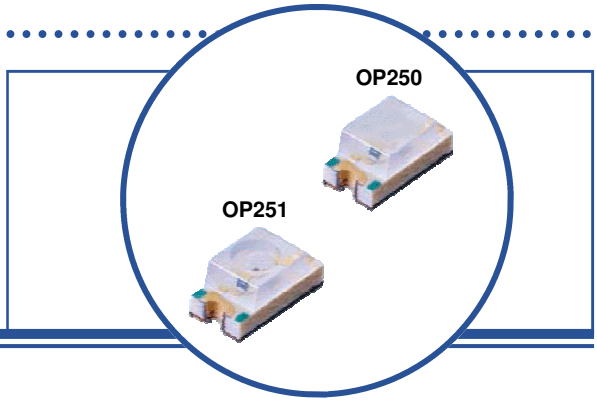
Infrared Light Emitting Diode
OP250, OP251

TT electronics
OPTEK Technology

Features:

- High power GaAlAs
- 1206 miniature SMD package style
- 880 nm wavelength
- Choice of narrow or tight beam angle
- Mechanically and spectrally matched to OP520 series phototransistors



Description:

Each **OP250** and **OP251** device is a GaAlAs infrared LED, mounted in a miniature SMT 1206 size chip carrier that is compatible with most automated mounting equipment. The **OP250** has a flat molded lens that enables a wide beam angle and provides an even emission pattern. The **OP251** has an internal molded lens that enables a tight beam angle and provides an even emission pattern.

OP250 and OP251 are mechanically and spectrally matched to OP520 series phototransistors.

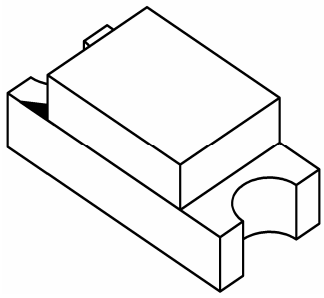
Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.

Applications:

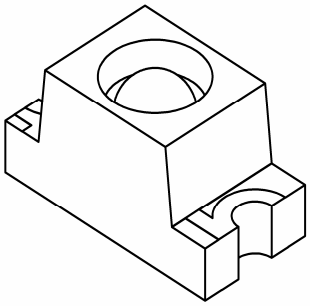
- Non-contact position sensing
- Datum detection
- Machine automation
- Optical encoding

Ordering Information				
Part Number	**LED Peak Wavelength**	**Output Power (mW / sr) Min / Max**	**Total Beam Angle**	**Lead Length**
OP250	880 nm	0.45 / NA	160°	N/A
OP251		0.2/ NA	90°	

OP250



OP251

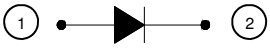


Pin #	LED
1	Anode
2	Cathode

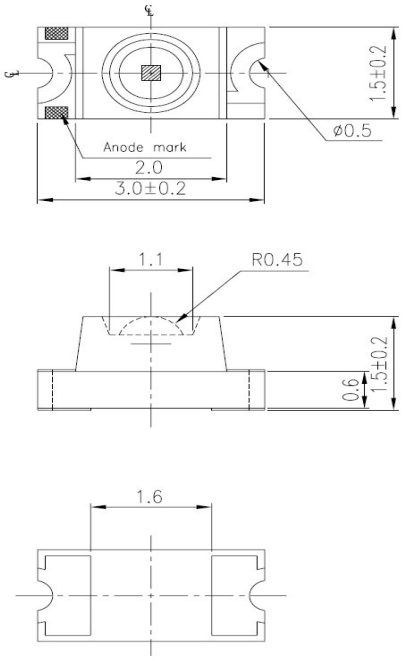
Pb
RoHS

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

OP250

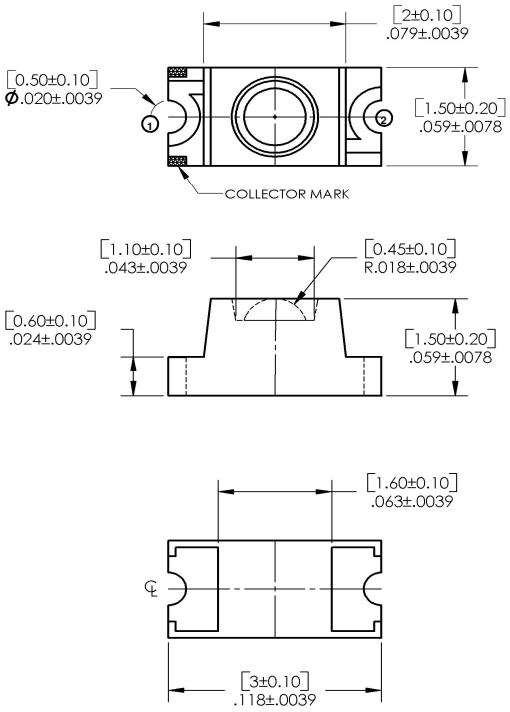


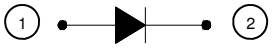
Pin #	LED
1	Anode
2	Cathode



DIMENSIONS ARE IN: [MILLIMETERS] INCHES

OP251





Pin #	LED
1	Anode
2	Cathode

DIMENSIONS ARE IN: [MILLIMETERS] INCHES

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Storage Temperature Range	-40° C to +100° C
Operating Temperature Range	-25° C to +85° C
Reverse Voltage	5 V
Continuous Forward Current	65 mA
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron]	260° C(1)
Power Dissipation	110 mW(2)

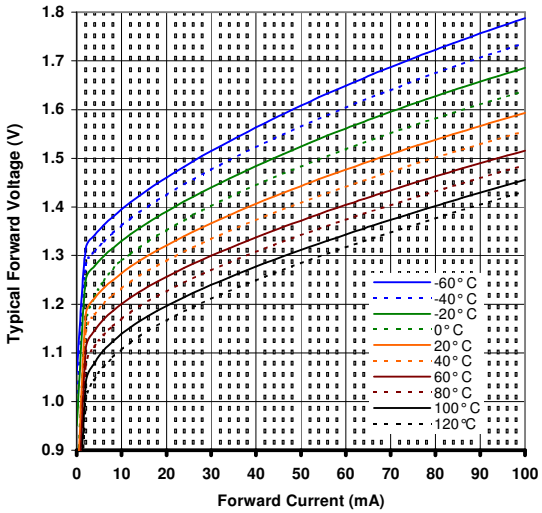
Electrical Characteristics (T_A = 25°C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
$E_{E\ (APT)}$	Apertured Radiant Incidence OP250 OP251	 0.45 0.2	 - -	 - -	mW/sr	I_F = 20 mA(3)
V_F	Forward Voltage	-	-	1.60	V	I_F = 20 mA
I_R	Reverse Current	-	-	10	µA	V_R= 5.0 V
λ_P	Wavelength at Peak Emission	-	880	-	nm	I_F = 20 mA
θ_{HP}	Emission Angle at Half Power Points OP250 OP251	 - -	 160 90	 - -	Degree	I_F = 20 mA
t_r	Output Rise Time	-	-	500	ns	$I_{F(PK)}$ = 100 mA, PW = 10 µs, and D.C. = 10.0%
t_f	Output Fall Time	-	-	500	ns	

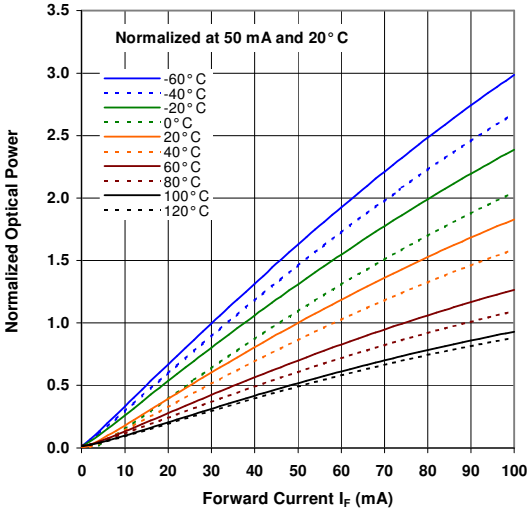
Notes:
1. Solder time less than 5 seconds at temperature extreme.
2. Derate linearly at 2.17 mW/° C above 25° C.
3. $E_{E(APT)}$ is a measurement of the apertured radiant incidence upon a sensing area 0.081" (2.06 mm) in diameter, perpendicular to and centered on the mechanical axis of the lens and 0.590" (14.99 mm) from the measurement surface. $E_{E(APT)}$ is not necessarily uniform within the measured area.

OP250, OP251

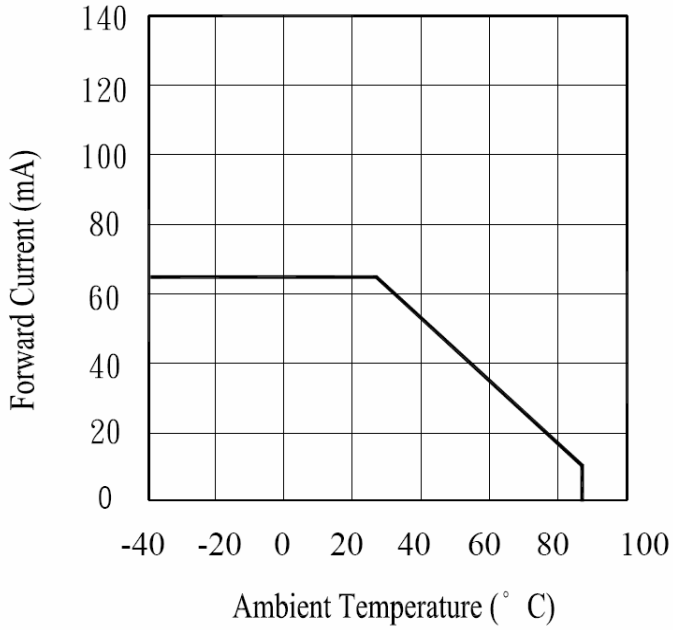
Forward Voltage vs Forward Current vs Temperature



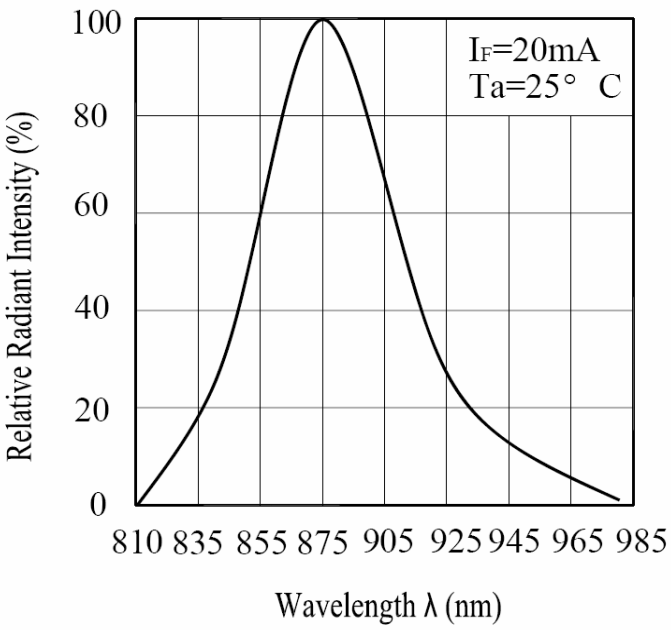
Optical Power vs I_F vs Temperature



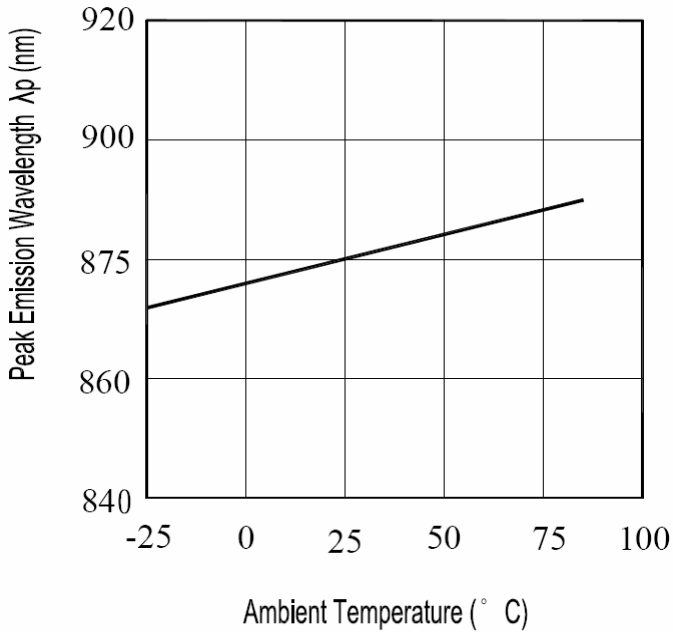
Forward Current vs. Ambient Temperature



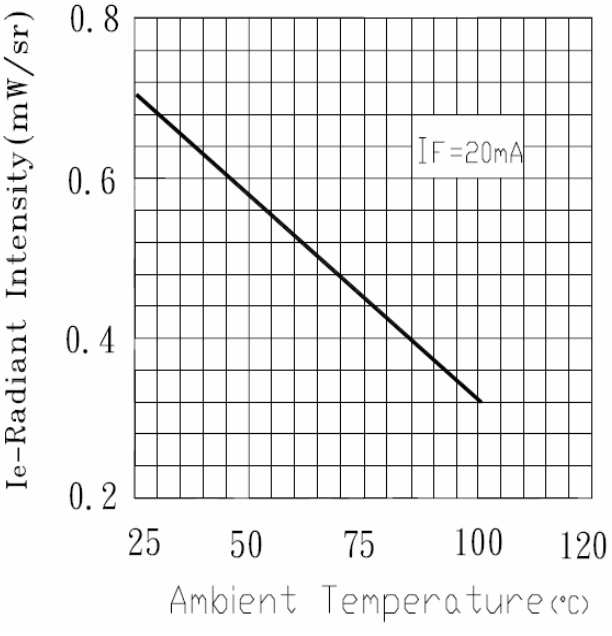
Spectral Distribution



Peak Emission Wavelength vs. Ambient Temperature



Relative Intensity vs. Ambient Temperature



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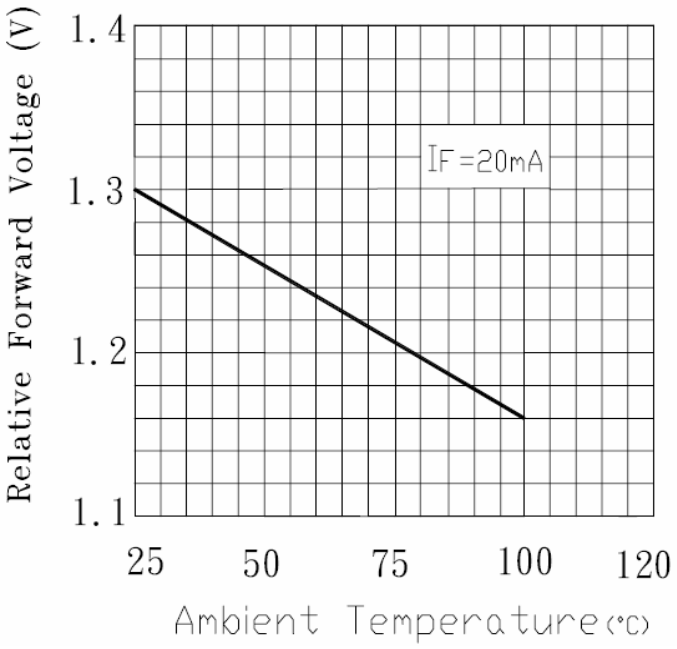
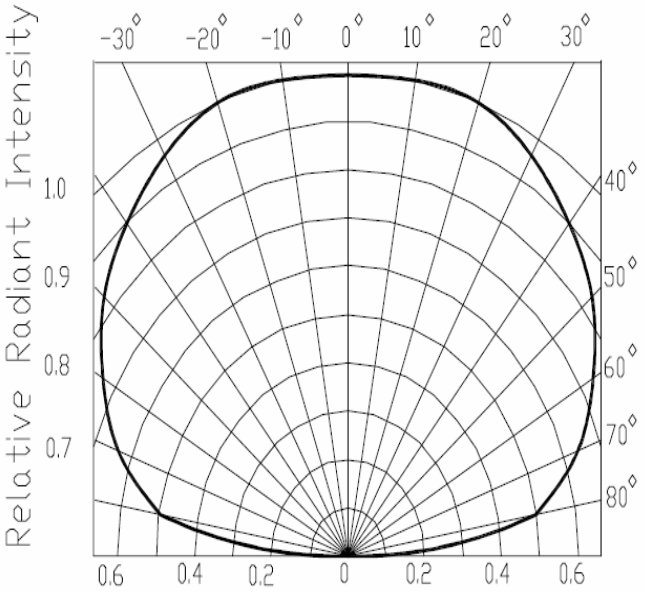
Forward Current
vs. Ambient Temperature



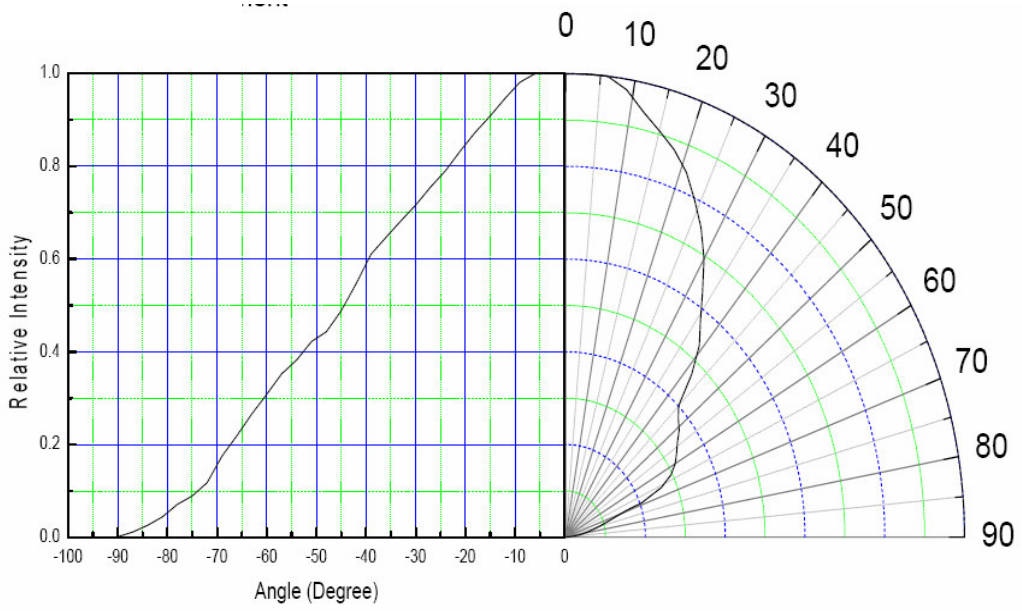
OP250

Relative Radiant Intensity
vs. Angular Displacement



OP251

Relative Radiant Intensity
vs. Angular Displacement



Issue	Change Description	Approval	Date
1.0	Initial Release (Preliminary)	G. Cawley	1/20/05
1.1	Initial Release	G. Cawley	7/15/05
A	Taken from PDF Catalog: OP200 (Issue 1.1, dated 07/05), OP250 (Issue1.1, dated 07/05), OP251 (Issue 1.1, dated 07/05). Added INF226 charts.	Trevor Schelp	05/25/06
A.1	Put 1st and 2nd graphs on page 3 and removed 3rd and 4th graphs. Changed Forward Voltage to 20 mA on Electrical Characteristics table on page 2. Changed wording in Description on page 1.	Trevor Schelp	06/15/06
A.2	Added 6 more graphs to pages 4 and 5. (Add more description)	Chima Ehiem	10/24/07

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