



MU20 Series

Single Color / Light Bar Module

Features

Light emitting surface (Outer size)	5 x 9 mm (6 x 10 mm) (L x W)
Product features	• Single Color (Green, Yellow Green, Orange or Red) • Lead-free soldering compatible • RoHS compliant
Peak wavelength	Green : 555 nm Yellow Green : 570 nm Orange : 605 nm Red : 660 nm
Die materials	Green, Yellow Green : GaP Orange : GaAsP Red : GaAlAs
Soldering methods	TTW (Through The Wave) soldering and manual soldering
Soldering methods	More than 2kV(HBM)
Packing	Plastic bag

Recommended Applications

Electric Household Appliances, OA/FA, Other General Applications

Color and Luminous Intensity

Part No.	Material	Emitted Color	Resin Color	Luminous Intensity I _v (mcd)			Number of Chips
				MIN.	TYP.	I _F	
MU20-5101	GaP	Green	Green	2	4	20	1
MU20-5105	GaP		Milky White	2	4	20	1
MU20-4101	GaP	Yellow Green	Yellow	4	8	20	1
MU20-4105	GaP		Milky White	4	8	20	1
MU20-3101	GaAsP	Orange	Orange	3	6	20	1
MU20-3105	GaAsP		Milky White	3	6	20	1
MU20-2101	GaAlAs	Red	Red	4	8	20	1
MU20-2105	GaAlAs		Milky White	4	8	20	1

Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Absolute Maximum Ratings								Unit
		5101	5105	4101	4105	3101	3105	2101	2105	
Power Dissipation	P _d	62.5		75		62.5		60		mW
Forward Current	I _F	25		30		25		30		mA
Pulse Forward Current ※1	I _{FRM}	60		60		60		60		mA
Derating (Ta=25°C or higher)	Δ I _F	0.33		0.40		0.33		0.40		mA/°C
	Δ I _{FRM}	0.80		0.80		0.80		0.80		mA/°C
Reverse Voltage	V _R	4		4		4		4		V
Operating Temperature	T _{opr}	-40~+85								°C
Storage Temperature	T _{stg}	-40~+85								°C

※1 I_{FRM} Measurement condition : Pulse Width ≤ 2ms, Duty ≤ 1/5

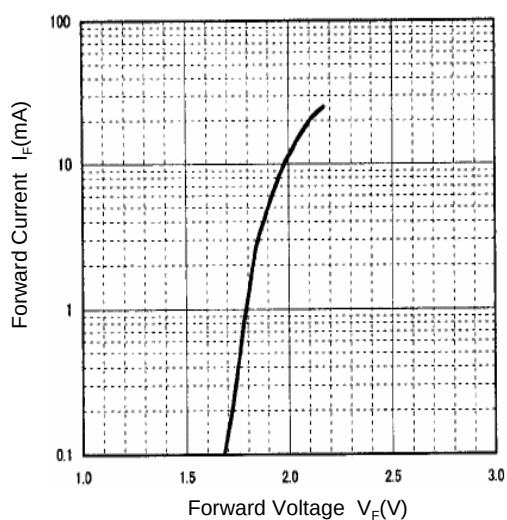
Electro-Optical Characteristics

(Ta=25°C)

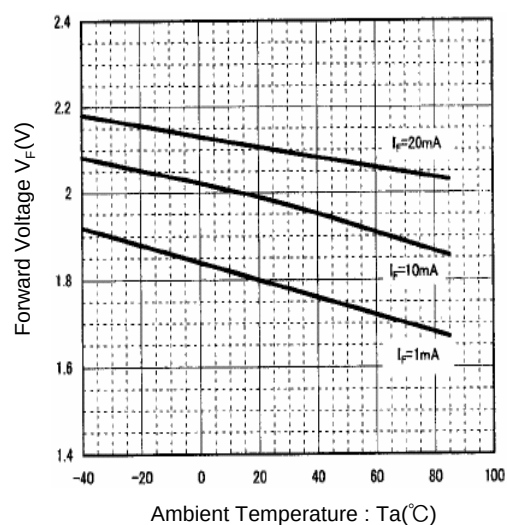
Item	Conditions	Symbol		Characteristics								Unit
				5101	5105	4101	4105	3101	3105	2101	2105	
Forward Voltage	I _F =20mA	V _F	TYP.	2.2		2.1		2.2		1.7		V
			MAX.	2.5		2.5		2.5		2.0		
Reverse Current	V _R =4V	I _R	MAX.	100		100		100		100		μ A
Peak Wavelength	I _F =20mA	λ _p	TYP.	555		570		605		660		nm
Spectral Line Half Width	I _F =20mA	Δ λ	TYP.	30		30		30		30		nm

Technical Data(5101/5105)

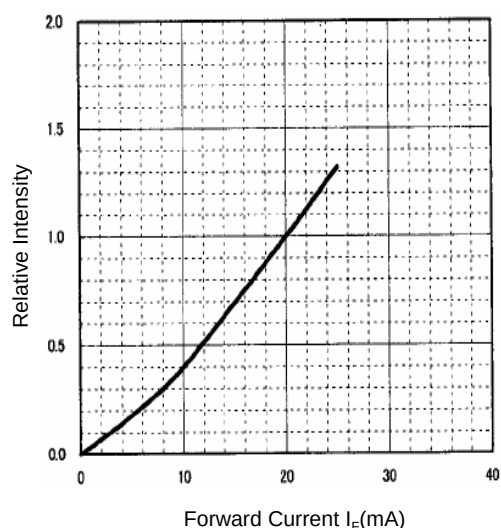
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



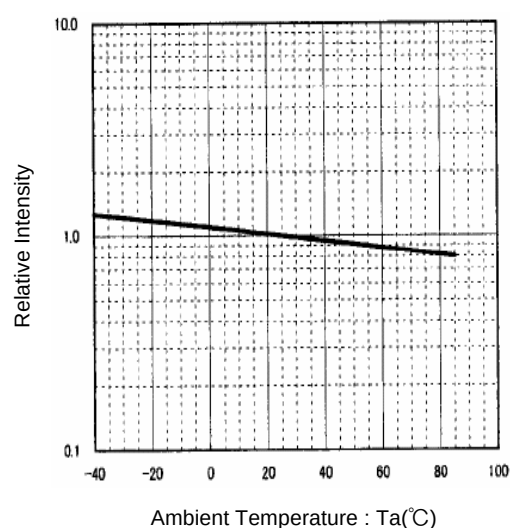
Ambient Temperature vs. Forward Voltage



Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



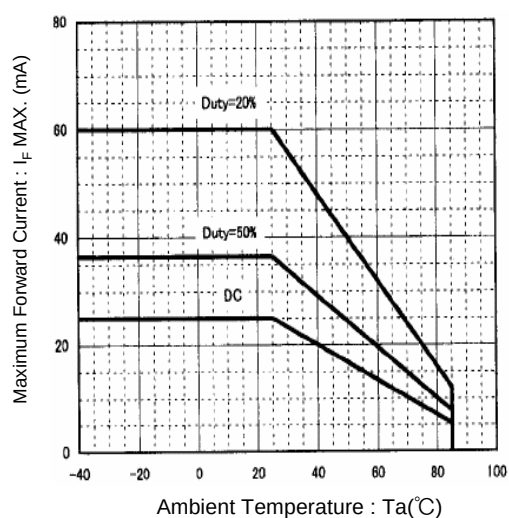
Ambient Temperature vs. Relative Intensity
Condition : $I_F = 20\text{mA}$



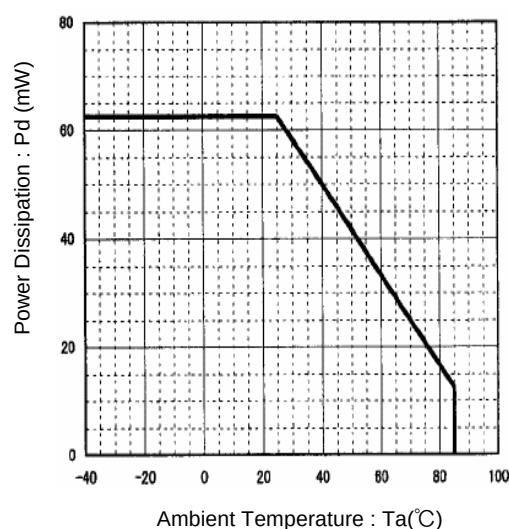
Technical Data(5101/5105)

Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 100\text{Hz}$

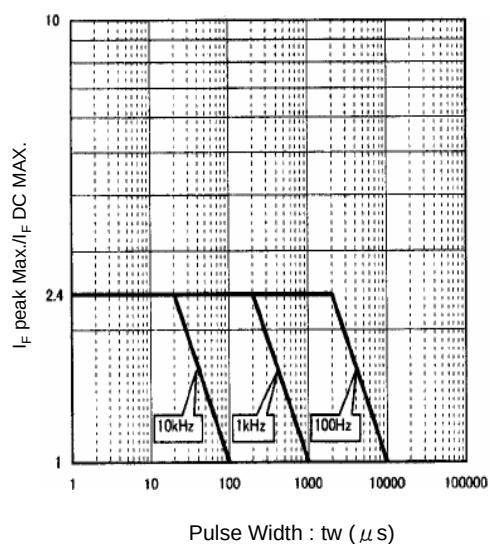


Power Dissipation vs. Ambient Temperature



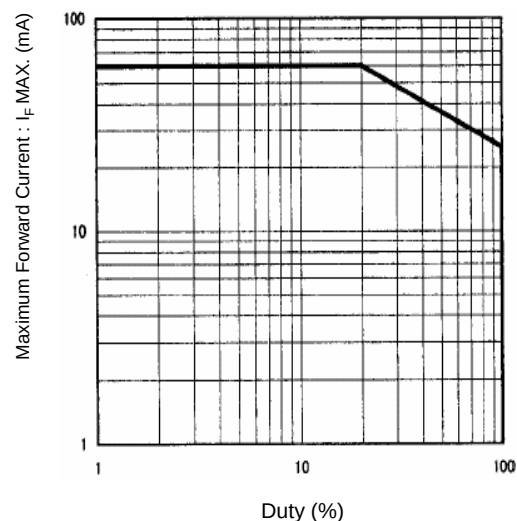
Pulse Width vs. Maximum Tolerable Peak Current

Condition : $T_a = 25^\circ\text{C}$



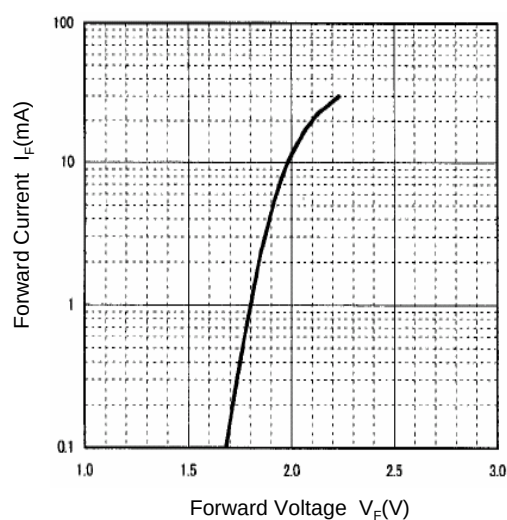
Dynamic Drive Rating

Duty cycle vs. Maximum Forward Current
Condition : $T_a = 25^\circ\text{C}$

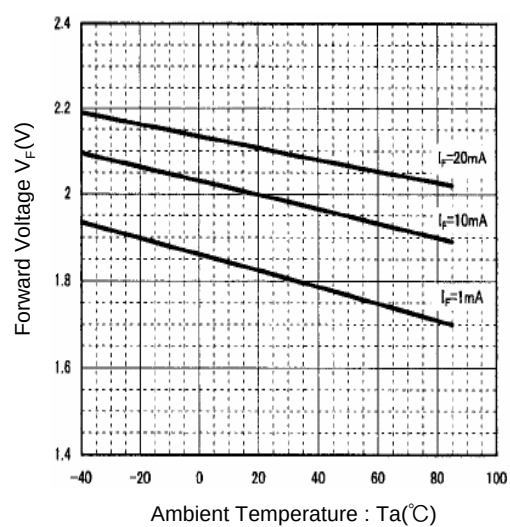


Technical Data(4101/4105)

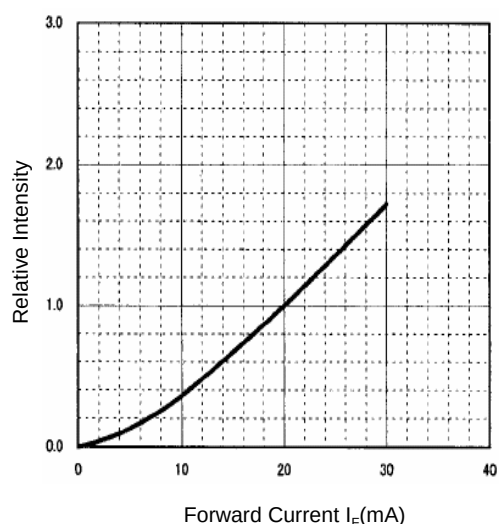
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



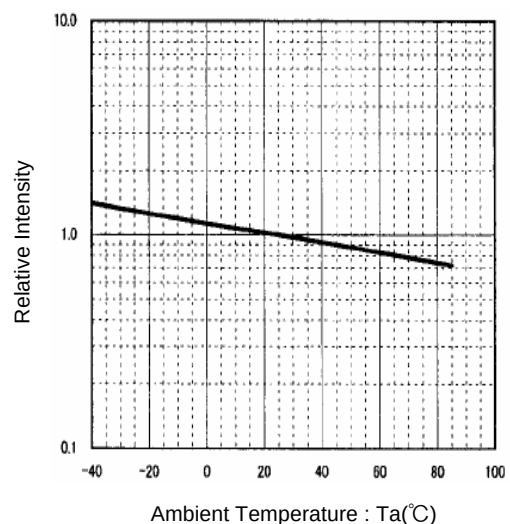
Ambient Temperature vs. Forward Voltage



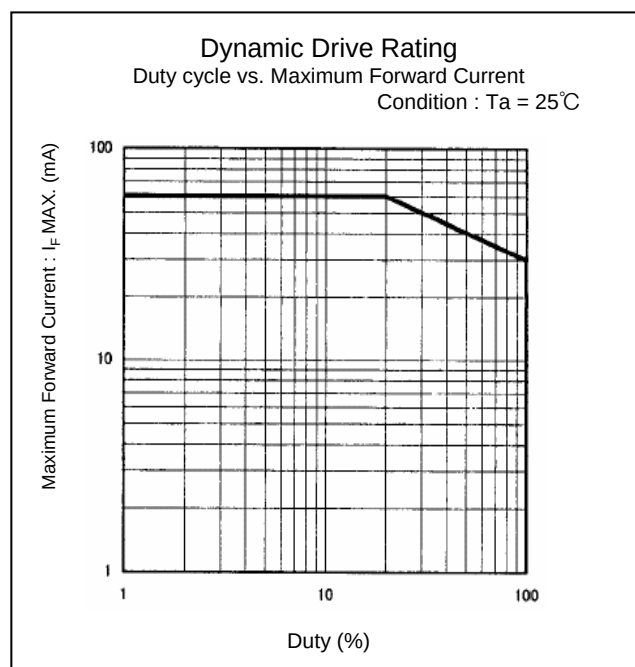
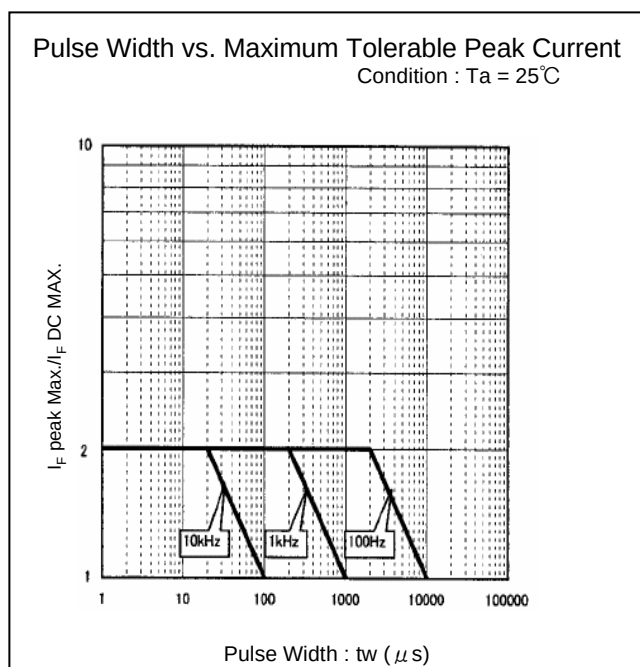
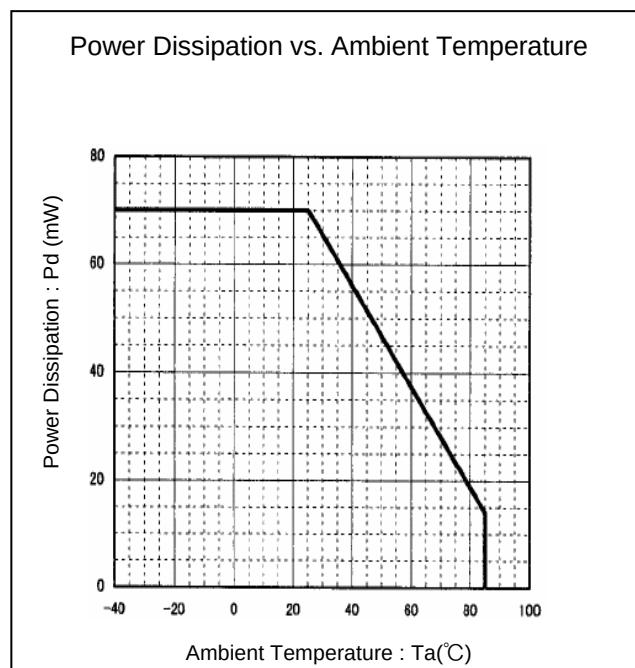
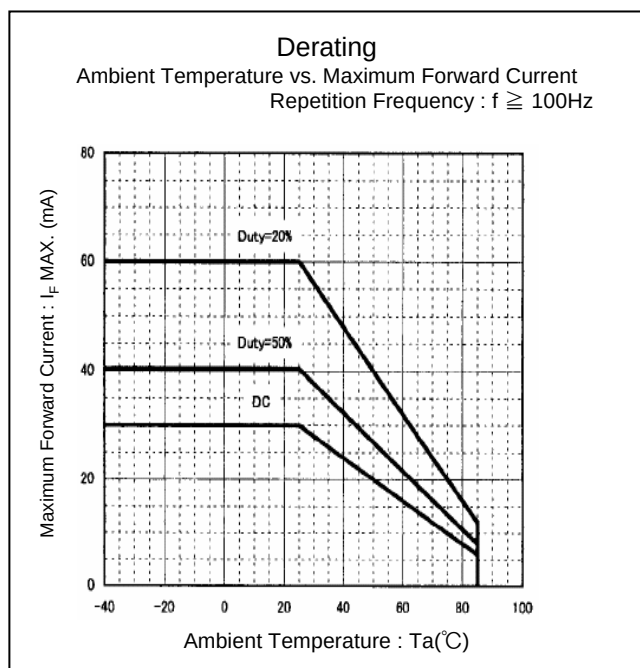
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Ambient Temperature vs. Relative Intensity
Condition : $I_F = 20\text{mA}$

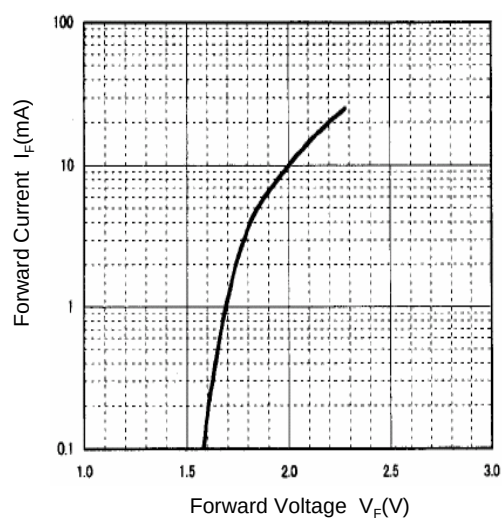


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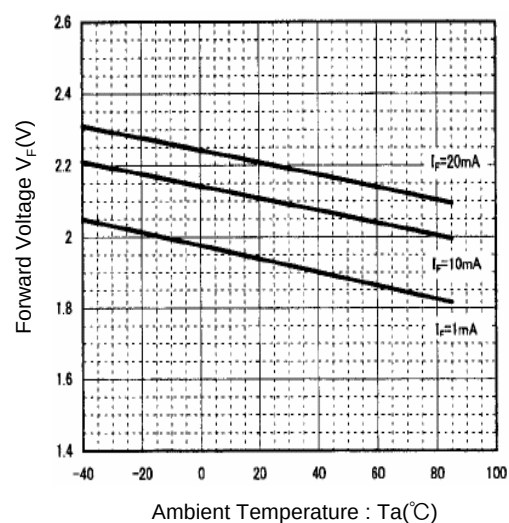


Technical Data(3101/3105)

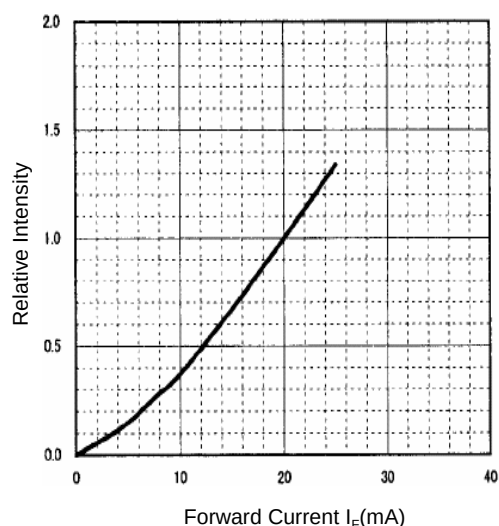
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



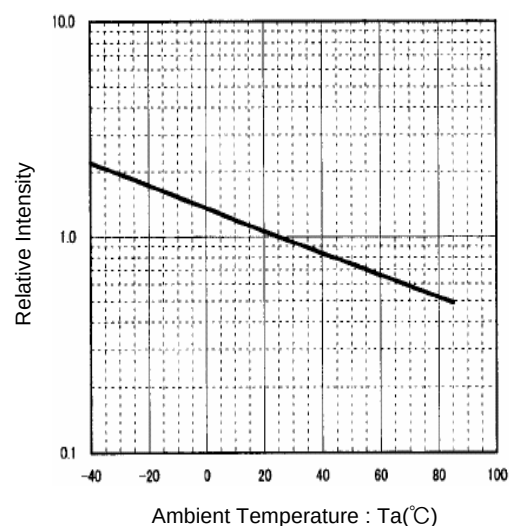
Ambient Temperature vs. Forward Voltage



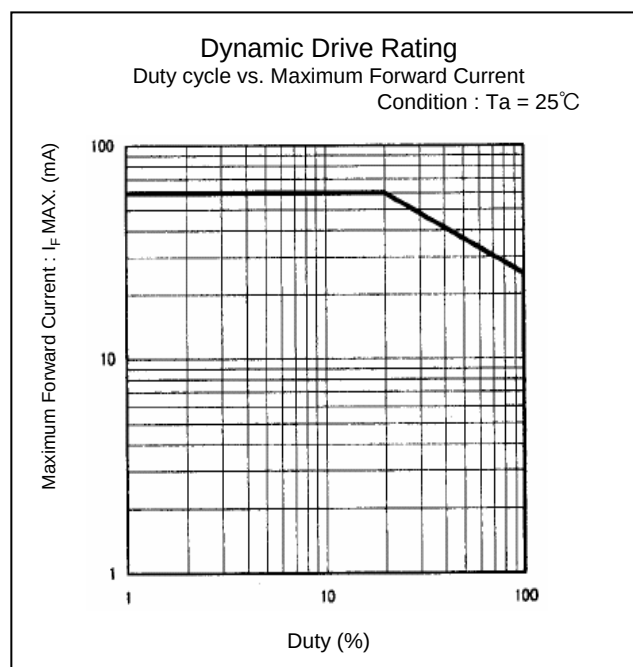
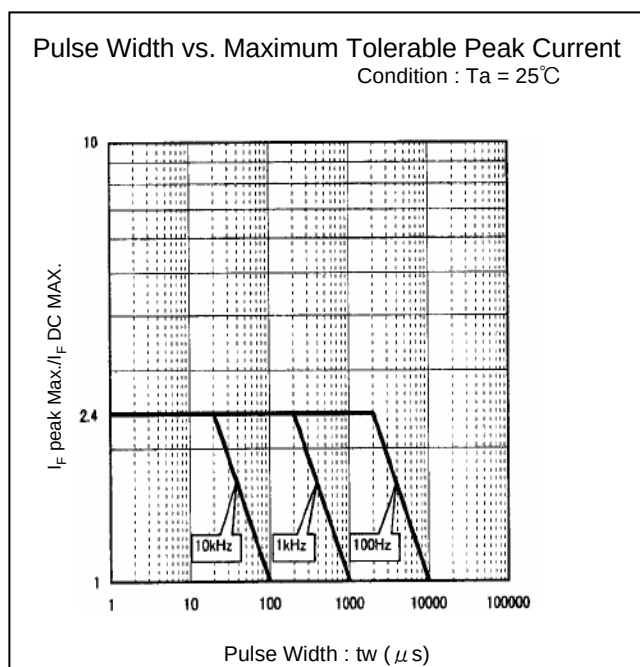
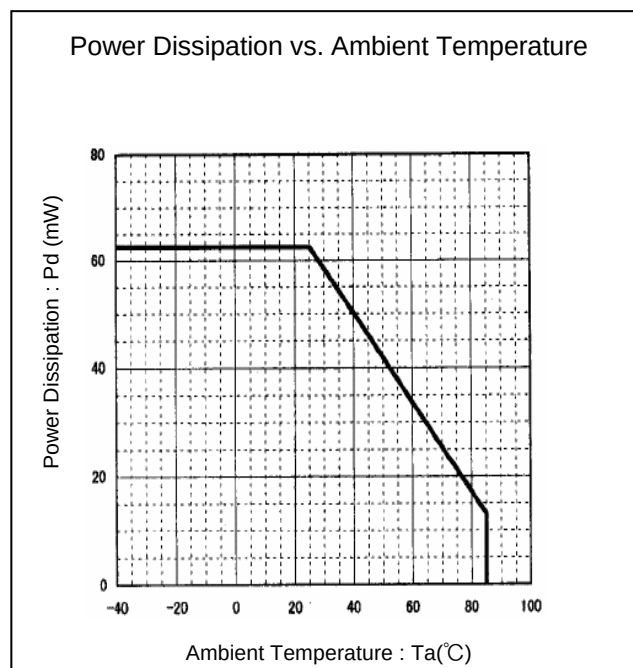
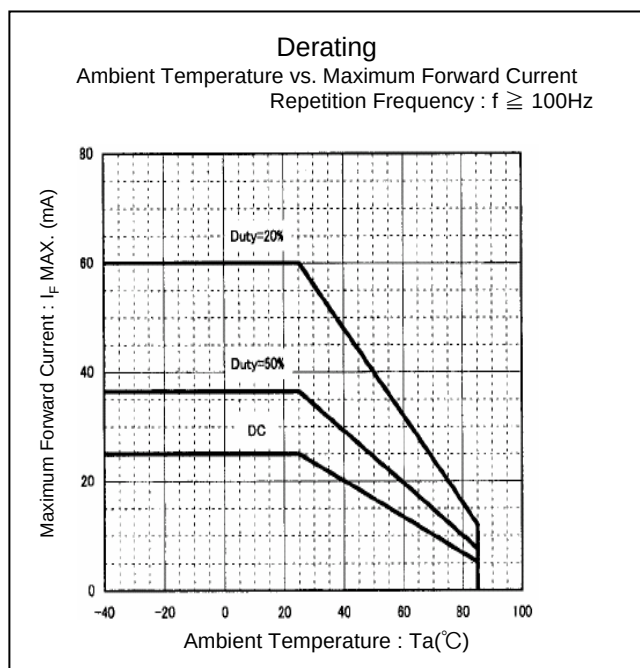
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Ambient Temperature vs. Relative Intensity
Condition : $I_F = 20\text{mA}$

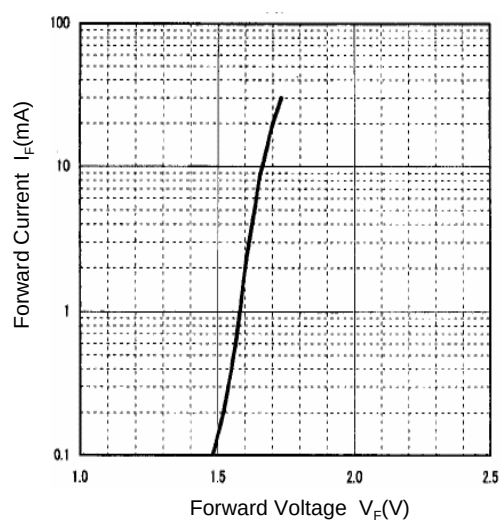


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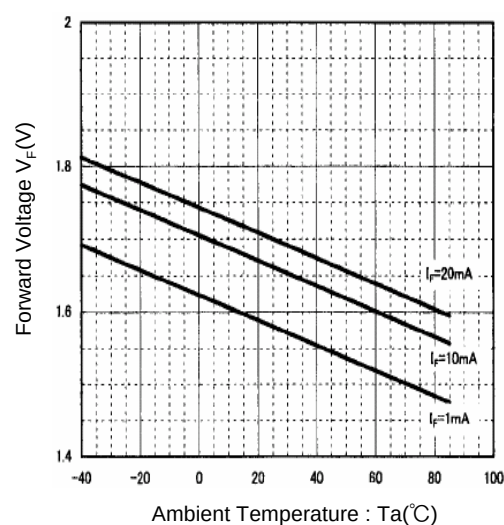


Technical Data(2101/2105)

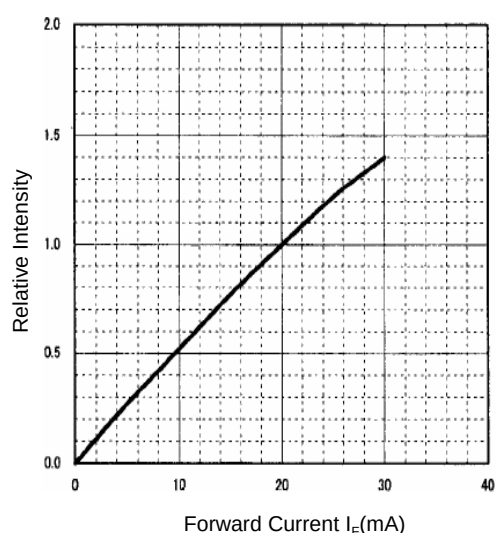
Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



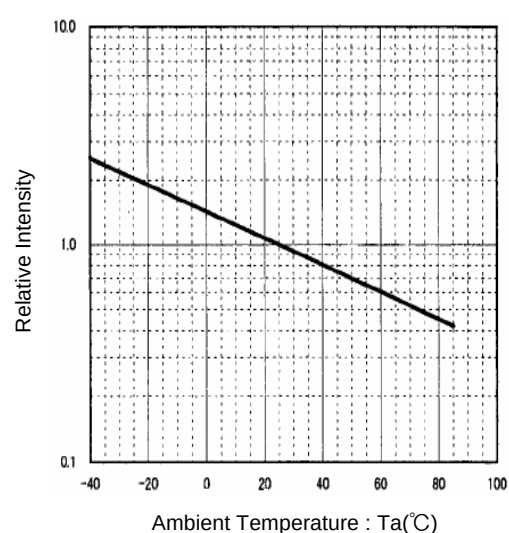
Ambient Temperature vs. Forward Voltage



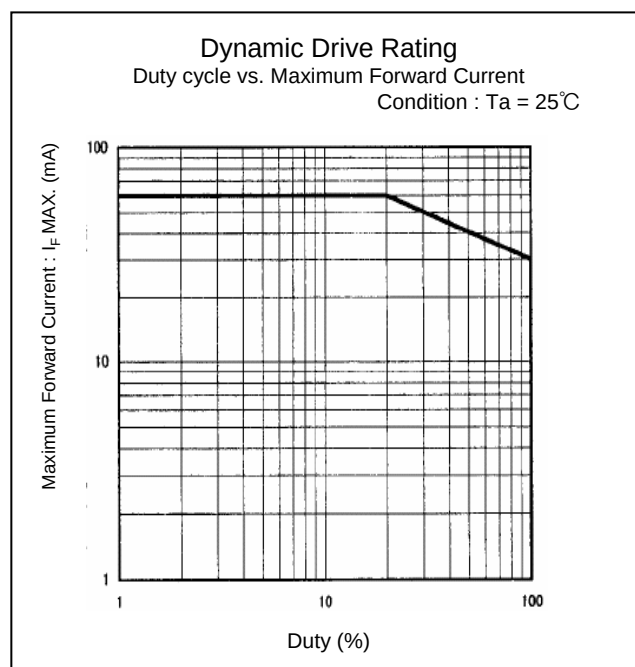
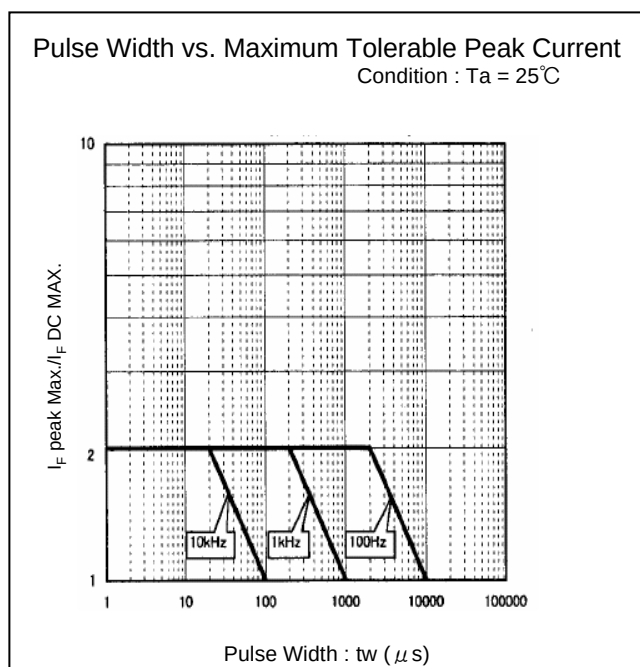
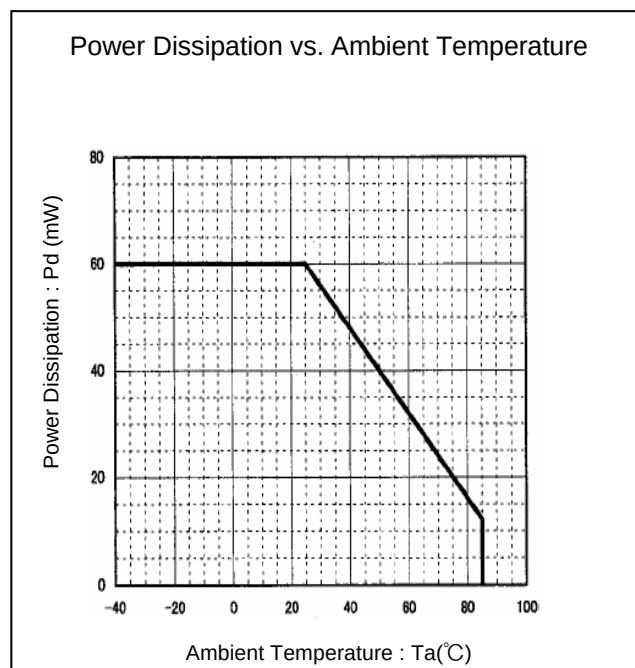
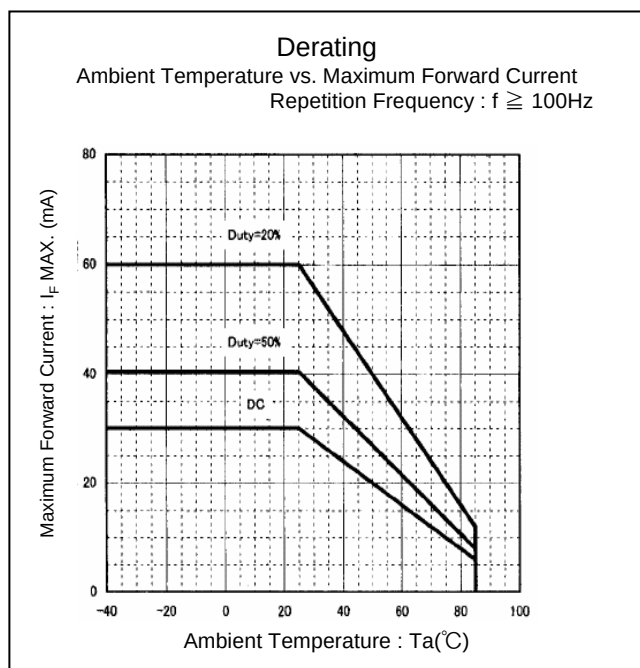
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Ambient Temperature vs. Relative Intensity
Condition : $I_F = 20\text{mA}$



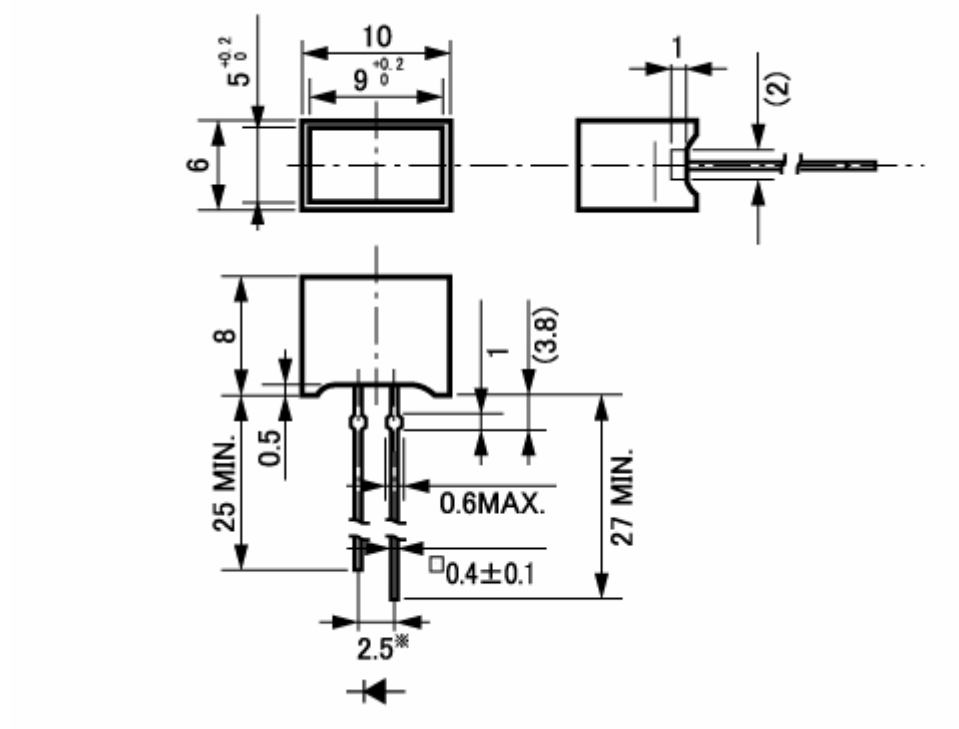
Technical Data(2101/2105)



Package Dimensions

(Unit: mm)

(Tolerance : ± 0.25 mm)



● ※ mark : The measure of lead root

TTW (Through The Wave) soldering Conditions

Pre-heating	100 °C 60 s	(MAX.) Resin surface temperature (MAX.)
Solder Bath Temp.	265 °C	(MAX.)
Dipping Time	5 s	(MAX.)
Position	At least 3.0 mm away from the root of lead	

- 1) The dip soldering process shall be 2 times maximum.
- 2) The product shall be cooled to normal temperature before the second dipping process.

Manual Soldering Conditions

Iron tip temp.	400 °C	(MAX.) (30 W Max.)
Soldering time and frequency	3 s 2 times	(MAX.) (MAX.)
Position	At least 3.0 mm away from the root of lead	

Reliability Testing Result

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	BAJED-4701/100(101)	Ta = 25°C, If = Maximum Rated Current	1,000 h	0/10
Resistance to Soldering Heat	BAJED-4701/300(302)	260±5°C, 3mm from package base	10s	0/10
Temperature Cycling	BAJED-4701/100(105)	Minimum Rated Storage Temperature(30min) ~ Normal Temperature(15min) ~ Maximum Rated Storage Temperature(30min) ~ Normal Temperature(15min)	5 cycles	0/10
Wet High Temp. Storage Life	BAJED-4701/100(103)	Ta = 60±2°C, RH = 90±5%	1,000 h	0/10
High Temp. Storage Life	BAJED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/10
Low Temp. Storage Life	BAJED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/10
Lead Tension	BAJED-4701/400(401)	5N, 1time	10s	0/10
Vibration, Variable Frequency	BAJED-4701/400(403)	98.1m/s ² (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction	2 h	0/10
Lead Bend	BAJED-4701/400(401)	2.5N, 0°↔90°	Twice	0/10
Shock	JSC 7201 A-8	It falls on wood engraving from height of 75cm.	3 times	0/10

Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	Iv	If=20mA	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	V _F	If=20mA	Testing Max. Value ≥ Spec. Max. Value x 1.2
Reverse Current	I _R	V _R =4V	Testing Max. Value ≥ Spec. Max. Value x 2.5
Cosmetic Appearance	-	-	Occurrence of notable decoloration, deformation and cracking

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