

**Inolux Technologies 0.51" Single Digit Numeric SMD Display
HNSS51 Series**

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	*****	*****		HNSS51 Series
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DISCLAIMER

- The information contained herein is presented only as a guide for the applications of our products.

No responsibility is assumed by INOLUX for any infringements of intellectual property or other rights of the third parties which may result from its use.

- Inolux is continually effort to improve the quality of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing INOLUX products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such INOLUX products cause loss of human life, bodily injury or damage to property.
- The INOLUX products listed in this document are intended for usage in general electronics (computer, personal equipment, office equipment, industrial robotics, domestic, etc...) These products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury.
- In developing your designs, please ensure that INOLUX products are used within specified operating ranges as set forth in the most recent INOLUX products specifications.
- Also, please keep in mind the precautions listed in this document.

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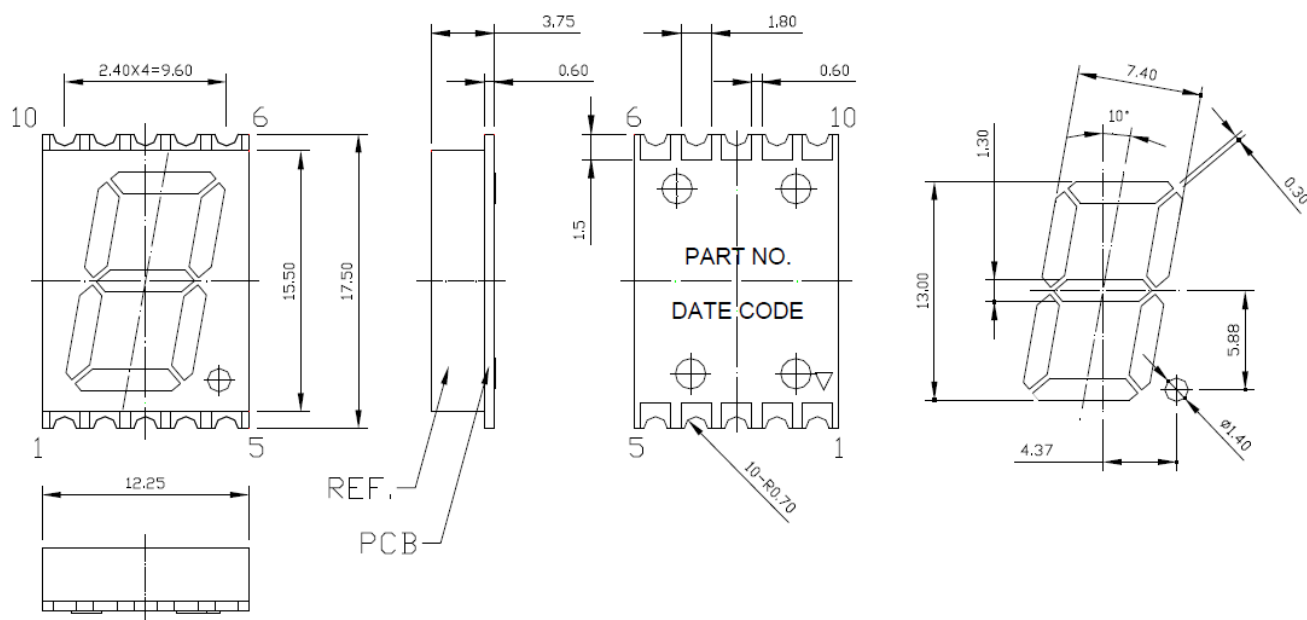
Orderable Information

H	N	S	S	51	X	X	X	-	X	X	X	X
↓		↓		↓	↓			↓	↓			
Series Name		Digit Height	Color Code					Polarity	Customer Code			
HNSS H: Inolux Technologies N: Numeric S: SMD Display S: Single Digit		51: 0.51" Digit Height	UB: 470nm InGaP Blue TG: 525nm InGaP True Green TW: InGaP White UYG: 570nm AlInGaP Yellow Green UY: 590nm AlInGaP Yellow UA: 610nm AlInGaP Amber UR: 625nm AlInGaP Hyper Red USR: 640nm AlInGaP Super Red					A: Common Anode C: Common Cathode	XXXX: Customer specific code			

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Features

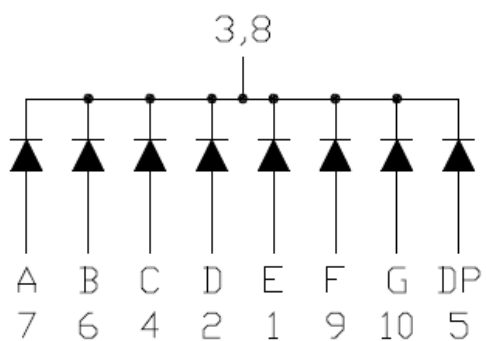
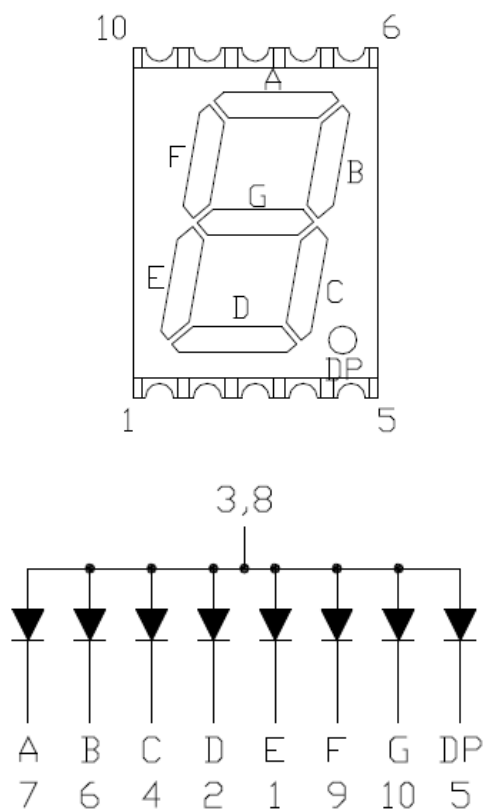
- 0.51" (13.0mm) Digit Height
- SMD Type Display
- Gray Face , White Segment
- RoHS Compliant, Pb Free



Note: Dimension is in millimeters. Tolerance is $\pm 0.25\text{mm}$ unless otherwise noted.

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Schematic Drawing



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Product Characteristic

Absolute Maximum Rating

(T_a = 25°C)

Product	Emission Color	P _{AD} (mW)	I _{AF} (mA)	I _{PF} (mA)	V _R (V)	T _{OP} (°C)	T _{ST} (°C)	Derate From 25°C (mA/°C)
HNSS51UBA/ HNSS51UBC	Blue	120	30	100	5	-40 ~ +105	-40 ~ +105	0.3
HNSS51TGA/ HNSS51TGC	True Green	120	30	100	5	-40 ~ +105	-40 ~ +105	0.3
HNSS51TWA/ HNSS51TWC	White	120	30	100	5	-40 ~ +105	-40 ~ +105	0.3
HNSS51UYGA/ HNSS51UYGC	Yellow Green	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSS51UYA/ HNSS51UYC	Yellow	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSS51UAA/ HNSS51UAC	Amber	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSS51URA/ HNSS51URC	Hyper Red	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSS51USRA/ HNSS51USRC	Super Red	75	30	100	5	-40 ~ +105	-40 ~ +105	0.3

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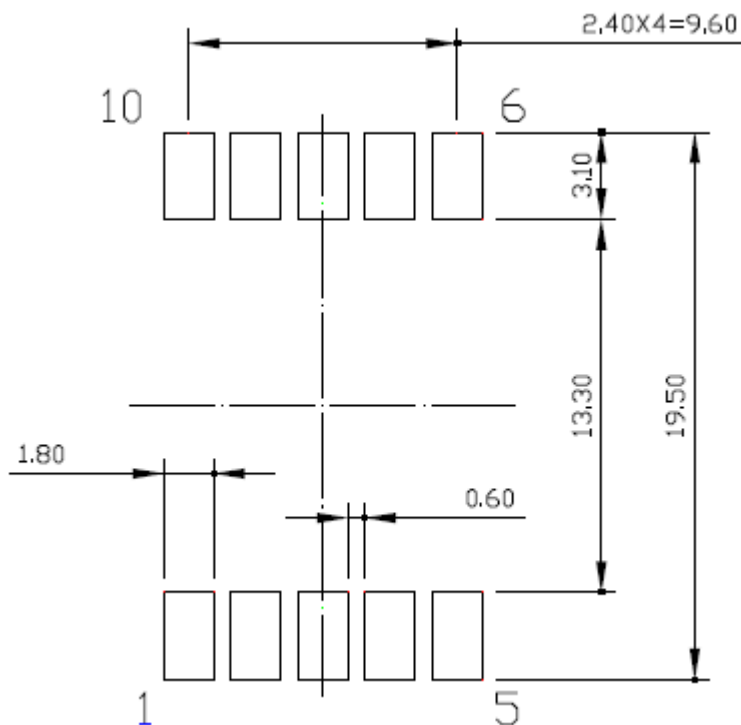
Electrical and Optical Characteristic
 $(T_a = 25^{\circ}\text{C})$

Product	Emission Color	I_F (mA)	V_F (V)		λ (nm)		I_V (mcd)	I_R (μA)
			Typ.	Max.	λ_d	$\Delta\lambda$	Typ.	Max
HNSS51UBA/ HNSS51UBC	Blue	20	3.2	4.0	470	30	40	10 ($V_R=8\text{V}$)
HNSS51TGA/ HNSS51TGC	True Green	20	3.2	4.0	525	30	170	10 ($V_R=8\text{V}$)
HNSS51TWA/ HNSS51TWC	White	5	3.2	4.0	X=0.29 Y=0.29	30	120	10 ($V_R=8\text{V}$)
HNSS51UYGA/ HNSS51UYGC	Yellow Green	20	2.1	2.6	570	20	30	10 ($V_R=5\text{V}$)
HNSS51UYA/ HNSS51UYC	Yellow	20	2.0	2.6	590	20	30	10 ($V_R=5\text{V}$)
HNSS51UAA/ HNSS51UAC	Amber	20	2.0	2.6	610	20	30	10 ($V_R=5\text{V}$)
HNSS51URA/ HNSS51URC	Hyper Red	20	2.0	2.6	625	20	30	10 ($V_R=5\text{V}$)
HNSS51USRA/ HNSS51USRC	Super Red	20	2.0	2.6	640	20	6	10 ($V_R=5\text{V}$)

Luminous Intensity tolerance = +/- 15%

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Recommended Solder Footprint



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Characteristic Curves for UB

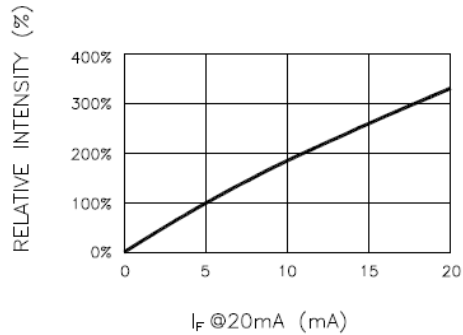


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

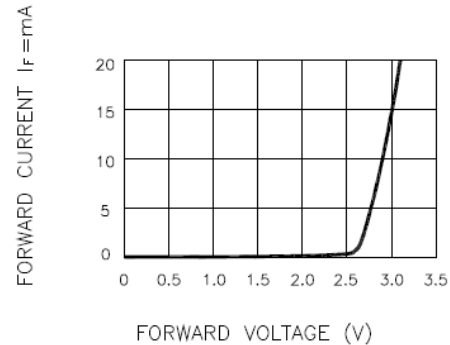


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

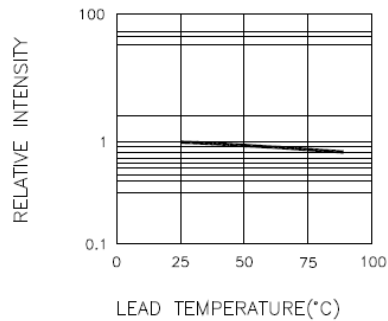


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

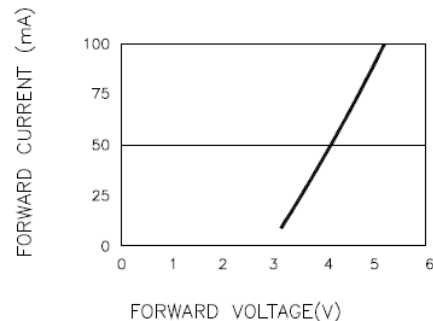


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD
(100us TEST PULSE, 1% DUTY CYCLE)

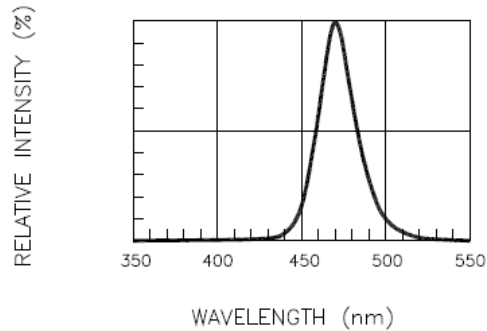


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

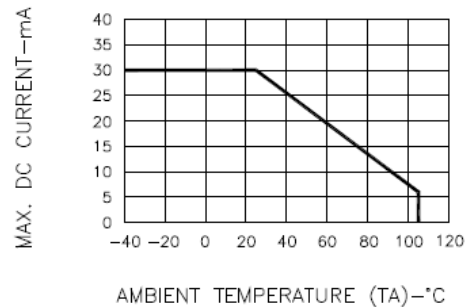
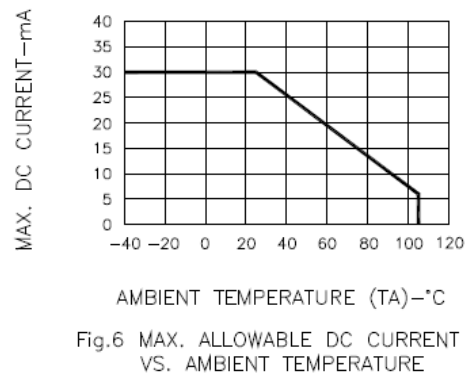
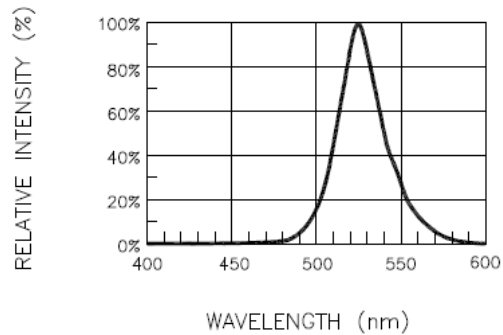
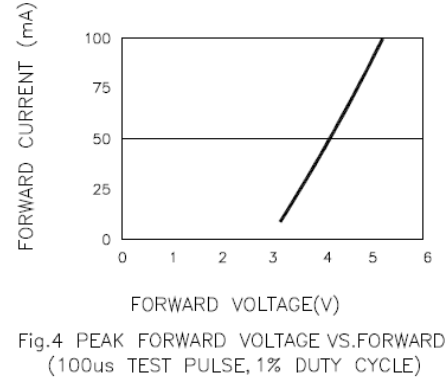
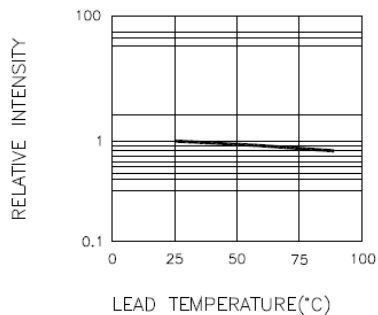
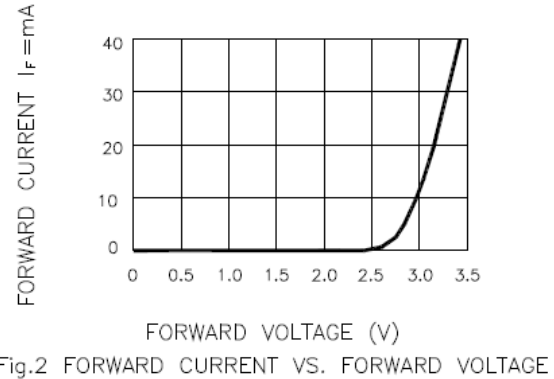
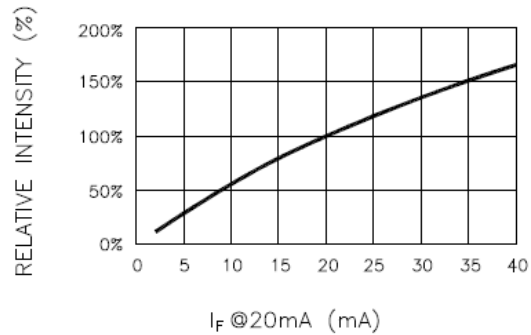


Fig.6 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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Characteristic Curves for TG



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Characteristic Curves for TW

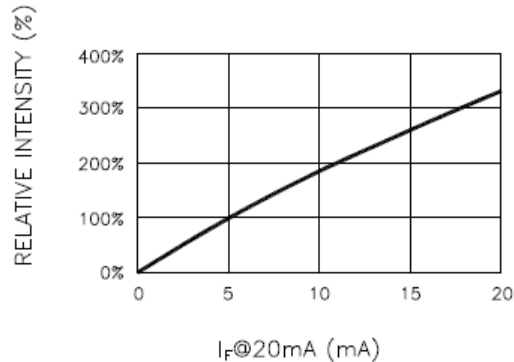


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

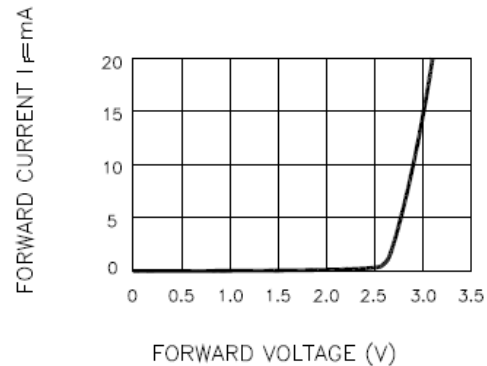


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

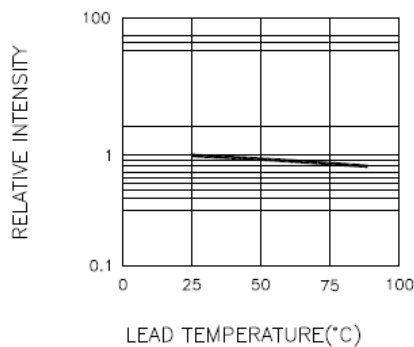


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

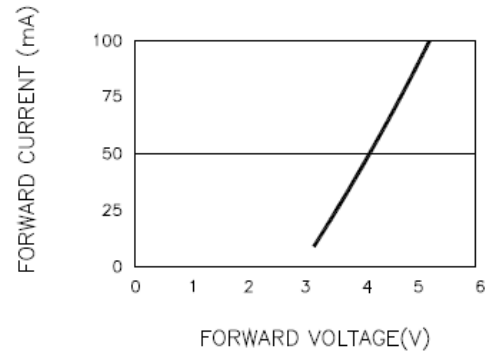


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD
(100us TEST PULSE, 1% DUTY CYCLE)

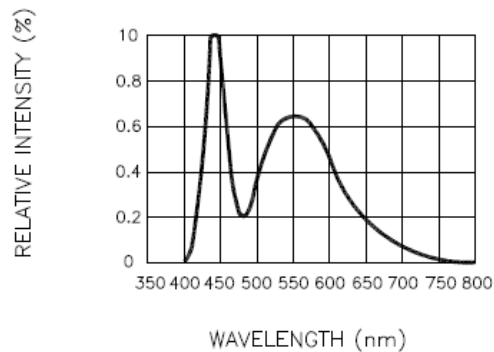


Fig.4 RELATIVE INTENSITY VS. WAVELENGTH

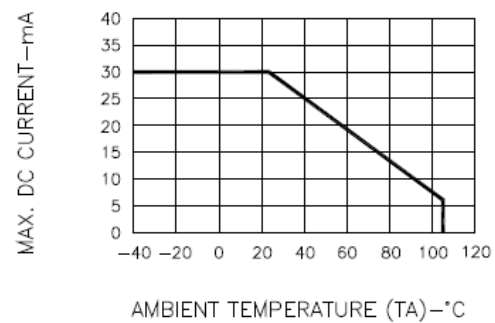


Fig.7 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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Characteristic Curves for UYG

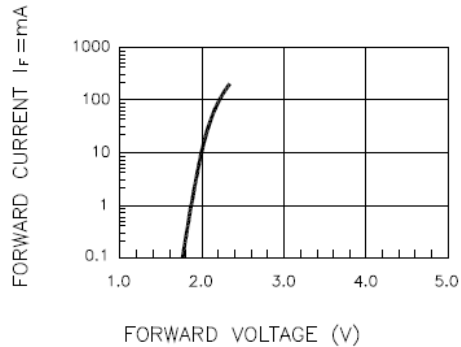


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

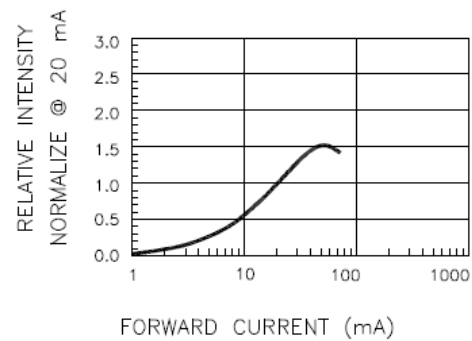


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

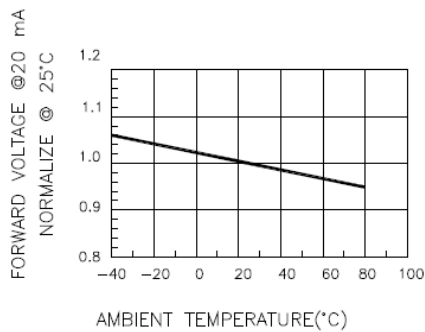


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

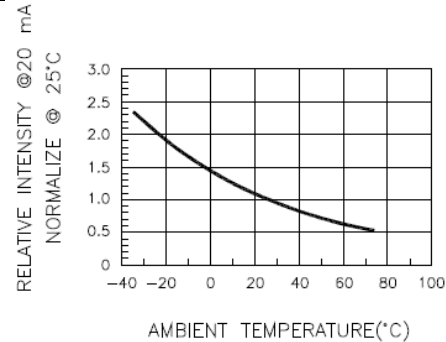


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

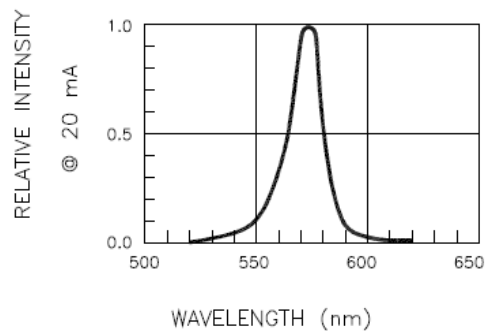


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

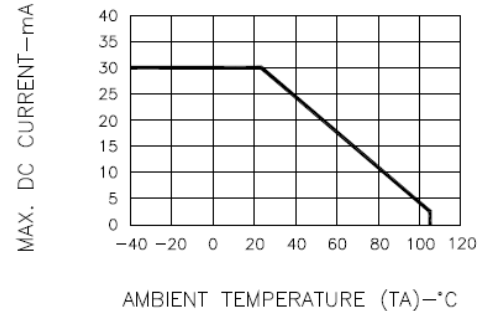


Fig.6 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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Characteristic Curves for UY

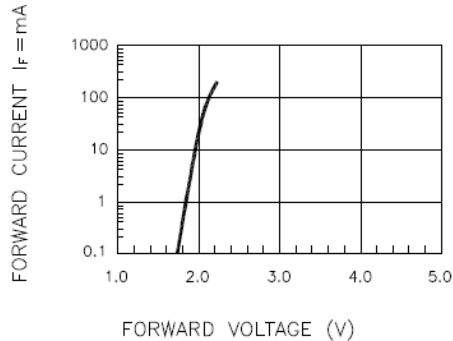


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

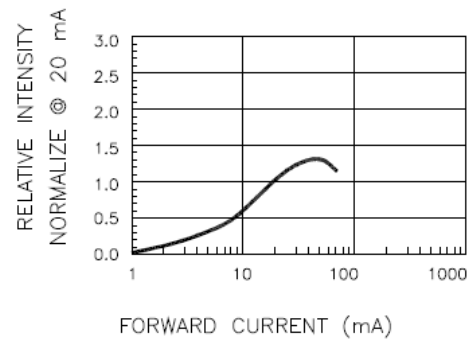


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

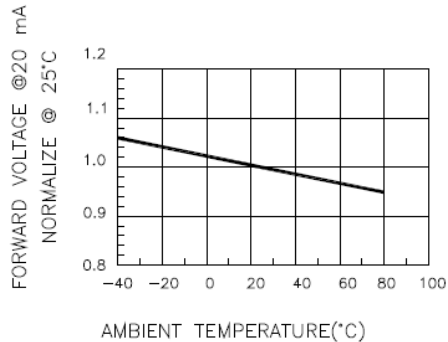


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

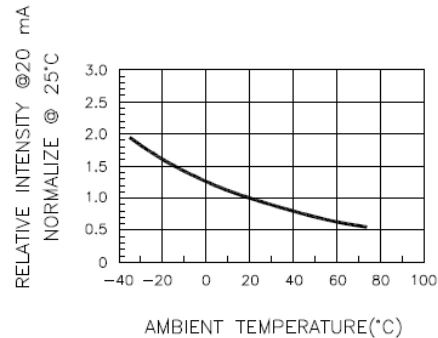


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

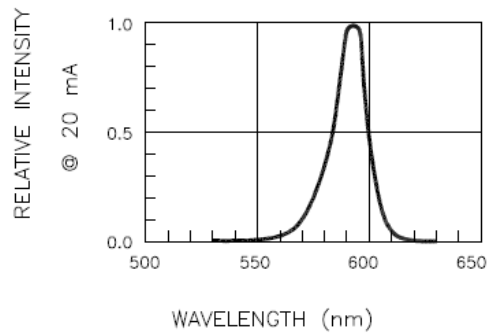


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

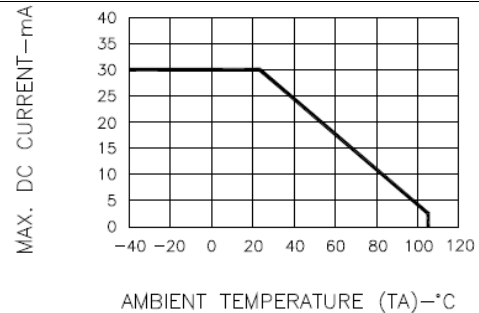


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for UA

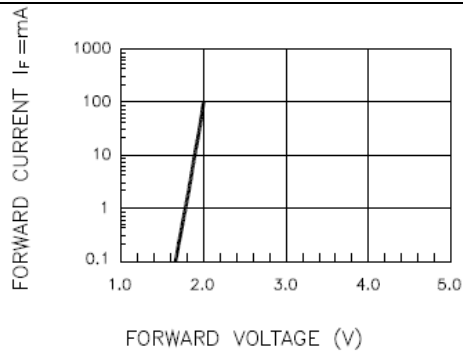


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

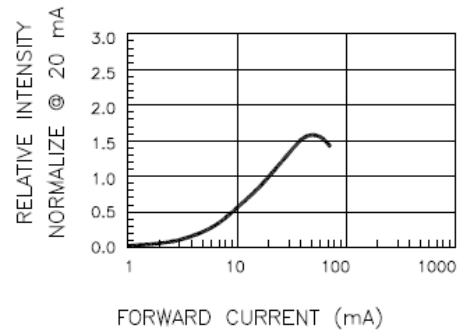


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

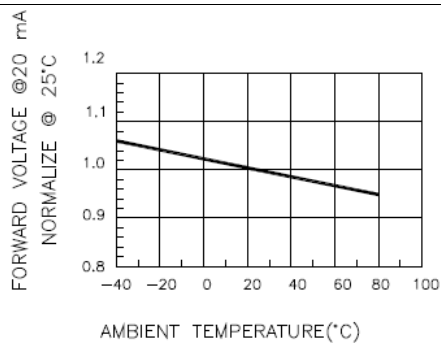


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

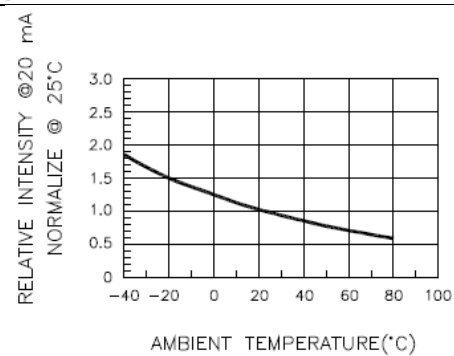


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

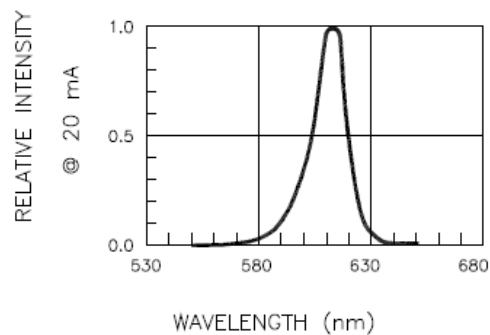


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

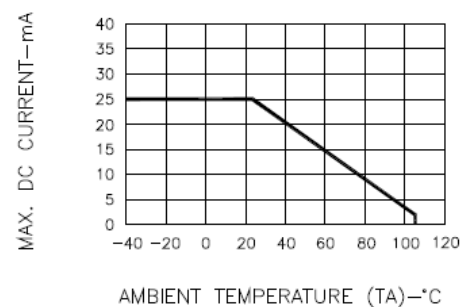


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for UR

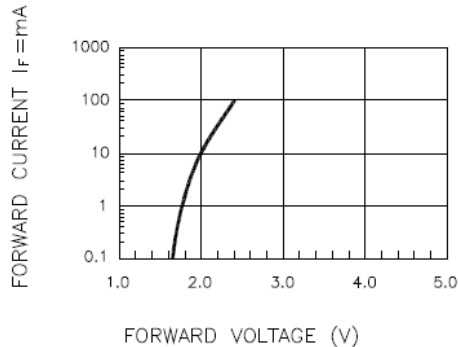


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

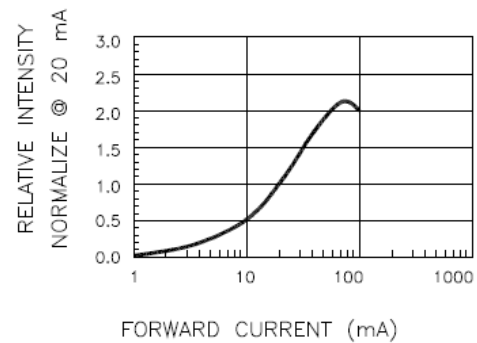


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

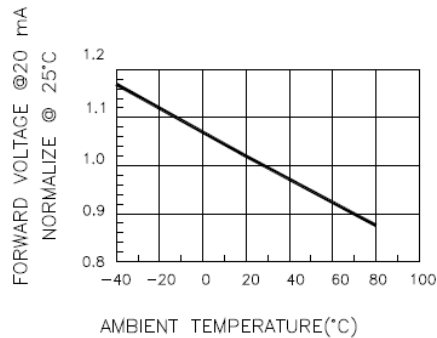


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

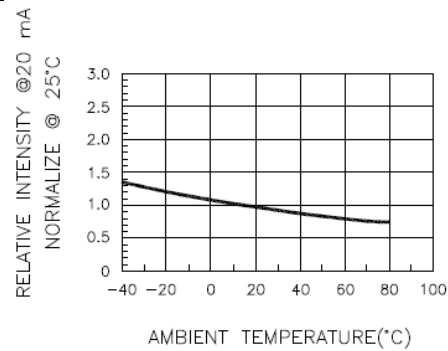


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

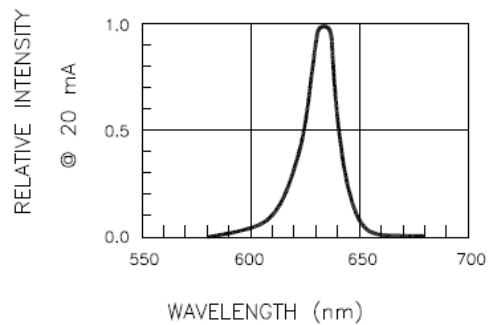


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

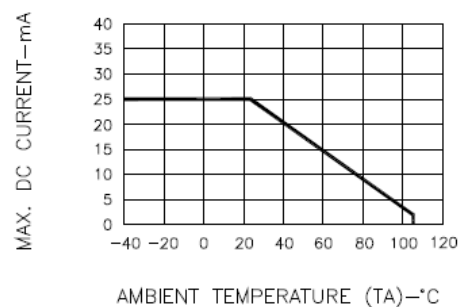


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for USR

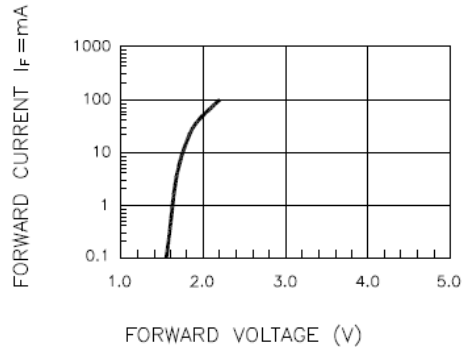


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

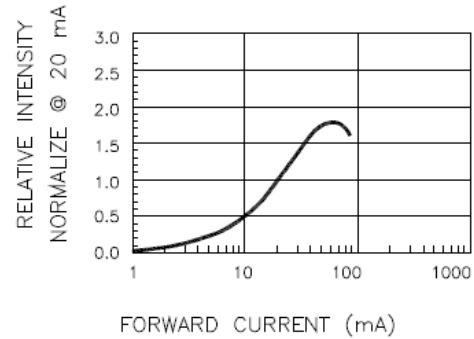


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

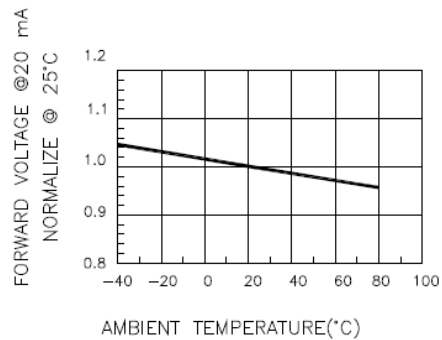


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

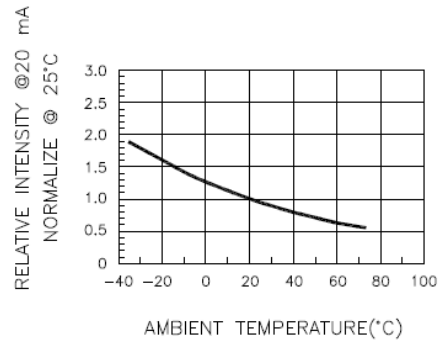


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

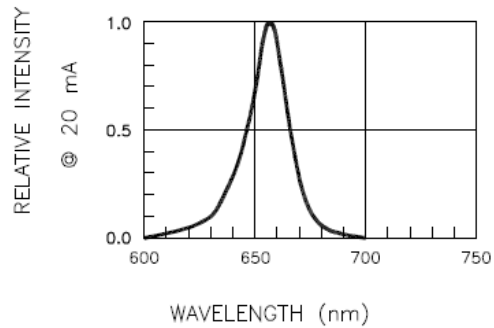


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

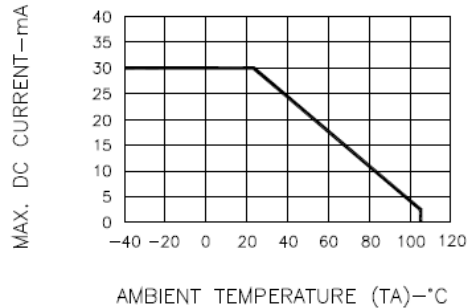
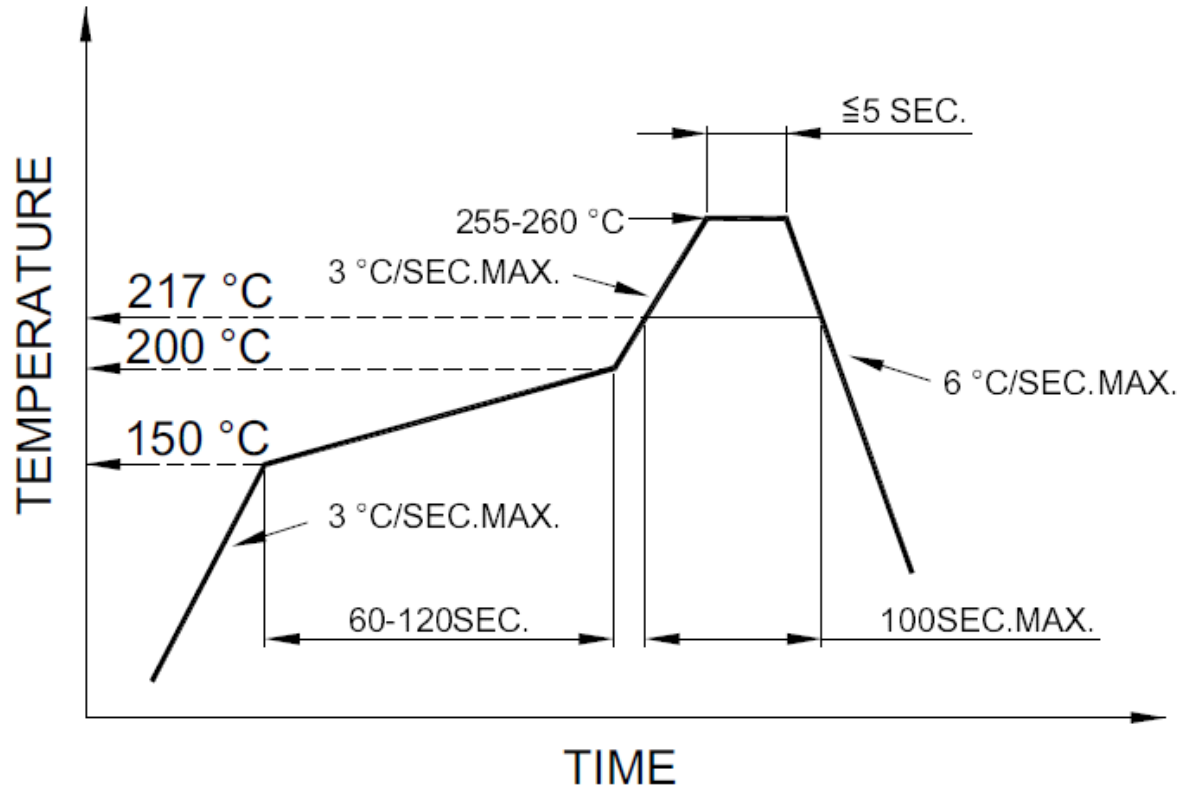


Fig.6 MAX. ALLOWABLE DC CURRENT
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Reflow Soldering



Pb Free Reflow Soldering Profile

Soldering Iron

Basic Spec is ≤ 4 sec. when 260°C (+10°C $\rightarrow$ -1 second). Power dissipation of Iron should be less than 15W. Surface temperature should be under 230°C

Rework

Rework should be completed within 3 second under 350°C

Official Product	HNSS51 Series	Customer Part No.		Data Sheet No.
	*****	*****		HNSS51 Series
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Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release for HNSS51		1.0	05-09-2013

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