

### FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
<b>Repetitive peak forward current</b> 100µs pulse width, 1.0% duty cycle 20µs pulse width, 1.0% duty cycle	$I_{TRM}$	1.0 2.0	Amp
<b>Non repetitive peak forward current</b> 10µs pulse width	$I_{TSM}$	5.0	Amp
<b>DC forward anode current</b> Derate above 25°C	$I_T$	200 2.0	mA mA/°C
<b>DC gate current</b>	$I_G$	±20	mA
<b>Gate to cathode forward voltage</b>	$V_{GKF}$	40	Volt
<b>Gate to cathode reverse voltage</b>	$V_{GKR}$	5.0	Volt
<b>Gate to anode reverse voltage</b>	$V_{GAR}$	40	Volt
<b>Anode to cathode voltage</b>	$V_{AK}$	±40	Volt
<b>Forward power dissipation @ <math>T_A = 25^\circ\text{C}</math></b> Derate above 25°C	$P_F$ $1/\theta_{JA}$	250 2.5	mW mW/°C
<b>Operating junction temperature range</b>	$T_J$	-55 to 125	°C
<b>Storage temperature range</b>	$T_{stg}$	-65 to 200	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	
<b>Offset voltage</b> ( $V_S = 10\text{Vdc}$ , $R_G = 1.0\text{M}\Omega$ )	$V_T$	0.2	0.70	1.6	Volts	
2N6116			0.50	0.6		
2N6117			0.40	0.6		
2N6118			0.35	0.6		
( $V_S = 10\text{Vdc}$ , $R_G = 10\text{k}\Omega$ )	All types	0.2	0.35	0.6		
<b>Gate to anode leakage current</b> ( $V_S = 40\text{Vdc}$ , $T_A = 25^\circ\text{C}$ , cathode open) ( $V_S = 40\text{Vdc}$ , $T_A = 75^\circ\text{C}$ , cathode open)	$I_{GAO}$	-	1.0 30	5.0 75	nAdc	
<b>Gate to cathode leakage current</b> ( $V_S = 40\text{Vdc}$ , anode to cathode shorted)	$I_{GKS}$	-	5.0	50	nAdc	
<b>Peak current</b> ( $V_S = 10\text{Vdc}$ , $R_G = 1\text{M}\Omega$ )	$I_p$	-	1.25	2.00	$\mu\text{A}$	
2N6116			0.19	0.30		
2N6117			0.08	0.15		
2N6118			4.00	5.00		
( $V_S = 10\text{Vdc}$ , $R_G = 10\text{k}\Omega$ )			2N6116	1.20		2.00
2N6117			0.70	1.00		
2N6118						

# 2N6116-2N6118

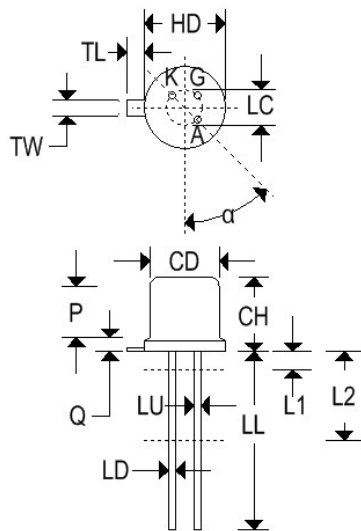
## SILICON PROGRAMMABLE UNIJUNCTION TRANSISTORS

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>Valley current</b> ( $V_S = 10\text{Vdc}$ , $R_G = 1\text{M}\Omega$ )	$I_V$	-	18	50	$\mu\text{A}$
2N6116, 2N6117		-	18	25	
2N6118		70	270	-	
( $V_S = 10\text{Vdc}$ , $R_G = 10\text{k}\Omega$ )		50	270	-	
<b>Forward voltage</b> ( $I_F = 50\text{mA}$ peak)	$V_F$	-	0.8	1.5	Volts
<b>Peak output voltage</b> ( $V_B = 20\text{Vdc}$ , $C_C = 0.2\mu\text{F}$ )	$V_O$	6.0	16	-	Volts
<b>Pulse voltage rise time</b> ( $V_B = 20\text{Vdc}$ , $C_C = 0.2\mu\text{F}$ )	$t_r$	-	40	80	ns

**MECHANICAL CHARACTERISTICS**

<b>Case</b>	TO-18
<b>Marking</b>	Body painted, alpha-numeric
<b>Pin out</b>	See below



Dim	TO-18			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	0.178	0.195	4.520	4.950
CH	0.140	0.210	3.556	5.330
HD	0.209	0.230	5.310	5.840
LC	0.100 TP		2.540 TP	
LD	0.016	0.021	0.410	0.530
LL	0.500	0.750	12.700	19.050
LU	0.016	0.019	0.410	0.480
L <sub>1</sub>	-	0.050	-	1.270
L <sub>2</sub>	0.250	-	6.350	-
P	0.100	-	2.540	-
Q	-	0.040	-	1.020
TL	0.028	0.048	0.710	1.220
TW	0.036	0.046	0.910	1.170
$\alpha$	45°TP		45°TP	

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## SILICON PROGRAMMABLE UNIJUNCTION TRANSISTORS

FIGURE 1 – ELECTRICAL CHARACTERIZATION

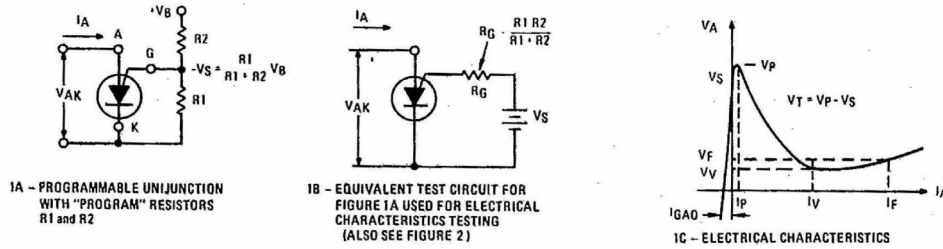


FIGURE 2 – PEAK CURRENT ( $I_p$ ) TEST CIRCUIT

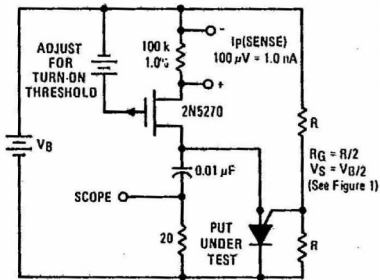


FIGURE 3 –  $V_0$  AND  $t_r$  TEST CIRCUIT

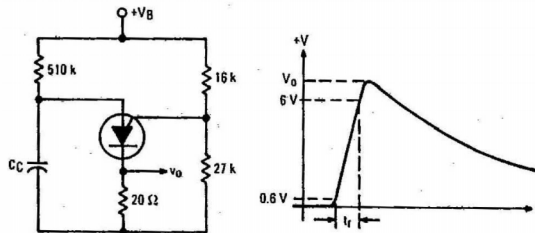


FIGURE 4 – EFFECT OF SUPPLY VOLTAGE

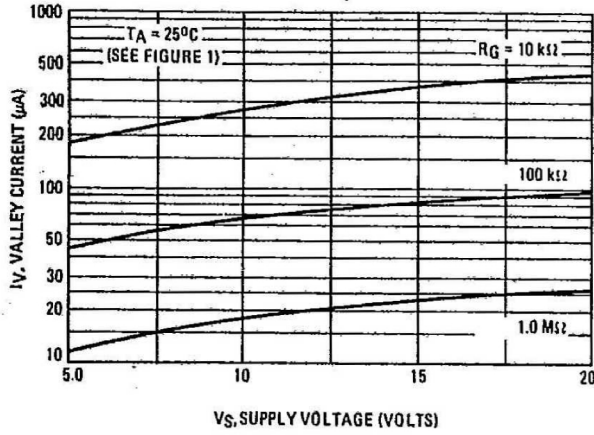


FIGURE 5 – EFFECT OF TEMPERATURE

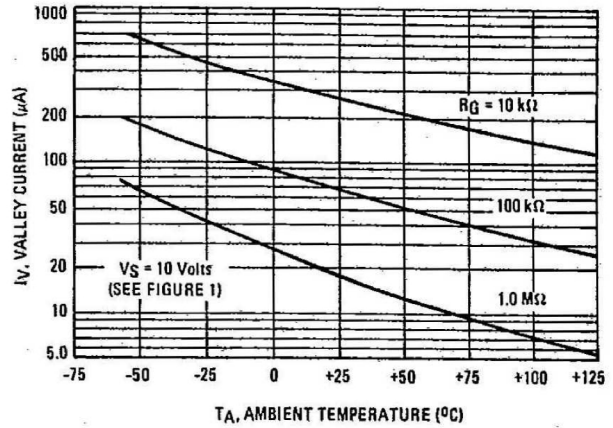


FIGURE 6 – FORWARD VOLTAGE

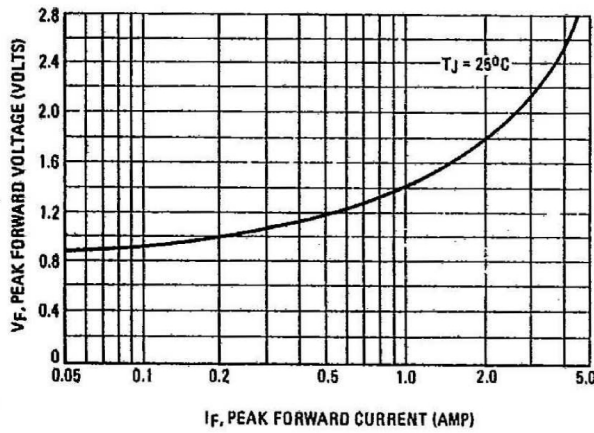


FIGURE 7 – PEAK OUTPUT VOLTAGE

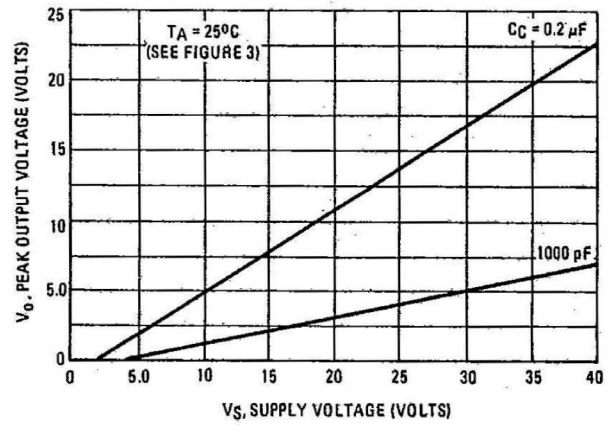
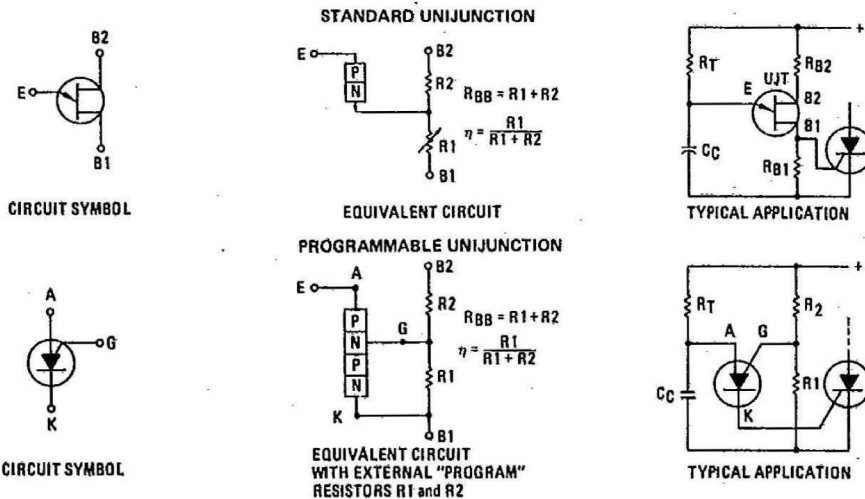
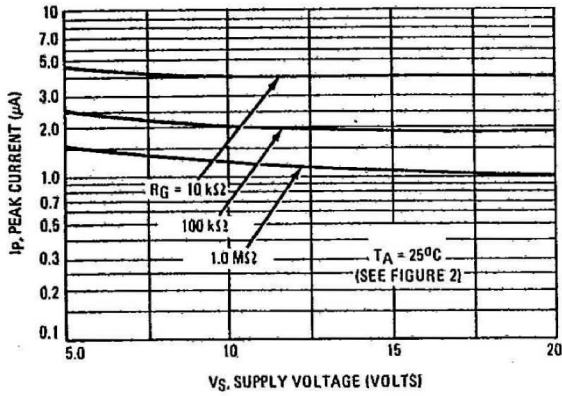


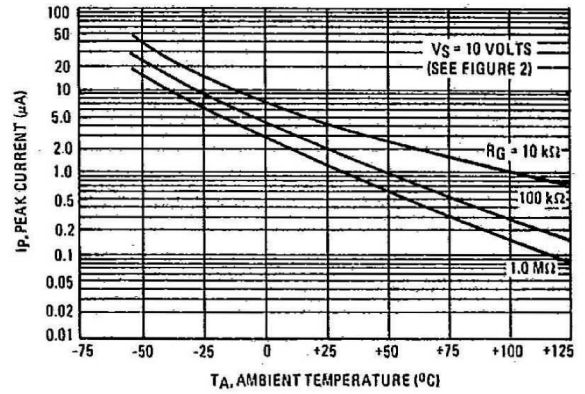
FIGURE 8 – STANDARD UNIJUNCTION  
COMPARED TO PROGRAMMABLE UNIJUNCTION



**FIGURE 9 – EFFECT OF SUPPLY VOLTAGE AND  $R_G$**

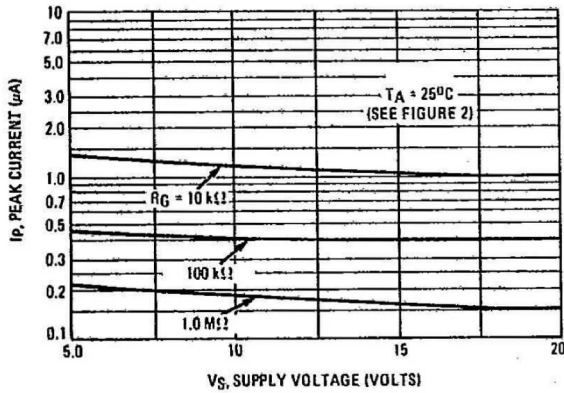


**FIGURE 10 – EFFECT OF TEMPERATURE AND  $R_G$**

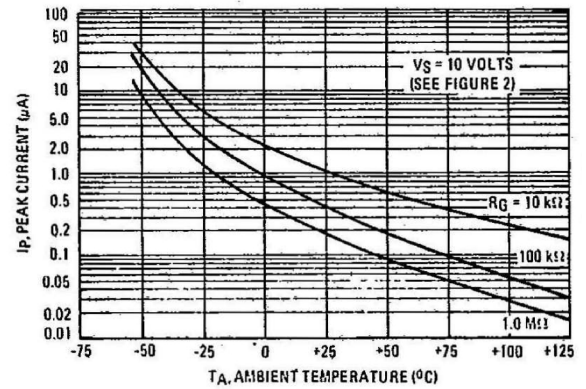


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**FIGURE 11 – EFFECT OF SUPPLY VOLTAGE AND  $R_G$**

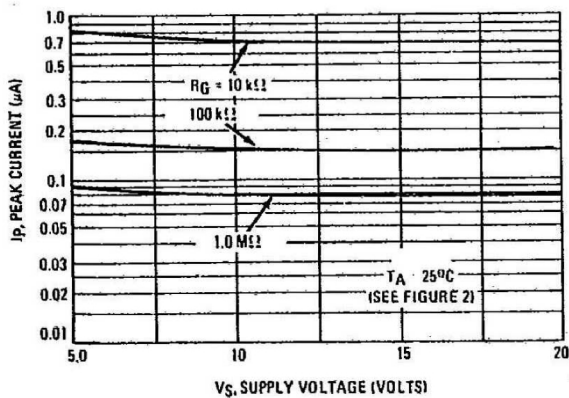


**FIGURE 12 – EFFECT OF TEMPERATURE AND  $R_G$**



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**FIGURE 13 – EFFECT OF SUPPLY VOLTAGE AND  $R_G$**



**FIGURE 14 – EFFECT OF TEMPERATURE AND  $R_G$**

