LITEON

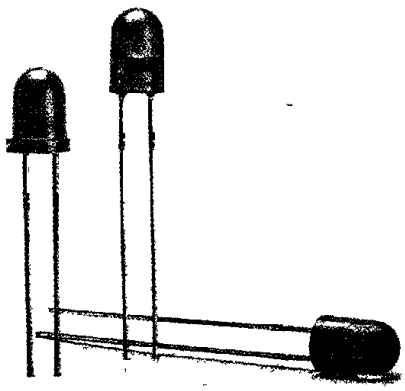
MEDIUM PROFILE T-1¾ LED LAMPS

T-41-21

LTL-10203/10203W	RED	LTL-10233/10233W	GREEN
LTL-10213	BRIGHT RED	LTL-10253/10253W	YELLOW
LTL-10223/10223W	HIGH EFFICIENCY RED	LTL-10293W	ORANGE

FEATURES

- LOW POWER CONSUMPTION.
- WIDE VIEWING ANGLE.
- MEDIUM PROFILE: 7.24mm (0.285") NOMINAL.
- GENERAL PURPOSE LEADS.
- I.C. COMPATIBLE/LOW CURRENT REQUIREMENT.
- RELIABLE AND RUGGED.

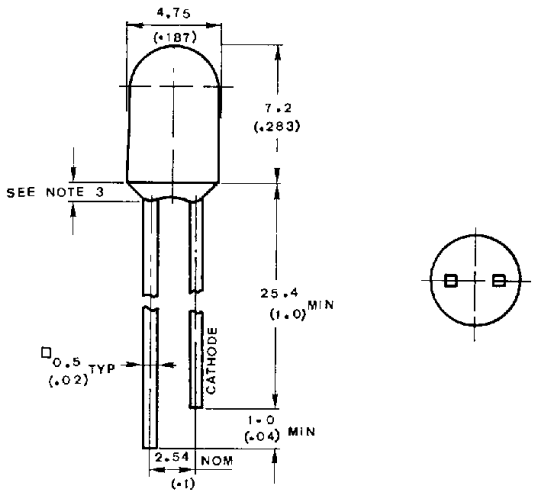


DESCRIPTION

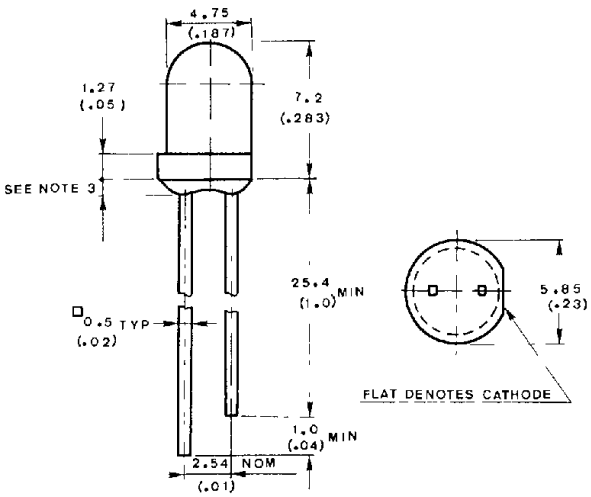
The Red source color devices are made with Gallium Arsenide Phosphide on Gallium Arsenide Red Light Emitting Diode.
The Bright Red source color devices are made with Gallium Phosphide on Gallium Phosphide Red Light Emitting Diode.
The High Efficiency Red and Orange source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.
The Green source color devices are made with Gallium Phosphide on Gallium Phosphide Green Light Emitting Diode.
The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

PACKAGE DIMENSIONS

LTL-102 x 3W Series



LTL-102 x 3 Series



NOTES:
1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25mm (.010") unless otherwise noted.
3. Protruded resin under flange is 1.5mm (.059") max.
4. Lead spacing is measured where the leads emerge from the package.
5. Specifications are subject to change without notice.

DEVICES

PART NO. LTL–	LENS		SOURCE COLOR
	COLOR	DIFFUSION	
10203	Red	Diffused	Red
10213	Red	Diffused	Bright Red
10223	Red	Diffused	Hi. Eff. Red
10233	Green	Diffused	Green
10253	Yellow	Diffused	Yellow

PART NO. LTL–	LENS		SOURCE COLOR
	COLOR	DIFFUSION	
10203W	Red	Diffused	Red
10223W	Red	Diffused	Hi. Eff. Red
10233W	Green	Diffused	Green
10253W	Yellow	Diffused	Yellow
10293W	Orange	Diffused	Orange

ABSOLUTE MAXIMUM RATINGS AT $T_A = 25°C$

PARAMETER	RED	BRIGHT RED	GREEN	HI.EFF.RED ORANGE	YELLOW	UNIT
Power Dissipation	80	40	100	100	60	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	200	60	120	120	80	mA
Continuous Forward Current	40	15	30	30	20	mA
Derating Linear From 25°C	0.5	0.2	0.4	0.4	0.25	mA/°C
Reverse Voltage	5	5	5	5	5	V
Operating Temperature Range	–55°C to +100°C					
Storage Temperature Range	–55°C to +100°C					
Lead Soldering Temperature [1.6mm (0.063in) From Body]	260°C for 5 Seconds					

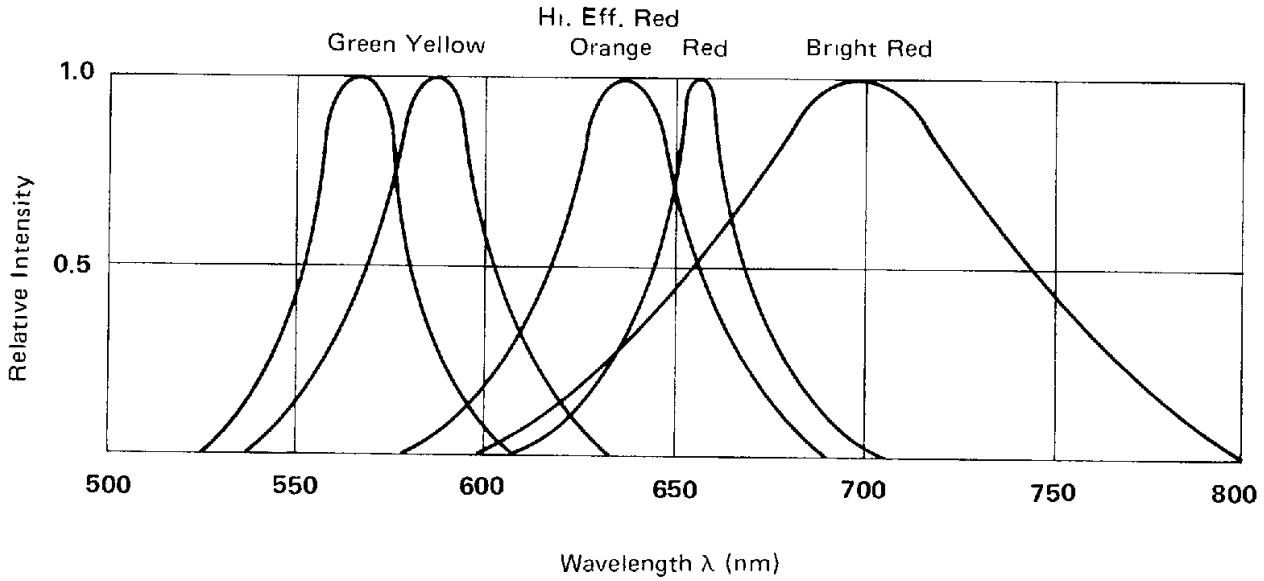


FIG. 1 RELATIVE INTENSITY VS. WAVELENGTH

ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT T_A = 25°C

PARAMETER	SYMBOL	PART NO. LTL–	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	Iv	10203 10213 10203W	0.3 0.8 0.3	0.8 2.5 0.8		mcd	I_F = 10 mA Note 1
Viewing Angle	2θ½	10203 10213 10203W		60 60 60		deg.	Note 2 (Fig. 6)
Peak Emission Wavelength	λPEAK	10203 10213 10203W		655 697 655		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	Δλ	10203 10213 10203W		24 90 24		nm	
Forward Voltage	V_F	10203 10213 10203W		1.7 2.1 1.7	2.0 2.8 2.0	V	I_F = 20 mA
Reverse Current	I_R	10203 10213 10203W			100	μA	V_R = 5 V
Capacitance	C	10203 10213 10203W		30 55 30		PF	V_F = 0 f = 1MHZ

NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.
2. θ½ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

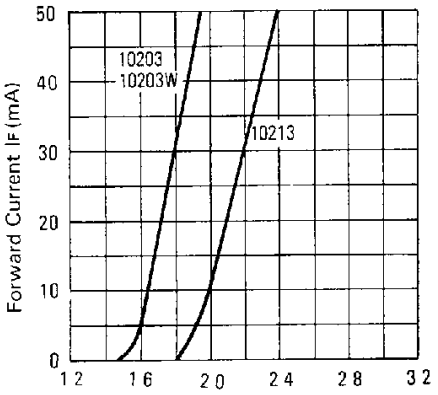


FIG 2 FORWARD CURRENT VS FORWARD VOLTAGE

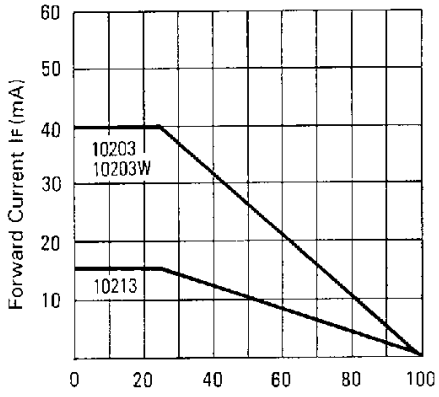


FIG 3 FORWARD CURRENT DERATING CURVE

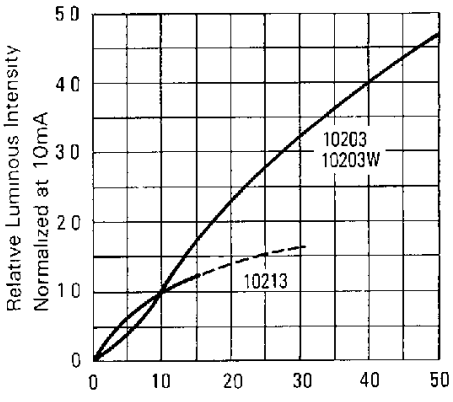


FIG 4 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT

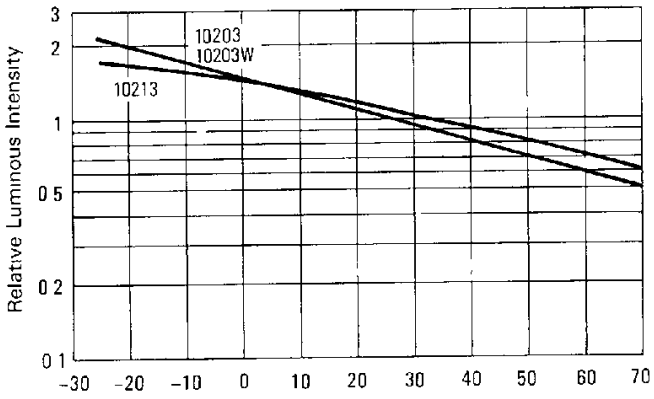


FIG 5 LUMINOUS INTENSITY VS AMBIENT TEMPERATURE

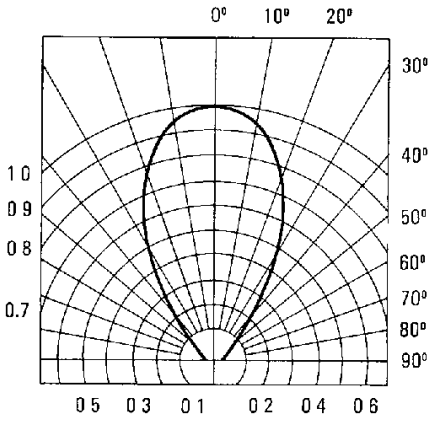


FIG. 6 SPATIAL DISTRIBUTION

ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT T_A = 25°C

PARAMETER	SYMBOL	PART NO. LTL–	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	Iv	10223 10223W	1.7 1.7	5.6 5.6		mcd	I_F = 10 mA Note 1
Viewing Angle	2θ½	10223 10223W		60		deg.	Note 2 (Fig. 11)
Peak Emission Wavelength	λPEAK	10223 10223W		635		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	Δλ	10223 10223W		40		nm	
Forward Voltage	V_F	10223 10223W		2.0	2.8	V	I_F = 20 mA
Reverse Current	I_R	10223 10223W			100	μA	V_R = 5V
Capacitance	C	10223 10223W		20		PF	V_F = 0 f = 1 MHZ

NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Intenationale De L'Eclairage) eye-response curve.

2. θ½ is the off-axis angle at which the liminous intensity is half the axial luminous intensity.

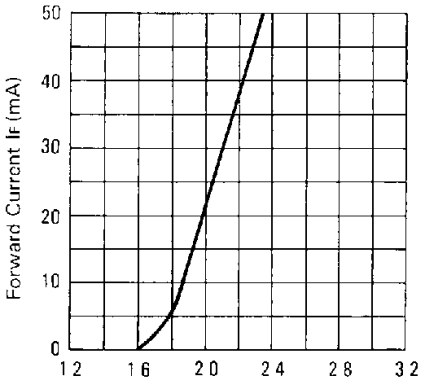


FIG 7 FORWARD CURRENT VS FORWARD VOLTAGE

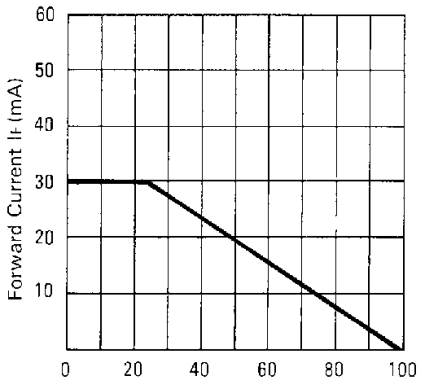


FIG 8 FORWARD CURRENT DERATING CURVE

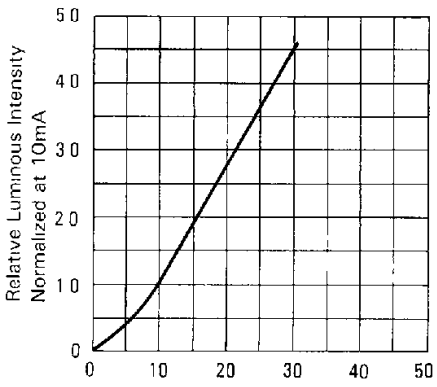


FIG 9 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT

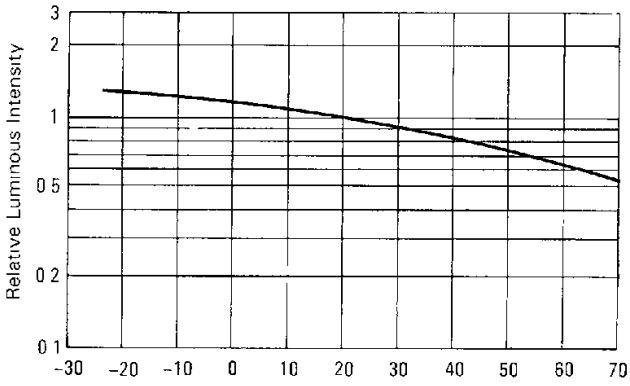


FIG 10 LUMINOUS INTENSITY VS AMBIENT TEMPERATURE

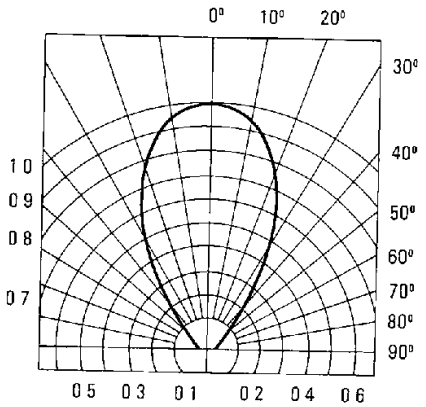


FIG 11 SPATIAL DISTRIBUTION

ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT $T_A = 25°C$

PARAMETER	SYMBOL	PART NO. LTL–	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	I_V	10233 10253 10233W 10253W	1.7 1.7 1.7 1.7	5.6 12.6 5.6 12.6		mcd	I_F = 10 mA Note 1
Viewing Angle	$2\theta 1/2$	10233 10253 10233W 10253W		60 60 60 60		deg	Note 2 (Fig. 16)
Peak Emission Wavelength	$\lambda PEAK$	10233 10253 10233W 10253W		565 585 565 585		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	10233 10253 10233W 10253W		30 35 30 35		nm	
Forward Voltage	V_F	10233 10253 10233W 12053W		2.1	2.8	V	I_F = 20 mA
Reverse Current	I_R	10233 10253 10233W 10253W			100	μA	V_R = 5V
Capacitance	C	10233 10253 10233W 10253W		35 15 35 15		PF	V_F = 0 f = 1 MHZ

NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.
2. $\theta 1/2$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

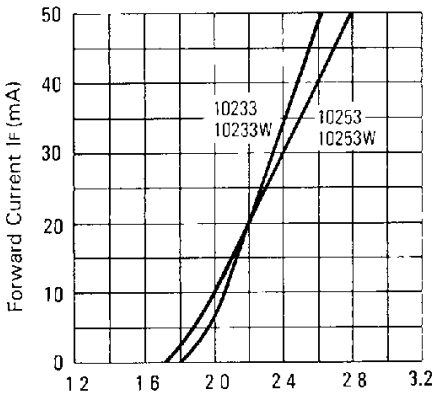


FIG 12 FORWARD CURRENT VS FORWARD VOLTAGE

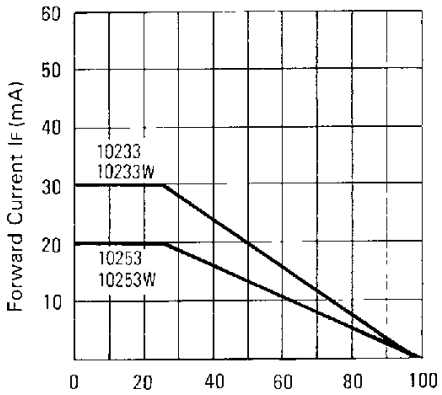


FIG 13 FORWARD CURRENT DERATING CURVE

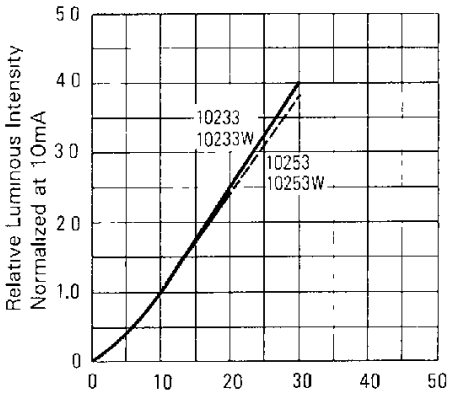


FIG 14 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT

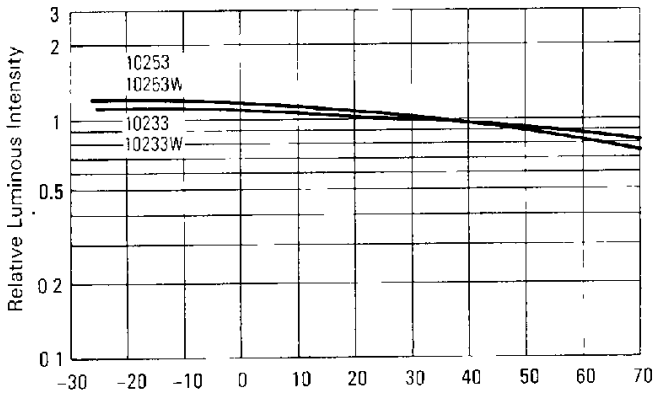


FIG 15 LUMINOUS INTENSITY VS AMBIENT TEMPERATURE

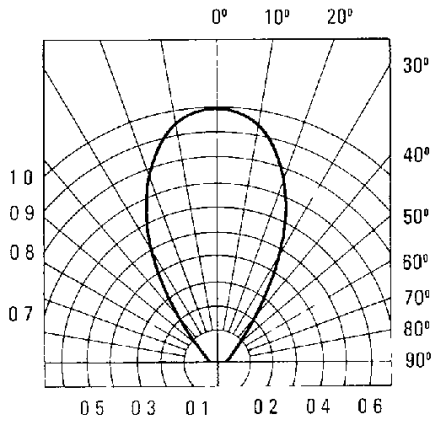


FIG 16 SPATIAL DISTRIBUTION

ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT $T_A = 25°C$

PARAMETER	SYMBOL	PART NO. LTL–	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	Iv	10293W	1.7	5.6		mcd	I_F = 10 mA Note 1
Viewing Angle	$2\theta\frac{1}{2}$	10293W		60		deg.	Note 2 (Fig. 21)
Peak Emission Wavelength	$\lambda PEAK$			630		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$			40		nm	
Forward Voltage	V_F			2.0	2.8	V	I_F = 20 mA
Reverse Current	I_R				100	μA	V_R = 5V
Capacitance	C			20		PF	V_F = 0 f = 1 MHZ

NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Intenationale De L'Eclairage) eye-response curve.

2. $\theta\frac{1}{2}$ is the off-axis angle at which the liminous intensity is half the axial luminous intensity.

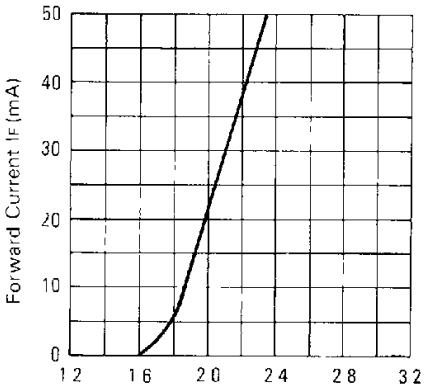


FIG 17 FORWARD CURRENT VS FORWARD VOLTAGE

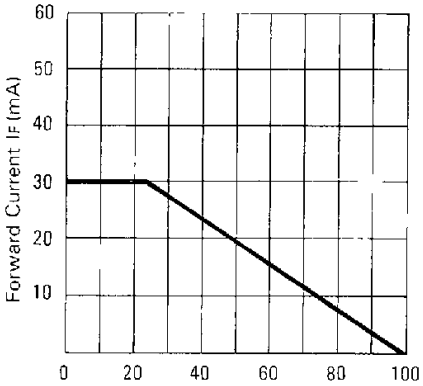


FIG 18 FORWARD CURRENT DERATING CURVE

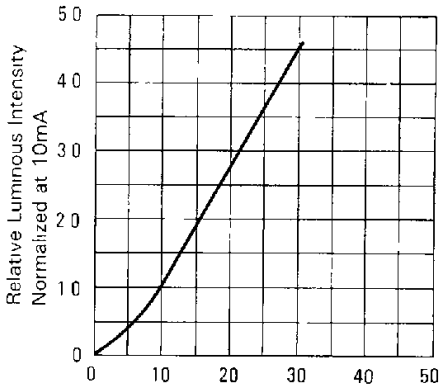


FIG 19 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT

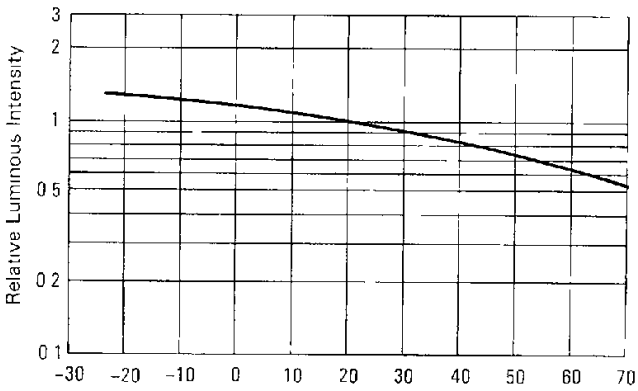


FIG 20 LUMINOUS INTENSITY VS AMBIENT TEMPERATURE

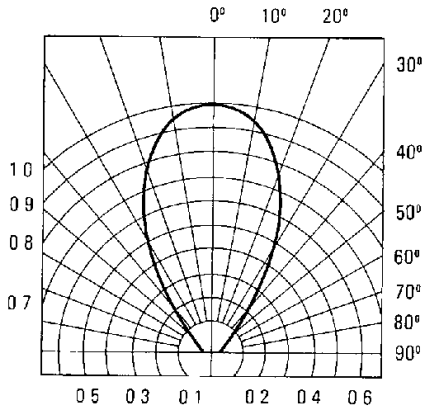


FIG 21 SPATIAL DISTRIBUTION