

7-3

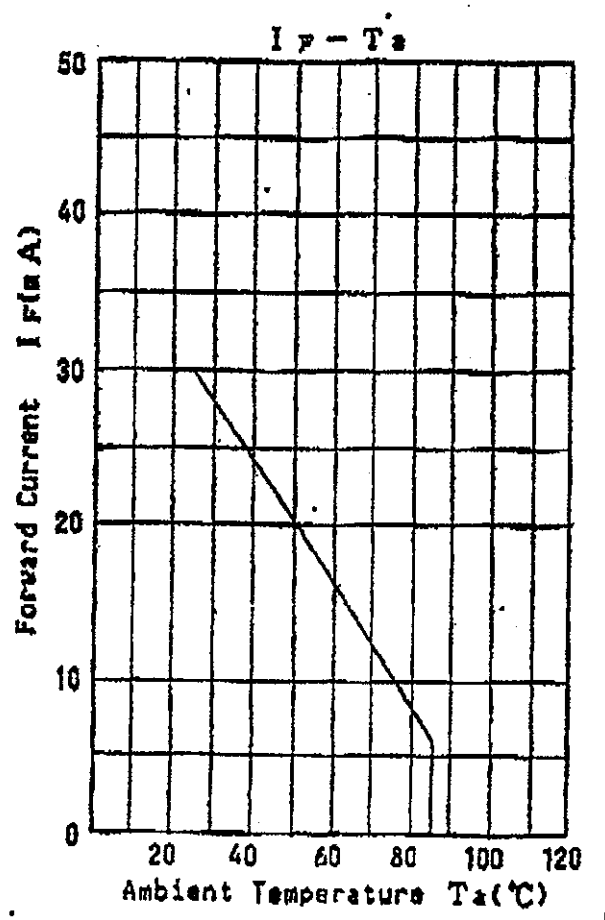
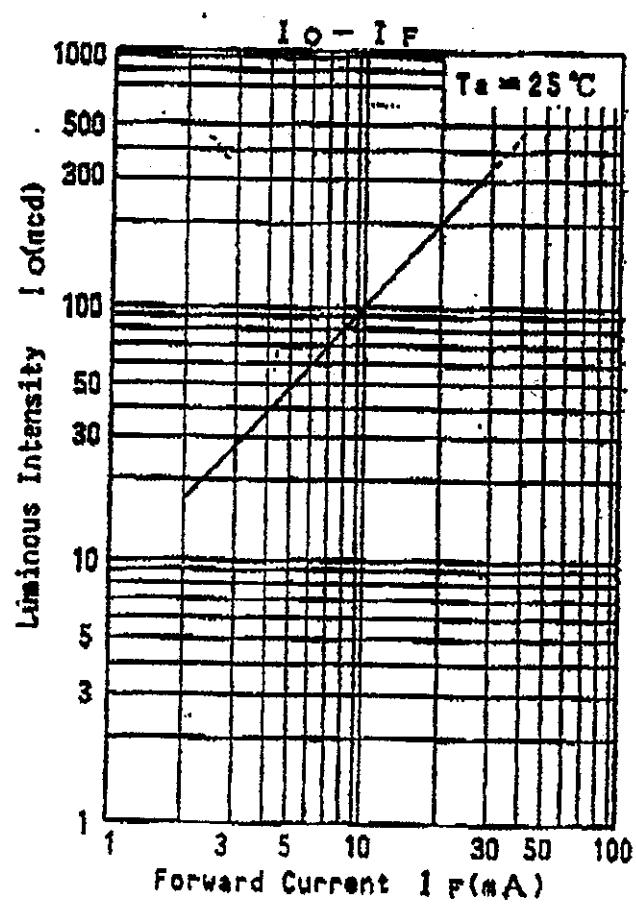
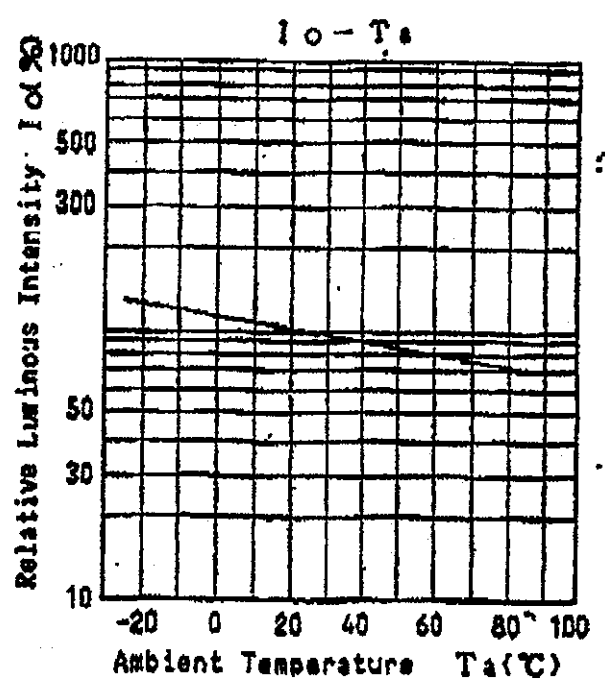
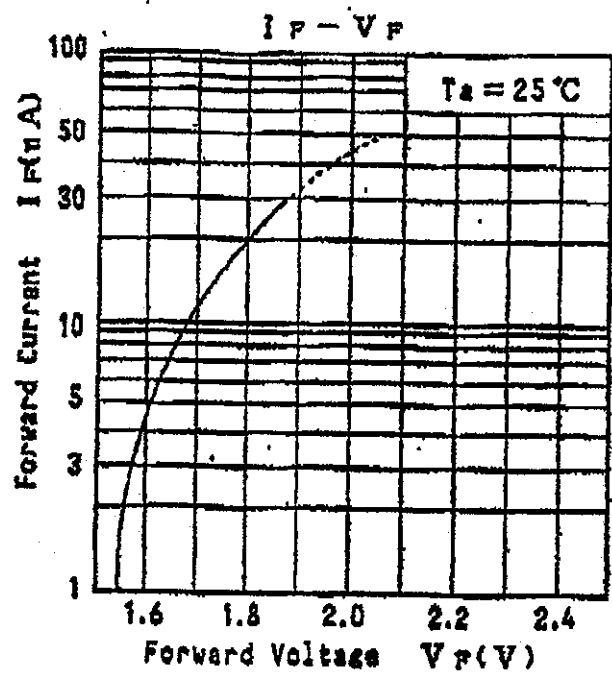
				SEMICONDUCTOR PRODUCT			
				LN21RUQ			
TYPE		Red Light Emitting Diode					
MATERIAL		GaAlAs					
APPLICATION		Indicators					
OUTLINE							
CONNECTION							
ABSOLUTE MAXIMUM RATINGS		P_D	$*I_{FP}$	I_{FDC}	V_R	T_{opr}	T_{stg}
		70	150	30	3	-25~+85	-30~+100
		mW	mA	mA	V	°C	°C
		$T_a=25\pm3^{\circ}C$					
Test Specification							
		Condition		Typ	Limit		Unit
					Min	Max	
VF		$I_F=20mA$		1.8		2.6	V
IR		$V_R=3V$				100	μA
I _o		$I_F=20mA$ DC		200	120		acd
λ _p		$I_F=20mA$ DC		660			nm
Δλ		$I_F=20mA$ DC		20			nm

*1 The condition of IFP is duty 10%, Pulse width 1msec.

*2 Lead material and surface treatment : Fe type + solder dipping

7-4

LN21RUQ



LN21RUQ RELIABILITY TEST DATA

TEST CONDITION AND RESULT

TEST ITEM	TEST CONDITION	RESULTS
Consecutive operating life test	IF DC max, $T_a=25^{\circ}\text{C}$, $t=1,000\text{h}$	0/100
High temperature storage life test	T_{stg} max, $t=1,000\text{h}$	0/100
Low temperature storage life test	T_{stg} min, $t=1,000\text{h}$	0/100
Tropical life test	$T_a=60^{\circ}\text{C}$, RH $\geq$ 90%, $t=1,000\text{h}$	0/100
Soldering test	$T_a=230\pm 5^{\circ}\text{C}$, $t=5\text{sec}$, 1cycle, flux	0/50
Soldering heat test	$T_a=280\pm 5^{\circ}\text{C}$, $t=10\text{sec}$, 1cycle	0/100
Temperature cycle test (gaseous phase)	T_{stg} min $\sim 25^{\circ}\text{C}$ $\sim T_{stg}$ max $\sim 25^{\circ}\text{C}$ (30min 5min 30min 5min) X 10 cycles	0/100
Thermal shock test (liquid phase)	T_{stg} max $\sim 0^{\circ}\text{C}$ (5min 5min) X 10 cycles	0/100
Fall test	Maple Wood $h=75\text{cm}$, 3 cycles	0/50
Terminal strength test	$V=1\text{Kg}$, $t=30\text{sec}$	0/50
Lead Bending	$W=0.5\text{Kg}$, 2 cycles	0/50

ITEM	SYMBOL	CONDITIONS	LIMIT	UNIT
Forward Voltage	V_F	Same as the specification	Upper $\times 1.2$	V
Reverse Leakage Current	IR	Same as the specification	Upper $\times 2.0$	μA
Luminous Intensity	I_o	Same as the specification	Min $\times 70$	%

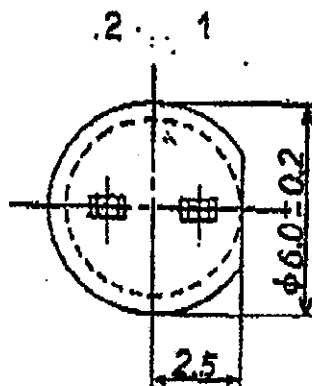
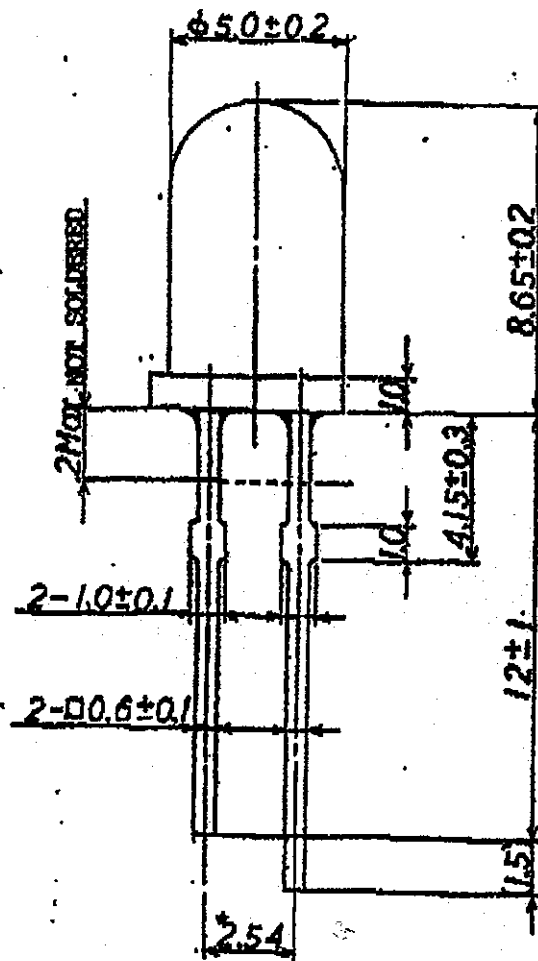
* note : Operating Life Stability $\geq 50\%$

* Assurance for LED

Assurance for LED within each condition is mentioned above.

7-6

LN21RUQ



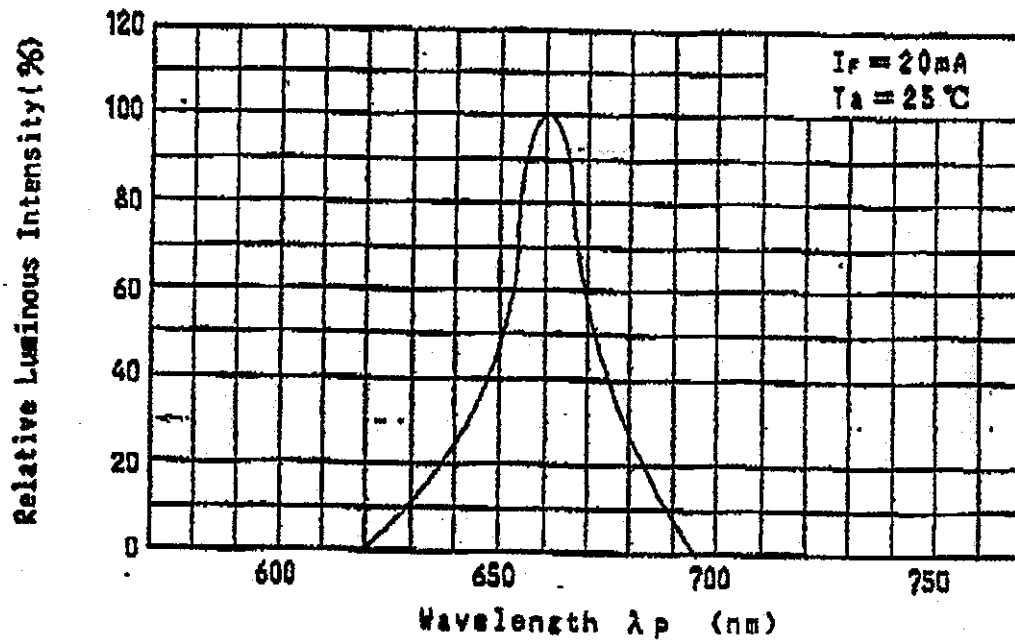
1: Anode

2: Cathode

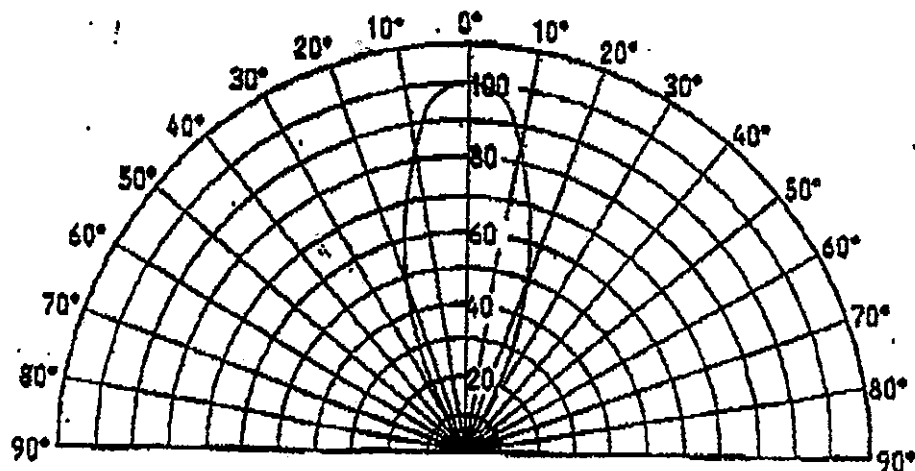
* Lead wire dimension.
(The bottom of lead)

7-5

LN21RU0

Relative Luminous Intensity
Wavelength Characteristics

Directive Characteristics



3. Electro-optical characteristics (Note 2)

Parameter		Symbol		Condition	Min	Typ	Max	U
Threshold current		I_{th}		CW	20	40	65	
Operating current		I_{op}		$P_o=3mW$	30	50	75	
Operating voltage		V_{op}		$P_o=3mW$	—	1.75	2.5	
Wavelength		λ_L	(Note 3)	$P_o=3mW$	775	790	810	
Radiation angle	Parallel	$\theta_{ }$	(Note 4)	$P_o=3mW$	8	11	16	
	Perpendicular	$\theta_{\perp}$	(Note 4)	$P_o=3mW$	20	33	45	
Differential efficiency		η	(Note 3)	$2mW/(I(3mW)-I(1mW))$	0.1	0.4	0.7	π
PIN dark current		I_d		$V_r(PIN)=30V$	—	—	0.1	
PIN photo-current		I_p		$P_o=3mW$ $V_r(PIN)=5V$	0.2	0.6	1.0	
Emission point angle accuracy	X direction	θ_x		$P_o=3mW$	—	—	± 2	
	Y direction	θ_y		$P_o=3mW$	—	—	± 3	
Oscillation mode		Single transverse mode						

(Note 2) Initial value

(Note 3) Sampling inspection by lot

(Note 4) Angle of 50% peak intensity (FWHM)