GL9□156/ GL8□156 Series

14 12mm Character Height Numeric LEDs

■ Model No.

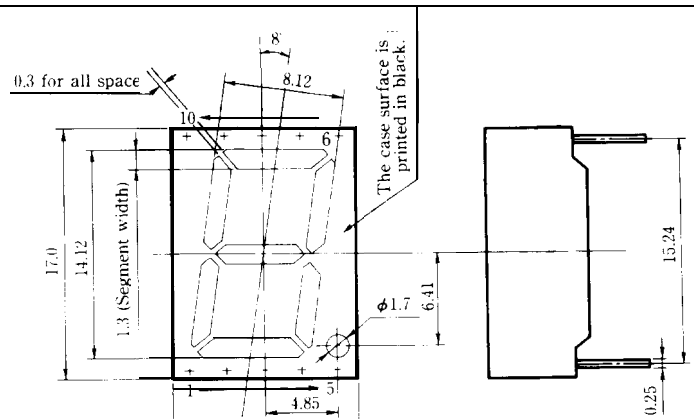
GL9L156/GL8L156	Red (High-luminosity)	GaAlAs/GaAs
GL9T156/GL8T156	Red (High-luminosity)	GaAlAs/GaAs
GL9P156/GL8P156	Red	GaP
GL9D156/GL8D156	Red	GaAsP/GaP
GL9S156/GL8S156	Sunset orange	GaAsP/GaP
GL9H156/GL8H156	Yellow	GaAsP/GaP
GL9E156/GL8E156	Yellow-green	GaP
GL9K156/GL8K156	Green	GaP

■ Features

1. Character height 4.12mm
2. 1 digit
3. Case mold type
4. Small package
5. Diamond cut type segments

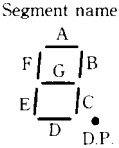
■ Outline Dimensions

(Unit: mm)



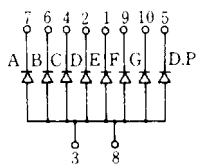
※GL9L156/GL8L156, GL9T156/GL8T156, GL9D156/GL8D156: gray

Segment name

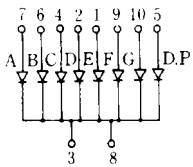


Internal connection diagram

GL9 156



GL8 156



Unspecified tolerance ±0.38mm

GL9□156 / GL8□156

■ Absolute Maximum Ratings

(Ta = 25℃)

Parameter			Symbol	GL9L156 GL8L156 GL9T156 GL8T156	GL9P156 GL8P156	GL9D156 GL8D156	GL9S156 GL8S156 GL9H156 GL8H156	GL9E156 GL8E156 GL9K156 GL8K156	Unit
Power dissipation	※1 Per digit		P	**308**	**263**	**322**	**350**	**263**	mW
Continuous forward current	※1 Per digit		IF	140	105	140	140	105	mA
	※2		IF	20	15	20	20	15	mA
※3 Peak forward current	※2		IFM	100	50	50	50	50	mA
Derating factor	※2	DC	·	0.36	0.27	0.36	0.36	0.27	mA/℃
		Pulse	–	1.82	0.91	0.91	0.91	0.91	mA/℃
Reverse voltage	Per segment		VR	5	5	5	5	5	v
	Per decimal point		VR	5	5	5	5	5	v
Operating temperature			Topr	–30 to +70					“c
Storage temperature			Tstg	–40 to +80					℃
※4 Soldering temperature			Tsol	260 (within 5 seconds)					“c

※1 Per digit: 7 segments
※2 Per segment, or per decimal point
※3 Duty ratio = 1/10, Pulse width = 0.1ms
※4 At the position of 2,6 mm from Ⓐ level of outline dimensions

GL9L156/GL8L156(Red), GL9T156/GL8T156(Red)

■ Electro-optical Characteristics

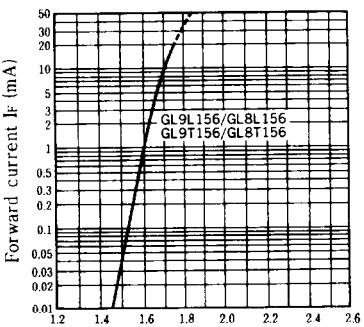
(Ta = 25℃)

Parameter		Symbol	Model No.	Conditions	MIN.	TYP.	MAX.	Unit
Forward voltage	Per segment	V_F	GL9L156/GL8L156	I_F = 10mA	–	1.7	2.2	V
			GL9T156/GL8T156	I_F = 10mA	–	1.7	2.2	
	I'er decimal point		GL9L156/GL8L156	I_F = 10mA	–	1.7	2.2	V
			GL9T156/GL8T156	I_F = 10mA	–	1.7	2.2	
※5 Luminous intensity	Per segment	I_V	GL9L156/GL8L156	I_F = 10mA	3.71	10.8	–	mcd
			GL9T156/GL8T156	I_F = 10mA	1.69	5.25	–	
	Per decimal point		GL9L156/GL8L156	I_F = 10mA	1.85	4.90	–	mcd
			GL9T156/GL8T156	I_F = 10mA	0.90	2.50	–	
※2 Peak emission wavelength		λ_p	GL9L156/GL8L156	I_F = 10mA		660		'm
			GL9T156/GL8T156	I_F = 10mA	–	660	–	
※2 Spectrum radiation bandwidth		$\Delta\lambda$	GL9L156/GL8L156	I_F = 10mA	–	20	–	nm
			GL9T156/GL8T156	I_F = 10mA	–	20	–	
Reverse current	Per segment	I_R	GL9L156/GL8L156	V_R = 4V	–	–	10	μA
			GL9T156/GL8T156	V_R = 4V	–	–	10	
	Per decimal point		GL9L156/GL8L156	V_R = 4V	–	–	10	μA
			GL9T156/GL8T156	V_R = 4V	–	–	10	
※2 Response frequency		f_c	GL9L156/GL8L156	–	–	8	–	MHz
			GL9T156/GL8T156		–	8	–	

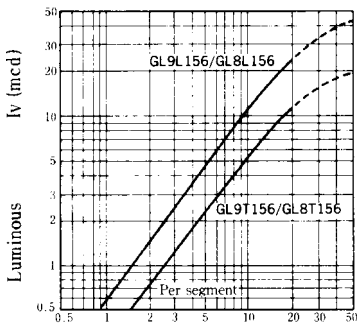
※2 Per segment, or per decimal point
※5 Tolerance: ±30%

■ Characteristics Diagrams

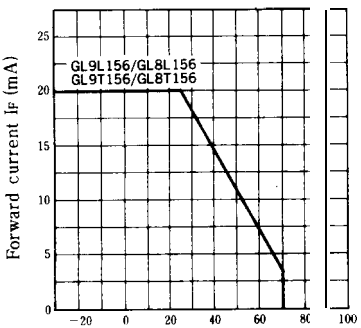
Forward Current vs. Forward Voltage (Ta = 25℃)



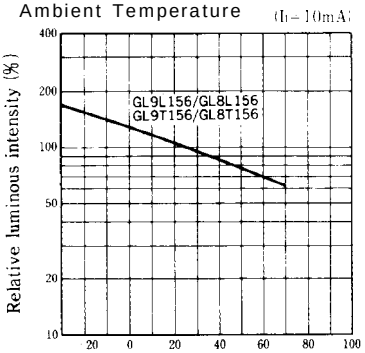
Luminous Intensity vs. Forward Current (Ta = 25℃)



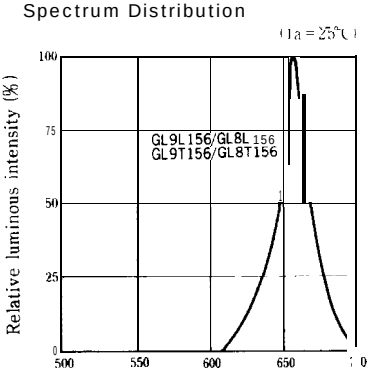
Forward Current Derating Curve



Relative Luminous Intensity vs. Ambient Temperature (IF = 10mA)



Spectrum Distribution (Ta = 25℃)



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GL9P156/GL8P156(Red), **GL9D156/GL8D156** (Red)

■ **Electro-optical** Characteristics

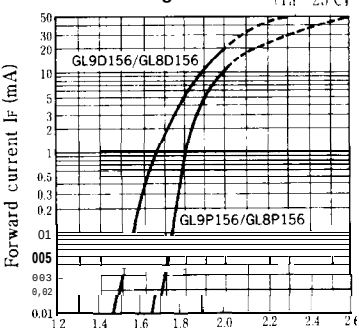
(Ta = 25℃)

Parameter		Symbol	Model No.	Conditions	MIN.	TYP.	MAX.	Unit
Forward voltage	Per segment	V_F	GL9P156/GL8P156	I_F = 5mA	–	1.9	2.5	V
			GL9D156/GL8D156	I_F = 10mA		1.85	2.3	
	Per decimal point		GL9P156/GL8P156	I_F = 5mA	–	1.9	2.5	V
			GL9D156/GL8D156	I_F = 10mA		1.85	2.3	
※5 Luminous intensity	Per segment	I_V	GL9P156/GL8P156	I_F = 5mA	0.3	1.0	–	mcd
			GL9D156/GL8D156	I_F = 10mA	1.0	4,0	--	
	Per decimal point		GL9P156/GL8P156	I_F = 5mA	0.1	0.3	–	mcd
			GL9D156/GL8D156	I_F = 10mA	0.3	1.2	–	
※2 Peak emission wavelength		λ_p	GL9P156/GL8P156	I_F = 5mA		695	–	‘m
			GL9D156/GL8D156	I_F = 10mA		635	–	
※2 Spectrum radiation bandwidth		$\Delta\lambda$	GL9P156/GL8P156	I_F = 5mA		100	–	‘m
			GL9D156/GL8D156	I_F = 10mA		35	–	
Reverse current	Per segment	I_R	GL9P156/GL8P156	V_R = 4V	–	–	10	μA
			GL9D156/GL8D156	V_R = 4V	–	–	10	
	Per decimal point		GL9P156/GL8P156	V_R = 4V			10	μA
			GL9D156/GL8D156	V_R = 4V	–	–	10	
※2 Response frequency		f_c	GL9P156/GL8P156	–		4		MHz
			GL9D156/GL8D156	-	–	4	-	

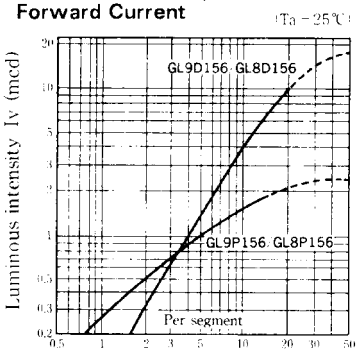
※2 Per **segment,** or per decimal point
※5 Tolerance: ±30%

■ Characteristics Diagrams

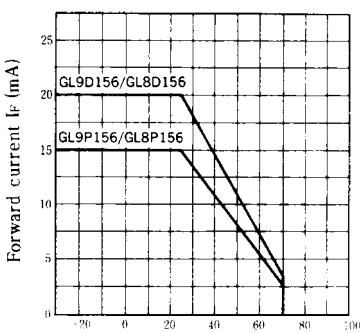
Forward Current vs. Forward Voltage



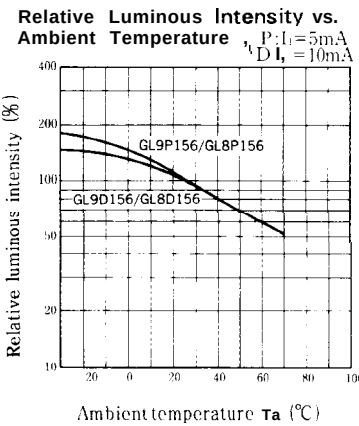
Luminous Intensity vs. Forward Current



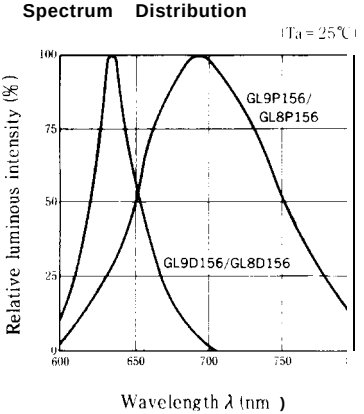
Forward Current Derating Curve



Relative Luminous Intensity vs. Ambient Temperature



Spectrum Distribution



GL9S156/GL8SI 56(Sunset orange) , GL9H156/GL8HI 56(Yellow)

■ Electro-optical Characteristics

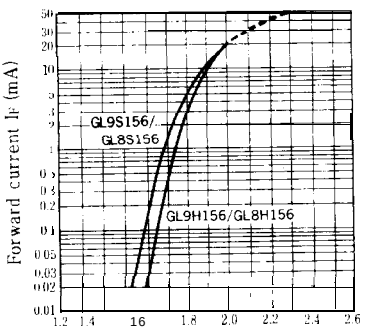
(Ta=25℃)

Parameter		Symbol	Model No.	Conditions	MIN.	TYP.	MAX.	Unit
Forward voltage	Per segment	V_F	GL9S156/GL8S156	I_F=10mA	–	1.9	2.5	V
			GL9H156/GL8H156	I_F=10mA	–	1.9	2.5	
	Per decimal point		GL9S156/GL8S156	I_F=10mA	–	1.9	2.5	
			GL9H156/GL8H156	I_F=10mA		1.9	2.5	
※5 Luminous intensity	Per segment	I_V	GL9S156/GL8S156	I_F=10mA	1.32	3.8	–	mcd
			GL9H156/GL8H156	I_F=10mA	1.32	4.5	–	
	Per decimal point		GL9S156/GL8S156	I_F=10mA	0.45	1.2	–	mcd
			GL9H156/GL8H156	I_F=10mA	0.60	1.8	–	
※2 Peak emission wavelength		λ_p	GL9S156/GL8S156	I_F=10mA	–	610	–	nm
			GL9H156/GL8H156	I_F=10mA	–	585	–	
※2 Spectrum radiation bandwidth		$\Delta\lambda$	GL9S156/GL8S156	I_F=10mA	–	35	–	‘m
			GL9H156/GL8H156	I_F=10mA		30	–	
Reverse current	Per segment	I_R	GL9S156/GL8S156	V_R=4V	–	–	10	μA
			GL9H156/GL8H156	V_R=4V			10	
	Per decimal point		GL9S156/GL8S156	V_R=4V	–		10	μA
			GL9H156/GL8H156	V_R=4V	–	–	10	
※2 Response frequency		f_c	GL9S156/GL8S156	–	–	4	–	MHz
			GL9H156/GL8H156	–	–	4	–	

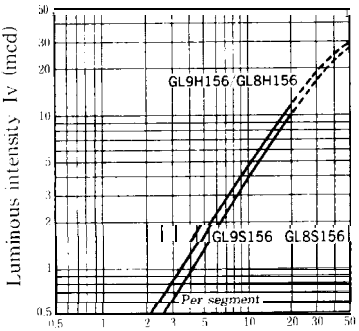
※2 Per segment, or per decimal point
※5 Tolerance: ±30%

■ Characteristics Diagrams

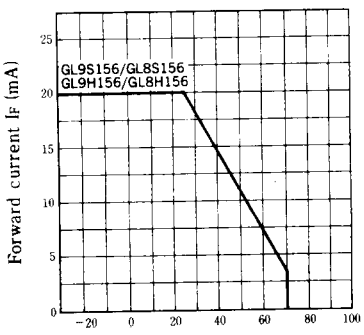
Forward Current vs. Forward Voltage (Ta=25℃)



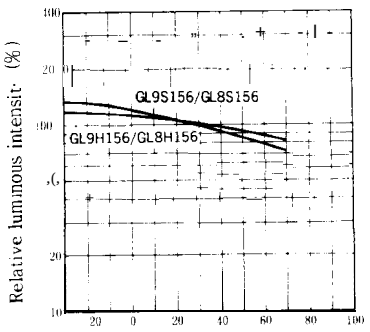
Luminous Intensity vs. Forward Current (Ta=25℃)



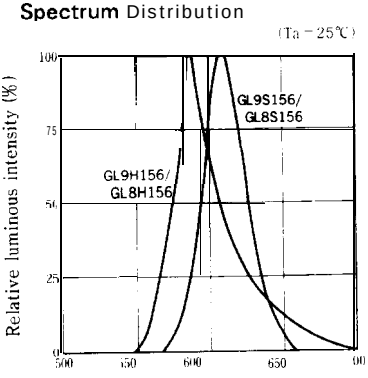
Forward Current Derating Curve



Relative Luminous Intensity vs. Ambient Temperature , I_F=10mA)



Spectrum Distribution (Ta=25℃)



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GL9E156/GL8E156(Yellow-green) ,GL9K156/GL8K156 (Green)

■ Electro-optical Characteristics

(Ta=25°C)

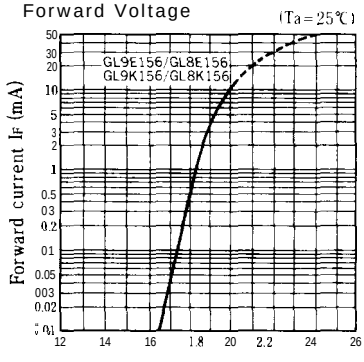
Parameter		Symbol	Model No.	Conditions	MIN.	TYP.	MAX.	Unit
Forward voltage	Per segment	V_F	GL9E156/GL8E156	I_F=10mA	–	2.0	2.5	V
			GL9K156/GL8K156	I_F=10mA	–	2.0	2.5	
	Per decimal point		GL9E156/GL8E156	I_F=10mA	–	2.0	2.5	V
			GL9K156/GL8K156	I_F=10mA	–	2.0	2.5	
※5 Luminous intensity	Per segment	I_V	GL9E156/GL8E156	I_F=10mA	1.0	3.0	–	mcd
			GL9K156/GL8K156	I_F=10mA	0.82	2.1		
	Per decimal point		GL9E156/GL8E156	IF=10mA	0.3	0.9	–	mcd
			GL9K156/GL8K156	I_F=10mA	0.35	0.9		
※2 Peak emission wavelength		λ_p	GL9E156/GL8E156	I_F=10mA		565	–	‘m
			GL9K156/GL8K156	I_F=10mA		555	–	
※2 Spectrum radiation bandwidth		$\Delta\lambda$	GL9E156/GL8E156	I_F=10mA	–	30	–	nm
			GL9K156/GL8K156	I_F=10mA		30	–	
Reverse current	Per segment	I_R	GL9E156/GL8E156	V_R=4V	–	–	10	μA
			GL9K156/GL8K156	V_R=4V	–	–	10	
	Per decimal point		GL9E156/GL8E156	V_R=4V	–	–	10	μA
			GL9K156/GL8K156	V_R=4V	–		10	
※2 Response frequency		f_c	GL9E156/GL8E156	–		4	–	MHz
			GL9K156/GL8K156	–	–	4	–	

※2 Per segment, or per decimal point

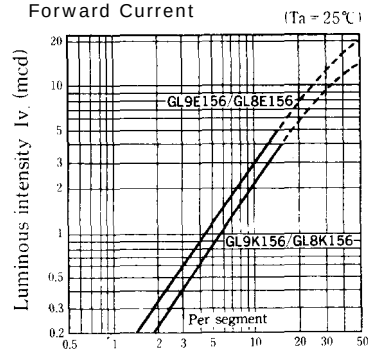
※5 Tolerance: ±30%

■ Characteristics Diagrams

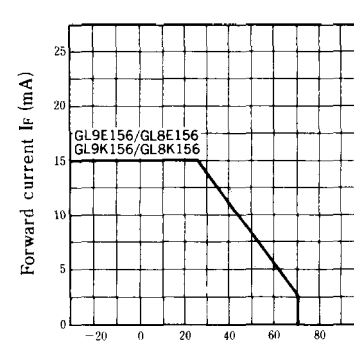
Forward Current vs. Forward Voltage



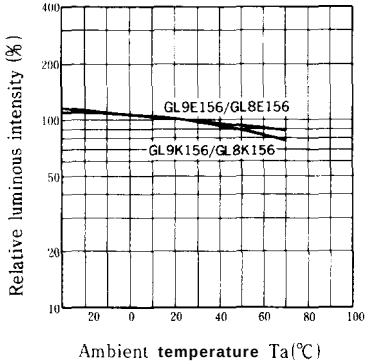
Luminous Intensity vs. Forward Current



Forward Current Derating Curve



Relative Luminous Intensity vs. Ambient Temperature (I_F=10mA)



Spectrum Distribution