Unity Opto Technology Co., Ltd.

MSL-334B	MSL-334NUYL
MSL-334UB	MSL-334UG
MSL-334TG	MSL-334UYL
MSL-334UTG	MSL-334SO
MSL-334PG	MSL-334UOL
MSL-334G	MSL-334DR

Technical DaTa

AxiaL LEDs

Features

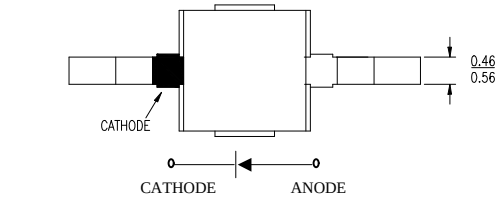
- **Package**：Subminiature Dome package ,Z-bend
- **Viewing angle**：25°
- **Technology**：AlGaAs (red)
  AlInGaP (red, orange, amber, green)
  GaP (pure green)
  InGaN (true green, blue)
- **Wavelength**：640 nm (red)
  625 nm (red), 605 nm (orange), 590 nm (amber), 573nm (green),
  555 nm (pure green),
  525 nm (true green), 470 nm (blue)
- **Grouping parameter**：luminous intensity , wavelength
- **Assembly methods**：suitable for all SMT assembly methods
- **Soldering methods**：IR reflow soldering and TTW soldering
- **Preconditioning**：acc. to JEDEC Level 2
- **Taping**：12-mm tape with 1500/reel, ϕ180mm

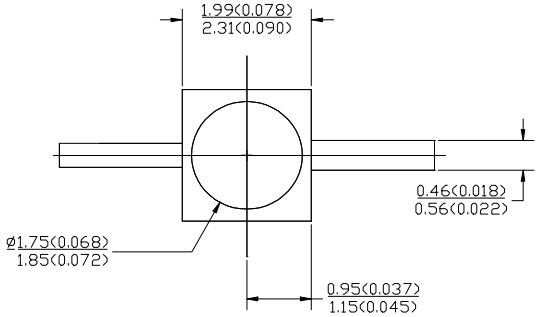
Applications

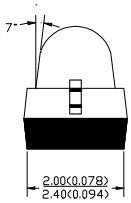
- **Automotive** : Dashboards
- **Backlighting** : LCDs , Key pads , advertising
- **Lighting** : Signal & symbol luminare , marker lights
- **Displays** Message boards
- **Status indicators** : Comsumer & industrial electronics

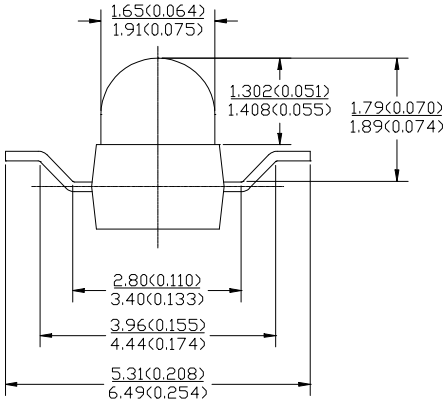
Package Dimensions

Unit：mm (inch)





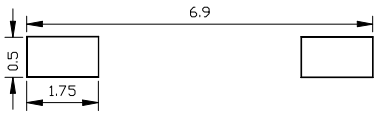




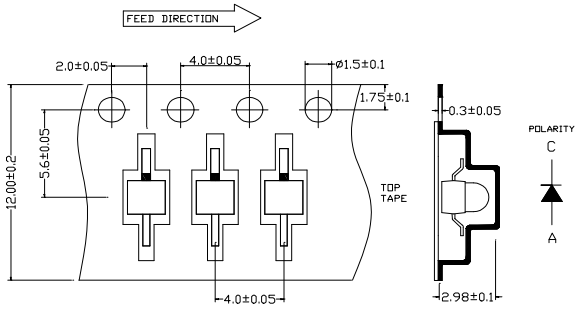
Notes：

1. All dimensions are in millimeters (inches)

Package Dimensions



Method of Taping / Polarity and Orientation Packing unit 1500/reel



Selection Guide

Part Number	Color of Emission	λd (nm)	Package Description	Viewing Angle 2q 1/2	Luminous Intensity I_V (mcd) @20mA
MSL-334B	Blue	470	Dome Nondiffused	25°	210
MSL-334UB	Blue	470			210
MSL-334TG	Ture Green	525			700
MSL-334UTG	Ture Green	525			1400
MSL-334PG	Pure Green	557			18
MSL-334G	Green	570			35
MSL-334UG	Green	572			420
MSL-334NUYL	Amber	587			210
MSL-334UYL	Amber	590			525
MSL-334SO	Orange	605			740
MSL-334UOL	Red	625			740
MSL-334DR	Red	640			160

Maximum Ratings

Parameter	Symbol	Value					Unit
		UOL,SO UYL,UG	B,UB TG,UTG	DR	NUYL	G,PG	
Operating Temp. range	T_{OP}	-40 ~ +100		-20 ~ +100			°C
Storage Temp. range	T_{stg}	-55 ~ +100					°C
Junction temperature	T_j	110					°C
Forward current	I_F	50	30				mA
Surge current t ≤ 10μs, D=0.005	I_{FM}	0.5					A
Reverse Voltage (I_R=100μA)	V_R	5					V
Power dissipation	P_{tot}	105		55	65	70	mW
Lead Soldering Temperature [1.6 mm (0.063 in.) from body]		260°C for 5 seconds					
SMT Reflow Soldering Temperatures Convective Reflow Vapor Phase Reflow		235°C Peak, above 183°C for 90 seconds 215°C for 3 minutes					

Optical Characteristics at T_A=25°C

Part Number	Luminous Intensity I_V (mcd) @ 20mA		Peak Wavelength λpeak (nm)	Color, Dominant Wavelength λd (nm)	Viewing Angle 2θ 1/2 (Degrees)	Luminous Efficiency @I_F=20mA (lm / W)	Spectral Bandwidth at 50% Irel max (nm)
	Min.	Typ.	Typ.	Typ.	Typ.		
MSL-334B	63	210	468	470	25	80	26
MSL-334UB	60	210	468	470	25	80	26
MSL-334TG	250	700	523	525	25	465	36
MSL-334UTG	400	1400	518	525	25	465	35
MSL-334PG	4	18	555	557	25	630	20
MSL-334G	16	35	568	570	25	576	30
MSL-334UG	160	420	576	572	25	560	16
MSL-334NUYL	63	210	589	587	25	503	20
MSL-334UYL	250	525	592	590	25	490	16
MSL-334SO	250	740	611	605	25	335	20
MSL-334UOL	250	740	633	625	25	190	20
MSL-334DR	63	160	660	640	25	60	20

Electrical Characteristics at T_A=25°C

Device Type	Forward Voltage V_F (Volts) @IF = 20mA			Reverse Current I_R (uA) @ V_R = 5V		Capacitance C (pF) V_F=0, f=1 MH_Z	Thermal Resistance R_{qPIN}(°C/W)
	Min.	Typ.	Max	Min.	Typ.	Typ.	Typ.
MSL-334B	-	3.30	4.0	0.01	10	70	110
MSL-334UB	-	3.70	4.2	0.01	10	70	110
MSL-334TG	-	3.30	4.0	0.01	10	70	110
MSL-334UTG	-	3.70	4.2	0.01	10	70	110
MSL-334PG	-	2.25	2.5	0.01	10	70	170
MSL-334G	-	2.30	2.6	0.01	10	70	170
MSL-334UG	-	2.00	2.5	0.01	10	70	170
MSL-334NUYL	-	2.10	2.4	0.01	10	70	170
MSL-334UYL	-	2.00	2.5	0.01	10	70	170
MSL-334SO	-	2.00	2.5	0.01	10	70	170
MSL-334UOL	-	2.00	2.5	0.01	10	70	170
MSL-334DR	-	1.80	2.4	0.01	10	70	170

FIG.1 Relative spektrale Emission $I_{rel} = f(\lambda)$, $T_A = 25^oC$, $I_F = 10mA$

V(λ) = Standard eye response curve

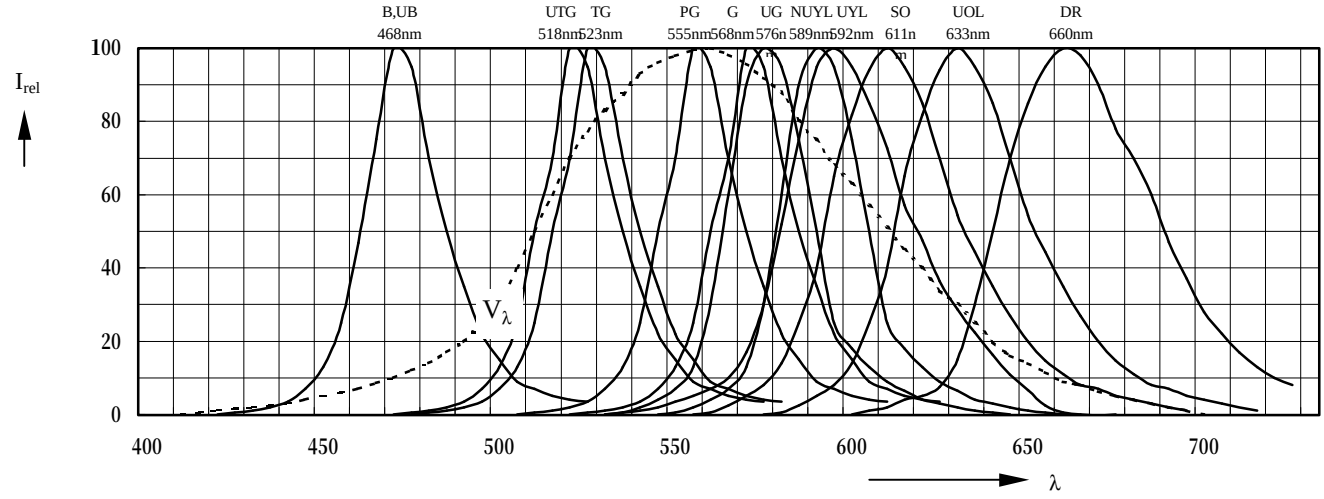


FIG.2 Forward Current $I_F = f(V_F)$

TA = 25°C

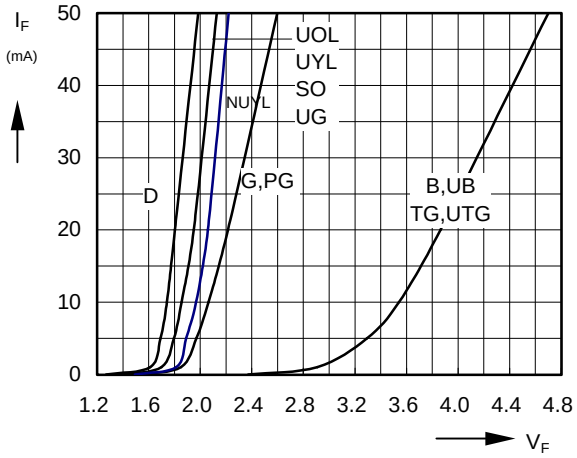


FIG.3 Relative Luminous Intensity I_V/I_V (10mA) = f (I_F)

TA = 25°C

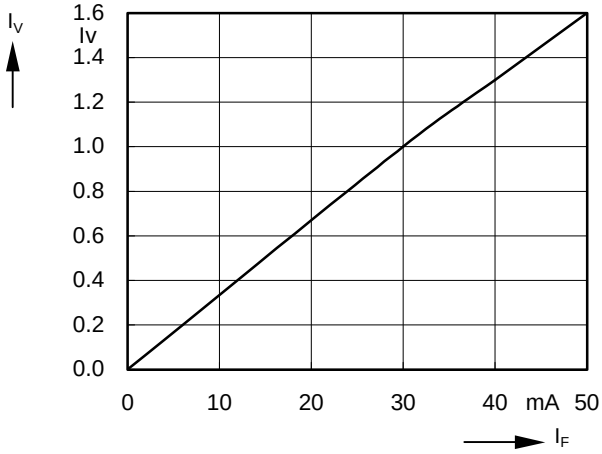


FIG.4 Relative Luminous Intensity $I_{v(rel)} = f(T_A)$

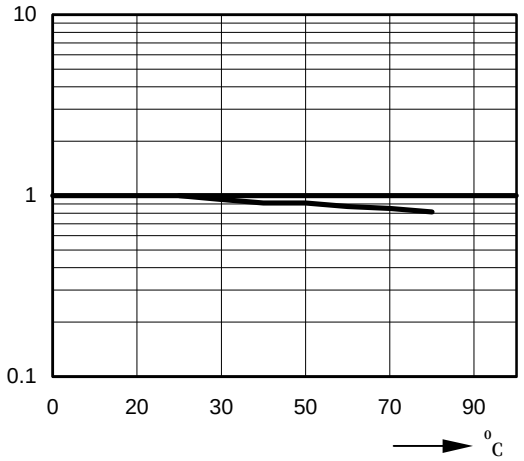


FIG.5 Radiation Characteristic $I_{rel} = f(j)$

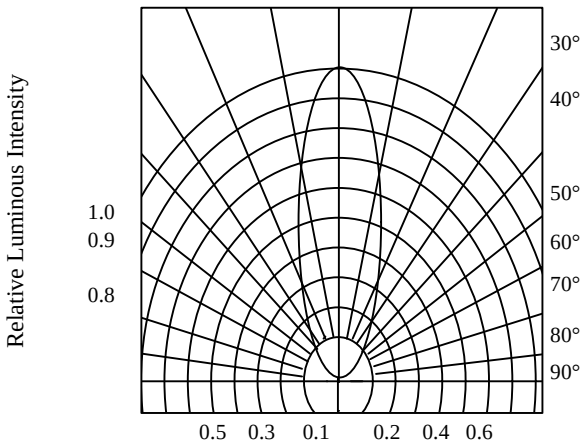
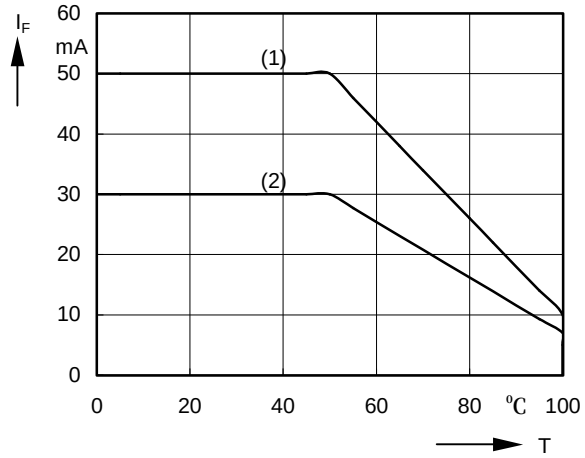


FIG.6 Max. Permissible Forward Current $I_F = f(T_A)$



(1)	(2)
UG	B
UYL	UB
SO	TG
UOL	UTG
	PG
	G
	NUYL
	DR

Part Numbering System

M S L - 3 X X U Y L

Chip Type λd

1:B	470nm
2:UB	470nm
3:TG	525nm
4:UTG	525nm
5:PG	557nm
6:G	570nm
7:UG	572nm
8:NUYL	587nm
9:UYL	590nm
10:SO	605nm
11:UOL	625nm
12:DR	640nm

Epoxy Color & Package

1:Color Diffused Epoxy
2:White Diffused Epoxy
3:Color Transparent Epoxy
4:Water Clear Epoxy

Package Type & Lead Frame Forming Option

0:Dome Straight Lead
1:Dome Yoke Lead
2:Dome Gull Wing Lead
3:Dome Z Bend Lead
4:Flat Top Straight Lead
5:Flat Top Yoke Lead
6:Flat Top Gull Wing Lead
7:Flat Top Z Bend Lead

3:Subminature Axial

L:Visible Lamp

S:Surface Mount Device

M:Company Code

Intensity Bin Limits

Bin	Min.	Max.
A	0.10	0.20
B	0.16	0.32
C	0.25	0.50
D	0.40	0.80
E	0.63	1.25
F	1.00	2.00
G	1.60	3.20
H	2.50	5.00
J	4.00	8.00
K	6.30	12.50
L	10.00	20.00
M	16.00	32.00
N	25.00	50.00
P	40.00	80.00
Q	63.00	125.00
R	100.00	200.00
S	160.00	320.00
T	250.00	500.00
U	400.00	800.00
V	630.00	1250.00
W	1000.00	2000.00
X	1600.00	3200.00
Y	2500.00	5000.00

Color Bin Limits

Package	Bin	Min.	Max.
Pure Green	0	Full Distribution	
	9	552	556
	8	555	559
	7	558	562
	6	561	565
Green	0	Full Distribution	
	6	561	565
	5	564	568
	4	567	571
	3	570	574
	2	573	577
Amber	0	Full Distribution	
	1	581.5	585.0
	2	584.0	587.5
	3	586.0	590.0
	4	589.0	592.5
	5	591.5	593.5
	6	591.5	595.0
	7	594.0	597.5
Orange	0	Full Distribution	
	1	596.5	600.0
	2	599.0	602.5
	3	601.5	604.0
	4	603.8	608.2
	5	606.8	611.2
	6	609.8	614.2
	7	612.8	617.2
	8	615.8	620.2
Red	0	Full Distribution	
	2	611	618
	3	614	622
	4	616	634