



NSIC2030JB

MAXIMUM RATINGS ($T_A = 25\text{ C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Anode–Cathode Voltage	$V_{AK\text{ Max}}$	120	V
Reverse Voltage	V_R	500	mV
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +175	C
ESD Rating:	Human Body Model Machine Model	ESD	Class 3A (4000 V) Class C (400 V)

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Steady State Current @ $V_{AK} = 7.5\text{ V}$ (Note 1)	$I_{reg(SS)}$	25.5	30	34.5	mA
Voltage Overhead (Note 2)	$V_{overhead}$		1.8		V
Pulse Current @ $V_{AK} = 7.5\text{ V}$ (Note 3)	$I_{reg(P)}$	27.0	32.8	38.2	mA

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

- $I_{reg(SS)}$ steady state is the voltage (V_{AK}) applied for a time duration 80 sec, using 100 mm², 1 oz. Cu (or equivalent), in still air.
- $V_{overhead} = V_{in} - V_{LEDs}$. $V_{overhead}$ is typical value for 85% $I_{reg(SS)}$.
- $I_{reg(P)}$ non-repetitive pulse test. Pulse width $t \leq 360\text{ }\mu\text{sec}$.

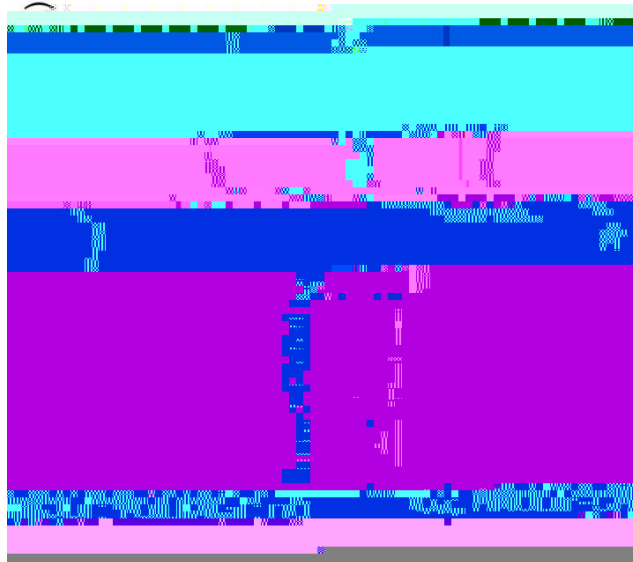


Figure 1. CCR Voltage Current Characteristic

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THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 4) $T_A = 25\text{ C}$ Derate above 25 C	P_D	1210 8.0	mW mW/ C
Thermal Resistance, Junction-to-Ambient (Note 4)	$R_{\theta JA}$	124	C/W
Thermal Reference, Junction-to-Tab (Note 4)	$R_{\psi JL}$	17.5	C/W
Total Device Dissipation (Note 5) $T_A = 25\text{ C}$ Derate above 25 C	P_D	1282 8.5	mW mW/ C
Thermal Resistance, Junction-to-Ambient (Note 5)	$R_{\theta JA}$	117	C/W
Thermal Reference, Junction-to-Tab (Note 5)	$R_{\psi JL}$	18.2	C/W
Total Device Dissipation (Note 6) $T_A = 25\text{ C}$ Derate above 25 C	P_D	1667 11.1	mW mW/ C
Thermal Resistance, Junction-to-Ambient (Note 6)	$R_{\theta JA}$	90	C/W
Thermal Reference, Junction-to-Tab (Note 6)	$R_{\psi JL}$	16.4	C/W
Total Device Dissipation (Note 7) $T_A = 25\text{ C}$ Derate above 25 C			

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TYPICAL PERFORMANCE CURVES

(Minimum FR-4 @ 100 mm², 1 oz. Copper Trace, Still Air)

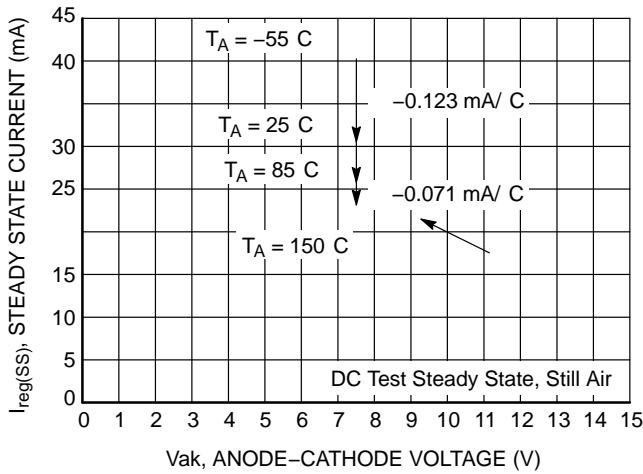


Figure 2. Steady State Current ($I_{reg(SS)}$) vs. Anode Cathode Voltage (V_{ak})

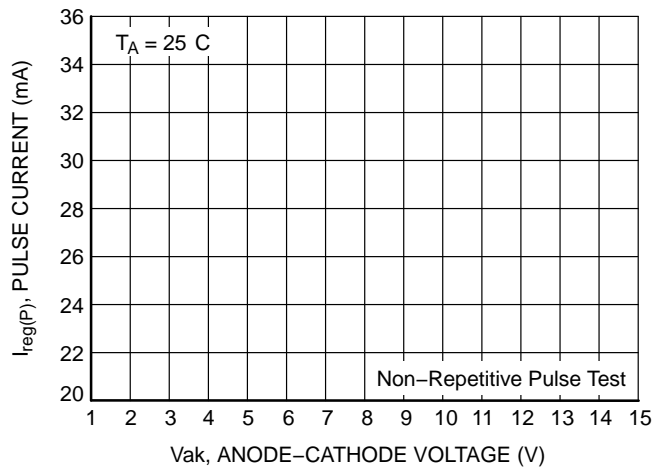


Figure 3. Pulse Current ($I_{reg(P)}$) vs. Anode Cathode Voltage (V_{ak})

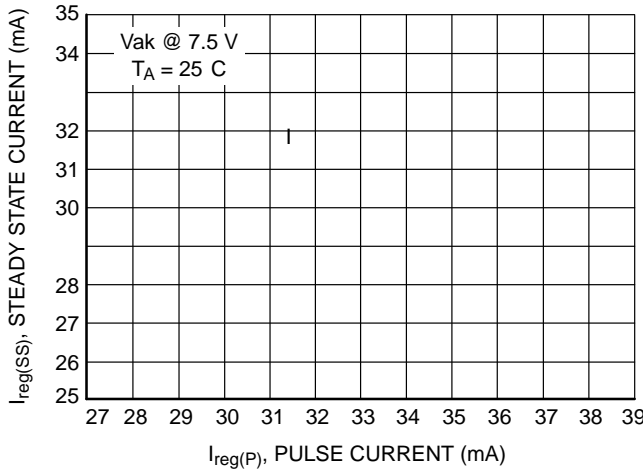


Figure 4. Steady State Current vs. Pulse Current Testing

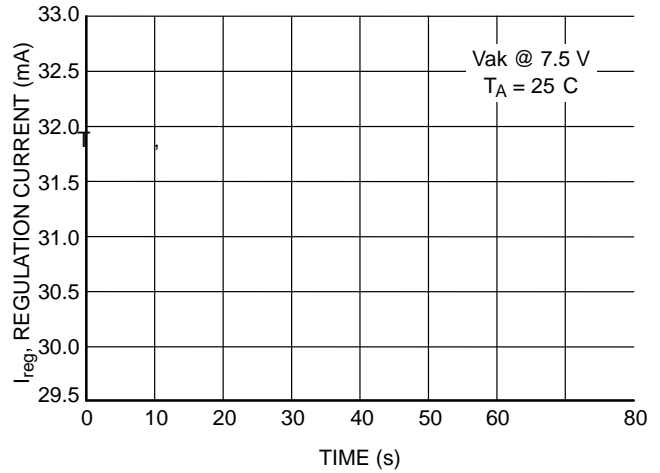


Figure 5. Current Regulation vs. Time

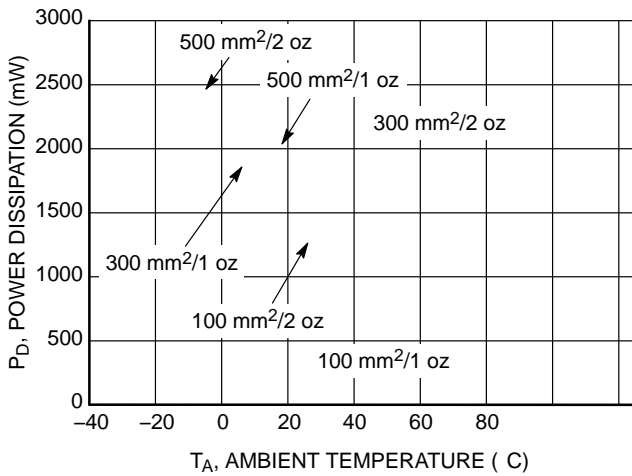


Figure 6. Power Dissipation vs. Ambient Temperature @ $T_J = 175 \text{ C}$: Small Footprint

Higher Current LED Strings



Figure 11.

Dimming using PWM

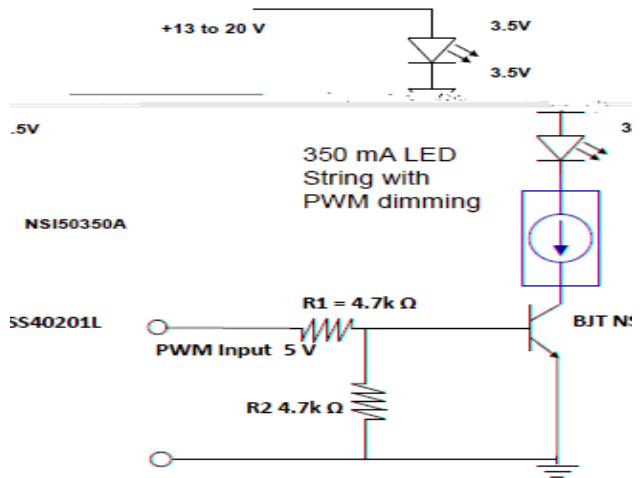


Figure 13.

Other Currents

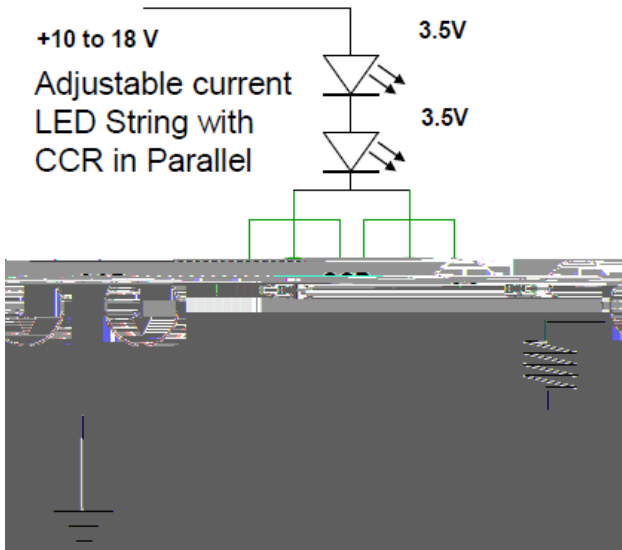


Figure 12.

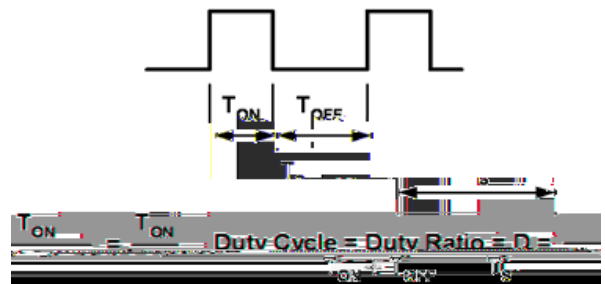
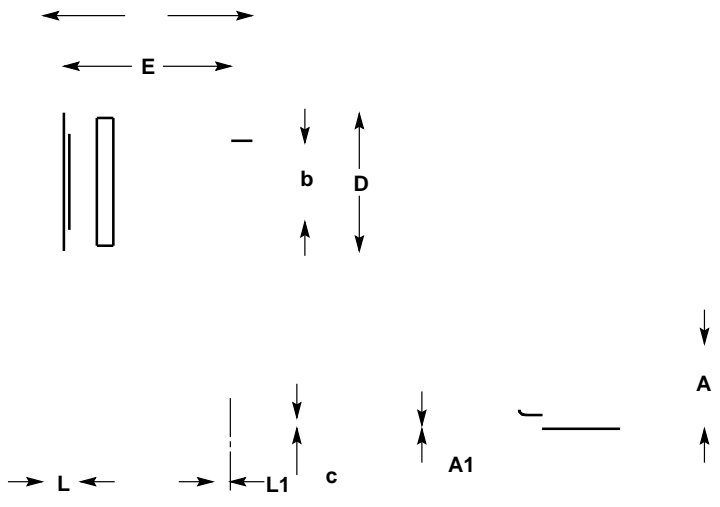
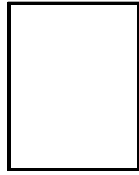


Figure 14.



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L1.

AYWW
XXXXX▪
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- XXXXX = Specific Device Code
- A = Assembly Location
- Y = Year
- WW = Work Week
- = Pb-Free Package

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