

MVL-914HUOLC	MVL-904HUOLC
MVL-914UOLC	MVL-904UOLC
MVL-914HUYLC	MVL-904HUYLC
MVL-914UYLC	MVL-904UYLC
MVL-914TUOLC	MVL-904TUOLC
MVL-914TUYLC	MVL-904TUYLC
MVL-914TGC / 914UTGC	MVL-904TGC / 914UTGC
MVL-914SGC / 914USGC / 914MSGC	MVL-904SGC / 904USGC / 904MSGC
MVL-914BC / 914UBC / 914MBC	MVL-904BC / 904UBC / 904MBC
MVL-914W / 914UW / 914MW	MVL-904W / 904UW / 904MW
MVL-914HW	MVL-904HW
MVL-914HTGC	MVL-904HTGC
MVL-914HSGC	MVL-904HSGC
MVL-914HBC	MVL-904HBC

Technical Data JACK LEDs

11/19/2001

Benefits

- Fewer LEDs Required
- Lowers Lighting System Cost

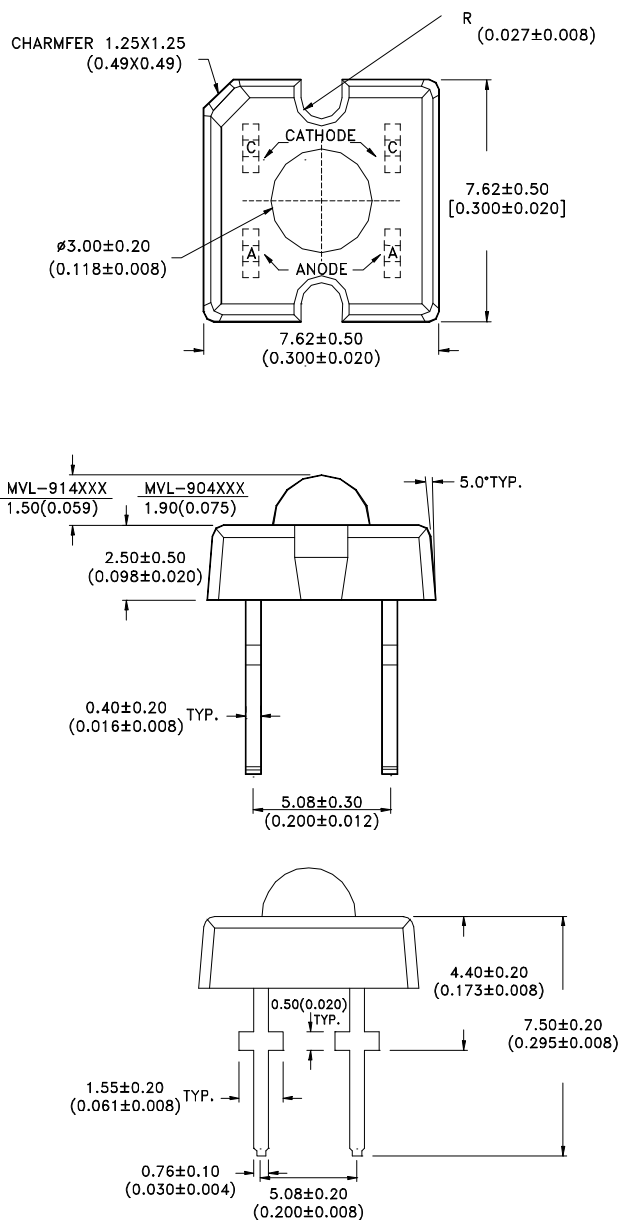
Features

- High Flux Output
- Designed for High Current Operation
- Low Thermal Resistance
- Low Profile
- Reliable
- Packaged in Tubes for Use with Automatic Insertion Equipment

Applications

- Automotive Exterior Lighting
- Electronic Signs and Signals
- Traffic Signal
- Sign

Outline Drawing



NOTES : 1.DIMENSIONS ARE IN MILLIMETERS (INCHES).
2.DIMENSIONS WITHOUT TOLERANCES ARE NOMINAL.

Device Selection Guide

Part Number	LED Color	Total Flux qv(mlm) Typ.	View Angle 2q1/2 (Degrees) Typ.
MVL-914HUOLC	AS AlInGaP Red-Orange	2500 @ I _F =70mA	70
MVL-904HUOLC			50
MVL-914UOLC		1700 @ I _F =50mA	70
MVL-904UOLC			50
MVL-914HUYLEC	AS AlInGaP Amber	2500 @ I _F =70mA	70
MVL-904HUYLEC			50
MVL-914UYLC		1700 @ I _F =50mA	70
MVL-904UYLC			50
MVL-914TUOLC	TS AlInGaP Red	3500 @ I _F =70mA	90
MVL-904TUOLC			70
MVL-914TUYLC	TS AlInGaP Amber	3500 @ I _F =70mA	90
MVL-904TUYLC			70
MVL-914TGC / 914UTGC	InGaN True Green	900 / 1200 @ I _F =40mA	50
MVL-904TGC / 904UTGC			30
MVL-914SGC / 914USGC / 914MSGC	InGaN Signal Green	800 / 1100 / 2500 @ I _F =40mA	50
MVL-904SGC / 904USGC / 904MSGC			30
MVL-914BC / 914UBC / 914MBC	InGaN Blue	700 / 1000 / 1900 @ I _F =40mA	50
MVL-904BC / 904UBC / 904MBC			30
MVL-914W / 914UW / 914MW	White	1200 / 2000 / 4000 @ I _F =40mA	60
MVL-904W / 904UW / 904MW			30
MVL-914HW	White	1000 @ I _F =20mA	60
MVL-904HW			30
MVL-914HTGC	InGaN True Green	500 @ I _F =20mA	50
MVL-904HTGC			30
MVL-914HSGC	InGaN Signal Green	400 @ I _F =20mA	50
MVL-904HSGC			30
MVL-914HBC	InGaN Blue	300 @ I _F =20mA	50
MVL-904HBC			30

Absolute Maximum Ratings at T_A=25°C

Parameter	Device Type				MVL-9X4HTGC MVL-9X4HSGC MVL-9X4HBC	Units
	MVL-9X4HUOLC MVL-9X4HUYLEC	MVL-9X4TUOLC MVL-9X4TUYLC	MVL-9X4UOLC MVL-9X4UYLC	MVL-9X4(U)TGC MVL-9X4(M)(U)SGC MVL-9X4(M)(U)BC MVL-9X4(M)(U)W		
DC Forward Current	70	70	50	40	20	mA
Power Dissipation	150	182	120	140	74	mW
Reverse Voltage (I _R =100μA)	10	10	10	5	5	V
LED Junction Temperature	125	125	125	125	125	°C
Operating Temp Range	-20 to +80					°C
Storage Temp	-30 to +100					°C
Solder Conditions						
Preheat Temperature	100°C for 30 seconds					
Solder Temperature	260°C for 5 seconds					
	[1.5mm (0.06 in.) below seating plane]					

Optical Characteristics at $T_A=25^\circ\text{C}$

Part Number	Total Flux f_v (mlm)		Peak Wavelength l peak (nm) Typ.	Color, Dominant Wavelength l d (nm) Typ.	Viewing Angle 2q 1/2 (Degrees) Typ.
	Min.	Typ.			
MVL-914HUOLC	600@IF=70mA	2500 @IF=70mA	630	625	70
MVL-904HUOLC					50
MVL-914HUYLC	600@IF=70mA	2500 @IF=70mA	592	590	70
MVL-904HUYLC					50
MVL-914TUOLC	600@IF=70mA	3500 @IF=70mA	640	630	90
MVL-904TUOLC					70
MVL-914TUYLC	600@IF=70mA	3500 @IF=70mA	594	592	90
MVL-904TUYLC					70
MVL-914UOLC	600@IF=70mA	1700 @IF=50mA	630	625	70
MVL-904UOLC					50
MVL-914UYLC	600@IF=70mA	1700 @IF=50mA	592	590	70
MVL-904UYLC					50
MVL-914TGC/914UTGC	300 / 600 @IF=40mA	900 / 1200 @IF=40mA	523	525	50
MVL-904TGC/904UTGC					30
MVL-914SGC/914USGC/MSGC	300 / 600 / 900 @IF=40mA	800 / 1100 / 2500 @IF=40mA	502	505	50
MVL-904SGC/904USGC/MSGC					30
MVL-914BC/914UBC/914MBC	300 / 600 / 900 @IF=40mA	700 / 1000 / 1900 @IF=40mA	468	470	50
MVL-904BC/904UBC/904MBC					30
MVL-914HTGC	200 @IF=20mA	500 @IF=20mA	523	525	50
MVL-904HTGC					30
MVL-914HSGC	200 @IF=20mA	400 @IF=20mA	502	505	50
MVL-904HSGC					30
MVL-914HBC	200 @IF=20mA	300 @IF=20mA	468	470	50
MVL-904HBC					30

Part Number	Total Flux f_v (mlm)		Chromaticity Coordinates (Typ.)	
	Min.	Typ.	X	Y
MVL-914W / 914UW / 914MW	600 @IF=40mA	1200 / 2000 / 4000 @IF=40mA	0.33	0.31
MVL-904W / 904UW / 904MW				
MVL-914HW	300 @IF=20mA	1000 @IF=20mA	0.33	0.31
MVL-904HW				

Electrical Characteristics at $T_A=25^\circ\text{C}$

Device Type	Forward Voltage V_F (Volts)			Reverse Breakdown V_R (Volts) @ $I_R=100\text{mA}$		Thermal Resistance $R_{\theta J-PIN}$ ($^\circ\text{C}/\text{W}$)	Thermal Resistance $R_{\theta J-A}$ ($^\circ\text{C}/\text{W}$)
	Min.	Typ.	Max	Min.	Typ.	Typ.	Typ.
MVL-9X4HUOLC	1.83	2.2	2.79	10	20	120	250
MVL-9X4HUYLC		@IF=70mA					
MVL-9X4UOLC	1.83	2.15	2.79	10	20	120	250
MVL-9X4UYLC		@IF=50mA					
MVL-9X4TUOLC	2.07	2.5	3.15	10	20	125	250
MVL-9X4TUYLC		@IF=70mA					
MVL-9X4(U)TGC	3	3.7	5.2	5	10	90	180
MVL-9X4(M)(U)SGC							
MVL-9X4(M)(U)BC							
MVL-9X4(M)(U)W							
MVL-9X4HTGC	3	3.7	4.0	5	10	90	180
MVL-9X4HSGC							
MVL-9X4HBC							
MVL-9X4HW							

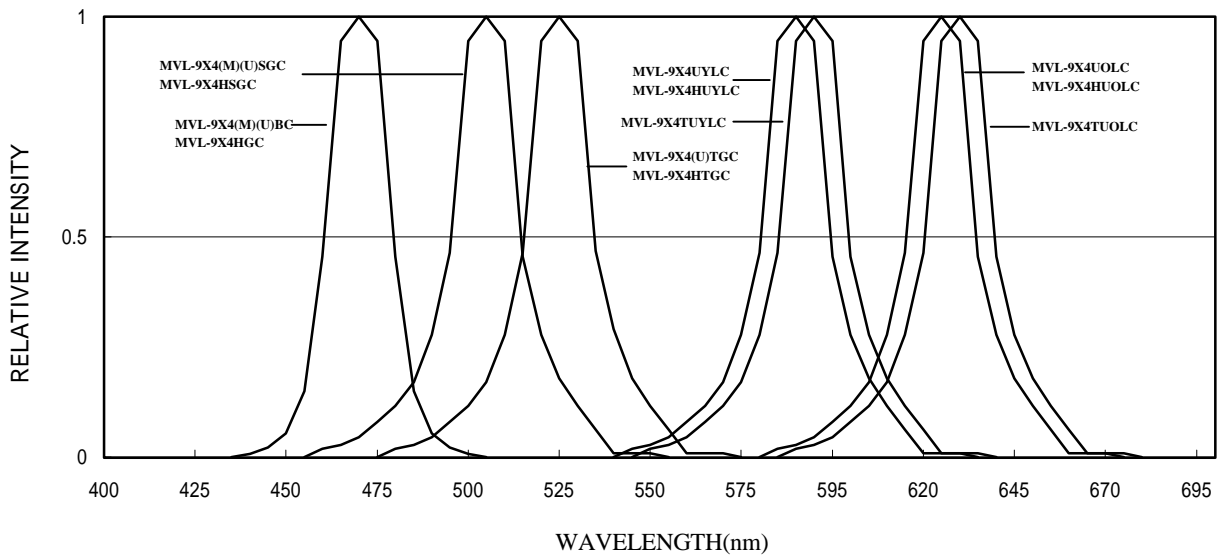


Figure 1. Relative Intensity vs. Wavelength.

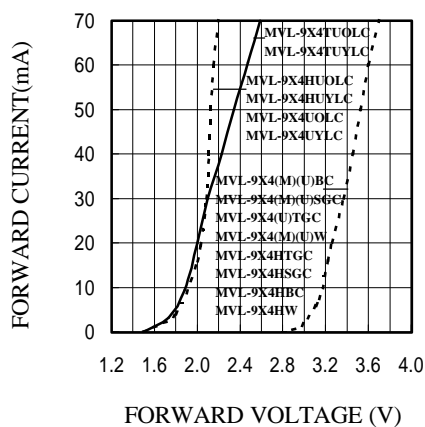


Figure 2. Forward Current vs. Forward Voltage.

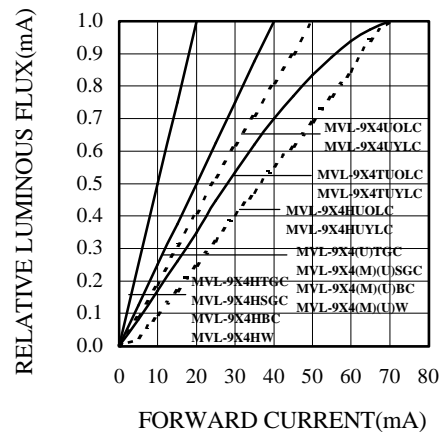


Figure 3. Relative Luminous Flux vs. Forward Current.

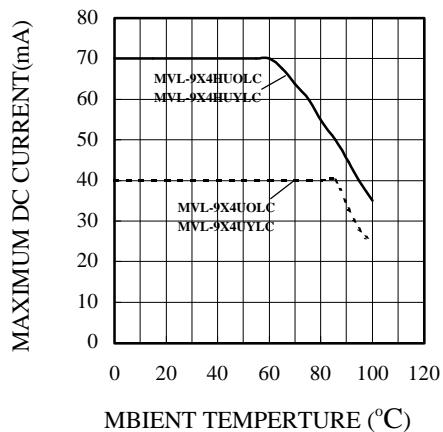


Figure 4a. Maximum DC Forward Current vs. Ambient Temperature.

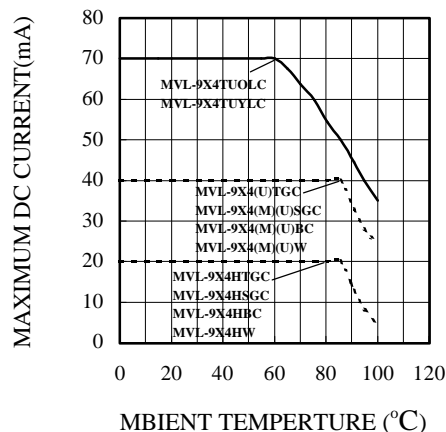


Figure 4b. Maximum DC Forward Current vs. Ambient Temperature.

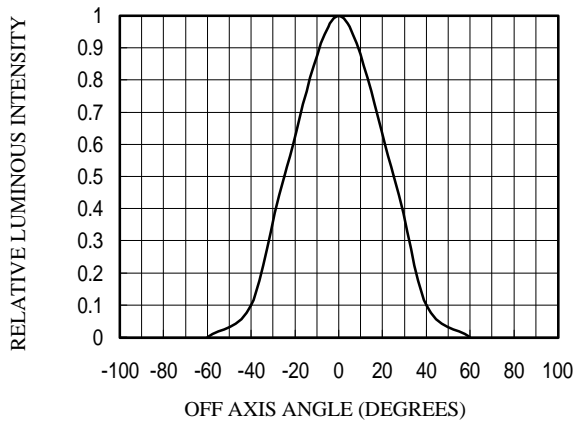


Figure 5. MVL-904HUOLC, MVL-904HUYLEC, MVL-904UOLC, MVL-904UYLC, MVL-914(U)TGC, MVL-914(M)(U)SGC, MVL-914(M)(U)BC, MVL-914HTGC, MVL-914HSGC, MVL-914HBC
Relative Luminous Intensity vs. Off Axis Angle.

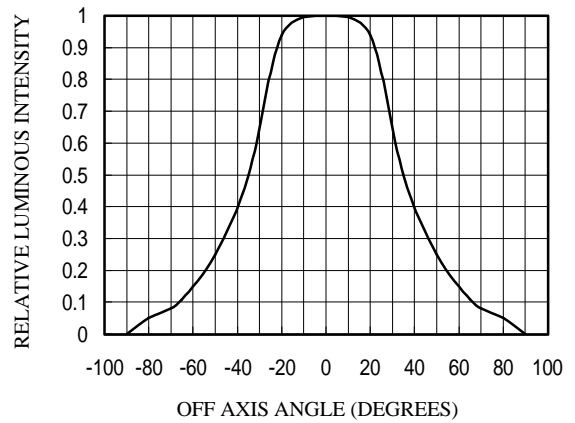


Figure 6. MVL-914HUOLC, MVL-914HUYLEC, MVL-904TUOLC, MVL-904TUYLEC, MVL-914UOLC, MVL-914UYLC, MVL-904HTGC, MVL-904HSGC, MVL-904HBC
Relative Luminous Intensity vs. Off Axis Angle.

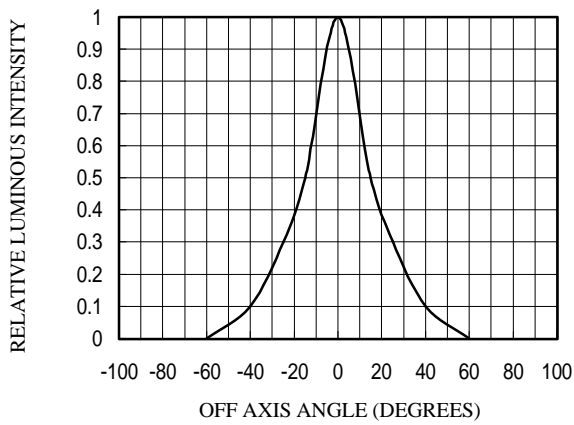


Figure 7. MVL-904(U)TGC, MVL-904(M)(U)SGC, MVL-904(M)(U)BC
Relative Luminous Intensity vs. Off Axis Angle.

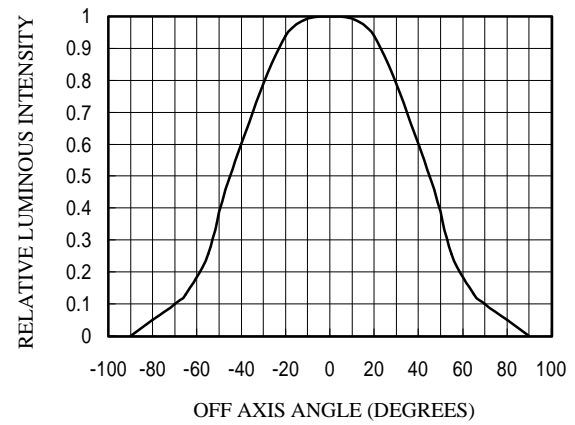


Figure 8. MVL-914TUOLC, MVL-914TUYLEC
Relative Luminous Intensity vs. Off Axis Angle.

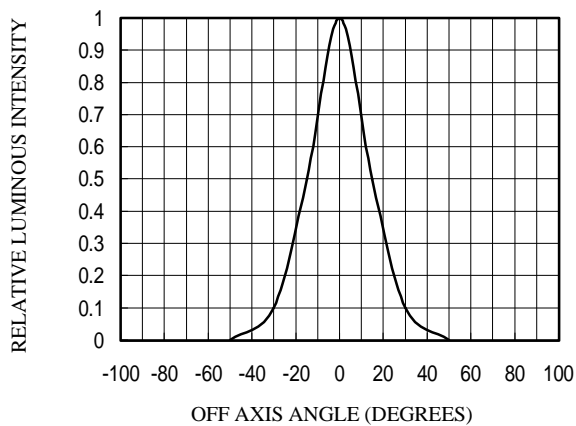


Figure 9. MVL-904(M)(U)W, MVL-904HW
Relative Luminous Intensity vs. Off Axis Angle.

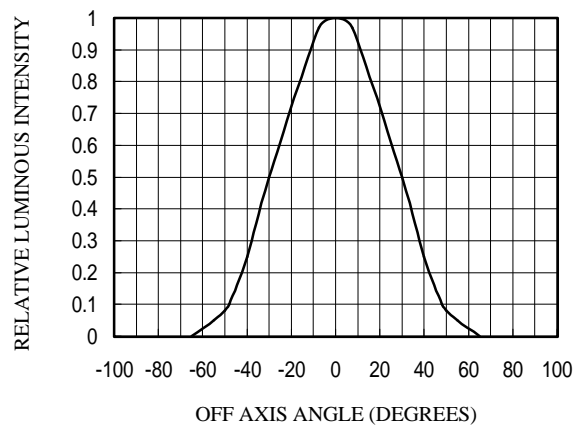


Figure 10. MVL-914(M)(U)W, MVL-914HW
Relative Luminous Intensity vs. Off Axis Angle.

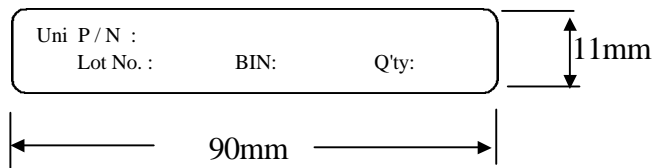
Packaging

Tubes of LEDs

LEDs are packaged in tubes , each of which contains 60 LEDs.

The LEDs in any individual tube come from a single category code.

Figure 1. Shows a sample label taken from a tube.



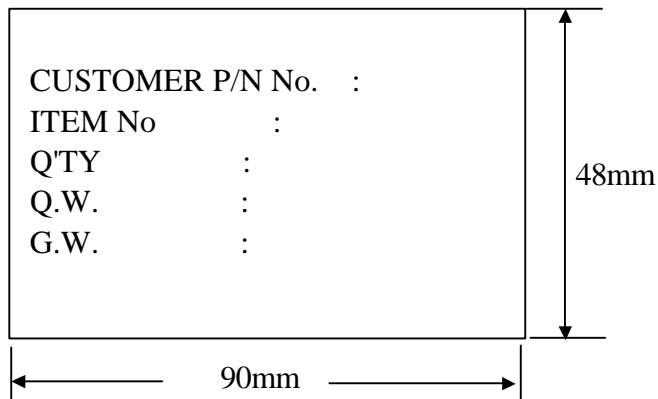
Boxes of LEDs

Each box of LEDs contains 240 tubes , or 14400 LEDs.

The box dimensions are 500×243×150mm(L×W×H)

All of the tubes are in the same orientation .

Figure 2. Shows a sample label taken from a box .



Unity JACK LED Bin Codes

Category Code		
C	2	3

Luminous Flux (Light-output in lumens)				
BIN CODE	MVL-9X4HUOLC MVL-9X4HUYLC MVL-9X4TUOLC MVL-9X4TUYL C@ I _f =70mA MVL-9X4UOLC MVL-9X4UYLC @I _f =50mA		MVL-9X4(U)TGC MVL-9X4(M)(U)SGC MVL-9X4(M)(U)B C@ I _f =40mA MVL-9X4HTGC MVL-9X4HSGC MVL-9X4HBC @ I _f =20mA	
	minimum	maximum	minimum	maximum
A	0.6	1.2	0.1	0.9
B	1.0	1.8	0.5	1.4
C	1.5	2.4	1.0	1.9
D	2.0	3.0	1.5	2.4
E	2.5	3.6	2.0	2.9
F	3.0	4.2	2.5	3.0
G	3.5	4.8		
H	4.0	6.1		

Dominant Wavelength (in nanometers) @ I _f =20mA										
Bin code	TUOLC, HUOLC, UOLC		TUYLC, HUYLC, UYLC		(U)TGC,HTGC		(M)(U)SGC,HSGC		(M)(U)BC,HBC	
	minimum	maximum	minimum	maximum	minimum	maximum	minimum	maximum	minimum	maximum
1	611	618	583	589	517	528	495	504	459	469
2	614	622	587	593	524	535	500	509	467	475
3	616	634	591	597	531	542	505	514	471	481

Forward Voltage (Volts)				
BIN CODE	MVL-9X4HUOLC MVL-9X4HUYLC MVL-9X4TUOLC MVL-9X4TUYLC @I _f =70mA MVL-9X4UOLC MVL-9X4UYLC@I _f =50mA		MVL-9X4(U)TGC MVL-9X4(M)(U)SGC MVL-9X4(M)(U)BC @ I _f =40mA MVL-9X4HTGC MVL-9X4HSGC MVL-9X4HBC @ I _f =20mA	
	minimum	maximum	minimum	maximum
0	1.83	2.07	3.0	3.4
1	1.95	2.19	3.2	3.6
2	2.07	2.31	3.4	3.8
3	2.19	2.43	3.6	4.0
4	2.31	2.55	3.8	4.2
5	2.43	2.67	4.0	4.4
6	2.55	2.79	4.2	4.6
7	2.67	2.91	4.4	4.8
8	2.79	3.03	4.6	5.0
9	2.91	3.15	4.8	5.2

Unity JACK White LED Bin Codes

Category Code		
C	2	3

Luminous Flux (Light -output in lumen s)		
	MVL-9X4W MVL-9X4UW MVL-9X4MW @ I _F =40mA MVL-9X4HW @ I _F =20mA	
BIN CODE	minimum	maximum
A	0.6	1.2
B	1.0	1.8
C	1.5	2.4
D	2.0	3.0
E	2.5	3.6
F	3.0	4.2
G	3.5	4.8
H	4.0	6.1

Chromaticity Coordinates @ I _F =20mA								
Bin Code	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
1	0.44	0.484	0.388	0.344	0.351	0.314	0.378	0.452
2	0.378	0.452	0.351	.314	0.335	0.292	0.332	0.417
3	0.332	0.417	0.335	0.292	0.323	0.275	0.303	0.388
4	0.303	0.388	0.323	0.275	0.303	0.243	0.256	0.338
5	0.256	0.338	0.303	0.243	0.292	0.222	0.221	0.293

Forward Voltage (Volts)		
	MVL-9X4W MVL-9X4UW MVL-9X4MW @ I _F =40mA MVL-9X4HW @ I _F =20mA	
BIN CODE	minimum	maximum
0	3.0	3.4
1	3.2	3.6
2	3.4	3.8
3	3.6	4.0
4	3.8	4.2
5	4.0	4.4
6	4.2	4.6
7	4.4	4.8
8	4.6	5.0
9	4.8	5.2