wafer (Total = 84)		Passed 100 cycles
6	Delco Power Wet High Temperature Cycle (DPWHTMCL)	25/65°C At 95%RH, 3 6 3 hours, If = 22mA	28/wafer (Total = 84)		Passed 100 cycles

**Note: Accelerated test condition with higher stress current was used to achieve the equivalent.
1000hrs at typical stress current.*

Notes: - Samples are built from 3 wafers

ET- Electrical test

Qualification test for GaAsP dice:

Item	Test Type	Condition	Sample Size	Test criteria	Test Result
1	Solder on board→ temperature cycle (TMCL)	TMCL -55/100°C, 15 5 15mins (hot light up test)	100/wafer (Total =300)	No open/short LEDs	Passed 100 cycles
2	*High temperature operating life test (HTOL)	55°C, 45mA (ET@10mA)	28/wafer (Total = 84)	a) No Catastrophic failure and no parametric failure	Passed 1000 hrs
3	*Wet high temperature operating life test (WHTOL)	85°C/85%RH,20mA (ET@10mA)	28/wafer (Total = 84)		Passed 1000 hrs
4	Preconditioning→solder on board→temperature cycle (TMCL)	Preconditioning at 60°C/60%RH, 120 hours TMCL -55/100°C, 15 5 15 mins, (ET@10mA)	28/wafer (Total = 84)		Passed 100 cycles
5	Delco Power Temperature Cycle (DPTMCL)	-40/85°C, 15 5 15 mins, 20mA, 5 min on/off	28/wafer (Total = 84)	b) Iv degradation <50% c) Vf shift <5%	Passed 100 cycles
6	Delco Power Wet High Temperature Cycle (DPWHTMCL)	25/65°C At 95%RH, 3 6 3 hours, If = 37mA	28/wafer (Total = 84)		Passed 100 cycles

**Note: Accelerated test condition with higher stress current was used to achieve the equivalent.
1000hrs at typical stress current.*

Notes: - Samples are built from 3 wafers
ET- Electrical test

These changes have been reviewed and approved by Avago Technologies engineers and managers per Avago Technologies procedure: Change Control and Customer Notification, A-5962-6052-80.

Please contact your Avago Technologies field sales engineer or Contact Center (<http://www.avagotech.com/contact/>) for any questions or support requirements. Please return any response as soon as possible, but not to exceed 30 days.