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## NTE3115, NTE3116, NTE3117 Bar Graph Display

**Description:**

The NTE3115 (High-Efficiency Red), NTE3116 (High Efficiency Green), and NTE3117 (Yellow) are 10-segment bar graph displays with separate anodes and cathodes for each light segment. The packages are end stackable.

**Features:**

- Large Segments, Closely Spaced
- End Stackable
- Fast Switching, Excellent for Multiplexing
- Low Power Consumption
- Directly Compatible with IC's
- Wide Viewing Angle
- Standard .300" DIP Lead Spacing
- Categorized for Luminous Intensity (Note 1)

**Absolute Maximum Ratings:**

Power Dissipation ( $T_A = +25^\circ\text{C}$ ) .....	750mW
Derate Linearly from 50°C .....	-14.3mW/°C
Operating Temperature Range .....	-40° to +85°C
Storage Temperature Range .....	-40° to +85°C
Continuous Forward Current	
Total	
NTE3115, NTE3116 .....	300mA
NTE3117 .....	200mA
Per Segment	
NTE3115, NTE3116 .....	30mA
NTE3117 .....	25mA
Reverse Voltage, Per Segment .....	6V
Lead Temperature (During Soldering, 5sec max, Note 2) .....	+260°C

**Typical Thermal Characteristics:**

Thermal Resistance, Junction-to-Free-Air, $R_{thJA}$ .....	160°C/W
Wavelength Temperature Coefficient (Case Temperature) .....	1.0Å/°C
Forward Voltage Temperature Coefficient	
NTE3115 .....	-2.0mV/°C
NTE3116 .....	1.4mV/°C
NTE3117 .....	-1.5mV/°C

Note 1. The average Luminous Intensity is obtained by summing the Luminous Intensity of each segment and dividing by the total number of segments. The standard of measurement is the Photo Research Corp. "Spectra" Microcandela Meter (Model IV-D) corrected for wavelength. Intensity will not vary more than ±33.3% between all segments within a unit.

Note 2. Leads immersed to 1/16" (1.6mm) from the body of the device. Maximum unit surface temperature is +140°C. For flux removal, Freon TF, Freon TE, isoproponal or water may be used up to their boiling points.

**Electro-Optical Characteristics:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
Forward Voltage NTE3115, NTE3117	$I_F = 10\text{mA}$	–	2.0	2.5	V
NTE3116		–	2.2	3.0	V
Luminous Intensity (Unit Average)	$I_F = 10\text{mA}$ , Note 1	510	–	–	$\mu\text{cd}$
Pulsed Luminous Intensity (NTE3116 Only)	$I_F = 60\text{mA}$ peak, 1:6 DF	710	–	–	$\mu\text{cd}$
Peak Emission Wavelength NTE3115		–	630	–	nm
NTE3116		–	562	–	nm
NTE3117		–	585	–	nm
Spectral Line Half Width NTE3115, NTE3117		–	40	–	nm
NTE3116		–	30	–	nm
Dynamic Resistance, Segment NTE3115, NTE3117	$I_F = 20\text{mA}$	–	26	–	$\Omega$
NTE3116		–	12	–	$\Omega$
Capacitance NTE3115, NTE3117	$V = 0$ , $f = 1\text{MHz}$	–	35	–	pF
NTE3116		–	40	–	pF
Switching Time	$I_F = 10\text{mA}$	–	500	–	ns
Reverse Voltage	$I_R = 100\mu\text{A}$	6.0	–	–	V

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