

Technical Data

ALLEDs

MSL-299SW-Z2-P

02/21/2006

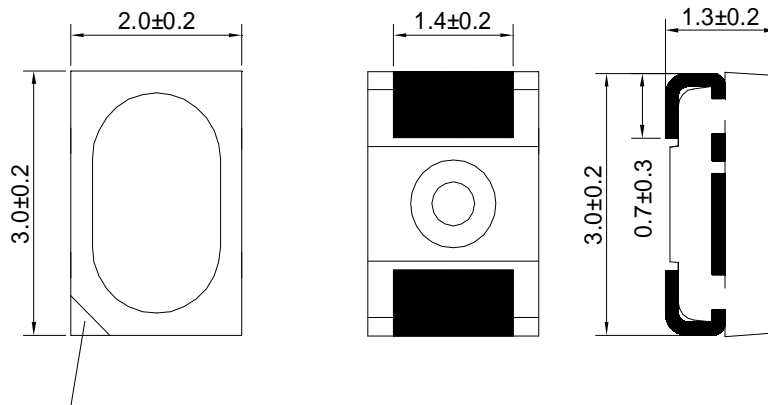
Features

- | **Package** : Rectangle white 3 * 2mm P-LCC-2 package with silicone resin.
- | **Feature of the device** : Extremely wide viewing angle.
Ideal for backlighting and coupling in light guides.
- | **White color** : x / y coordinate is 0.28 / 0.28.
- | **Viewing angle** : Lambertian Emitter (110°).
- | **Technology** : InGaN.
- | **Grouping parameter** : Luminous Intensity.
- | **Assembly methods** : Suitable for all SMT assembly methods.
- | **Soldering methods** : Reflow soldering.
- | **Taping** : 8-mm tape with 2000 pieces / reel, ϕ 180mm.
- | **Lead free product** : RoHS compliant.

Applications

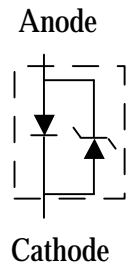
- | **Automotive** : Dashboards.
- | **Backlighting** : LCDs, Key pads, Advertising.
- | **Lighting** : Signal, symbol and marker lights;
Substitution of micor incandescent lamps.
- | **Displays** : Indoor and outdoor signboards, message boards.
- | **Status indicators** : Industrial electronics.

Package Dimensions



Cathode Marking

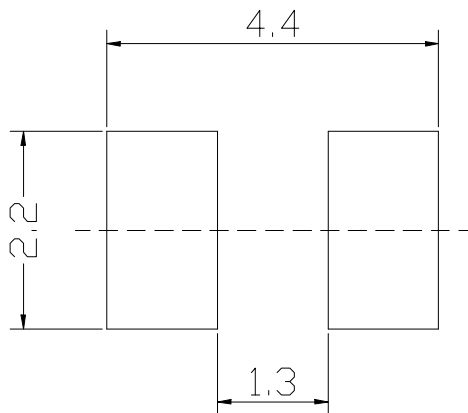
Unit: mm



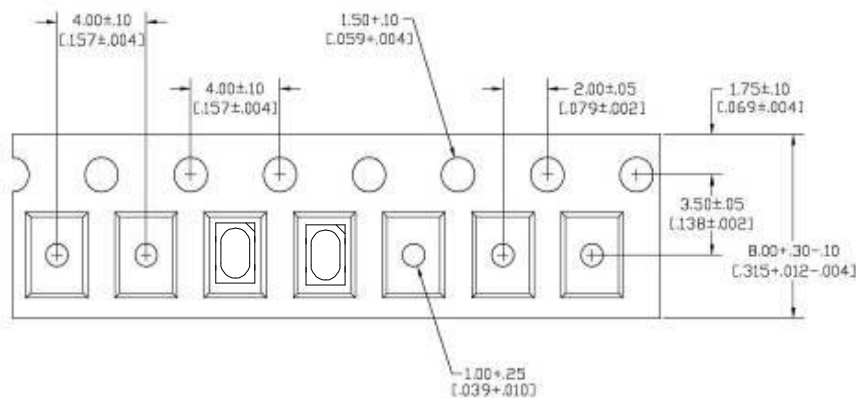
Notes :

- 1.All dimensions are in millimeters.
- 2.Tolerance is ± 0.20 mm unless otherwise noted.

Recommended Solder Patterns



Method of Taping / Polarity and Orientation : Packing unit 2000 pieces / reel



Cathode



Anode

Notes :

- 1.All dimensions are in millimeters.
- 2.Tolerance is ± 0.20 mm unless otherwise noted.

Selection Guide

Part Number	Color of Emission	Color of the Light Emitting Area	Luminous Intensity I_V (mcd) @ 20mA	Viewing $2\theta_{1/2}$ @ 20mA
MSL-299SW-Z2-P	White	Yellowish silicone	900	110

Luminous intensity is tested at a current pulse duration of 3 ms and an accuracy of +/- 11%.

Part Number	Forward Voltage V_F (Volts) @ $I_F = 20mA$			Chromaticity Coordinates (Typ.)	
	Min.	Typ.	Max.	x	y
				Typ.	Typ.
MSL-299SW-Z2-P	-	3.3	4.0	0.29	0.28

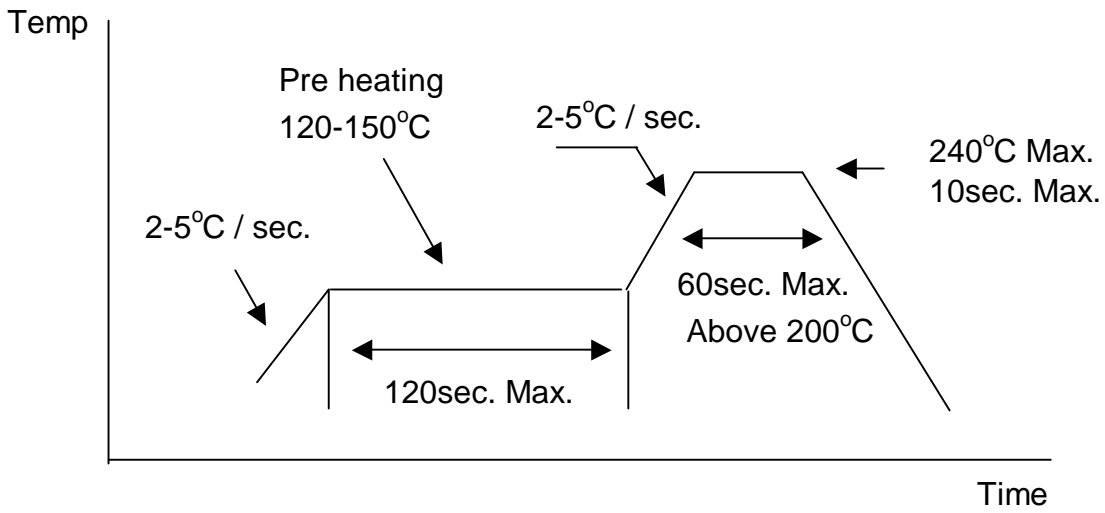
Voltage groups are tested at a current pulse duration of 3 ms and an accuracy of +/- 0.05V.

Chromaticity coordinate groups are tested at a current pulse duration of 100 ms and a tolerance of ± 0.01 .

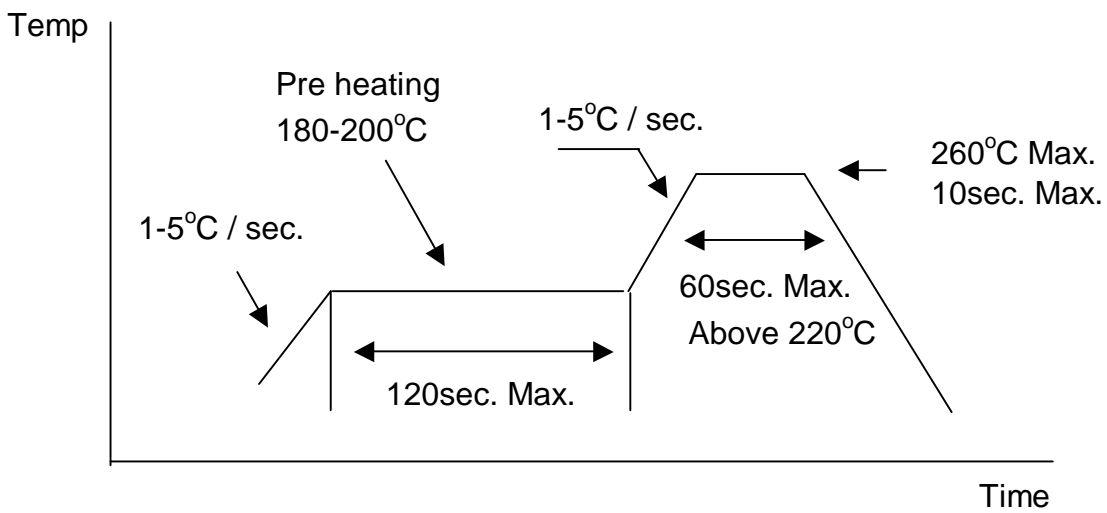
Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Operating Temp. range	T_{OP}	-40 ~ +85	°C
Storage Temp. range	T_{stg}	-40 ~ +100	°C
Junction temperature	T_j	110	°C
Forward current	I_F	30	mA
Reverse Voltage	V_R	5	V
Power dissipation	P_{tot}	120	mW

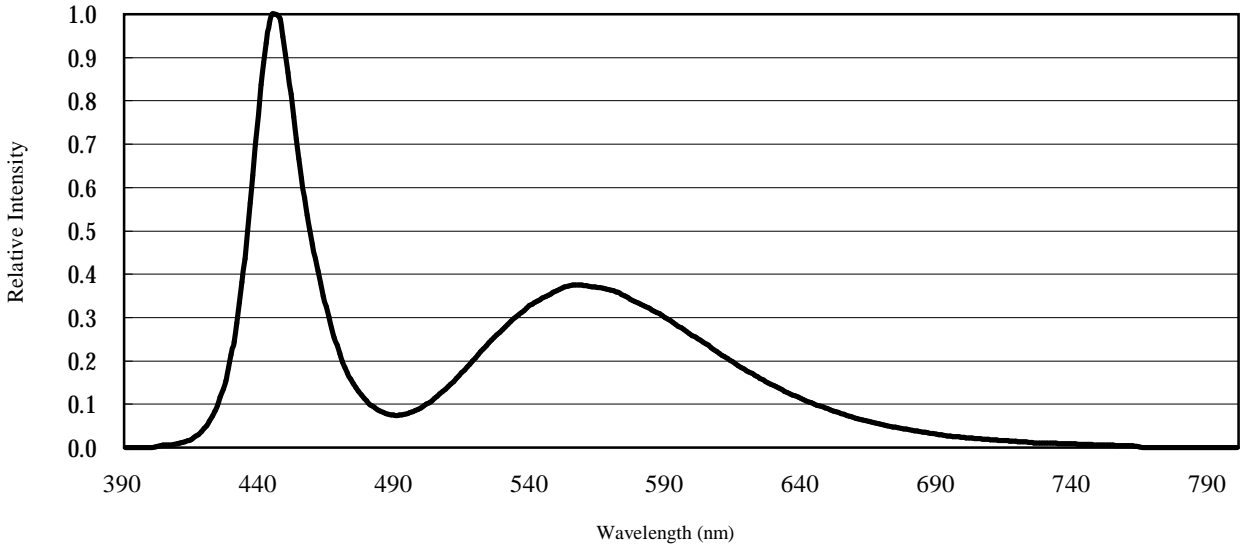
Reflow Soldering Profile Lead Solder



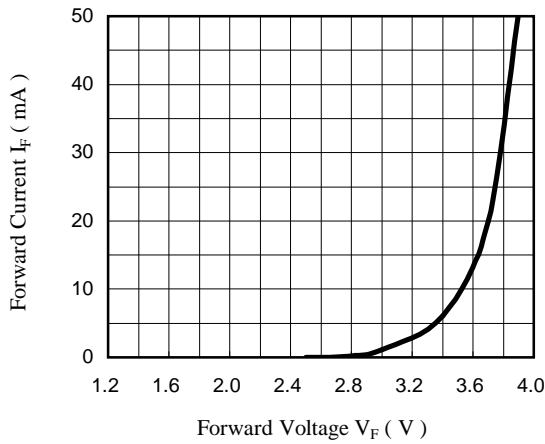
Lead Free Solder



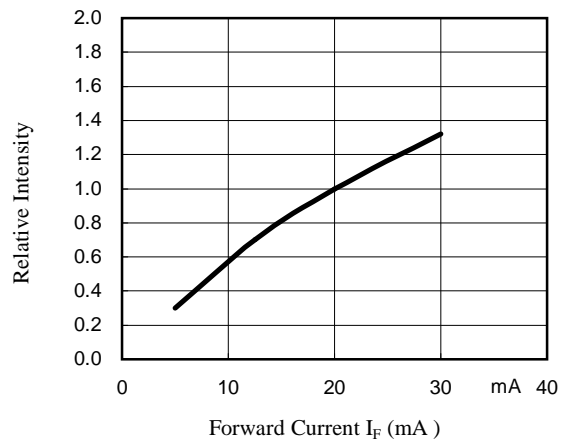
Relative Intensity vs. Wavelength (Ta = 25°C)



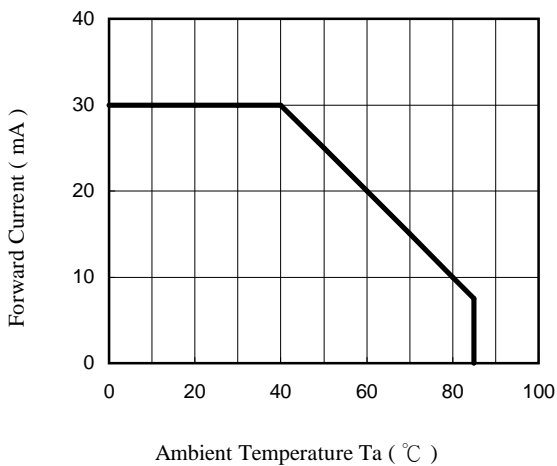
Forward Current vs. Forward Voltage (Ta = 25°C)



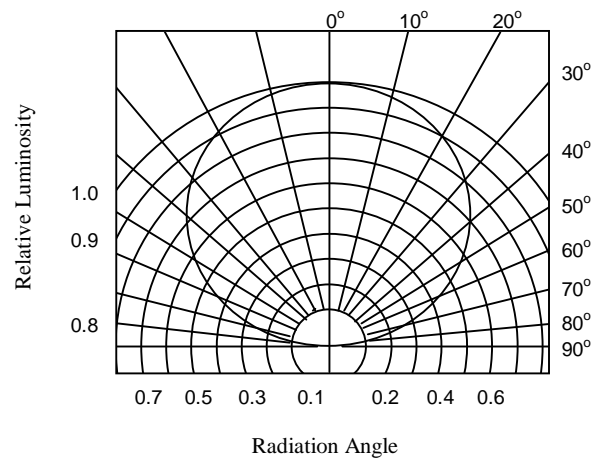
Relative Intensity vs. Forward Current (Ta = 25°C)



Forward Current vs. Ambient Temperature



Radiation Pattern



Unity Bin Codes

MSL-299SW-Z2-P		
V2B	C	4

Luminous Intensity Group (mcd) @ I_F=20mA

Bin	Min	Max
V1	710	900
V2A	900	1000
V2B	1000	1120
AAA	1120	1200
AAB	1200	1300
AAC	1300	1400
ABA	1400	1500
ABB	1500	1600
ABC	1600	1700
ABD	1700	1800
BA	1800	2240

Luminous intensity is tested at a current pulse duration of 3 ms and an accuracy of +/- 11%.

Color Coordinate @ I_F=20mA

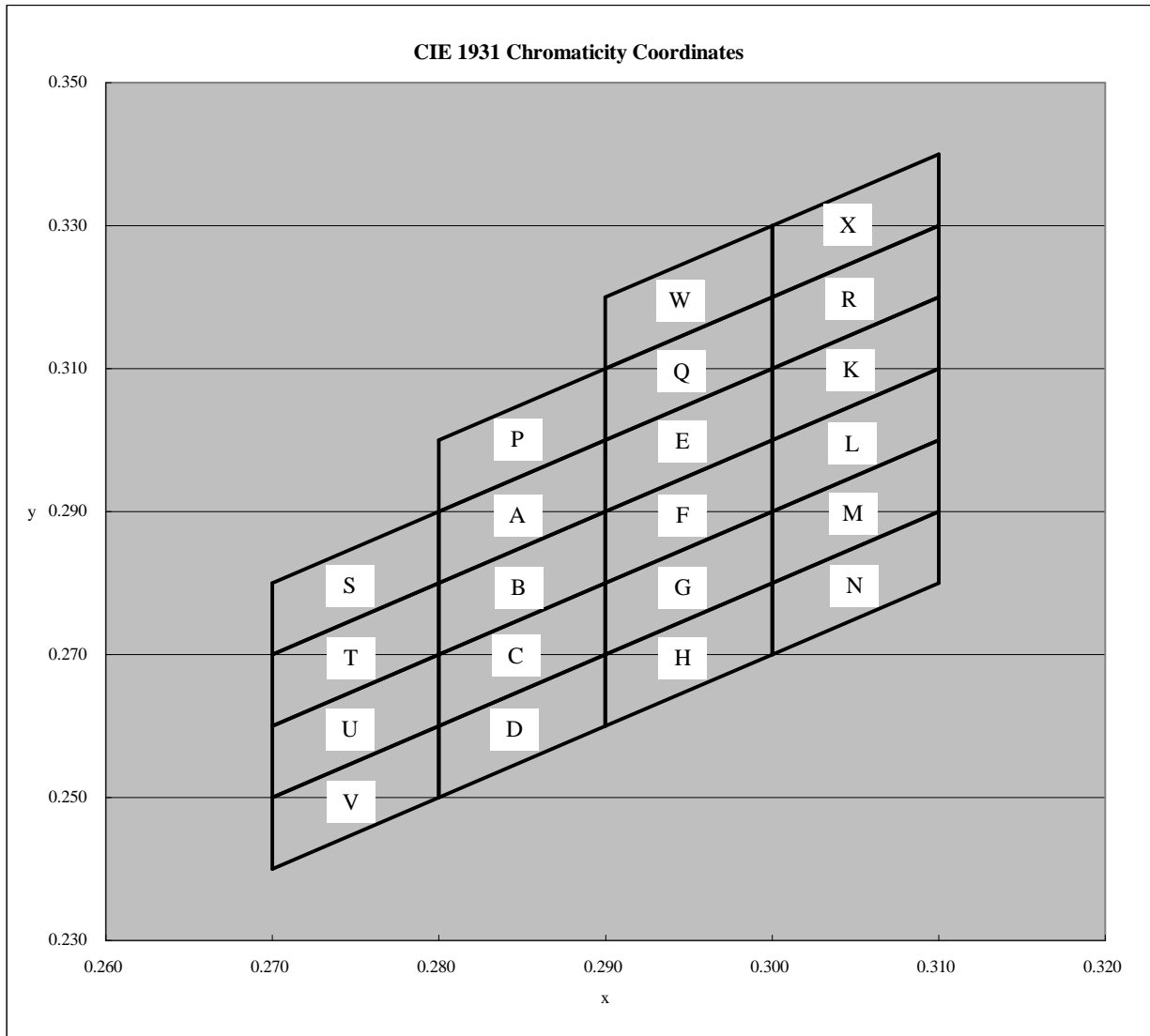
Bin Code	1		2		3		4	
	x	y	x	y	x	y	x	y
A	0.280	0.280	0.280	0.290	0.290	0.300	0.290	0.290
B	0.280	0.270	0.280	0.280	0.290	0.290	0.290	0.280
C	0.280	0.260	0.280	0.270	0.290	0.280	0.290	0.270
D	0.280	0.250	0.280	0.260	0.290	0.270	0.290	0.260
E	0.290	0.290	0.290	0.300	0.300	0.310	0.300	0.300
F	0.290	0.280	0.290	0.290	0.300	0.300	0.300	0.290
G	0.290	0.270	0.290	0.280	0.300	0.290	0.300	0.280
H	0.290	0.260	0.290	0.270	0.300	0.280	0.300	0.270
K	0.300	0.300	0.300	0.310	0.310	0.320	0.310	0.310
L	0.300	0.290	0.300	0.300	0.310	0.310	0.310	0.300
M	0.300	0.280	0.300	0.290	0.310	0.300	0.310	0.290
N	0.300	0.270	0.300	0.280	0.310	0.290	0.310	0.280
P	0.280	0.290	0.280	0.300	0.290	0.310	0.290	0.300
Q	0.290	0.300	0.290	0.310	0.300	0.320	0.300	0.310
R	0.300	0.310	0.300	0.320	0.310	0.330	0.310	0.320
S	0.270	0.270	0.270	0.280	0.280	0.290	0.280	0.280
T	0.270	0.260	0.270	0.270	0.280	0.280	0.280	0.270
U	0.270	0.250	0.270	0.260	0.280	0.270	0.280	0.260
V	0.270	0.240	0.270	0.250	0.280	0.260	0.280	0.250
W	0.290	0.310	0.290	0.320	0.300	0.330	0.300	0.320
X	0.300	0.320	0.300	0.330	0.310	0.340	0.310	0.330

Chromaticity coordinate groups are tested at a current pulse duration of 100 ms and a tolerance of ±0.01.

Forward Voltage (V) @ I_F=20mA

Bin	Min	Max
0	2.9	3.0
1	3.0	3.1
2	3.1	3.2
3	3.2	3.3
4	3.3	3.4
5	3.4	3.5
6	3.5	3.6
7	3.6	3.7
8	3.7	3.8
9	3.8	4.0

Voltage groups are tested at a current pulse duration of 3 ms and an accuracy of +/- 0.05V.



Color Coordinate @ $I_f=20\text{mA}$								
Bin Code	1		2		3		4	
	x	y	x	y	x	y	x	y
A	0.280	0.280	0.280	0.290	0.290	0.300	0.290	0.290
B	0.280	0.270	0.280	0.280	0.290	0.290	0.290	0.280
C	0.280	0.260	0.280	0.270	0.290	0.280	0.290	0.270
D	0.280	0.250	0.280	0.260	0.290	0.270	0.290	0.260
E	0.290	0.290	0.290	0.300	0.300	0.310	0.300	0.300
F	0.290	0.280	0.290	0.290	0.300	0.300	0.300	0.290
G	0.290	0.270	0.290	0.280	0.300	0.290	0.300	0.280
H	0.290	0.260	0.290	0.270	0.300	0.280	0.300	0.270
K	0.300	0.300	0.300	0.310	0.310	0.320	0.310	0.310
L	0.300	0.290	0.300	0.300	0.310	0.310	0.310	0.300
M	0.300	0.280	0.300	0.290	0.310	0.300	0.310	0.290
N	0.300	0.270	0.300	0.280	0.310	0.290	0.310	0.280
P	0.280	0.290	0.280	0.300	0.290	0.310	0.290	0.300
Q	0.290	0.300	0.290	0.310	0.300	0.320	0.300	0.310
R	0.300	0.310	0.300	0.320	0.310	0.330	0.310	0.320
S	0.270	0.270	0.270	0.280	0.280	0.290	0.280	0.280
T	0.270	0.260	0.270	0.270	0.280	0.280	0.280	0.270
U	0.270	0.250	0.270	0.260	0.280	0.270	0.280	0.260
V	0.270	0.240	0.270	0.250	0.280	0.260	0.280	0.250
W	0.290	0.310	0.290	0.320	0.300	0.330	0.300	0.320
X	0.300	0.320	0.300	0.330	0.310	0.340	0.310	0.330

Surface Mount Moisture Sensitivity Specifications

1. Controlling Moisture

Unity Opto Technology, in its design of packing materials and packing methods, takes into consideration the susceptibility of some Unity packages to moisture induced damage. The risk of this damage is caused when the LED lens plastic encapsulation material is exposed to increases or decreases in the Relative Humidity of the surrounding environment.

Such damage may include delamination between the die and the LED lens plastic encapsulation material, which may result in open connections due to broken wire bonds. Moisture in the package having reached a critical level will fracture the package in order to escape when exposed to peak temperature conditions, typical in soldering practices.

Therefore, the control of moisture levels in the LED package is critical to reduce the risk of moisture-induced failures. Please follow JEDEC-STD-033A standards for handling moisture sensitive devices.

2. Packaging SMD devices:

Unity packages all SMD devices into dry pack bags (moisture barrier bags).

Unity includes a desiccant pouch in each bag. Testing confirms that the desiccant pouch greatly reduces the presence of moisture by maintaining the environment in the bag, thus protecting the devices during shipment and storage.

3. Handling Dry Packed Parts

Upon receipt, the bags should be inspected for damage to ensure that the bag's integrity has been maintained. Inspection should verify that there are no holes, gouges, tears, or punctures of any kind that may expose the contents of the bag.

To open the bag, simply cut across the top of the bag as close to the original seal as possible being careful not to damage the contents. Once open the desired quantity of units should be removed and the bag resealed. If the bag is left open longer than 2 hours, the desiccant pouch should be replaced with a dry desiccant and the bag should be sealed immediately to avoid moisture damage.