

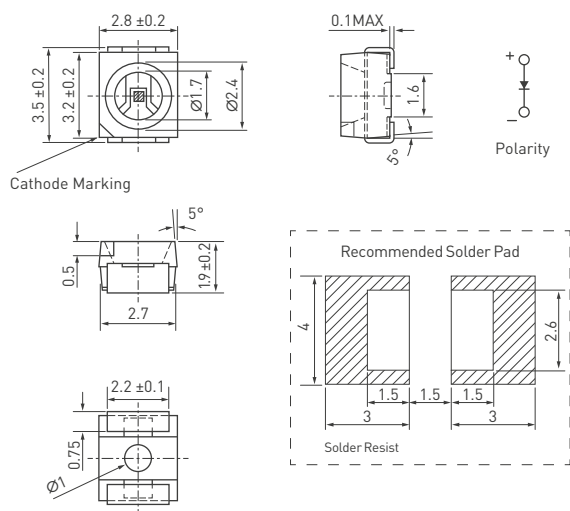
# ЧИП-СВЕТОДИОД ARL-3528-SAA- WHITE20000-85

## APPLICATIONS

- Interior Automotive Lighting (e.g. dashboard backlight).
- Optical Indicators.
- Communication Products.
- Backlighting.
- Flash.
- Toys.



## PACKAGE DIMENSIONS



All dimensions in mm, tolerance is ±0.1mm unless otherwise noted.

## PARAMETERS

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25 °C)

Parameter	Symbol	Absolute max Rating	Unit
Power Dissipation	P <sub>D</sub>	<b>0.08</b>	<b>W</b>
DC Forward Current	I <sub>F</sub>	<b>25</b>	<b>mA</b>
Peak Forward Current*	I <sub>FP</sub>	<b>100</b>	<b>mA</b>
Operating Temperature	T <sub>opr</sub>	<b>-40... +85</b>	<b>°C</b>
Storage Temperature	T <sub>stg</sub>	<b>-40... +100</b>	<b>°C</b>

\* Pulse width ≤ 0.1msec duty ≤ 1/10.

### TYPICAL ELECTRICAL & OPTICAL CHARACTERISTICS (T<sub>A</sub>=25 °C)

Parameter	Sym.	Condition	Min.	Typ.	Max.	Unit
Forward Voltage <sup>1</sup>	V <sub>F</sub>	<b>I<sub>F</sub>=20mA</b>	<b>2.8</b>	<b>3.2</b>	<b>3.2</b>	<b>V</b>
Reverse Current	I <sub>R</sub>	<b>V<sub>R</sub>=5V</b>			<b>10</b>	<b>µA</b>
Chromatic Coordinates <sup>2</sup>	CCT	<b>I<sub>F</sub>=20mA</b>	<b>15 000</b>		<b>20 000</b>	<b>K</b>
Luminous Intensity <sup>3</sup>	I <sub>v</sub>	<b>I<sub>F</sub>=20mA</b>	<b>2400</b>		<b>2700</b>	<b>mcd</b>
Luminous Flux	Flux	<b>I<sub>F</sub>=20mA</b>	<b>7</b>		<b>8</b>	<b>lm</b>
50% Power Angle	2θ <sub>1/2</sub>	<b>I<sub>F</sub>=20mA</b>		<b>120</b>		<b>Deg</b>
Color Rendering Index	Ra	<b>I<sub>F</sub>=20mA</b>	<b>70</b>		<b>75</b>	<b>CRI</b>

#### Notes:

1. Tolerance of measurement of forward voltage: ±0.1V.
2. Tolerance of measurement of chromatic coordinates: ±0.01.
3. Tolerance of measurement of luminous intensity: ±8%.

# CHROMATIC COORDINATES RANKS

	<b>R11</b>		<b>R12</b>		<b>R13</b>		<b>R14</b>		<b>R15</b>		<b>R16</b>	
X	0.3388	0.3466	0.3466	0.3545	0.3545	0.3626	0.3626	0.3705	0.3705	0.3787	0.3787	0.3869
Y	0.3882	0.3947	0.3947	0.4007	0.4007	0.4067	0.4067	0.4126	0.4126	0.4186	0.4186	0.4241
X	0.3460	0.3538	0.3538	0.3618	0.3618	0.3698	0.3698	0.3779	0.3779	0.3859	0.3859	0.3942
Y	0.3781	0.3845	0.3845	0.3904	0.3904	0.3963	0.3963	0.4023	0.4023	0.4082	0.4082	0.4139
	<b>R21</b>		<b>R22</b>		<b>R23</b>		<b>R24</b>		<b>R25</b>		<b>R26</b>	
X	0.3383	0.3460	0.3460	0.3538	0.3538	0.3618	0.3618	0.3698	0.3698	0.3779	0.3779	0.3859
Y	0.3717	0.3781	0.3781	0.3845	0.3845	0.3904	0.3904	0.3963	0.3963	0.4023	0.4023	0.4082
X	0.3455	0.3532	0.3532	0.3610	0.3610	0.3690	0.3690	0.3770	0.3770	0.3851	0.3851	0.3931
Y	0.3617	0.3681	0.3681	0.3745	0.3745	0.3804	0.3804	0.3864	0.3864	0.3923	0.3923	0.3982
	<b>R31</b>		<b>R32</b>		<b>R33</b>		<b>R34</b>		<b>R35</b>		<b>R36</b>	
X	0.3378	0.3455	0.3455	0.3532	0.3532	0.3610	0.3610	0.3690	0.3690	0.3770	0.3770	0.3851
Y	0.3553	0.3617	0.3617	0.3681	0.3681	0.3745	0.3745	0.3804	0.3804	0.3864	0.3864	0.3923
X	0.3449	0.3526	0.3526	0.3604	0.3604	0.3681	0.3681	0.3761	0.3761	0.3842	0.3842	0.3922
Y	0.3453	0.3517	0.3517	0.3581	0.3581	0.3645	0.3645	0.3705	0.3705	0.3764	0.3764	0.3824
	<b>R41</b>		<b>R42</b>		<b>R43</b>		<b>R44</b>		<b>R45</b>		<b>L41</b>	
X	0.3371	0.3449	0.3449	0.3526	0.3526	0.3604	0.3604	0.3681	0.3681	0.3761	0.3761	0.3842
Y	0.3389	0.3453	0.3453	0.3517	0.3517	0.3581	0.3581	0.3645	0.3645	0.3705	0.3705	0.3764
X	0.3445	0.3523	0.3523	0.3600	0.3600	0.3677	0.3677	0.3755	0.3755	0.3835	0.3835	0.3915
Y	0.3286	0.3350	0.3350	0.3414	0.3414	0.3478	0.3478	0.3542	0.3542	0.3601	0.3601	0.3661
	<b>R51</b>		<b>R52</b>		<b>R53</b>		<b>L51</b>		<b>L52</b>		<b>L53</b>	
X	0.3445	0.3523	0.3523	0.3600	0.3600	0.3677	0.3677	0.3755	0.3755	0.3835	0.3835	0.3915
Y	0.3286	0.3350	0.3350	0.3414	0.3414	0.3478	0.3478	0.3542	0.3542	0.3601	0.3601	0.3661
X	0.3515	0.3592	0.3592	0.3671	0.3671	0.3747	0.3747	0.3824	0.3824	0.3905	0.3905	0.3985
Y	0.3189	0.3254	0.3254	0.3317	0.3317	0.3380	0.3380	0.3445	0.3445	0.3504	0.3504	0.3584
	<b>L11</b>		<b>L12</b>		<b>L13</b>		<b>L14</b>		<b>L21</b>		<b>L22</b>	
X	0.3869	0.3953	0.3953	0.4035	0.4035	0.4127	0.4127	0.4216	0.3859	0.3942	0.3942	0.4026
Y	0.4241	0.4296	0.4296	0.4351	0.4351	0.4397	0.4397	0.4444	0.4082	0.4139	0.4139	0.4194
X	0.3942	0.4026	0.4026	0.4109	0.4109	0.4199	0.4199	0.4288	0.3931	0.4016	0.4016	0.4099
Y	0.4139	0.4194	0.4194	0.4250	0.4250	0.4296	0.4296	0.4343	0.3982	0.4036	0.4036	0.4092
	<b>L23</b>		<b>L24</b>		<b>L31</b>		<b>L32</b>		<b>L33</b>		<b>L34</b>	
X	0.4026	0.4109	0.4109	0.4199	0.3851	0.3931	0.3931	0.4016	0.4016	0.4099	0.4099	0.4184
Y	0.4194	0.4250	0.4250	0.4296	0.3923	0.3982	0.3982	0.4036	0.4036	0.4092	0.4092	0.4148
X	0.4099	0.4184	0.4184	0.4270	0.3922	0.4001	0.4001	0.4085	0.4085	0.4168	0.4168	0.4253
Y	0.4092	0.4148	0.4148	0.4197	0.3824	0.3883	0.3883	0.3940	0.3940	0.3995	0.3995	0.4049
	<b>L42</b>		<b>L43</b>		<b>L44</b>		<b>L45</b>		<b>L54</b>		<b>L55</b>	
X	0.3842	0.3922	0.3922	0.4001	0.4001	0.4085	0.4085	0.4168	0.3915	0.3996	0.3996	0.4076
Y	0.3764	0.3824	0.3824	0.3883	0.3883	0.3940	0.3940	0.3995	0.3661	0.3721	0.3721	0.3780
X	0.3915	0.3996	0.3996	0.4076	0.4076	0.4159	0.4159	0.4243	0.3985	0.4065	0.4065	0.4146
Y	0.3661	0.3721	0.3721	0.3780	0.3780	0.3836	0.3836	0.3891	0.3584	0.3623	0.3623	0.3683
	<b>L56</b>		<b>N51</b>									
X	0.4076	0.4159	0.4159	0.4243								
Y	0.3780	0.3836	0.3836	0.3891								
X	0.4146	0.4229	0.4229	0.4312								
Y	0.3683	0.3738	0.3738	0.3794								

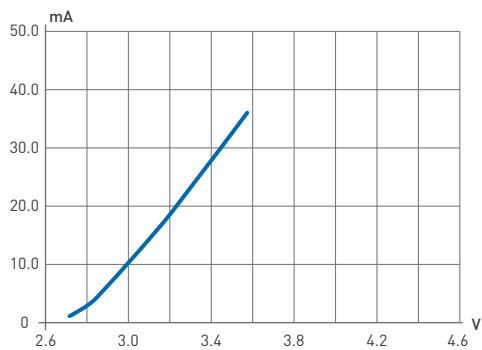
# CHROMATIC COORDINATES RANKS

	<b>L15</b>		<b>L16</b>		<b>N11</b>		<b>N12</b>		<b>N13</b>		<b>N14</b>	
X	0.4216	0.4305	0.4305	0.4400	0.4400	0.4496	0.4496	0.4592	0.4592	0.4694	0.4694	0.4797
Y	0.4444	0.4491	0.4491	0.4530	0.4530	0.4568	0.4568	0.4606	0.4606	0.4635	0.4635	0.4663
X	0.4288	0.4378	0.4378	0.4473	0.4473	0.4568	0.4568	0.4666	0.4666	0.4768	0.4768	0.4870
Y	0.4343	0.4390	0.4390	0.4428	0.4428	0.4467	0.4467	0.4504	0.4504	0.4532	0.4532	0.4560
	<b>L25</b>		<b>L26</b>		<b>N21</b>		<b>N22</b>		<b>N23</b>		<b>N24</b>	
X	0.4199	0.4288	0.4288	0.4378	0.4378	0.4473	0.4473	0.4568	0.4568	0.4666	0.4666	0.4768
Y	0.4296	0.4343	0.4343	0.4390	0.4390	0.4428	0.4428	0.4467	0.4467	0.4504	0.4504	0.4532
X	0.4270	0.4359	0.4359	0.4449	0.4449	0.4546	0.4546	0.4641	0.4641	0.4740	0.4740	0.4840
Y	0.4197	0.4244	0.4244	0.4291	0.4291	0.4327	0.4327	0.4365	0.4365	0.4404	0.4404	0.4432
	<b>L35</b>		<b>N31</b>		<b>N32</b>		<b>N33</b>		<b>N34</b>		<b>M31</b>	
X	0.4184	0.4270	0.4270	0.4359	0.4359	0.4449	0.4449	0.4546	0.4546	0.4641	0.4641	0.4740
Y	0.4148	0.4197	0.4197	0.4244	0.4244	0.4291	0.4291	0.4327	0.4327	0.4365	0.4365	0.4404
X	0.4253	0.4342	0.4342	0.4431	0.4431	0.4522	0.4522	0.4616	0.4616	0.4712	0.4712	0.4808
Y	0.4049	0.4096	0.4096	0.4143	0.4143	0.4191	0.4191	0.4228	0.4228	0.4267	0.4267	0.4304
	<b>N41</b>		<b>N42</b>		<b>N43</b>		<b>N44</b>		<b>N45</b>		<b>M41</b>	
X	0.4168	0.4253	0.4253	0.4342	0.4342	0.4431	0.4431	0.4522	0.4522	0.4616	0.4616	0.4712
Y	0.3995	0.4049	0.4049	0.4096	0.4096	0.4143	0.4143	0.4191	0.4191	0.4228	0.4228	0.4267
X	0.4243	0.4328	0.4328	0.4416	0.4416	0.4505	0.4505	0.4594	0.4594	0.4689	0.4689	0.4784
Y	0.3891	0.3947	0.3947	0.3993	0.3993	0.4040	0.4040	0.4087	0.4087	0.4127	0.4127	0.4165
	<b>N52</b>		<b>N53</b>		<b>N54</b>		<b>M51</b>		<b>M52</b>		<b>M53</b>	
X	0.4243	0.4328	0.4328	0.4416	0.4416	0.4505	0.4505	0.4594	0.4594	0.4689	0.4689	0.4784
Y	0.3891	0.3947	0.3947	0.3993	0.3993	0.4040	0.4040	0.4087	0.4087	0.4127	0.4127	0.4165
X	0.4312	0.4396	0.4396	0.4485	0.4485	0.4574	0.4574	0.4665	0.4665	0.4759	0.4759	0.4855
Y	0.3794	0.3849	0.3849	0.3896	0.3896	0.3943	0.3943	0.3991	0.3991	0.4029	0.4029	0.4067
	<b>NA1</b>		<b>NA2</b>		<b>NA3</b>		<b>MA1</b>		<b>MA2</b>		<b>M46</b>	
X	0.4512	0.4615	0.4615	0.4718	0.4718	0.4821	0.4821	0.4933	0.4933	0.5048	0.5116	0.5229
Y	0.4717	0.4745	0.4745	0.4773	0.4773	0.4801	0.4801	0.4817	0.4817	0.4831	0.4390	0.4404
X	0.4592	0.4694	0.4694	0.4797	0.4797	0.4900	0.4900	0.5013	0.5013	0.5126	0.5300	0.5188
Y	0.4606	0.4635	0.4635	0.4663	0.4663	0.4691	0.4691	0.4705	0.4705	0.4719	0.4304	0.4289
	<b>NB1</b>		<b>NB2</b>		<b>NB3</b>		<b>MB1</b>		<b>M11</b>		<b>M12</b>	
X	0.4621	0.4724	0.4724	0.4837	0.4837	0.4950	0.4950	0.5068	0.4797	0.4900	0.4900	0.5013
Y	0.4909	0.4936	0.4936	0.4950	0.4950	0.4964	0.4964	0.4979	0.4663	0.4691	0.4691	0.4705
X	0.4718	0.4821	0.4821	0.4933	0.4933	0.5048	0.5048	0.5164	0.4870	0.4975	0.4975	0.5086
Y	0.4773	0.4801	0.4801	0.4817	0.4817	0.4831	0.4831	0.4845	0.4560	0.4589	0.4589	0.4603
	<b>M13</b>		<b>M21</b>		<b>M22</b>		<b>M23</b>		<b>M24</b>		<b>M32</b>	
X	0.5013	0.5126	0.4768	0.4870	0.4870	0.4975	0.4975	0.5086	0.5086	0.5199	0.4740	0.4840
Y	0.4705	0.4719	0.4532	0.4560	0.4560	0.4589	0.4589	0.4603	0.4603	0.4617	0.4404	0.4432
X	0.5086	0.5199	0.4840	0.4942	0.4942	0.5044	0.5044	0.5158	0.5158	0.5272	0.4808	0.4911
Y	0.4603	0.4617	0.4432	0.4460	0.4460	0.4490	0.4490	0.4502	0.4502	0.4515	0.4304	0.4332
	<b>M33</b>		<b>M34</b>		<b>M35</b>		<b>M42</b>		<b>M43</b>		<b>M44</b>	
X	0.4840	0.4942	0.4942	0.5044	0.5044	0.5158	0.4712	0.4808	0.4808	0.4911	0.4911	0.5013
Y	0.4432	0.4460	0.4460	0.4490	0.4490	0.4502	0.4267	0.4304	0.4304	0.4332	0.4332	0.4361
X	0.4911	0.5013	0.5013	0.5116	0.5116	0.5228	0.4784	0.4880	0.4880	0.4982	0.4982	0.5085
Y	0.4332	0.4361	0.4361	0.4390	0.4390	0.4404	0.4165	0.4204	0.4204	0.4232	0.4232	0.4260
	<b>M45</b>		<b>M54</b>		<b>M55</b>		<b>M56</b>		<b>M57</b>		<b>M47</b>	
X	0.5013	0.5116	0.4784	0.4880	0.4880	0.4982	0.4982	0.5085	0.5085	0.5188	0.5229	0.5341
Y	0.4361	0.4390	0.4165	0.4204	0.4204	0.4232	0.4232	0.4260	0.4260	0.4289	0.4404	0.4418
X	0.5085	0.5188	0.4855	0.4949	0.4949	0.5052	0.5052	0.5156	0.5156	0.5258	0.5413	0.5300
Y	0.4260	0.4289	0.4067	0.4105	0.4105	0.4135	0.4135	0.4162	0.4162	0.4190	0.4318	0.4304

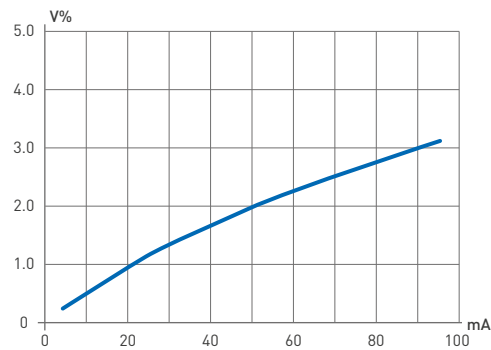
# TYPICAL ELECTRICAL/OPTICAL CHARACTERISTICS CURVES

( $T_a=25\text{ }^\circ\text{C}$  Unless Otherwise Noted)

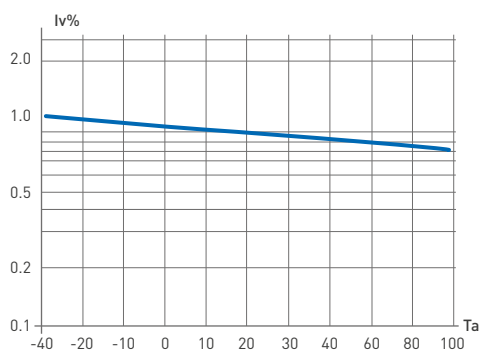
Forward Current vs Forward Voltage



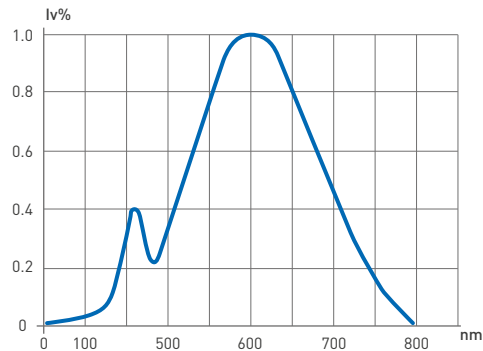
Relative Luminous Intensity vs Forward Current



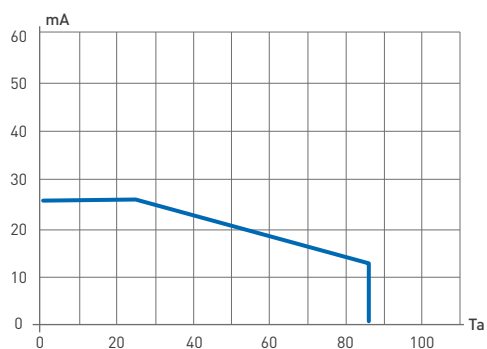
Relative Luminous Intensity vs Ambient Temperature



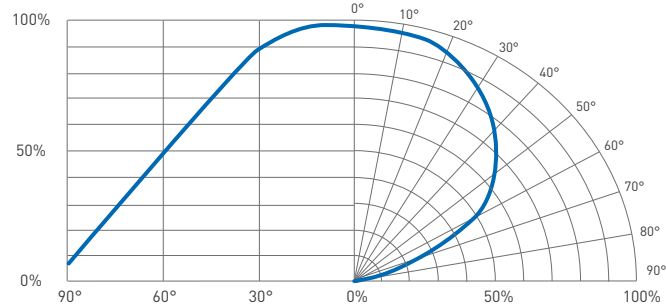
Relative Luminous Intensity vs Wavelength



Maximum Forward Current vs Ambient Temperature

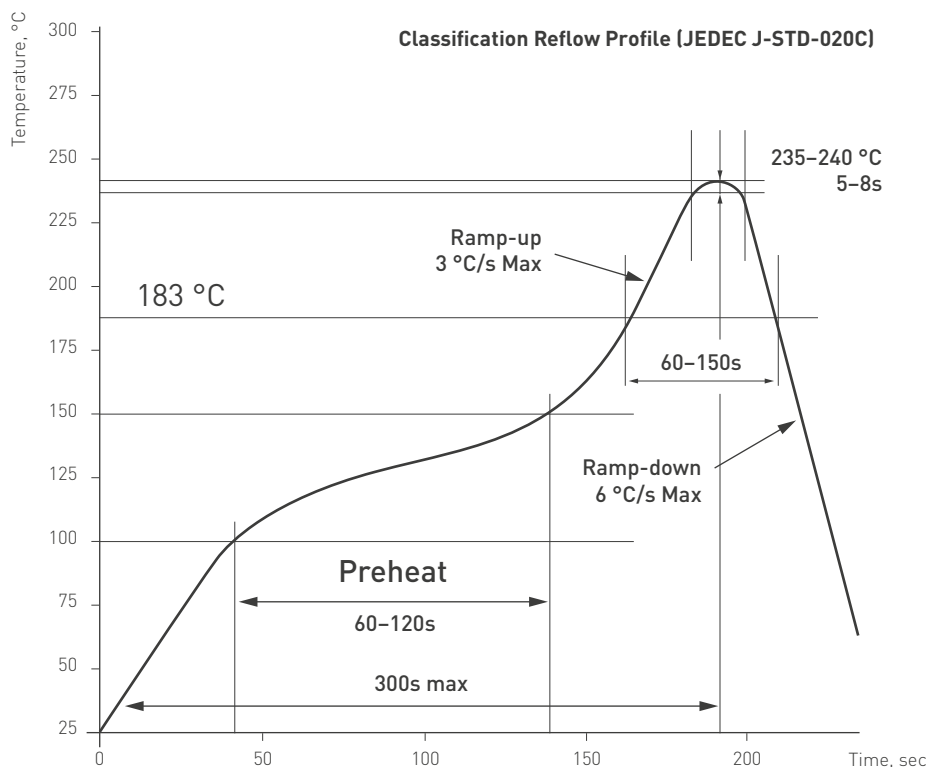


Radiation Angle

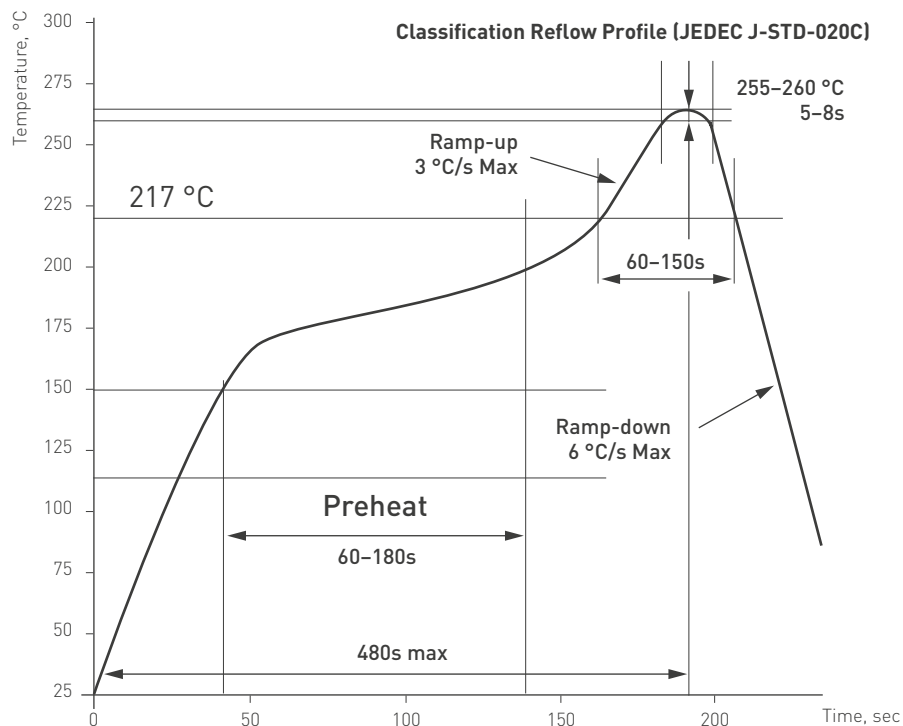


# SOLDERING HEAT RELIABILITY

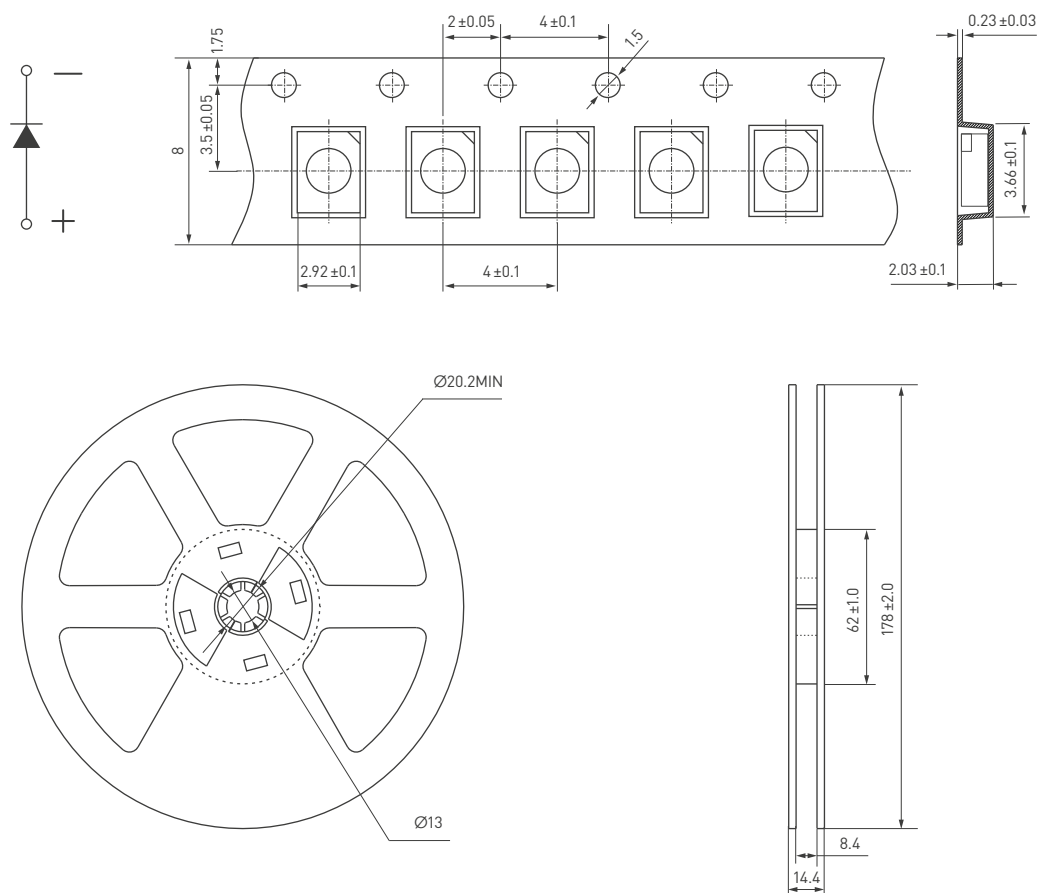
## LEAD SOLDER



## LEAD-FREE SOLDER



# PACKING SPECIFICATIONS



Dimensions are specified as follows: mm.

Notes:

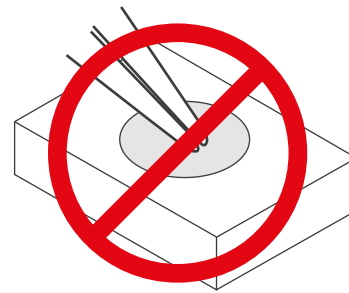
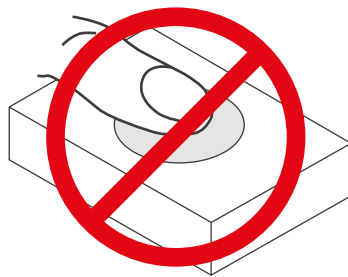
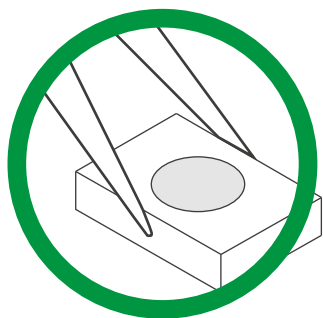
Normal packing quantity: 2.000pcs/reel.

# HANDLING PRECAUTIONS

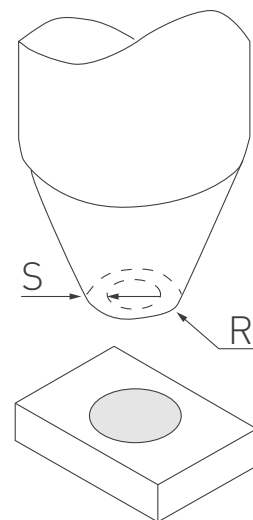
Comparing to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristics significantly reduce thermal stress, it is more susceptible to damage by external mechanical force.

As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might cause damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



3. Do not stack together assembled PCBs containing exposed LEDs. Outside impact may scratch the silicone lens or damage the internal circuitry.
4. The outer diameter of the TOP LED pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible.
5. The pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.
6. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.
7. Wet products have to be re-baked 24 hours at the temperature of  $65 \pm 5$  °C in use.



## Revision History

Rev. No.	Change Description	Date	Prepared By	Checked By	Approved By
01	New-made specification	2010/3/20	HDW	LF	LF
02	New-made specification	2012/8/21	HZHY	LF	LF