Apéndice 1: Hojas de especificaciones

Diodo emisor de luz Everlight modelo R333C/H0/L10.

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Units
Continuous Forward Current	I_F	100	mA
Peak Forward Current	I_{FP}	1.0	A
Reverse Voltage	V_R	5	V
Operating Temperature	T_{opr}	-40 ~ +85	℃
Storage Temperature	T_{stg}	-40 ~ +85	℃
Soldering Temperature	T_{sol}	260	℃
Power Dissipation at(or below) 25℃Free Air Temperature	P_d	150	mW

Notes: *1:I_{FP} Conditions--Pulse Width≦100 μs and Duty≦1%.

*2:Soldering time≦5 seconds.

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Radiant Intensity	Ee	I_F=20mA	7.8	10	--	mW/sr
		I_F=100mA Pulse Width≦100 μs ,Duty≦1%	--	45	--	
		I_F=1A Pulse Width≦100 μs ,Duty≦1%.	--	450	--	
Peak Wavelength	λp	I_F=20mA	--	940	--	nm
Spectral Bandwidth	$\Delta\lambda$	I_F=20mA	--	45	--	nm
Forward Voltage	V_F	I_F=20mA		1.2	1.5	V
		I_F=100mA Pulse Width≦100 μs ,Duty≦1%	--	1.4	1.8	
		I_F=1A Pulse Width≦100 μs ,Duty≦1%.	--	2.6	4.0	
Reverse Current	I_R	V_R=5V	--	--	10	μA
View Angle	2θ1/2	I_F=20mA	--	40	--	deg

Typical Electro-Optical Characteristics Curves

Fig.5 Relative Intensity vs. Forward Current

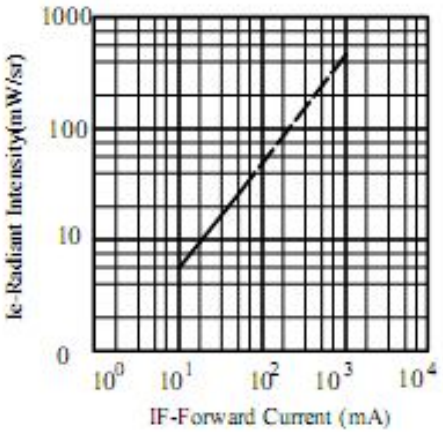


Fig.6 Relative Radiant Intensity vs. Angular Displacement

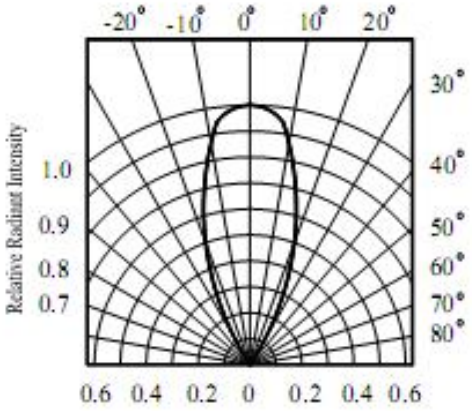


Fig.7 Relative Intensity vs. Ambient Temperature(°C)

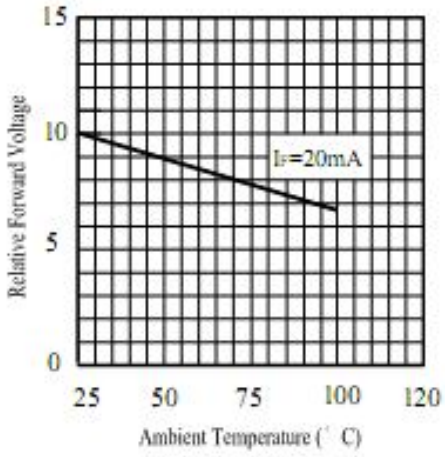
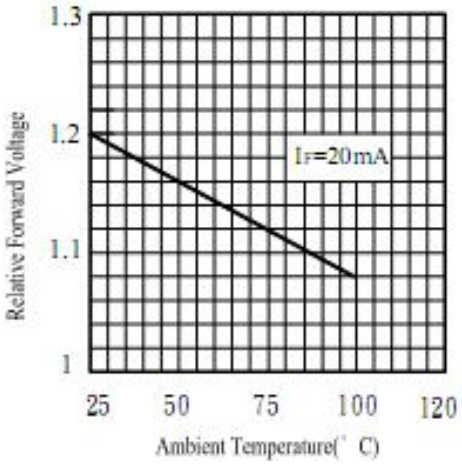
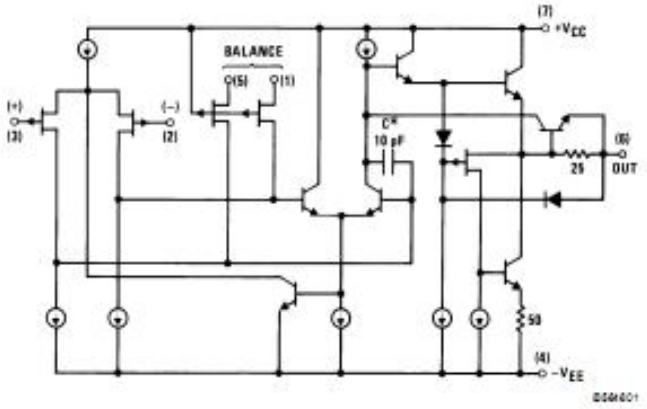


Fig.8 Forward Voltage vs. Ambient Temperature(°C)



Amplificador Operacional LF356.

Simplified Schematic



*3pF in LF357 series

Absolute Maximum Ratings (Note 1)

If Military/Aerospace specified devices are required, contact the National Semiconductor Sales Office/Distributors fo availability and specifications.

	LF155/6	LF256/7/LF356B	LF355/6/7
Supply Voltage	±22V	±22V	±18V
Differential Input Voltage	±40V	±40V	±30V
Input Voltage Range (Note 2)	±20V	±20V	±16V
Output Short Circuit Duration	Continuous	Continuous	Continuous
T_{JMAX}			
H-Package	150°C	115°C	115°C
N-Package		100°C	100°C
M-Package		100°C	100°C
Power Dissipation at T_A = 25°C (Notes 1, 8)			
H-Package (Still Air)	560 mW	400 mW	400 mW
H-Package (400 LF/Min Air Flow)	1200 mW	1000 mW	1000 mW
N-Package		670 mW	670 mW
M-Package		380 mW	380 mW
Thermal Resistance (Typical) θ_{JA}			
H-Package (Still Air)	160°C/W	160°C/W	160°C/W
H-Package (400 LF/Min Air Flow)	65°C/W	65°C/W	65°C/W
N-Package		130°C/W	130°C/W
M-Package		195°C/W	195°C/W
(Typical) θ_{JC}			
H-Package	23°C/W	23°C/W	23°C/W
Storage Temperature Range	−65°C to +150°C	−65°C to +150°C	−65°C to +150°C
Soldering Information (Lead Temp.)			
Metal Can Package			
Soldering (10 sec.)	300°C	300°C	300°C
Dual-In-Line Package			
Soldering (10 sec.)	260°C	260°C	260°C
Small Outline Package			
Vapor Phase (60 sec.)		215°C	215°C
Infrared (15 sec.)		220°C	220°C
See AN-450 "Surface Mounting Methods and Their Effect on Product Reliability" for other methods of soldering surface mount devices.			
ESD tolerance			
(100 pF discharged through 1.5kΩ)	1000V	1000V	1000V

DC Electrical Characteristics

(Note 3)

Symbol	Parameter	Conditions	LF155/6			LF256/7 LF356B			LF355/6/7			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OS}	Input Offset Voltage	R_S=50Ω, T_A=25°C		3	5		3	5		3	10	mV
		Over Temperature			7			6.5			13	mV
$\Delta V_{OS}/\Delta T$	Average TC of Input Offset Voltage	R_S=50Ω		5			5			5		µV/°C
$\Delta TC/\Delta V_{OS}$	Change in Average TC with V_{OS} Adjust	R_S=50Ω, (Note 4)		0.5			0.5			0.5		µV/°C per mV
I_{OS}	Input Offset Current	T_J=25°C, (Notes 3, 5)		3	20		3	20		3	50	pA
		$T_J \leq T_{HIGH}$			20			1			2	nA

DC Electrical Characteristics (Continued)

(Note 3)

Symbol	Parameter	Conditions	LF155/6			LF256/7 LF356B			LF355/6/7			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I_B	Input Bias Current	T_J=25°C, (Notes 3, 5)		30	100		30	100		30	200	pA
		$T_J \leq T_{HIGH}$			50			5			8	nA
R_{IN}	Input Resistance	T_J=25°C		10^{12}			10^{12}			10^{12}		Ω
A_{VOL}	Large Signal Voltage Gain	V_S=±15V, T_A=25°C	50	200		50	200		25	200		V/mV
		V_O=±10V, R_L=2k										
		Over Temperature	25			25			15			V/mV
V_O	Output Voltage Swing	V_S=±15V, R_L=10k	±12	±13		±12	±13		±12	±13		V
		V_S=±15V, R_L=2k	±10	±12		±10	±12		±10	±12		V
V_{CM}	Input Common-Mode Voltage Range	V_S=±15V	±11	+15.1 −12		±11	±15.1 −12		+10	+15.1 −12		V V
CMRR	Common-Mode Rejection Ratio		85	100		85	100		80	100		dB
PSRR	Supply Voltage Rejection Ratio	(Note 6)	85	100		85	100		80	100		dB

DC Electrical Characteristics

$T_A = T_J = 25°C$, $V_S = ±15V$

Parameter	LF155		LF355		LF156/256/257/356B		LF356		LF357		Units
	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	
Supply Current	2	4	2	4	5	7	5	10	5	10	mA

AC Electrical Characteristics

$T_A = T_J = 25°C$, $V_S = ±15V$

Symbol	Parameter	Conditions	LF155/355	LF156/256/356B	LF156/256/356/LF356B	LF257/357	Units
			Typ	Min	Typ	Typ	
SR	Slew Rate	LF155/6: A_V=1,	5	7.5	12		V/µs
		LF357: A_V=5				50	V/µs
GBW	Gain Bandwidth Product		2.5		5	20	MHz
t_s	Settling Time to 0.01%	(Note 7)	4		1.5	1.5	µs
e_n	Equivalent Input Noise Voltage	R_S=100Ω					
		f=100 Hz	25		15	15	$nV/\sqrt{Hz}$
		f=1000 Hz	20		12	12	$nV/\sqrt{Hz}$
i_n	Equivalent Input Current Noise	f=100 Hz	0.01		0.01	0.01	$pA/\sqrt{Hz}$
		f=1000 Hz	0.01		0.01	0.01	$pA/\sqrt{Hz}$
C_{IN}	Input Capacitance		3		3	3	pF