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2N6116 Silicon Programmable Unijunction Transistor (PUT)

SILICON PROGRAMMABLE UNIUNCTION TRANSISTORS

... designed to enable the engineer to "program" unijunction characteristics such as R_{BB} , η , I_V , and I_P by merely selecting two resistor values. Application includes thyristor-trigger, oscillator, pulse and timing circuits. These devices may also be used in special thyristor applications due to the availability of an anode gate.

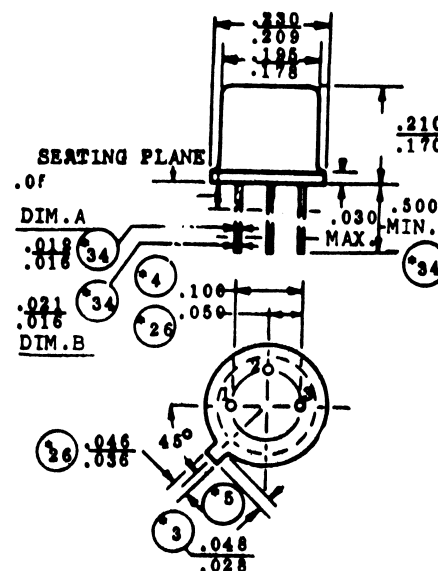
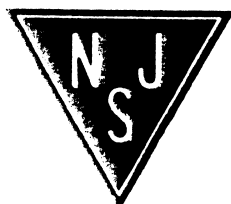
- Programmable — R_{BB} , η , I_V and I_P
- Hermetic TO-18 Package
- Low On-State Voltage — 1.5 Volts Maximum @ $I_F = 50$ mA
- Low Gate to Anode Leakage Current — 5.0 nA Maximum
- High Peak Output Voltage — 16 Volts Typical
- Low Offset Voltage — 0.35 Volt Typical ($R_G = 10$ k ohms)

*MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Repetitive Peak Forward Current 100 μ s Pulse Width, 1.0% Duty Cycle	I_{TRM}	1.0	Amp
20 μ s Pulse Width, 1.0% Duty Cycle		2.0	Amp
Non Repetitive Peak Forward Current 10 μ s Pulse Width	I_{TSM}	5.0	Amp
DC Forward Anode Current Derate Above 25°C	I_T	200 2.0	mA mA/°C
DC Gate Current	I_G	±20	mA
Gate to Cathode Forward Voltage	V_{GKF}	40	Volt
Gate to Cathode Reverse Voltage	V_{GKR}	5.0	Volt
Gate to Anode Reverse Voltage	V_{GAR}	40	Volt
Anode to Cathode Voltage	V_{AK}	±40	Volt
Forward Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_F $1/\theta_{JA}$	250 2.5	mW mW/°C
Operating Junction Temperature Range	T_J	-55 to +125	°C
Storage Temperature Range	T_{stg}	-65 to +200	°C

*Indicates JEDEC Registered Data

TO-18



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

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

Characteristic	Figure	Symbol	Min	Typ	Max	Unit
Offset Voltage ($V_S = 10\text{ Vdc}$, $R_G = 10\text{ k ohms}$)	1	V_T	0.2 0.2	0.70 0.35	1.6 0.6	Volts
Gate to Anode Leakage Current ($V_S = 40\text{ Vdc}$, $T_A = 25^\circ\text{C}$, Cathode Open) ($V_S = 40\text{ Vdc}$, $T_A = 75^\circ\text{C}$, Cathode Open)	-	I_{GAO}	- -	1.0 30	5.0 75	nA dc
Gate to Cathode Leakage Current ($V_S = 40\text{ Vdc}$, Anode to Cathode Shorted)	-	I_{GKS}	-	5.0	50	nA dc
Peak Current ($V_S = 10\text{ Vdc}$, $R_G = 10\text{ k ohms}$)	2, 9, 14	I_p	-	1.25 4.0	2.0 5.0	μA
Valley Current ($V_S = 10\text{ Vdc}$, $R_G = 10\text{ M ohms}$) ($V_S = 10\text{ Vdc}$, $R_G = 10\text{ k ohms}$)	1, 4, 5	I_v	- 70	18 270	50 -	μA
Forward Voltage ($I_F = 50\text{ mA Peak}$)	1, 6	V_T	-	0.8	1.5	Volts
Peak Output Voltage ($V_B = 20\text{ Vdc}$, $C_C = 0.2\text{ }\mu\text{F}$)	3, 7	V_o	6.0	16	-	Volts
Pulse Voltage Rise Time ($V_B = 20\text{ Vdc}$, $C_C = 0.2\text{ }\mu\text{F}$)	3	t_r	-	40	80	ns

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