

**Inolux Technologies 0.4" Dual Digit Numeric SMD Display
HNSD40 Series**

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	*****	*****		HNSD40 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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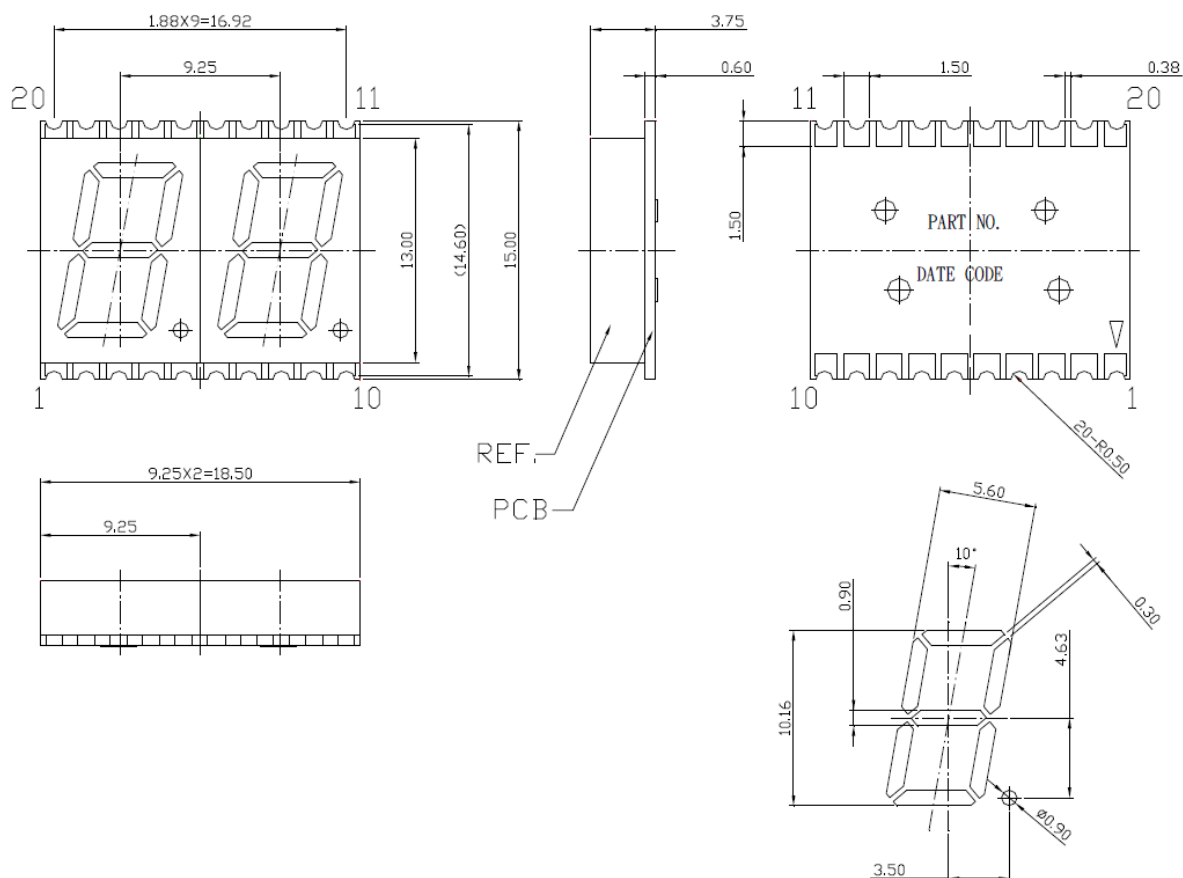
Orderable Information

H	N	S	D	40	X	X	X	-	X	X	X	X
↓		↓		↓	↓			↓	↓			
Series Name		Digit Height	Color Code					Polarity	Customer Code			
HNSD H: Inolux Technologies N: Numeric S: SMD Display D: Dual Digit		40: 0.4” Digit Height	UB: 470nm InGaN Blue TG: 525nm InGaN True Green TW: InGaN White UYG: 570nm AllnGaP Yellow Green UY: 590nm AllnGaP Yellow UA: 610nm AllnGaP Amber UR: 625nm AllnGaP Hyper Red USR: 640nm AllnGaP Super Red					A: Common Anode C: Common Cathode	XXXX: Customer specific code			

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Features

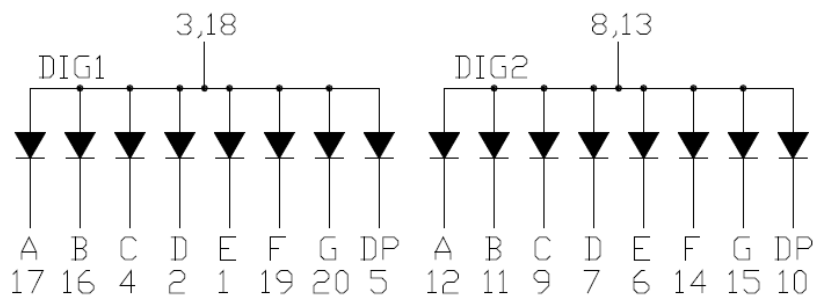
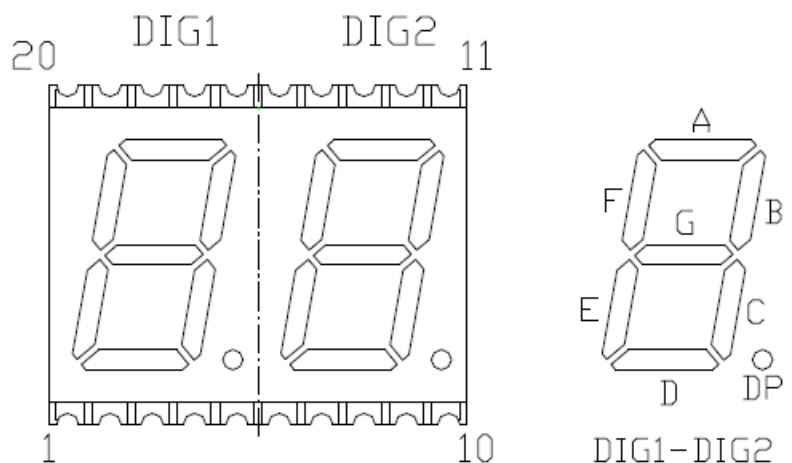
- 0.4" (10.16mm) Digit Height
- SMD Type Display
- Gray Face , White Segment
- RoHS Compliant, Pb Free



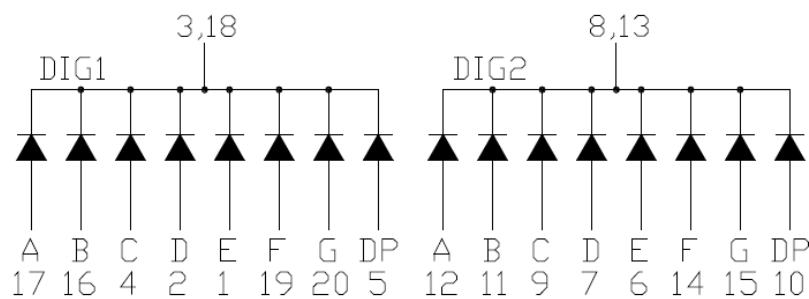
Note: Dimension is in millimeters. Tolerance is $\pm 0.25\text{mm}$ unless otherwise noted.

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Schematic Drawing



Common Anode



Common Cathode

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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)
HNSD40UBA/ HNSD40UBC	Blue	120	30	100	5	-40 ~ +105	-40 ~ +105	0.3
HNSD40TGA/ HNSD40TGC	True Green	120	30	100	5	-40 ~ +105	-40 ~ +105	0.3
HNSD40TWA/ HNSD40TWC	White	120	30	100	5	-40 ~ +105	-40 ~ +105	0.3
HNSD40UYGA/ HNSD40UYGC	Yellow Green	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSD40UYA/ HNSD40UYC	Yellow	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSD40UAA/ HNSD40UAC	Amber	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSD40URA/ HNSD40URC	Hyper Red	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSD40USRA/ HNSD40USRC	Super Red	75	30	100	5	-40 ~ +105	-40 ~ +105	0.3

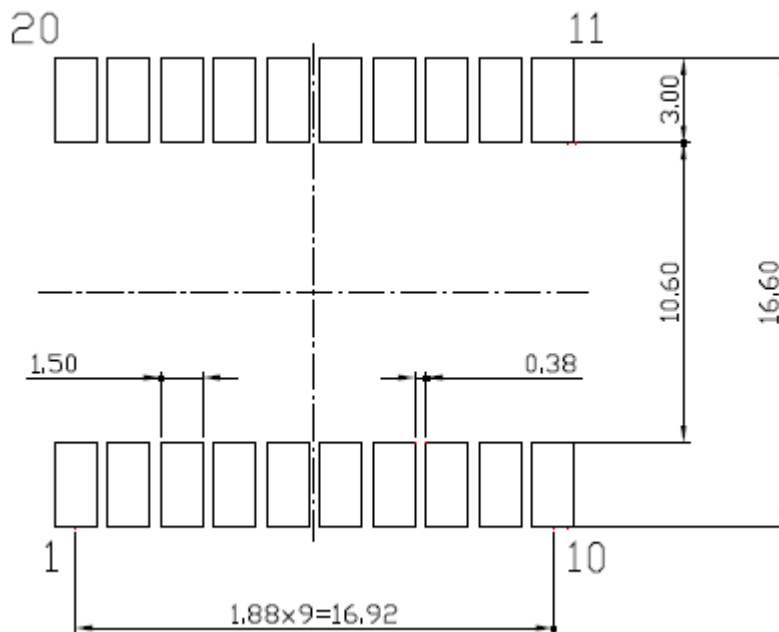
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Electrical and Optical Characteristic
 $(T_a = 25^{\circ}\text{C})$

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
HNSD40UBA/ HNSD40UBC	Blue	20	3.2	4.0	470	30	20	10 ($V_R=8\text{V}$)
HNSD40TGA/ HNSD40TGC	True Green	20	3.2	4.0	525	30	50	10 ($V_R=8\text{V}$)
HNSD40TWA/ HNSD40TWC	White	5	3.2	4.0	X=0.29 Y=0.29	30	50	10 ($V_R=8\text{V}$)
HNSD40UYGA/ HNSD40UYGC	Yellow Green	20	2.1	2.6	570	20	7	10 ($V_R=5\text{V}$)
HNSD40UYA/ HNSD40UYC	Yellow	20	2.0	2.6	590	20	20	10 ($V_R=5\text{V}$)
HNSD40UAA/ HNSD40UAC	Amber	20	2.0	2.6	610	20	20	10 ($V_R=5\text{V}$)
HNSD40URA/ HNSD40URC	Hyper Red	20	2.0	2.6	625	20	20	10 ($V_R=5\text{V}$)
HNSD40USRA/ HNSD40USRC	Super Red	20	2.0	2.6	640	20	2	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

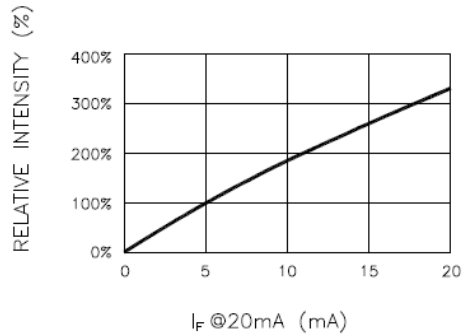


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

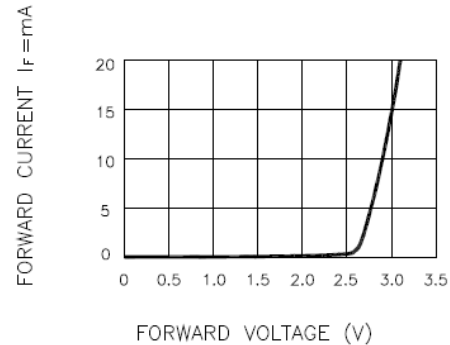


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

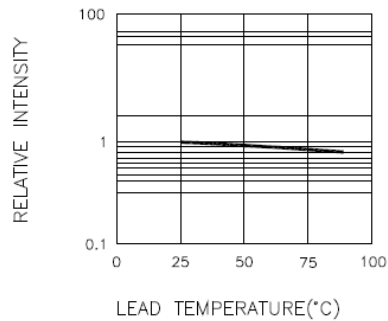


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

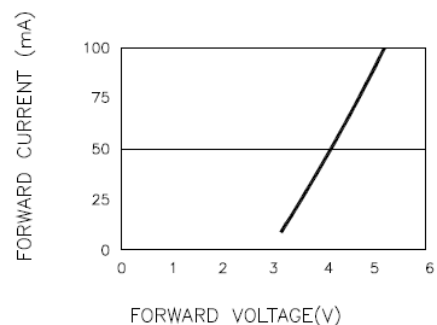


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD
(100us TEST PULSE, 1% DUTY CYCLE)

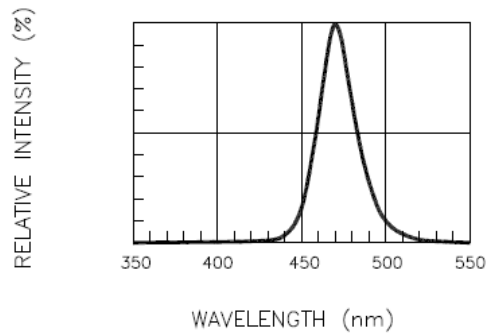


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

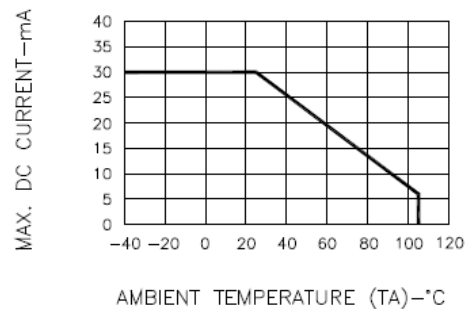
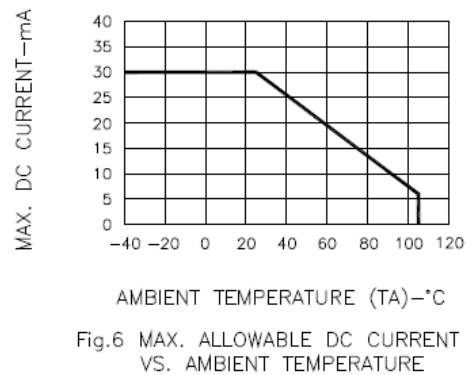
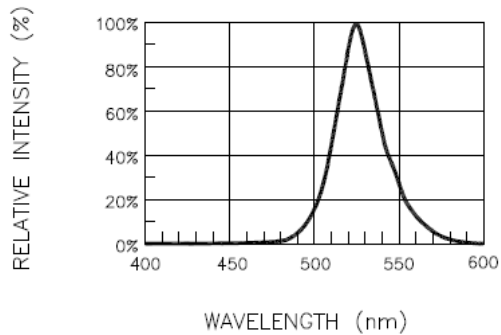
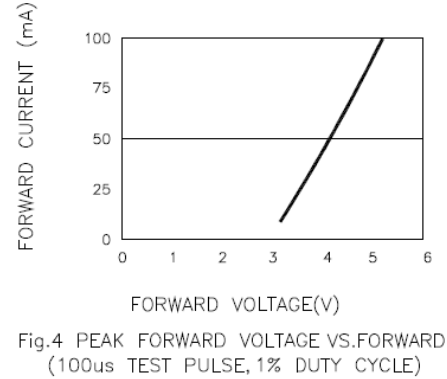
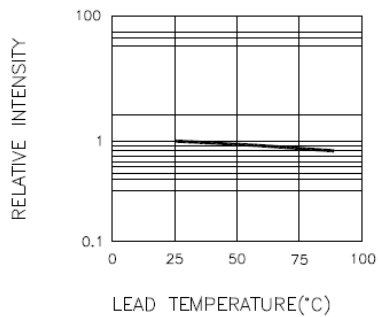
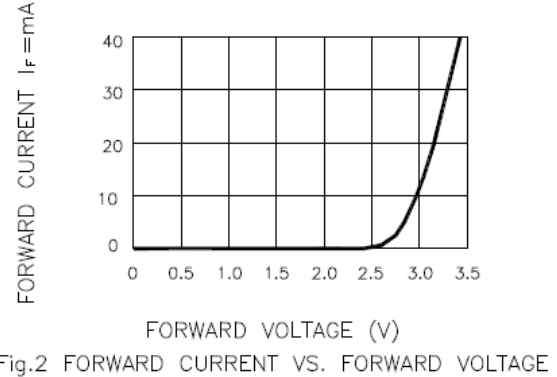
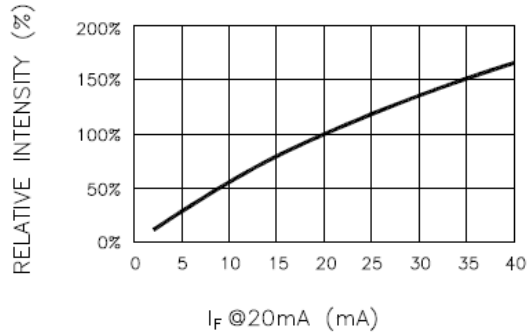


Fig.6 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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Characteristic Curves for TG



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Characteristic Curves for TW

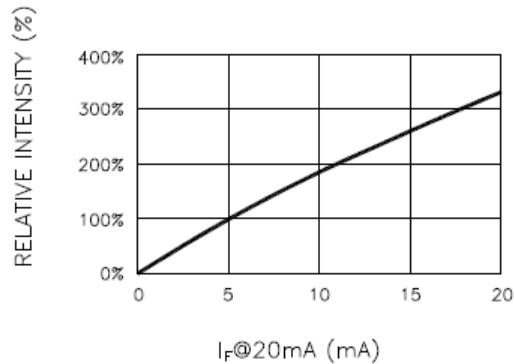


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

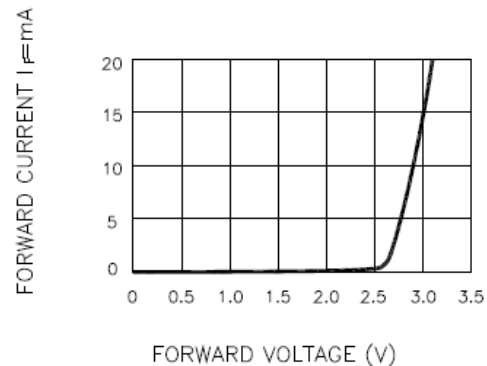


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

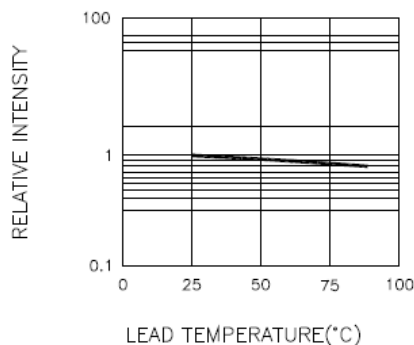


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

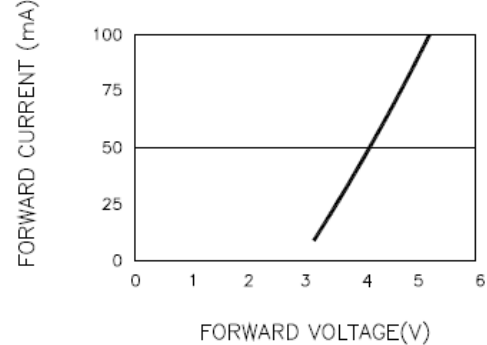


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD
(100us TEST PULSE, 1% DUTY CYCLE)

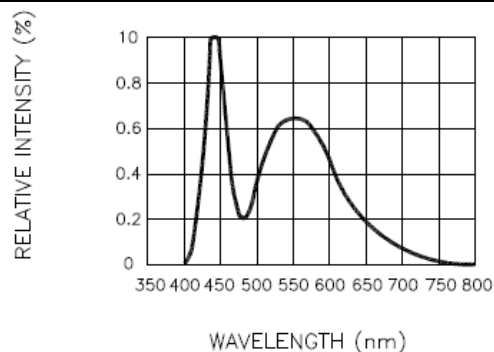


Fig.4 RELATIVE INTENSITY VS. WAVELENGTH

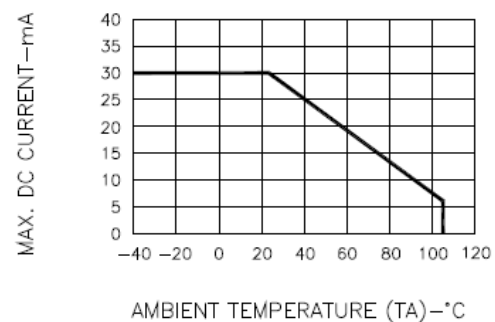


Fig.7 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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Characteristic Curves for UYG

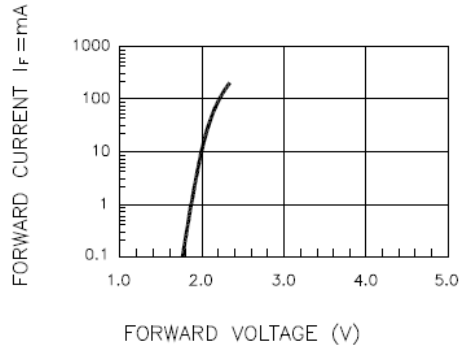


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

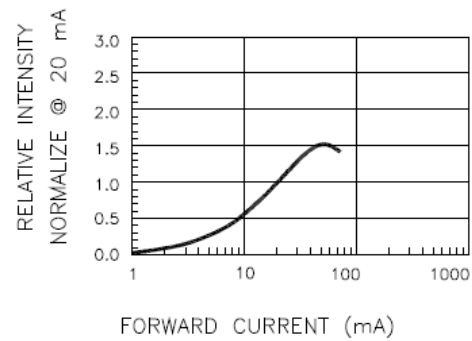


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

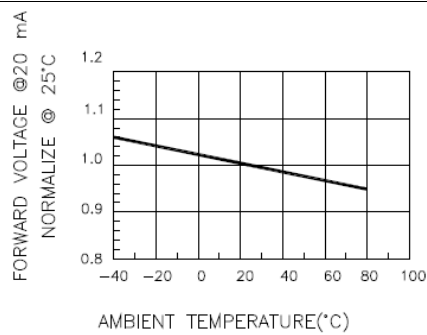


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

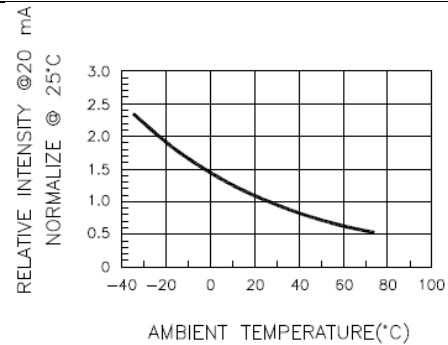


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

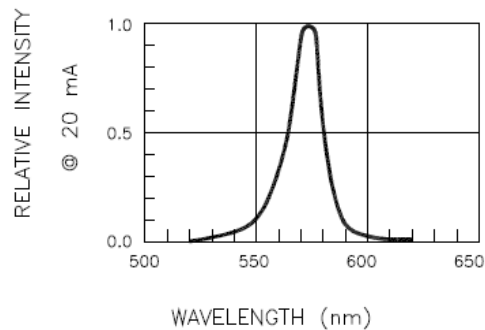


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

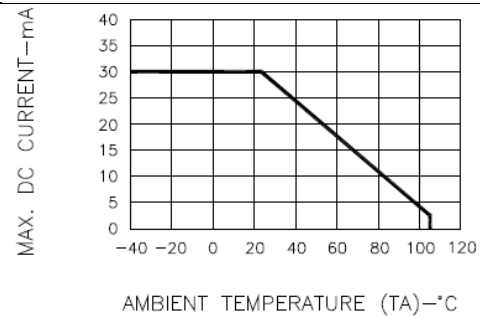


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for UY

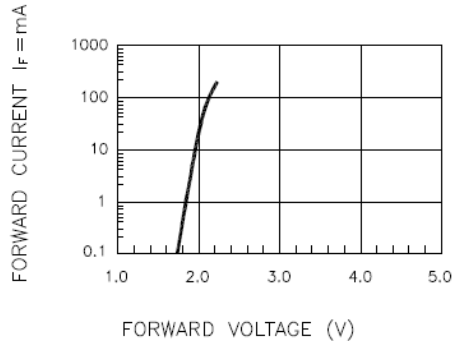


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

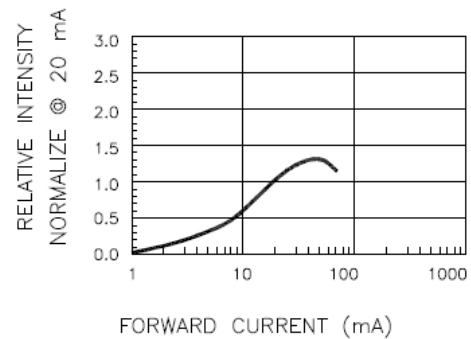


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

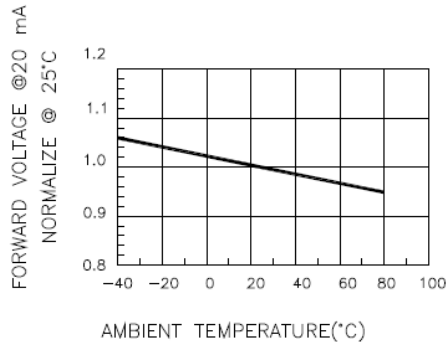


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

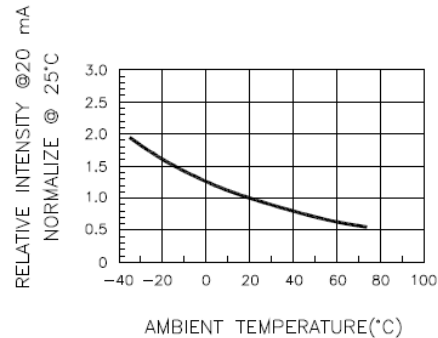


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

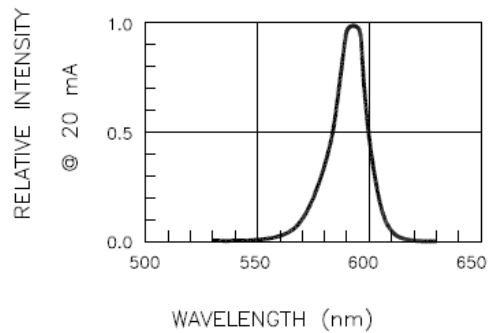


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

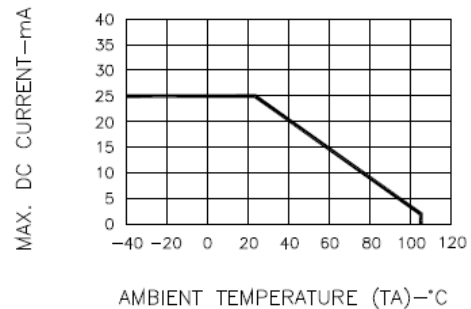


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for UA

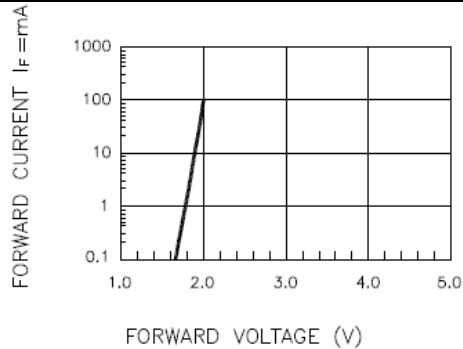


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

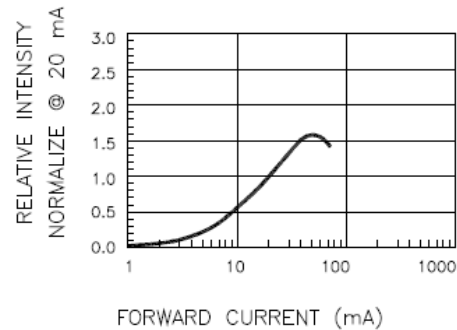


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

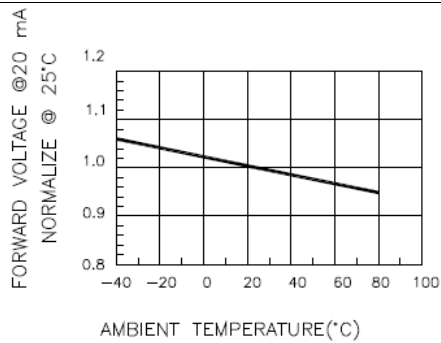


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

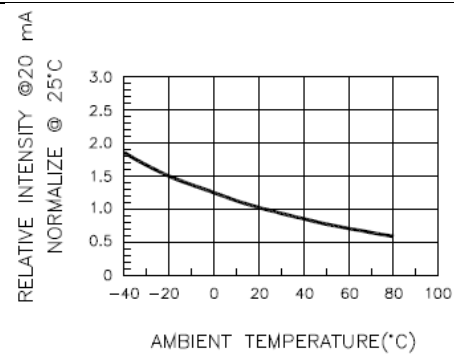


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

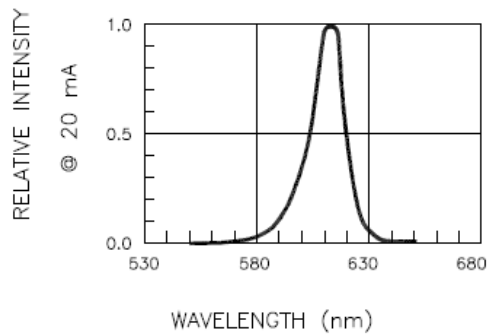


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

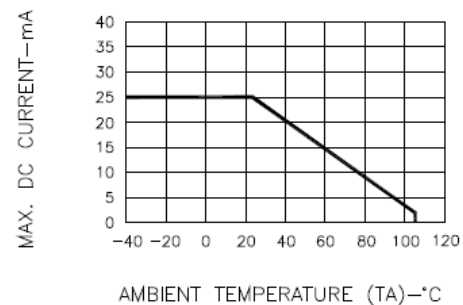


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for UR

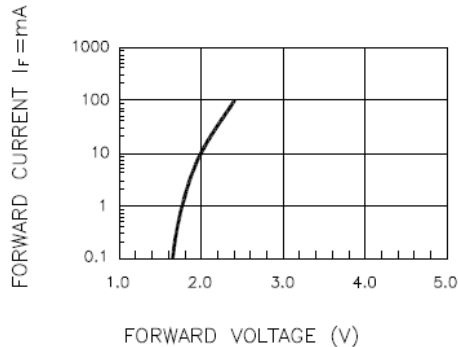


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

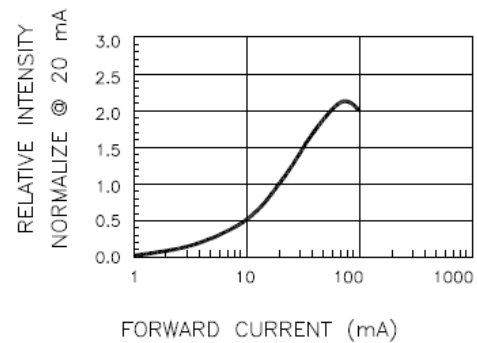


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

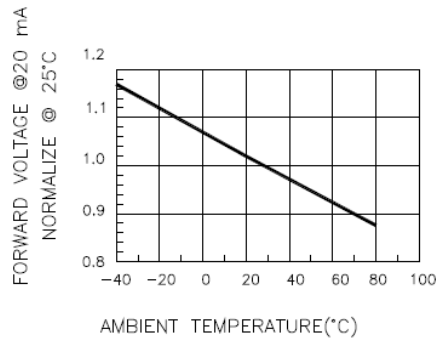


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

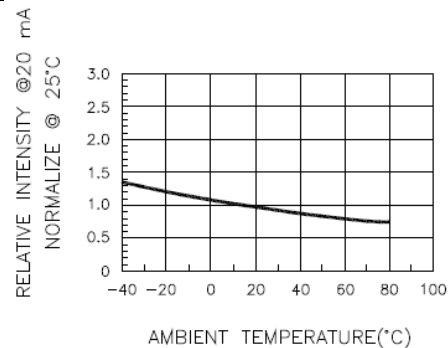


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

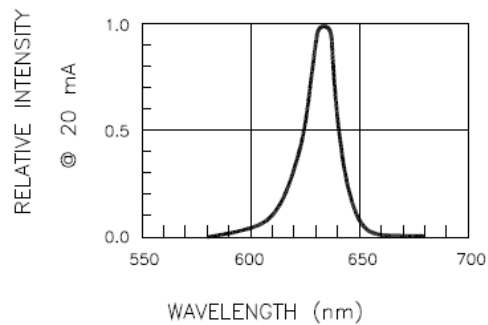


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

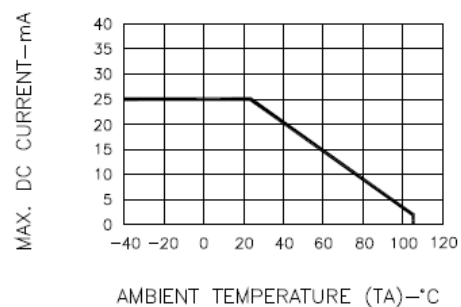


Fig.6 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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Characteristic Curves for USR

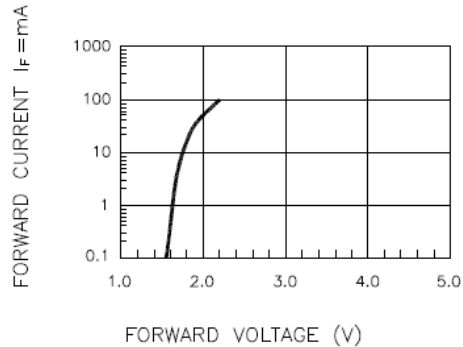


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

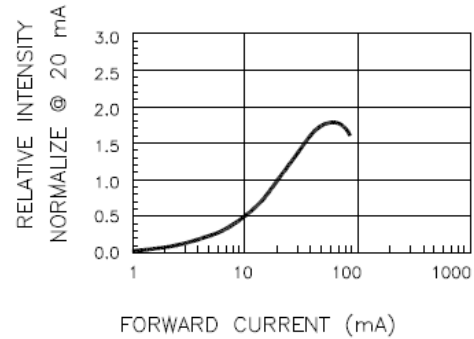


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

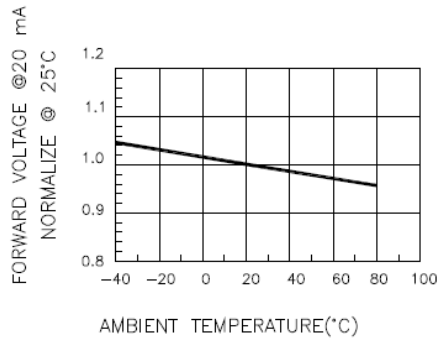


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

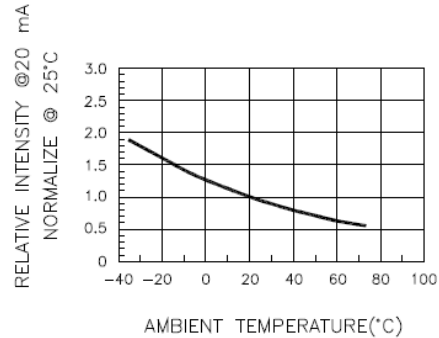


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

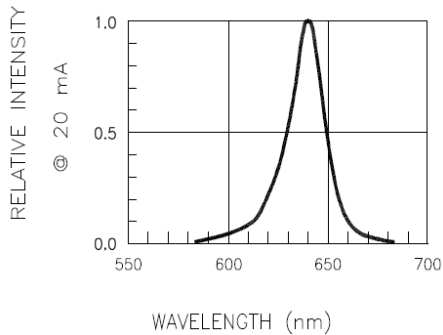


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

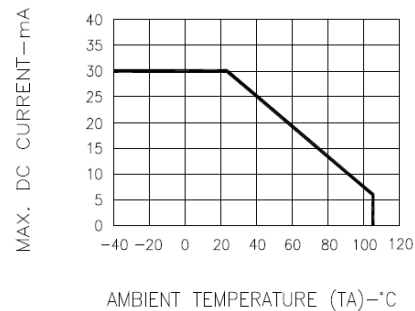
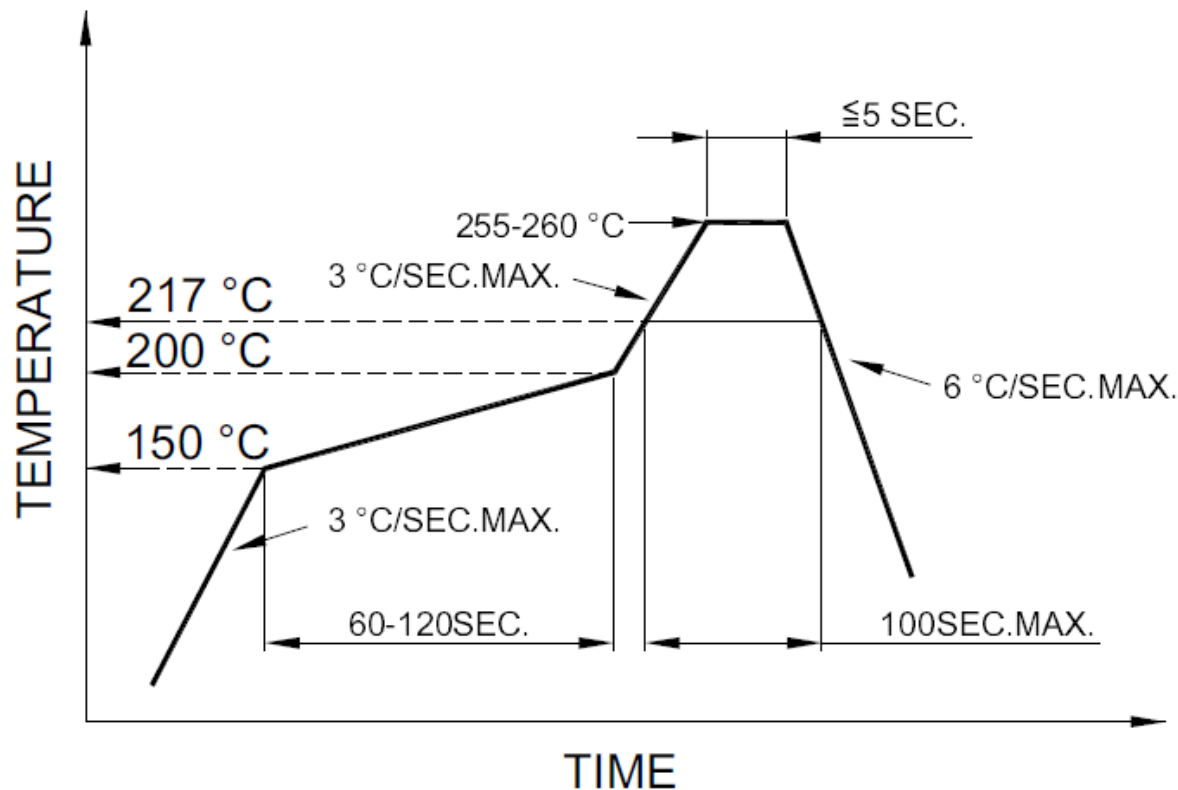


Fig.6 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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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

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Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release for HNSD40		1.0	05-13-2013

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