

**Inolux Technologies 0.3" Four Digit Numeric SMD Display
HNSQ30 Series**

Official Product	HNSQ30 Series	Customer Part No.		Data Sheet No.
	*****	*****		HNSQ30 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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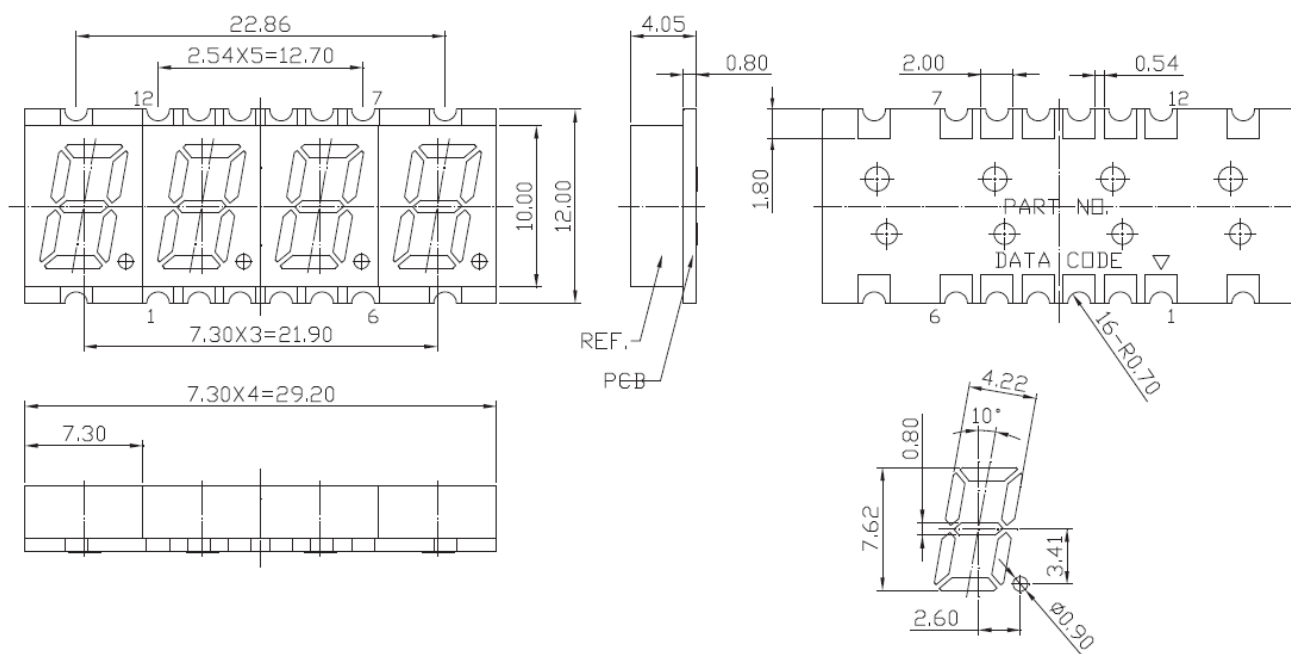
Orderable Information

H	N	S	Q	30	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 Q: Four Digit			30: 0.3" Digit Height		UB: 470nm InGaN Blue TG: 525nm InGaN True Green 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

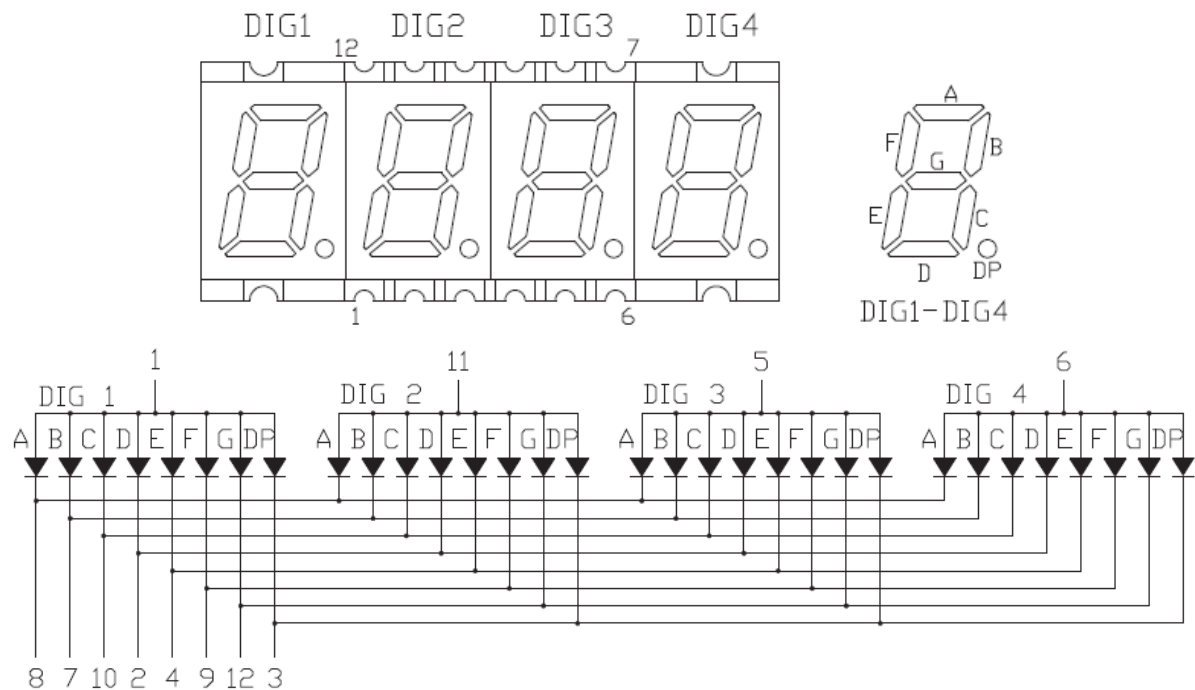
- 0.3" (7.62mm) Digit Height
- SMD Type Display
- Gray Face , White Segment
- RoHS Compliant, Pb Free



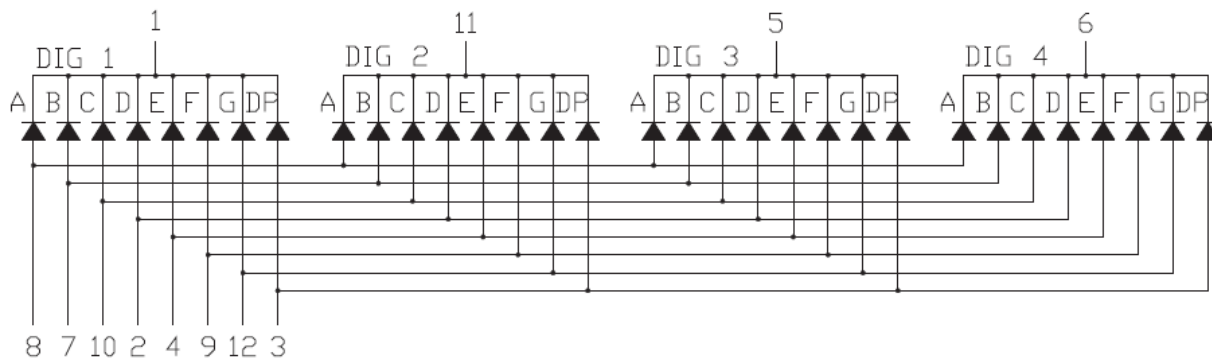
Note: Dimension is in millimeters. Tolerance is $\pm 0.25\text{mm}$ unless otherwise noted.

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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)
HNSQ30UBA/ HNSQ30UBC	Blue	120	30	100	5	-40 ~ +105	-40 ~ +105	0.3
HNSQ30TGA/ HNSQ30TGC	True Green	120	30	100	5	-40 ~ +105	-40 ~ +105	0.3
HNSQ30UYGA/ HNSQ30UYGC	Yellow Green	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSQ30UYA/ HNSQ30UYC	Yellow	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSQ30UAA/ HNSQ30UAC	Amber	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSQ30URA/ HNSQ30URC	Hyper Red	70	25	90	5	-40 ~ +105	-40 ~ +105	0.28
HNSQ30USRA/ HNSQ30USRC	Super Red	75	30	100	5	-40 ~ +105	-40 ~ +105	0.3

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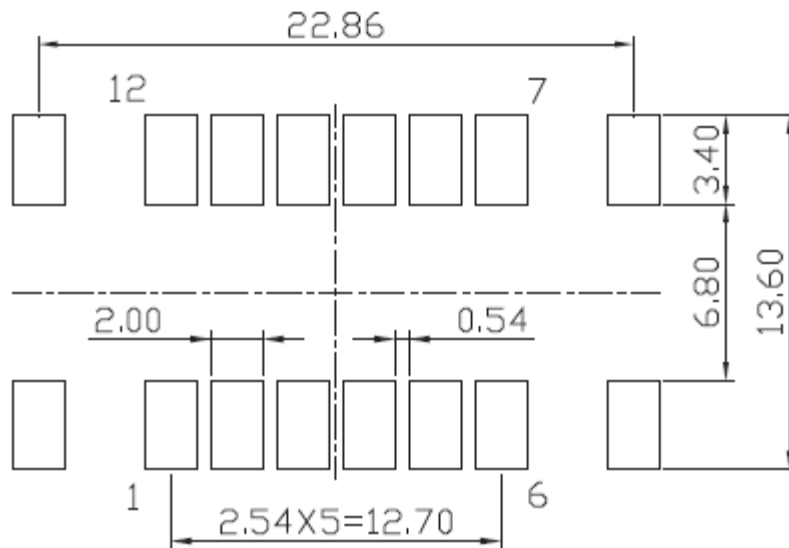
Electrical and Optical Characteristic

 (T_a= 25°C)

Product	Emission Color	I _F (mA)	V _F (V)		λ (nm)		I _V (mcd)	I _R (μA)
			Typ.	Max.	λ _d	Δλ	Typ.	Max
HNSQ30UBA/ HNSQ30UBC	Blue	20	3.2	4.0	470	30	10	10 (V _R =8V)
HNSQ30TGA/ HNSQ30TGC	True Green	20	3.2	4.0	525	30	30	10 (V _R =8V)
HNSQ30UYGA/ HNSQ30UYGC	Yellow Green	20	2.1	2.6	570	20	5	10 (V _R =5V)
HNSQ30UYA/ HNSQ30UYC	Yellow	20	2.0	2.6	590	20	8	10 (V _R =5V)
HNSQ30UAA/ HNSQ30UAC	Amber	20	2.0	2.6	610	20	8	10 (V _R =5V)
HNSQ30URA/ HNSQ30URC	Hyper Red	20	2.0	2.6	625	20	8	10 (V _R =5V)
HNSQ30USRA/ HNSQ30USRC	Super Red	20	2.0	2.6	640	20	2	10 (V _R =5V)

Luminous Intensity tolerance = +/- 15%

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Recommended Solder Footprint


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Characteristic Curves for UB

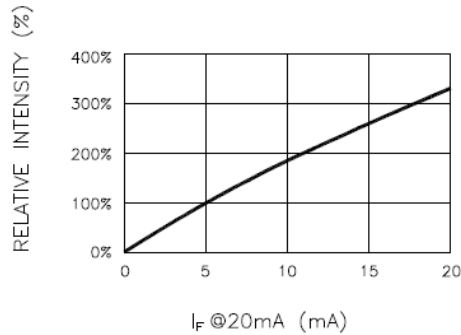


Fig.1 RELATIVE INTENSITY VS. FORWARD CURRENT

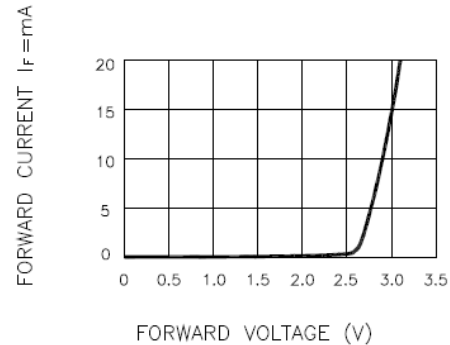


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

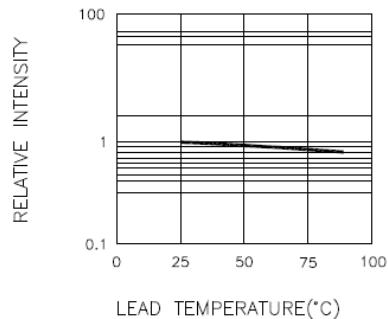


Fig.3 RELATIVE INTENSITY VS. LEAD TEMPERATURE
(PULSED 20 mA; 300us PULSE, 10ms PERIOD)

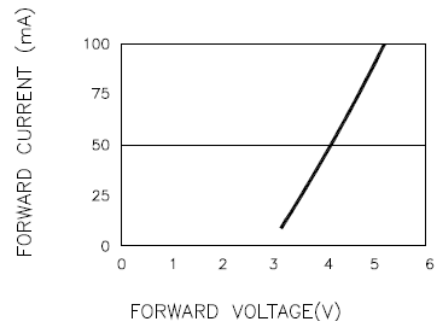


Fig.4 PEAK FORWARD VOLTAGE VS. FORWARD
(100us TEST PULSE, 1% DUTY CYCLE)

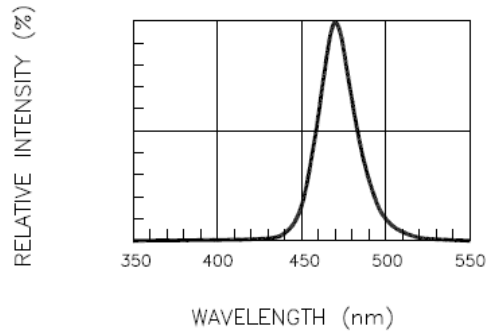


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

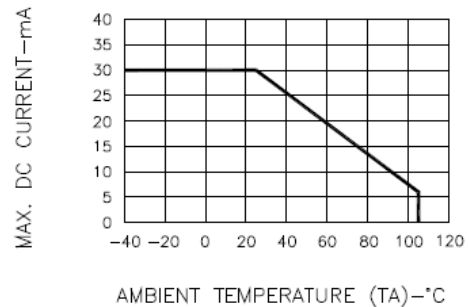
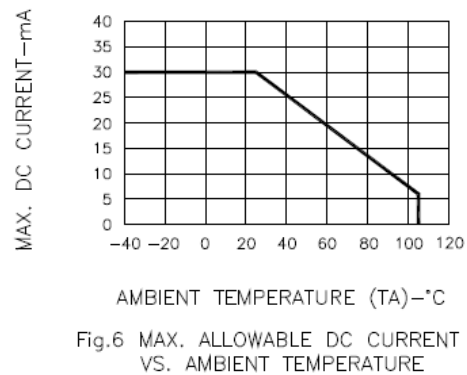
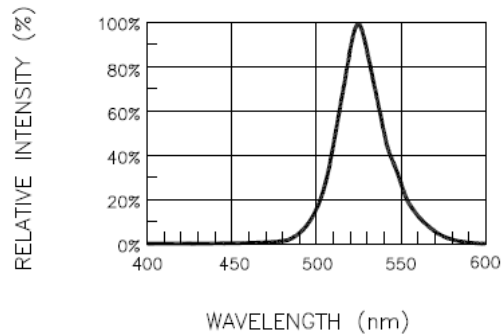
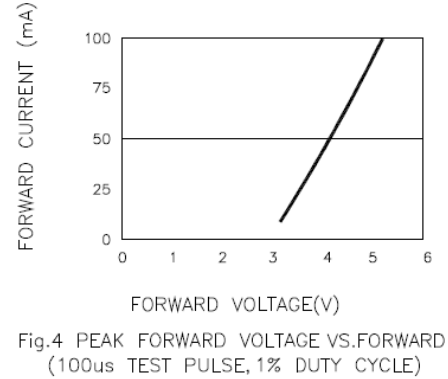
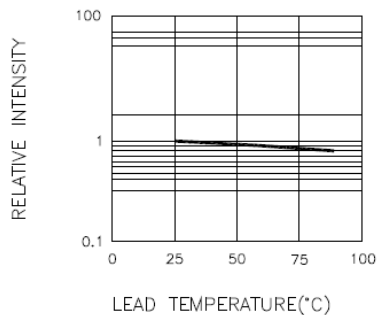
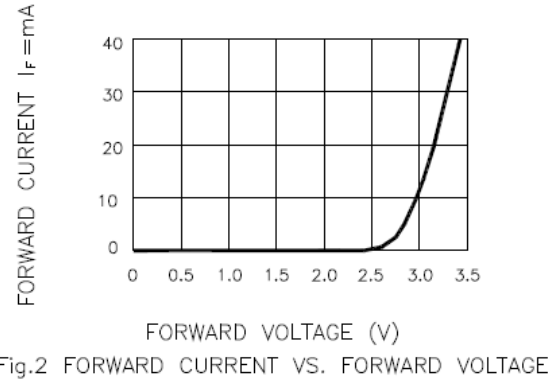
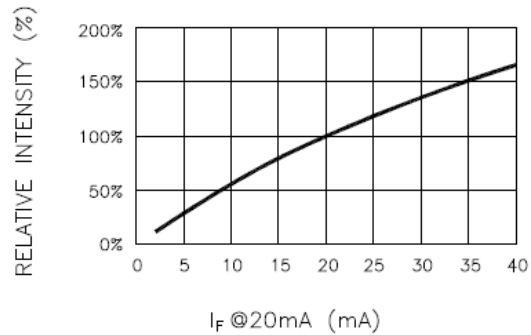


Fig.6 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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Characteristic Curves for TG



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Characteristic Curves for UYG

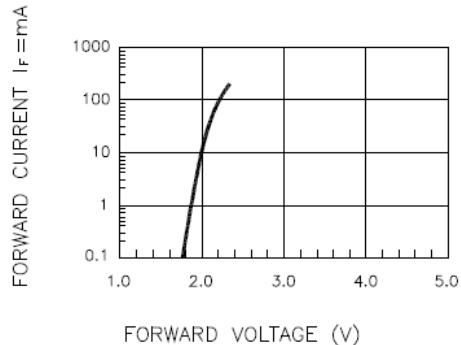


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

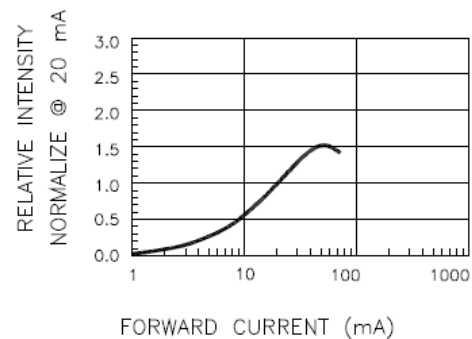


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

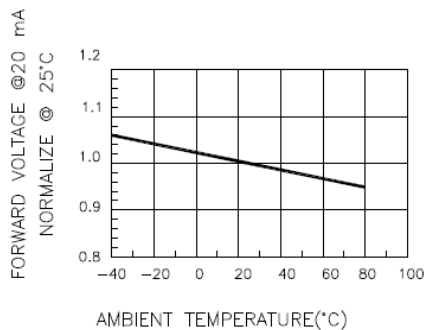


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

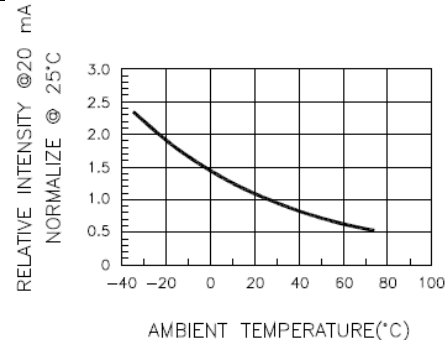


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

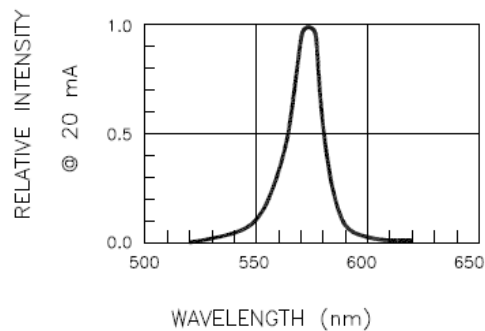


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

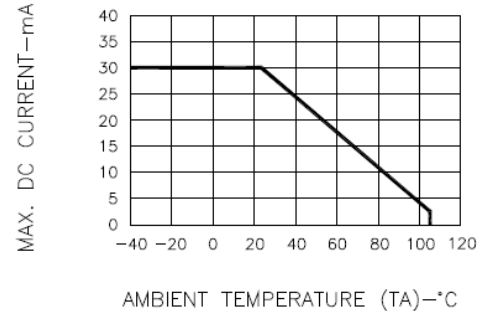


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for UY

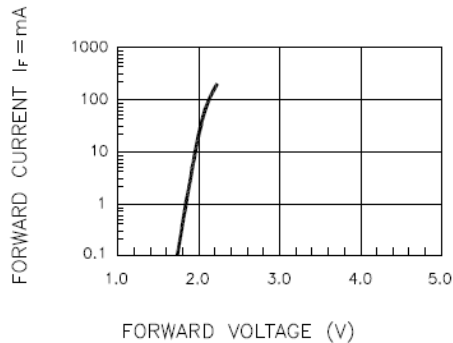


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

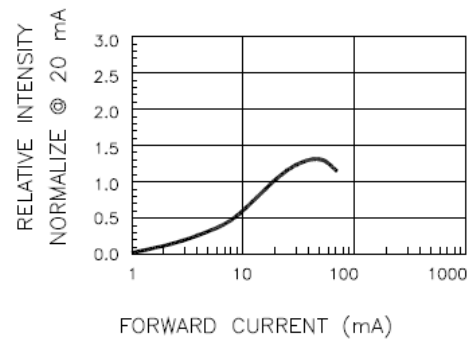


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

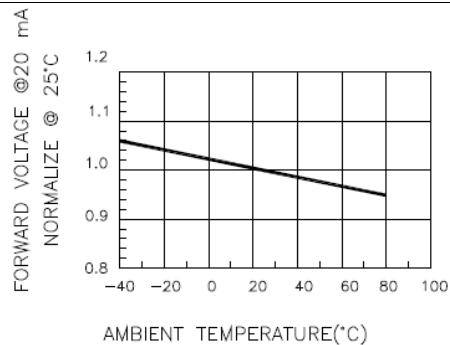


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

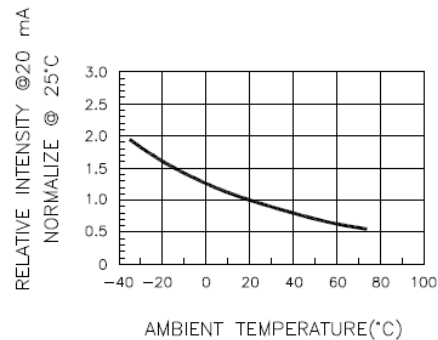


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

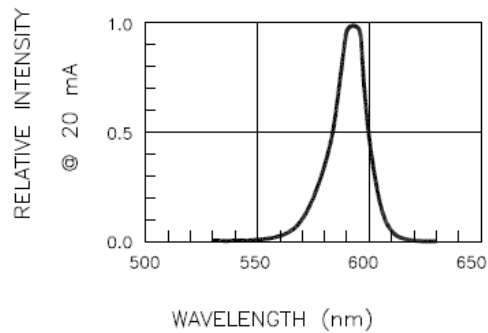


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

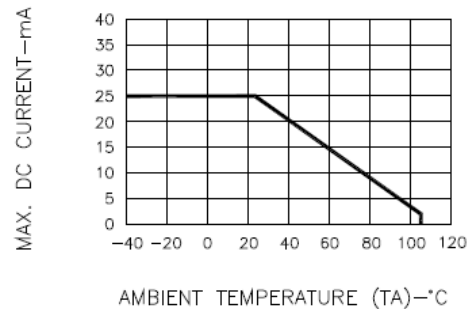


Fig.6 MAX. ALLOWABLE DC CURRENT
VS. AMBIENT TEMPERATURE

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Characteristic Curves for UA

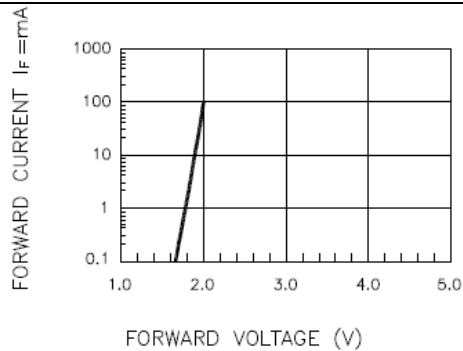


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

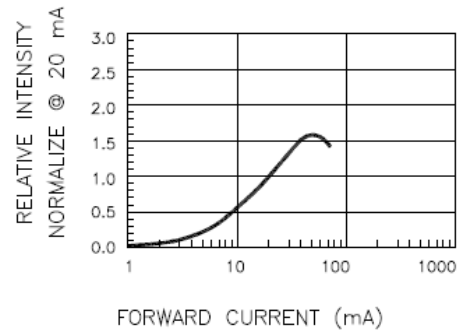


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

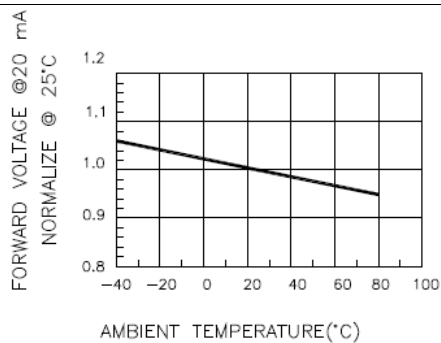


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

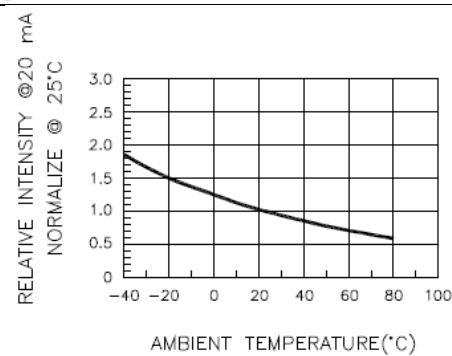


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

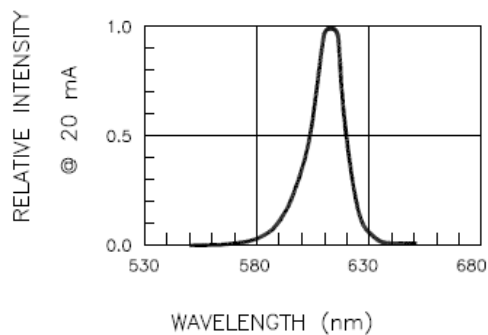


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

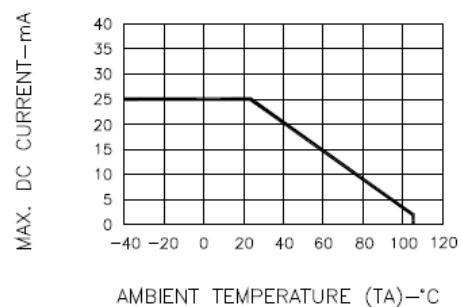


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for UR

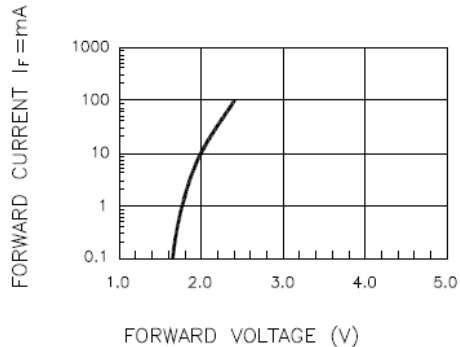


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

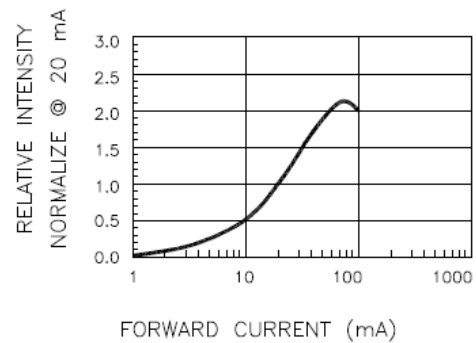


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

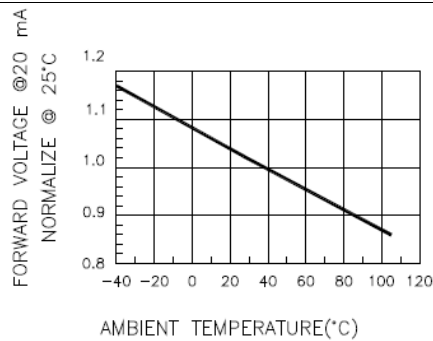


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

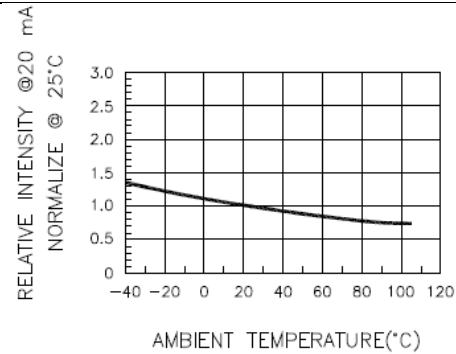


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

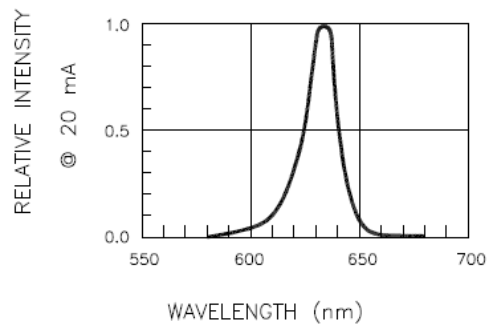


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

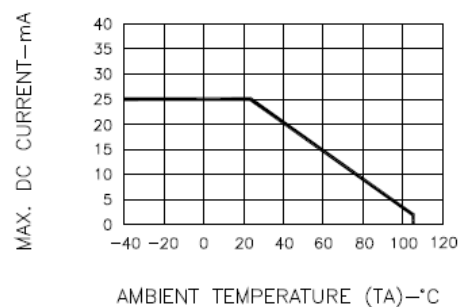


Fig.6 MAX. ALLOWABLE DC CURRENT
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Characteristic Curves for USR

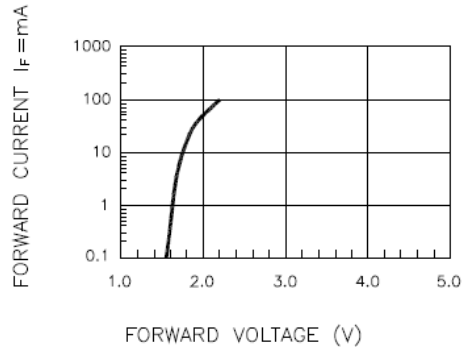


Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

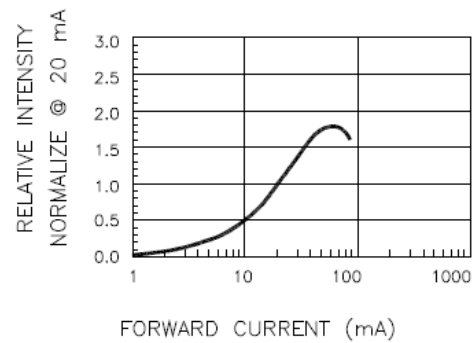


Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

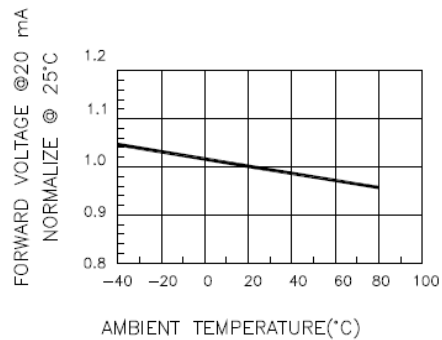


Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

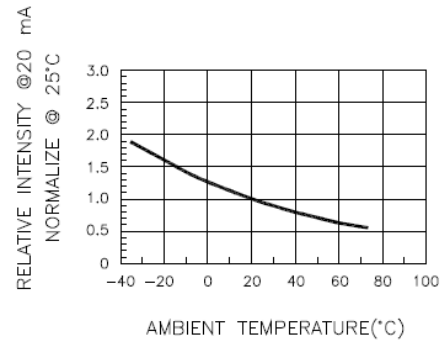


Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

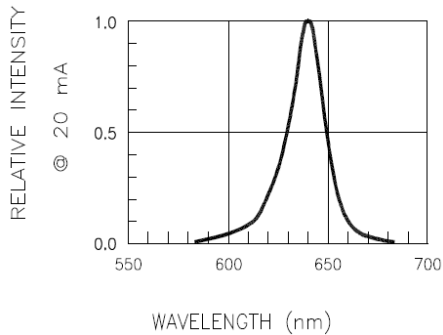


Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

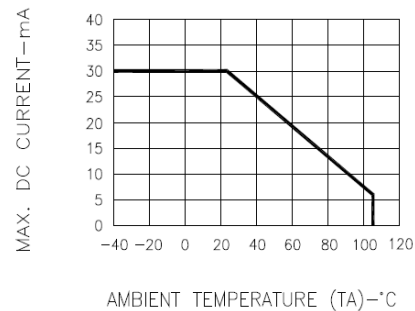
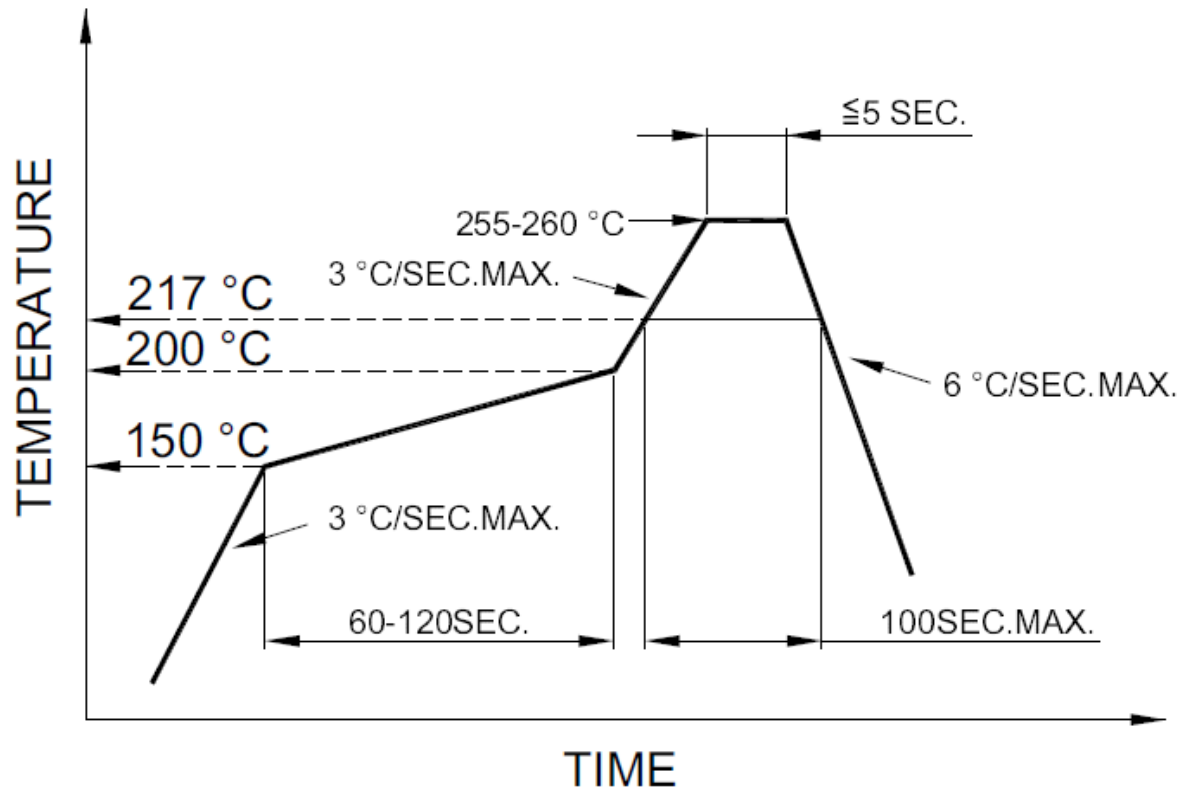


Fig.6 MAX. ALLOWABLE DC CURRENT
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Reflow Soldering



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

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Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release for HNSQ30		1.0	05-15-2013

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