DIGITRON SEMICONDUCTORS

2N6027-2N6028 PROGRAMMABLE UNIJUNCTION TRANSISTORS

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).
Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Power dissipation Derate above 25°C	P_F $1/\Theta_{JA}$	300 4.0	mW mW/°C
DC forward anode current Derate above 25°C	I_T	150 2.67	mA 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 2.0	Amp
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} = 1000ohms, Anode negative: R_{GA} = open

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

Characteristic		Symbol	Min	Typ	Max	Unit
Peak current						
(V_S = 10Vdc, R_G = 1.0MΩ)	2N6027		-	1.25	2.0	
	2N6028	I_P	-	0.08	0.15	µA
(V_S = 10Vdc, R_G = 10kΩ)	2N6027		-	4.0	5.0	
	2N6028		-	0.70	1.0	
Off set voltage						
(V_S = 10Vdc, R_G = 1.0MΩ)	2N6027	V_T	0.2	0.70	1.6	Volts
	2N6028		0.2	0.50	0.6	
(V_S = 10Vdc, R_G = 10kΩ)	(both)		0.2	0.35	0.6	
Valley current						
(V_S = 10Vdc, R_G = 1.0MΩ)	2N6027		-	18	50	µA
	2N6028		-	18	25	
(V_S = 10Vdc, R_G = 10kΩ)	2N6027	I_V	70	270	-	
	2N6028		25	270	-	
(V_S = 10Vdc, R_G = 200Ω)	2N6027		1.5	-	-	mA
	2N6028		1.0	-	-	
Gate to anode leakage current						
(V_S = 40Vdc, T_A = 25°C, cathode open)		I_{GAO}	-	1.0	10	nAdc
(V_S = 40Vdc T_A = 75°C, cathode open)			-	3.0	-	
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

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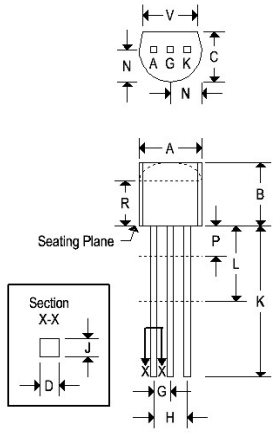
D I G I T R O N S E M I C O N D U C T O R S

2N6027-2N6028 PROGRAMMABLE UNIJUNCTION TRANSISTORS

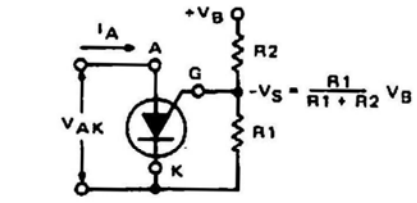
MECHANICAL CHARACTERISTICS

Case	TO-92
Marking	Body painted, alpha-numeric
Pin out	See below

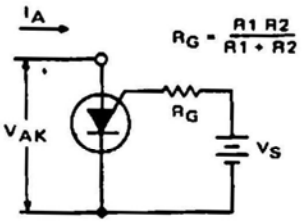


Dim	TO-92			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.175	0.205	4.450	5.200
B	0.170	0.210	4.320	5.330
C	0.125	0.165	3.180	4.190
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.150	1.390
H	0.095	0.105	2.420	2.660
J	0.015	0.020	0.390	0.500
K	0.500	-	12.700	-
L	0.250	-	6.350	-
N	0.080	0.105	2.040	2.660
P	-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

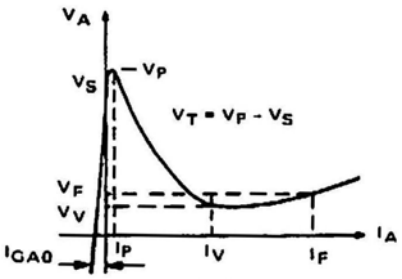
FIGURE 1 – ELECTRICAL CHARACTERIZATION



1A – Programmable Unijunction with "Program" Resistors R1 and R2



1B – Equivalent Test Circuit for Figure 1A used for electrical characteristics testing (also see Figure 2)



1C – Electrical Characteristics

FIGURE 2 – PEAK CURRENT (Ip) TEST CIRCUIT

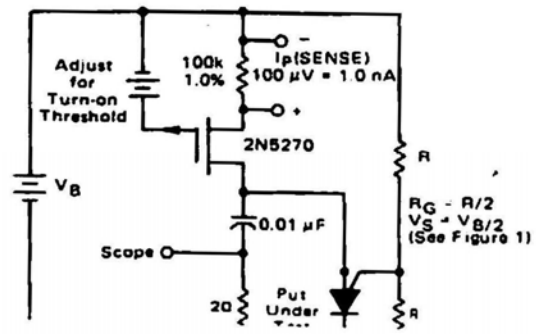


FIGURE 3 – V_o AND t_r TEST CIRCUIT

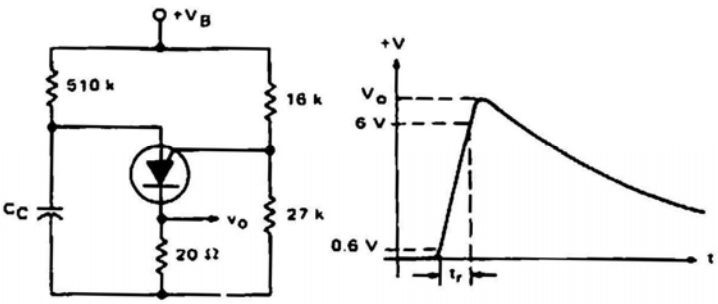


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FIGURE 4 – EFFECT OF SUPPLY VOLTAGE

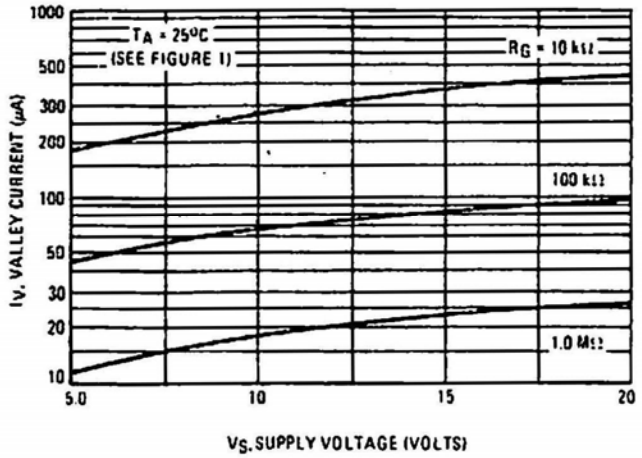


FIGURE 5 – EFFECT OF TEMPERATURE

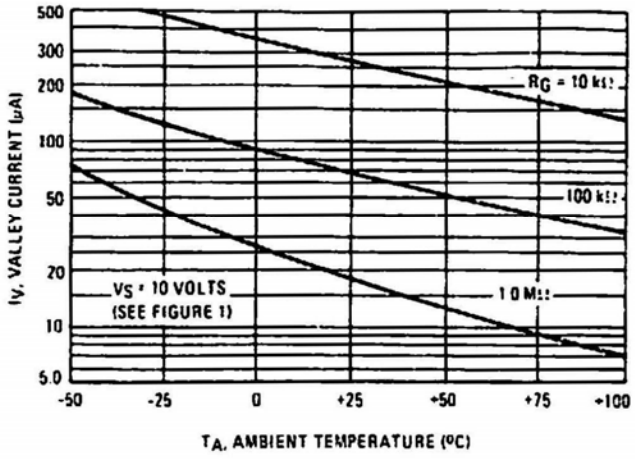


FIGURE 6 – FORWARD VOLTAGE

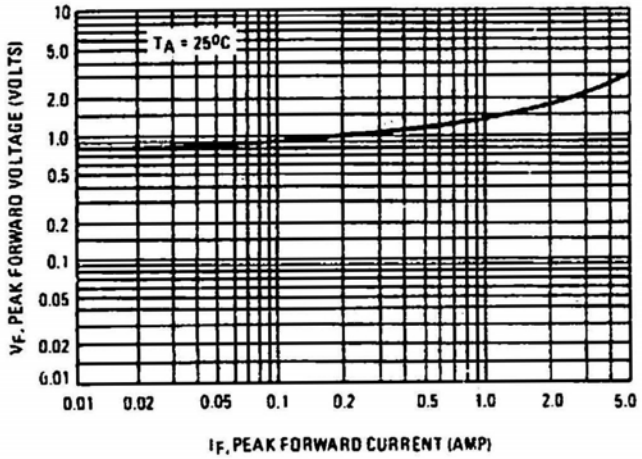


FIGURE 7 – PEAK OUTPUT VOLTAGE

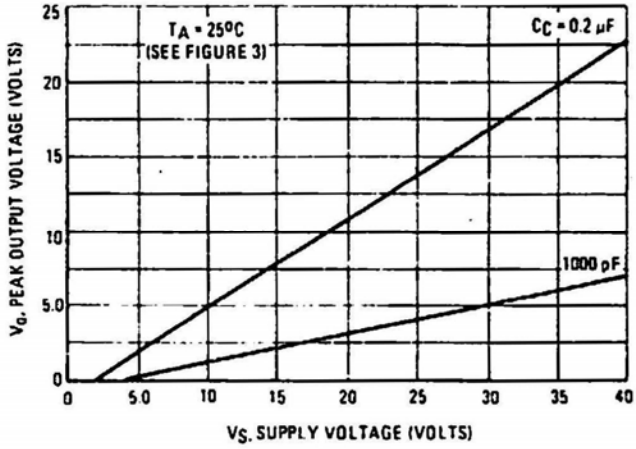
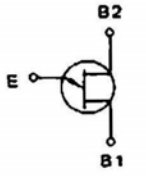
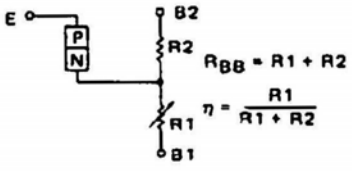


FIGURE 8 – STANDARD UNIJUNCTION COMPARED TO PROGRAMMABLE UNIJUNCTION

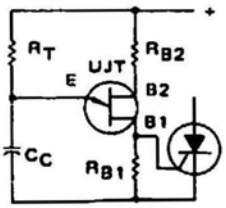
STANDARD UNIJUNCTION



Circuit Symbol



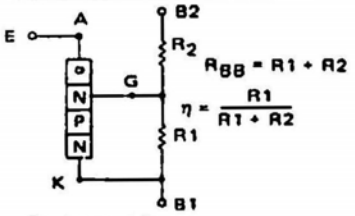
Equivalent Circuit



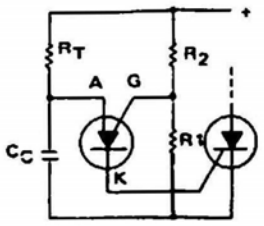
Typical Application

PROGRAMMABLE UNIJUNCTION

Circuit Symbol



Equivalent Circuit
with External "Program"
Resistors R1 and R2



Typical Application

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FIGURE 9 – EFFECT OF SUPPLY VOLTAGE AND R_G

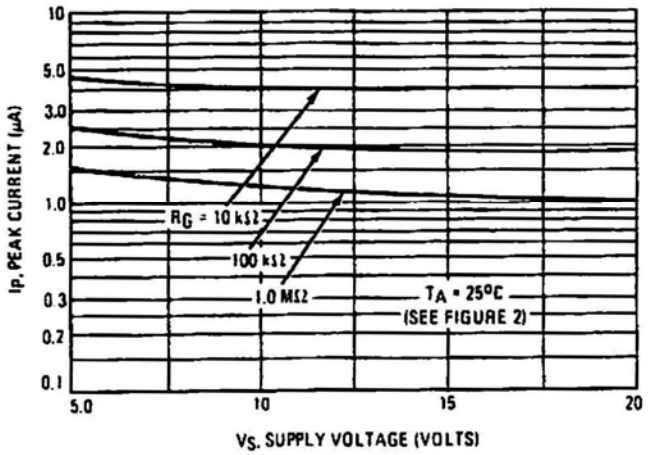
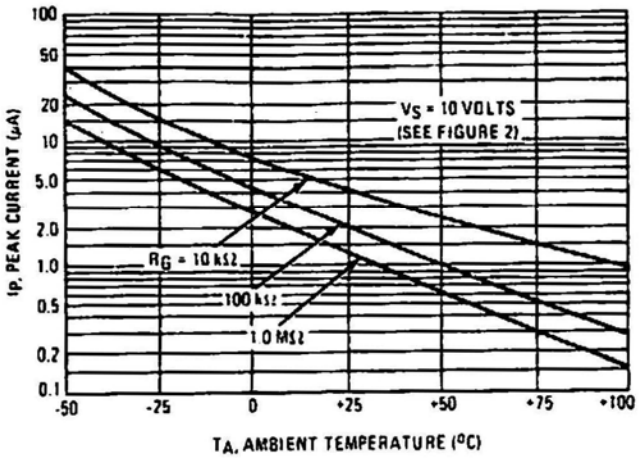


FIGURE 10 – EFFECT OF TEMPERATURE AND R_G



2N6028

FIGURE 11 – EFFECT OF SUPPLY VOLTAGE AND R_G

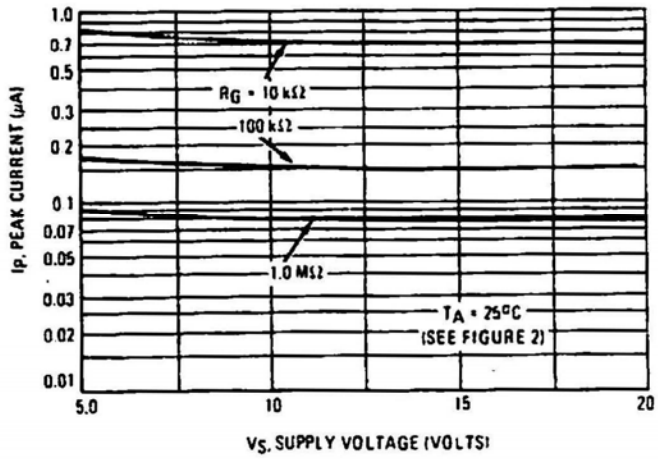
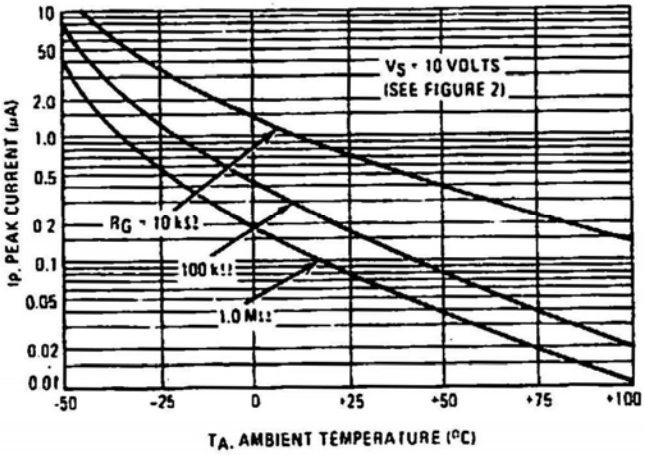


FIGURE 12 – EFFECT OF TEMPERATURE AND R_G



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