

2N6027-2N6028

PN UNIJUNCTION TRANSISTOR

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
Power dissipation Derate above 25°C	P_F	300	mW
	$1/\theta_{JA}$	4.0	mW/°C
DC forward anode current Derate above 25°C	I_T	150	mA
		2.67	mA/°C
DC gate current	I_G	±50	mA
Repetitive peak forward current 100µs pulse width, 1.0% duty cycle 20µs pulse width, 1.0% duty cycle	I_{TRM}	1.0	Amp
		2.0	
Non-repetitive peak forward current 10µs pulse width	I_{TSM}	5.0	Amp
Gate to cathode forward voltage	V_{GKF}	40	Volts
Gate to cathode reverse voltage	V_{GKR}	-5.0	Volts
Gate to anode reverse voltage	V_{GAR}	40	Volts
Anode to cathode voltage ⁽¹⁾	V_{AK}	±40	Volts
Operating junction temperature range	T_J	-50 to 100	°C
Storage temperature range	T_{stg}	-55 to 150	°C

Note 1: Anode positive: $R_{GA} = 1000\text{ohms}$, Anode negative: $R_{GA} = \text{open}$

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

Characteristic		Symbol	Min	Typ	Max	Unit
Peak current ($V_S = 10\text{Vdc}$, $R_G = 1.0\text{M}\Omega$) ($V_S = 10\text{Vdc}$, $R_G = 10\text{k}\Omega$)	2N6027	I_P	-	1.25	2.0	μA
	2N6028		-	0.08	0.15	
	2N6027		-	4.0	5.0	
	2N6028		-	0.70	1.0	
Off set voltage ($V_S = 10\text{Vdc}$, $R_G = 1.0\text{M}\Omega$) ($V_S = 10\text{Vdc}$, $R_G = 10\text{k}\Omega$)	2N6027	V_T	0.2	0.70	1.6	Volts
	2N6028		0.2	0.50	0.6	
	(both)		0.2	0.35	0.6	
Valley current ($V_S = 10\text{Vdc}$, $R_G = 1.0\text{M}\Omega$) ($V_S = 10\text{Vdc}$, $R_G = 10\text{k}\Omega$) ($V_S = 10\text{Vdc}$, $R_G = 200\Omega$)	2N6027	I_V	-	18	50	μA
	2N6028		-	18	25	
	2N6027		70	270	-	mA
	2N6028		25	270	-	
	2N6027		1.5	-	-	
	2N6028		1.0	-	-	
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	10	nAdc
			-	3.0	-	

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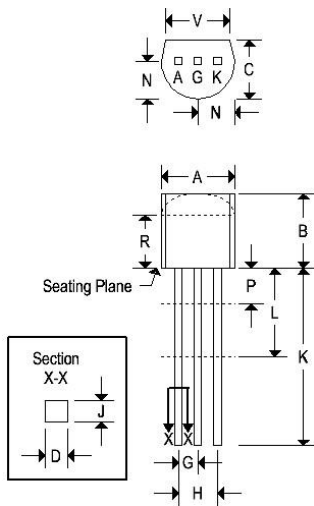
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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit
Gate to cathode leakage current (V _S = 40Vdc, anode to cathode shorted)	I _{GKS}	-	5.0	50	nAdc
Forward voltage (I _F = 50mA peak)	V _F	-	0.8	1.5	Volts
Peak output voltage (V _B = 20Vdc, C _c = 0.2μF)	V _O	6.0	11	-	Volts
Pulse voltage rise time (V _B = 20Vdc, C _c = 0.2μF)	t _r	-	40	80	ns

MECHANICAL CHARACTERISTICS

Case:	TO-92
Marking:	Alpha-numeric
Pin out:	See below



Dim	TO-92			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.175	0.205	4.450	5.200
B	0.170	0.210	4.320	5.330
C	0.125	0.165	3.180	4.190
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.150	1.390
H	0.095	0.105	2.420	2.660
J	0.015	0.020	0.390	0.500
K	0.500	-	12.700	-
L	0.250	-	6.350	-
N	0.080	0.105	2.040	2.660
P	-	0.100	-	2.540
R	0.115	-	2.930	-
V	0.135	-	3.430	-

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FIGURE 1 – ELECTRICAL CHARACTERIZATION

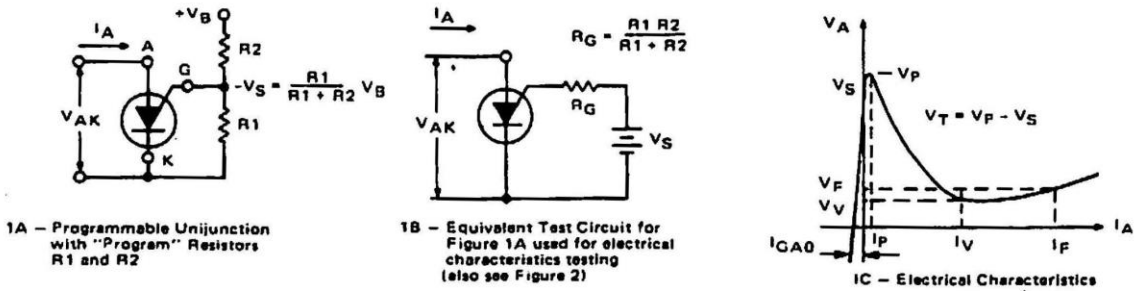


FIGURE 2 – PEAK CURRENT (I_p) TEST CIRCUIT

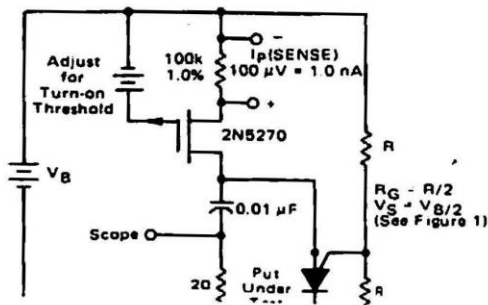
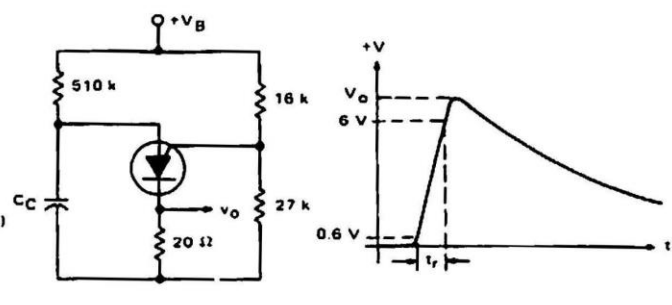


FIGURE 3 – V_o AND t_r TEST CIRCUIT



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FIGURE 4 – EFFECT OF SUPPLY VOLTAGE

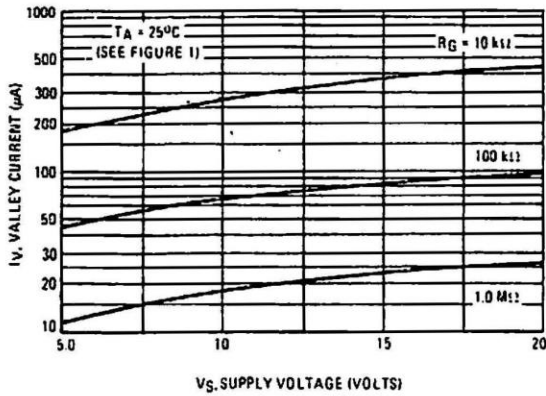


FIGURE 5 – EFFECT OF TEMPERATURE

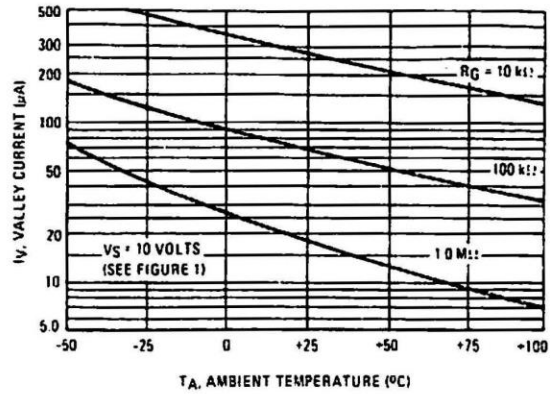


FIGURE 6 – FORWARD VOLTAGE

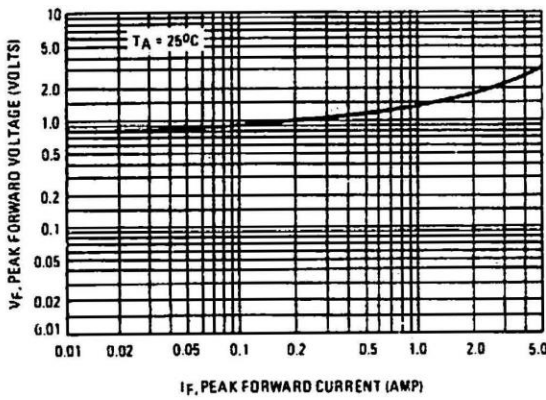


FIGURE 7 – PEAK OUTPUT VOLTAGE

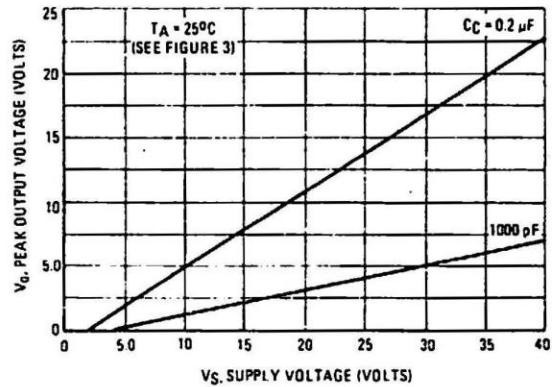
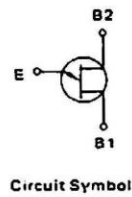
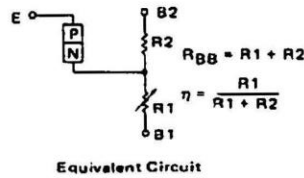


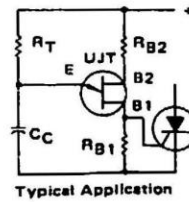
FIGURE 8 – STANDARD UNIJUNCTION
COMPARED TO PROGRAMMABLE UNIJUNCTION



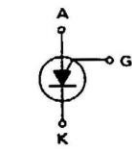
Circuit Symbol



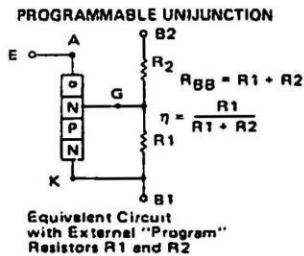
Equivalent Circuit



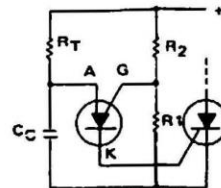
Typical Application



Circuit Symbol



Equivalent Circuit with External "Program" Resistors R_1 and R_2



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FIGURE 9 – EFFECT OF SUPPLY VOLTAGE AND R_G

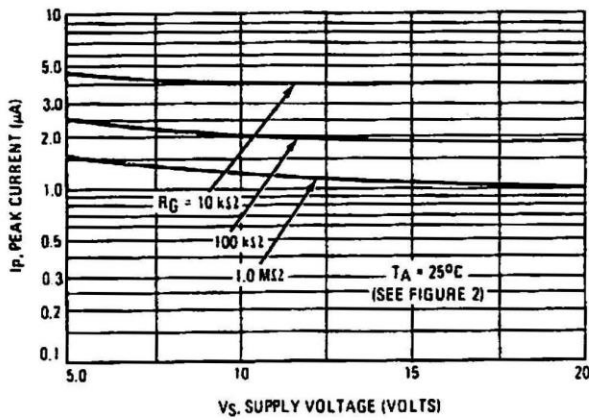
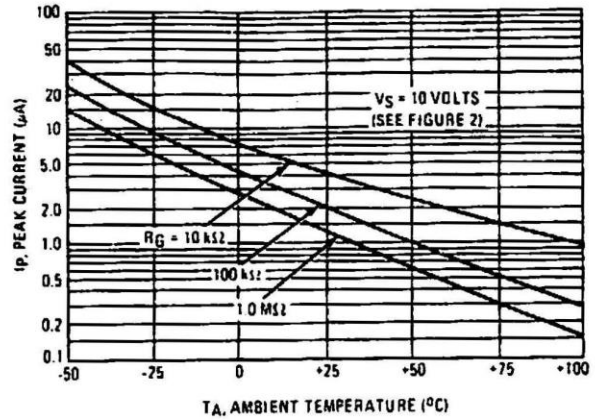


FIGURE 10 – EFFECT OF TEMPERATURE AND R_G



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FIGURE 11 – EFFECT OF SUPPLY VOLTAGE AND R_G

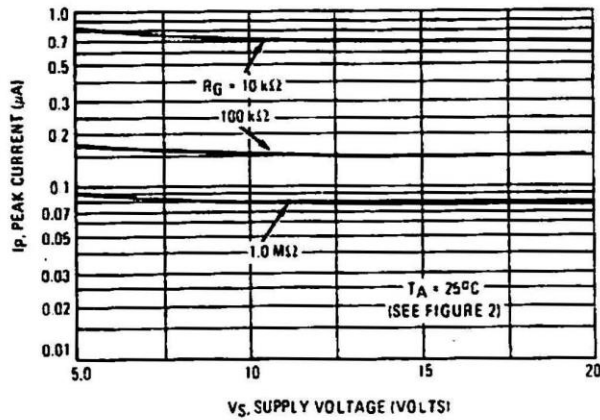


FIGURE 12 – EFFECT OF TEMPERATURE AND R_G

