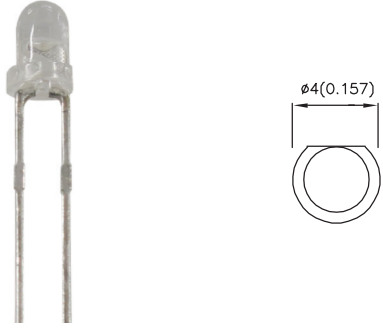
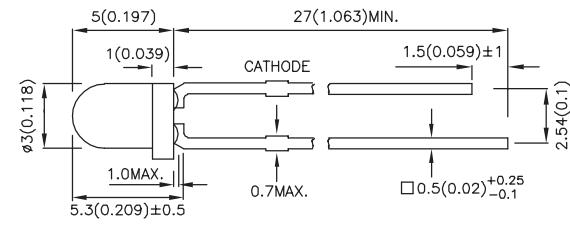


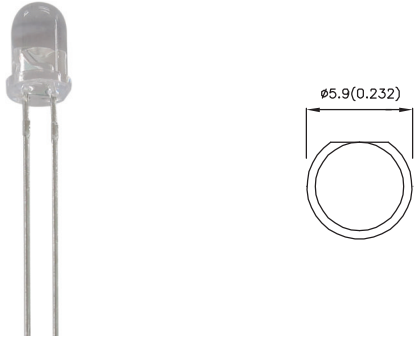
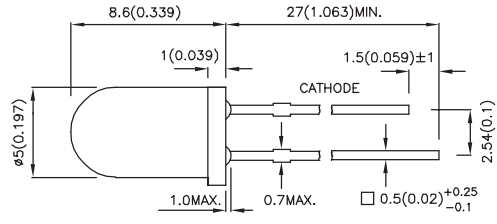
Part Number	Chip Structure	λ _{peak} (nm)	P _o (mW/sr) I _f =20mA,50mA*		Viewing Angle 2θ1/2	Lens
			Min.	Typ.		

3mm


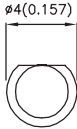
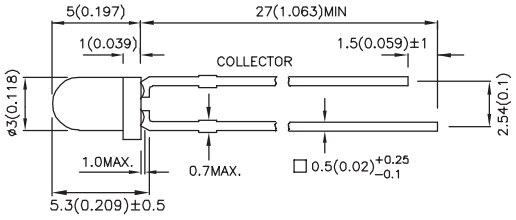
TNI30W	GaAs	940	3 *8	7 *14	50°	Water Clear
TNI30BF	GaAs	940	3 *8	7 *14	50°	Blue Transparent
THI30W	GaAlAs	880	3 *5	15 *19	50°	Water Clear
THI30BF	GaAlAs	880	3 *5	15 *19	50°	Blue Transparent
THI30W850	GaAlAs	850	8 *15	15 *49	50°	Water Clear
THI30BF850	GaAlAs	850	8 *15	15 *49	50°	Blue Transparent

5mm

TNI12W	GaAs	940	8 *25	19 *49	20°	Water Clear
TNI12BF	GaAs	940	8 *25	19 *49	20°	Blue Transparent
THI12W	GaAlAs	880	6 *12	14 *24	20°	Water Clear
THI12BF	GaAlAs	880	6 *12	14 *24	20°	Blue Transparent
THI12W850	GaAlAs	850	12 *40	29 *89	20°	Water Clear
THI12BF850	GaAlAs	850	12 *40	29 *89	20°	Blue Transparent

1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01").
 2. Radiant intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.


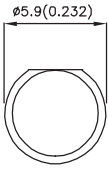
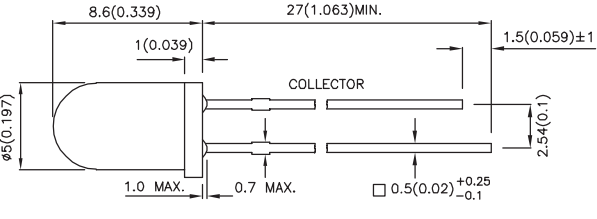
Part Number	Lens	Description
 3mm	 $\phi 4(0.157)$	 5(0.197) 27(1.063)MIN 1(0.039) COLLECTOR 1.5(0.059) ± 1 $\phi 3(0.118)$ 1.0MAX. 0.7MAX. $\square 0.5(0.02)^{+0.25}_{-0.1}$ 2.54(0.1) 5.3(0.209) ± 0.5
RNI30W-1	Water Clear	3mm

Electrical & Radiant Characteristics $T_a = 25^\circ\text{C}$

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Condition
$I_{(ON)}$	On State Collector Current	0.3	0.8	-	mA	$V_{CE}=5V, E_e=1mW/cm^2, l=940nm$
$V_{BR\ CE0}$	Collector-to-Emitter Breakdown Voltage	30	-	-	V	$I_c=100mA, E_e=0mW/cm^2$
$V_{BR\ EC0}$	Emitter-to-Collector Breakdown Voltage	5	-	-	V	$I_e=100mA, E_e=0mW/cm^2$
$V_{CE(SAT)}$	Collector-to-Emitter Saturation Voltage	-	-	0.8	V	$I_c=2mA, E_e=20mW/cm^2$
I_{CE0}	Collector Dark Current	-	-	100	nA	$V_{CE}=10V, E_e=0mW/cm^2$
T_R	Rise Time (10% to 90%)	-	15	-	ms	$V_{CE}=5V, I_c=1mA, R_L=1KW$
T_F	Fall Time (90% to 10%)	-	15	-	ms	$V_{CE}=5V, I_c=1mA, R_L=1KW$

Absolute Maximum Rating $T_a = 25^\circ\text{C}$

Collector-to-Emitter Voltage	30V	Operating Temperature Range	-40°C ~ +85°C
Emitter-to-Collector Voltage	5V	Storage Temperature Range	-40°C ~ +85°C
Power Dissipation at (or below) 25°C Free Air Temperature	100mW	Lead Soldering Temperature(>5mm For 5sec)	260°C

Part Number	Lens	Description
 5mm	 $\phi 5.9(0.232)$	 8.6(0.339) 27(1.063)MIN. 1.5(0.059) ± 1 1(0.039) COLLECTOR $\phi 5(0.197)$ 1.0 MAX. 0.7 MAX. $\square 0.5(0.02)^{+0.25}_{-0.1}$ 2.54(0.1)
RNI12W	Water Clear	5mm

Electrical & Radiant Characteristics $T_a = 25^\circ\text{C}$


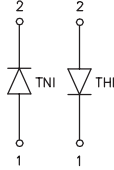
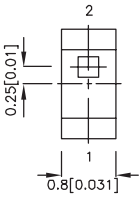
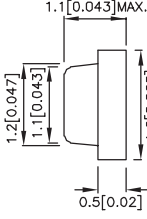
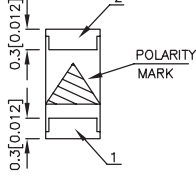
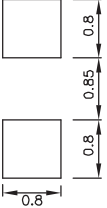

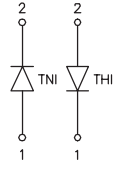
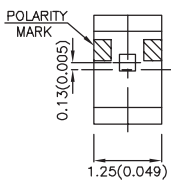
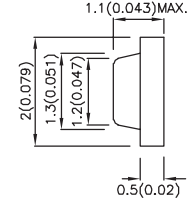
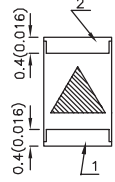
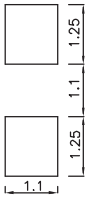

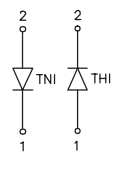
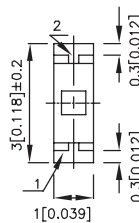
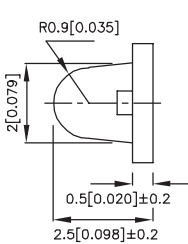
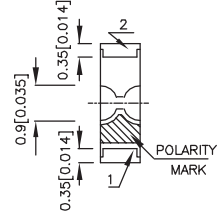
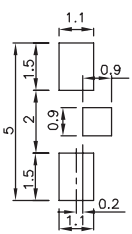
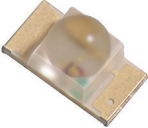
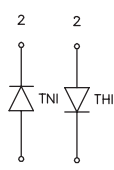
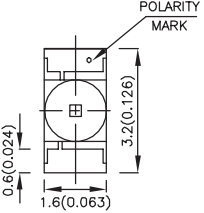
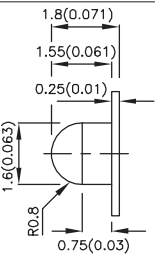
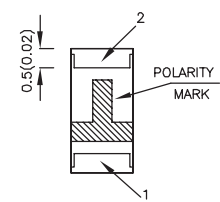
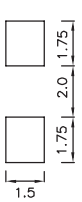

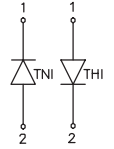
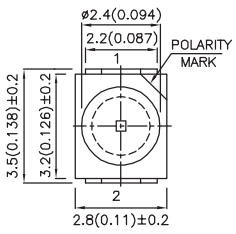
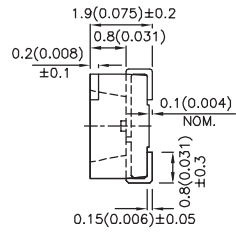
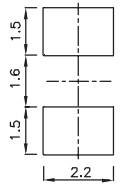
Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Condition
$I_{(ON)}$	On State Collector Current	0.5	2.5	-	mA	$V_{CE}=5V, E_e=1mW/cm^2, l=940nm$
$V_{BR\ CE0}$	Collector-to-Emitter Breakdown Voltage	30	-	-	V	$I_c=100mA, E_e=0mW/cm^2$
$V_{BR\ EC0}$	Emitter-to-Collector Breakdown Voltage	5	-	-	V	$I_e=100mA, E_e=0mW/cm^2$
$V_{CE(SAT)}$	Collector-to-Emitter Saturation Voltage	-	-	0.8	V	$I_c=2mA, E_e=20mW/cm^2$
I_{CE0}	Collector Dark Current	-	-	100	nA	$V_{CE}=10V, E_e=0mW/cm^2$
T_R	Rise Time (10% to 90%)	-	15	-	ms	$V_{CE}=5V, I_c=1mA, R_L=1KW$
T_F	Fall Time (90% to 10%)	-	15	-	ms	$V_{CE}=5V, I_c=1mA, R_L=1KW$

Absolute Maximum Rating $T_a = 25^\circ\text{C}$



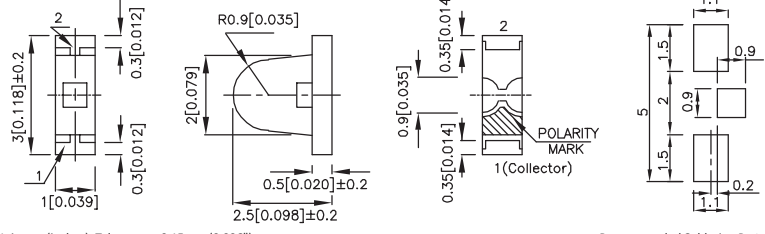

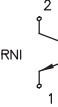
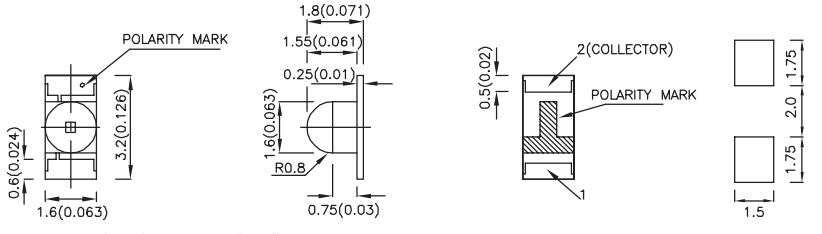


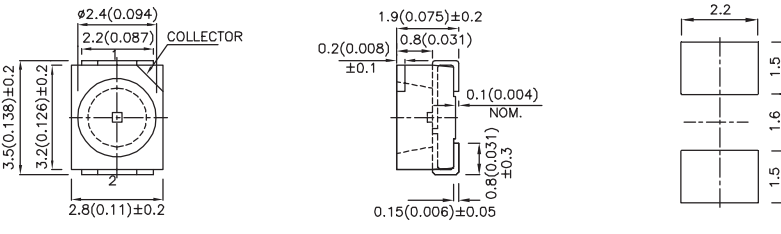
Collector-to-Emitter Voltage	30V	Operating Temperature Range	-40°C ~ +85°C
Emitter-to-Collector Voltage	5V	Storage Temperature Range	-40°C ~ +85°C
Power Dissipation at (or below) 25°C Free Air Temperature	100mW	Lead Soldering Temperature(>5mm For 5sec)	260°C

1. Dimension Unit: mm(inches). Tolerance: $\pm 0.25mm (0.01")$.
 2. We reserve the right to make changes at any time to enhance the design and / or performance of the product.



Part Number	Chip Structure	λpeak (nm)	Po(mW/sr) I _v =20mA		Viewing Angle 2θ1/2	Lens
			Min.	Typ.		
1.6x0.8x1.1mm (0603)      						
Dimension Unit: mm(inches), Tolerance : ±0.1(0.004")						
ZTNI53W	GaAs	940	0.8	1.8	150°	Water Clear
ZTHI53W	GaAlAs	880	0.8	1.3	150°	Water Clear
2.0x1.25x1.1mm (0805)      						
Dimension Unit: mm(inches), Tolerance : ±0.1(0.004")						
ZTNI54W	GaAs	940	0.8	1.8	160°	Water Clear
ZTHI54W	GaAlAs	880	0.8	1.3	160°	Water Clear
3.0x1.0x2.5mm (1104 Right Angle)      						
Dimension Unit: mm(inches), Tolerance: ±0.15mm (0.006")						
ZTNI56W-1	GaAs	940	1.2	2.3	30°	Water Clear
ZTHI56W-1	GaAlAs	880	1	2.3	30°	Water Clear
3.2x1.6x1.8mm (1206 Dome Lens)      						
Dimension Unit: mm(inches), Tolerance : ±0.2(0.008")						
ZTNI55W-3	GaAs	940	2	4.8	40°	Water Clear
ZTHI55W-3	GaAlAs	880	1.6	3.8	40°	Water Clear
3.5x2.8x1.9mm (PLCC2)     						
Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01")						
ZTNI45S	GaAs	940	1.2	2.3	120°	Water Clear
ZTHI45S	GaAlAs	880	1.2	1.8	120°	Water Clear

1. Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01").
 2. Radiant intensity value and wavelength are in accordance with CIE127-2007 standards.
 3. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

Part Number	Lens	Description
<p>3.0x1.0x2.5mm (1104 Right Angle)</p>    <p>Dimension Unit: mm(inches), Tolerance: ±0.15mm (0.006")</p> <p>Recommended Soldering Pattern</p>	Water Clear	3.0x1.0x2.5mm
ZRNI56W-1		
<p>3.2x1.6x1.8mm (1206 Dome Lens)</p>    <p>Dimension Unit: mm(inches), Tolerance: ±0.2(0.008")</p> <p>Recommended Soldering Pattern</p>	Water Clear	3.2x1.6x1.8mm
ZRNI55W-3		
<p>3.5x2.8x1.9mm (PLCC2)</p>    <p>Dimension Unit: mm(inches), Tolerance: ±0.25mm (0.01")</p> <p>Recommended Soldering Pattern</p>	Water Clear	3.5x2.8x1.9mm
ZRNI45S		

Electrical & Radiant Characteristics $T_a = 25^\circ\text{C}$

Symbol	Parameter	Part Number	Min.	Typ.	Max.	Unit	Test Condition
$I_{(ON)}$	On State Collector Current	ZRNI56W-1	0.2	0.5	-	mA	$V_{CE}=5V$ $E_e=1mW/cm^2$ $\lambda=940nm$
		ZRNI55W-3	0.4	1			
		ZRNI45S	0.2	0.4			
$V_{BR(CEO)}$	Collector-to-Emitter Breakdown Voltage	-	30	-	-	V	$I_C=100mA$ $E_e=0mW/cm^2$
$V_{BR(ECO)}$	Emitter-to-Collector Breakdown Voltage	-	5	-	-	V	$I_E=100mA$ $E_e=0mW/cm^2$
$V_{CE(SAT)}$	Collector-to-Emitter Saturation Voltage	-	-	-	0.8	V	$I_C=2mA$ $E_e=20mW/cm^2$
I_{CEO}	Collector Dark Current	-	-	-	100	nA	$V_{CE}=10V$ $E_e=0mW/cm^2$
T_R	Rise Time (10% to 90%)	-	-	15	-	ms	$V_{CE}=5V$ $I_C=1mA$ $R_L=1KW$
T_F	Fall Time (90% to 10%)	-	-	15	-	ms	$V_{CE}=5V$ $I_C=1mA$ $R_L=1KW$

Absolute Maximum Rating $T_a = 25^\circ\text{C}$

Collector-to-Emitter Voltage	30V	Operating Temperature Range	-40°C ~ +85°C
Emitter-to-Collector Voltage	5V	Storage Temperature Range	-40°C ~ +85°C
Power Dissipation at (or below) 25°C Free Air Temperature	100mW		

1. Soldering Pattern Dimension Unit : mm Tolerance : ±0.1mm.
 2. We reserve the right to make changes at any time to enhance the design and / or performance of the product.

