

MVL-924HUOLC
MVL-924UOLC
MVL-924HUYLC
MVL-924UYLC
MVL-924TUOLC
MVL-924TUYLC
MVL-924MTGC / 924HTGC
MVL-924MSGC / 924HSGC
MVL-924MBC / 924HBC
MVL-924MW / 924HW

Technical Data

JACK LEDs

11/19/2003

Benefits

- Fewer LEDs Required
- Lowers Lighting System Cost

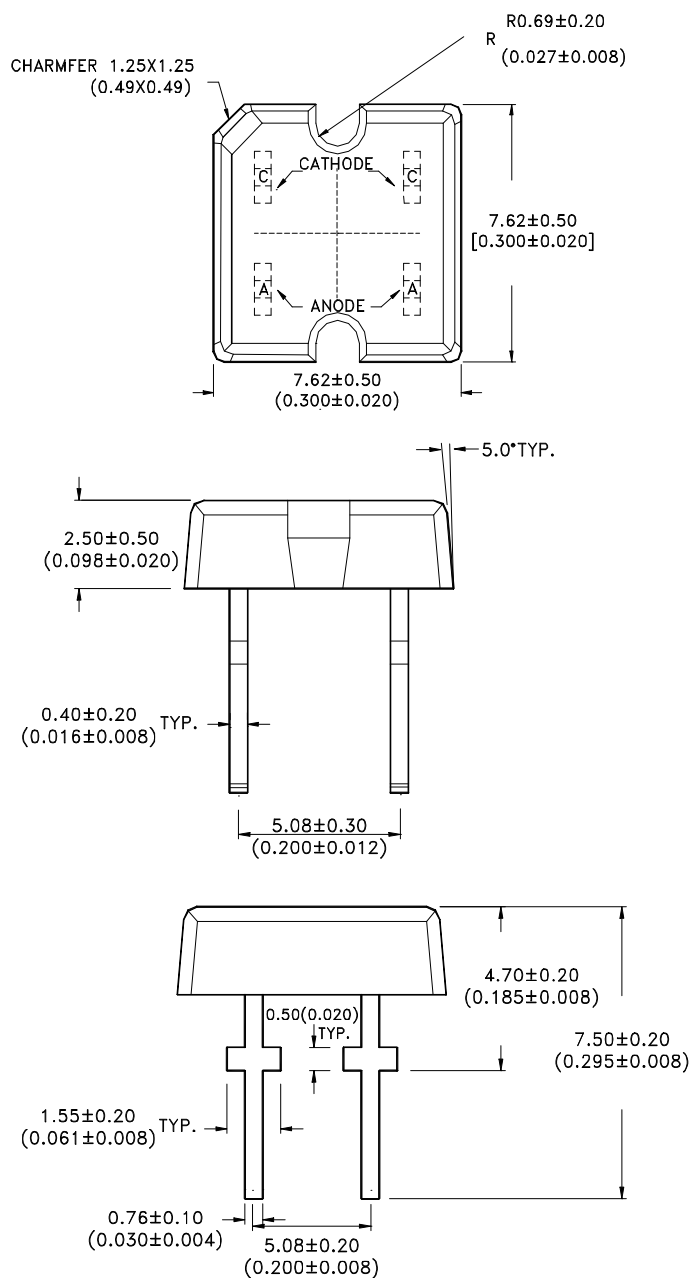
Features

- 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-924HUOLC	AS AlInGaP Red-Orange	1700 @IF=70mA	115
MVL-924UOLC		1100 @IF=50mA	110
MVL-924HUYLC	AS AlInGaP Amber	1700 @IF=70mA	115
MVL-924UYLC		1100 @IF=50mA	105
MVL-924TUOLC	TS AlInGaP Red	2500 @IF=70mA	115
MVL-924TUYLEC	TS AlInGaP Amber	2500 @IF=70mA	115
MVL-924MTGC	InGaN True Green	1400 @IF=40mA	100
MVL-924MSGC	InGaN Signal Green	1300 @IF=40mA	100
MVL-924MBC	InGaN Blue	1200 @IF=40mA	90
MVL-924MW	White	2000 @IF=40mA	120
MVL-924HTGC	InGaN True Green	500 @IF=20mA	100
MVL-924HSGC	InGaN Signal Green	400 @IF=20mA	100
MVL-924HBC	InGaN Blue	500 @IF=20mA	90
MVL-924HW	White	1500 @IF=20mA	100

Absolute Maximum Ratings at T_A=25°C

Device Type Parameter	MVL-924HUOLC MVL-924HUYLC	MVL-924TUOLC MVL-924TUYLEC	MVL-924UOLC MVL-924UYLC	MVL-924MTGC MVL-924MSGC MVL-924MBC MVL-924MW	MVL-924HBC MVL-924HTGC MVL-924HSGC MVL-924HW	Units
DC Forward Current	70	70	50	40	20	mA
Power Dissipation	150	182	120	140	74	mW
Reverse Voltage (I _R =100mA)	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	100°C for 30 seconds					
Preheat Temperature						
Solder Temperature	260°C for 5 seconds					
	[1.5mm (0.06 in.) below seating plane]					

Optical Characteristics at T_A = 25°C

Part Number	Total Flux f _v (mlm)		Peak Wavelength λ _{peak} (nm) Typ.	Color, Dominant Wavelength λ _d (nm) Typ.	Viewing Angle 2q 1/2 (Degrees) Typ.
	Min.	Typ.			
MVL-924HUOLC	600 @I _F =70mA	1700 @I _F =70mA	630	625	115
MVL-924HUYLC	600 @I _F =70mA	1700 @I _F =70mA	592	590	115
MVL-924TUOLC	600 @I _F =70mA	2500 @I _F =70mA	640	630	115
MVL-924TUYLC	600 @I _F =70mA	2500 @I _F =70mA	594	592	115
MVL-924UOLC	600 @I _F =50mA	1100 @I _F =50mA	630	625	110
MVL-924UYLC	600 @I _F =50mA	1100 @I _F =50mA	592	590	105
MVL-924MTGC	100 @I _F =40mA	1400 @I _F =40mA	523	525	100
MVL-924MSGC	100 @I _F =40mA	1300 @I _F =40mA	502	505	100
MVL-924MBC	100 @I _F =40mA	1200 @I _F =40mA	468	470	90
MVL-924HTGC	100 @I _F =20mA	500 @I _F =20mA	523	525	100
MVL-924HSGC	100 @I _F =20mA	400 @I _F =20mA	502	505	100
MVL-924HBC	100 @I _F =20mA	500 @I _F =20mA	468	470	90

Part Number	Total Flux f _v (mlm)		Chromaticity Coordinates (Typ.)	
	Min.	Typ.	X	Y
MVL-924MW	600 @I _F =40mA	2000 @I _F =40mA	0.33	0.31
MVL-924HW	600 @I _F =20mA	1500 @I _F =20mA	0.33	0.31

Electrical Characteristics at T_A=25°C

Device Type	Forward Voltage V _F (Volts)			Reverse Breakdown V _R (Volts) @I _R =100mA		Thermal Resistance R _{qJ-PIN} (°C/W)	Thermal Resistance R _{qJ-A} (°C/W)
	Min.	Typ.	Max	Min.	Typ.	Typ.	Typ.
MVL-924HUOLC MVL-924HUYLC	1.83	2.2 @I _F =70mA	2.79	10	20	120	250
MVL-924UOLC MVL-924UYLC	1.83	2.15 @I _F =50mA	2.79	10	20	120	250
MVL-924TUOLC MVL-924TUYLC	2.07	2.5 @I _F =70mA	3.15	10	20	125	250
MVL-924MTGC MVL-924MSGC MVL-924MBC MVL-924MW	3	3.7 @I _F =40mA	5.2	5	10	90	180
MVL-924HTGC MVL-924HSGC MVL-924HBC MVL-924HW	3	3.7 @I _F =20mA	4	5	10	90	180

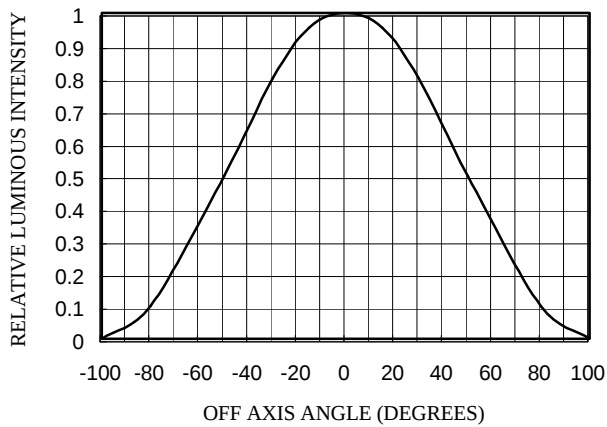


Figure 5. MVL-924MTGC/MVL-924HTGC/
MVL-924MSGC/MVL-924HSGC
Relative Luminous Intensity vs. Off Axis Angle.

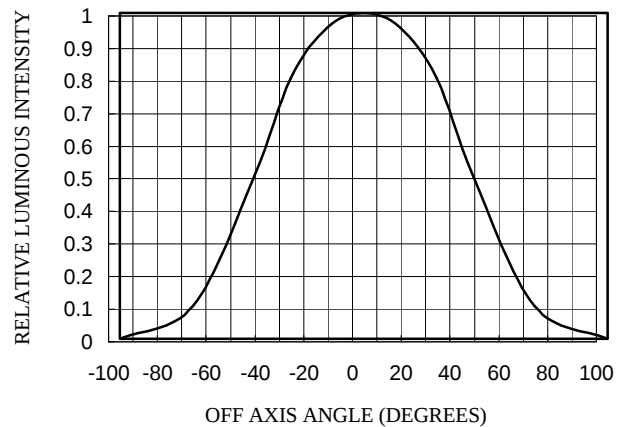


Figure 6. MVL-924MBC/MVL-924HBC
Relative Luminous Intensity vs. Off Axis Angle.

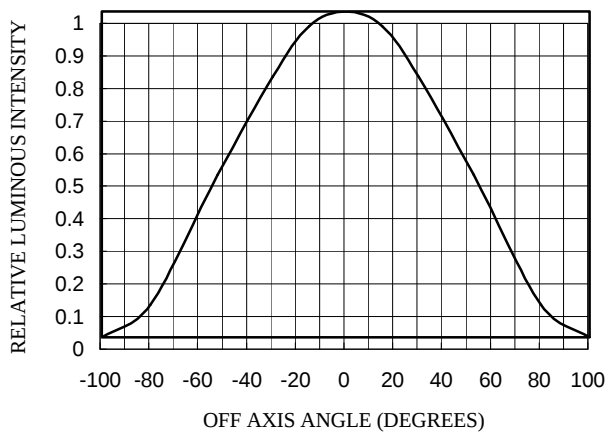


Figure 7. MVL-924UYLC
Relative Luminous Intensity vs. Off Axis Angle.

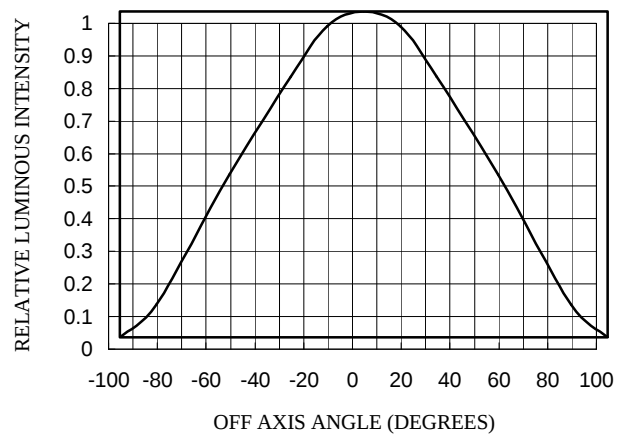


Figure 8. MVL-924UOLC
Relative Luminous Intensity vs. Off Axis Angle.

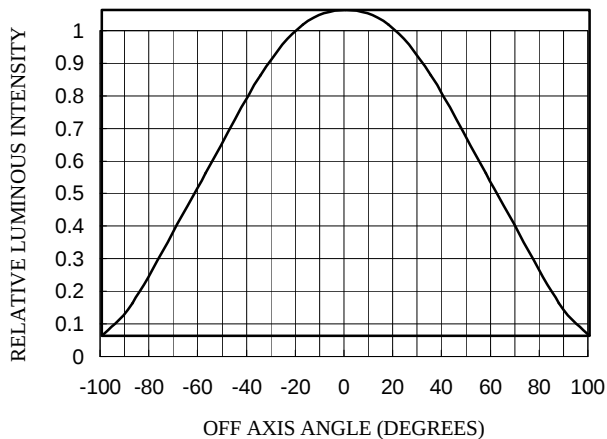


Figure 9. MVL-924HUOLC/MVL-924HUYLC/
MVL-924TUOLC/MVL-924TUYLC/MVL-924TGC
Relative Luminous Intensity vs. Off Axis Angle.

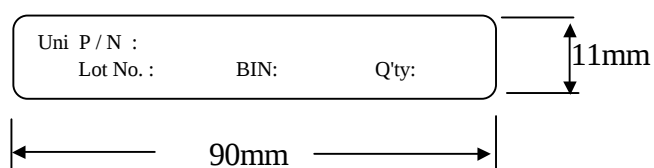
Packaging

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.



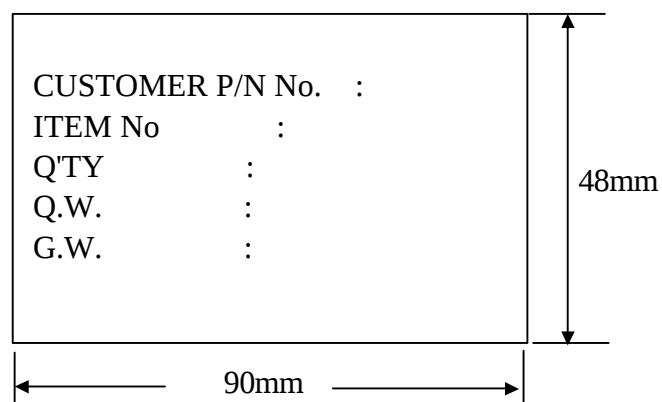
Boxes of LEDs

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)				
	MVL-9X4HUOLC MVL-9X4HUYLEC MVL-9X4TUOLC MVL-9X4TUYLC @I _F =70mA		MVL-9X4MTGC MVL-9X4MSGC MVL-9X4MBC @I _F =40mA	
	MVL-9X4UOLC MVL-9X4UYLC @I _F =50mA		MVL-9X4HTGC MVL-9X4HSGC MVL-9X4HBC @I _F =20mA	
BIN CODE	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	5.45		
I	4.5	6.1		
J	5.0	6.7		
K	5.5	7.3		

Dominant Wavelength (in naometers) @I _F =20mA										
BIN CODE	TUOLC , HUOLC UOLC		TUYLC , HUYLEC UYLC		MTGC HTGC		MSGC HSGC		MBC 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)				
	MVL-9X4HUOLC MVL-9X4HUYLEC MVL-9X4TUOLC MVL-9X4TUYLC @I _F =70mA		MVL-9X4MTGC MVL-9X4MSGC MVL-9X4MBC @I _F =40mA	
	MVL-9X4UOLC MVL-9X4UYLC @I _F =50mA		MVL-9X4HTGC MVL-9X4HSGC MVL-9X4HBC @I _F =20mA	
BIN CODE	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	A	3

Luminous Flux (Light-output in lumens)		
	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	5.45
I	4.5	6.1
J	5.0	6.7
K	5.5	7.3
L	6.0	7.9
M	6.5	8.5
N	7.0	9.1
O	7.5	9.7

Chromaticity Coordinates @I _F =20mA								
BIN CODE	1		2		3		4	
	X	Y	X	Y	X	Y	X	Y
A	0.264	0.317	0.273	0.336	0.273	0.286	0.264	0.267
B	0.273	0.336	0.283	0.353	0.283	0.305	0.273	0.286
C	0.264	0.267	0.273	0.286	0.288	0.262	0.280	0.248
D	0.273	0.286	0.283	0.305	0.296	0.276	0.288	0.262
E	0.283	0.345	0.306	0.372	0.306	0.352	0.283	0.325
F	0.306	0.372	0.330	0.400	0.330	0.380	0.306	0.352
G	0.285	0.325	0.306	0.352	0.306	0.332	0.283	0.305
H	0.306	0.352	0.330	0.380	0.330	0.360	0.306	0.332
I	0.283	0.305	0.306	0.332	0.308	0.317	0.287	0.295
J	0.306	0.332	0.330	0.360	0.330	0.339	0.308	0.317
K	0.287	0.295	0.308	0.317	0.313	0.297	0.296	0.276
L	0.308	0.317	0.330	0.339	0.330	0.318	0.313	0.297
M	0.296	0.276	0.313	0.297	0.313	0.277	0.296	0.256
N	0.313	0.297	0.330	0.318	0.330	0.298	0.313	0.277
O	0.330	0.390	0.345	0.402	0.345	0.372	0.330	0.360
P	0.345	0.402	0.361	0.415	0.361	0.385	0.345	0.372
Q	0.330	0.360	0.345	0.372	0.345	0.334	0.330	0.318
R	0.345	0.372	0.361	0.385	0.361	0.351	0.345	0.334

Tolerance : ± 0.01

Forward Voltage (Volts)		
	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