

High-reliability discrete products and engineering services since 1977

PROGRAMMABLE UNIJUNCTION TRANSISTORS

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	P _F	375	mW
Derate above 25°C	$1/\Theta_{JA}$	5.0	mW/°C
DC forward anode current		200	mA
Derate above 25°C	IT	2.67	mA/°C
DC gate current	l _G	±20	mA
Repetitive peak forward current			
100µs pulse width, 1.0% duty cycle	I _{TRM}	1.0	Amp
20μs pulse width, 1.0% duty cycle		2.0	
Non-repetitive peak forward current			A
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	V _{AK}	±40	Volts
Operating junction temperature range	Tj	-50 to 100	°C
Storage temperature range	T _{stg}	-65 to 150	°C

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

Characteristic		Symbol	Min	Тур	Max	Unit
Peak current						
$(V_{s} = 10Vdc, R_{g} = 1.0M\Omega)$	MPU131		-	1.25	2.0	
	MPU132		-	0.19	0.30	
	MPU133	IP	-	0.08	0.15	μΑ
$(V_s = 10Vdc, R_g = 10k\Omega)$	MPU131		-	4.0	5.0	
	MPU132		-	1.20	2.0	
	MPU133		-	0.70	1.0	
Off set voltage						
$(V_S = 10 V dc, R_G = 1.0 M \Omega)$	N 101 14 24	V _T	0.2	0.70	1.6	
	MPU131		0.2	0.50	0.6	Volts
	MPU132		0.2	0.40	0.6	
$(V_s = 10Vdc, R_g = 10k\Omega)$	MPU133 (all types)		0.2	0.35	0.6	
Valley current						
$(V_{s} = 10Vdc, R_{g} = 1.0M\Omega)$	MPU131, MPU132		-	18	50	
	MPU133	Iv	-	18	25	μΑ
$(V_{s} = 10Vdc, R_{g} = 10k\Omega)$	MPU131 70 270 -					
	MPU132, MPU133		50	270	-	
Gate to anode leakage current						
(V _s = 40Vdc, T _A = 25°C, cathode	open)	I _{GAO}	-	1.0	5.0	nAdc
$(V_s = 40Vdc T_A = 75^{\circ}C, cathode open)$			-	30	75	



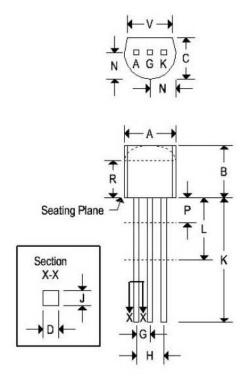
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Gate to cathode leakage current (V _s = 40Vdc, anode to cathode shorted)	I _{GKS}	-	5.0	50	nAdc
Forward voltage (I _F = 50mA peak)	V _F	-	0.8	1.5	Volts
Peak output voltage ($V_B = 20Vdc, C_C = 0.2\mu F$)	Vo	6.0	11	-	Volts
Pulse voltage rise time $(V_B = 20Vdc, C_c = 0.2\mu F)$	tr	-	40	80	ns

MECHANICAL CHARACTERISTICS

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



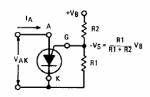
Dim	TO-92					
	Inches		Millimeters			
	Min	Max	Min	Max		
Α	0.175	0.205	4.450	5.200		
В	0.170	0.210	4.320	5.330		
С	0.125	0.165	3.180	4.190		
D	0.016	0.021	0.407	0.533		
G	0.045	0.055	1.150	1.390		
Η	0.095	0.105	2.420	2.660		
J	0.015	0.020	0.390	0.500		
К	0.500	and and a second	12.700	-		
L	0.250	1	6.350	127		
N	0.080	0.105	2.040	2.660		
Р		0.100		2.540		
R	0.115	Ξ.	2.930	(#3)		
۷	0.135	-	3.430	-		



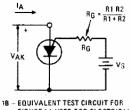
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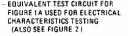
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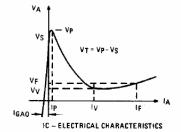
ELECTRICAL CHARACTERIZATION



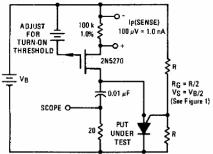
1A - PROGRAMMABLE UNIJUNCTION WITH "PROGRAM" RESISTORS R1 and R2



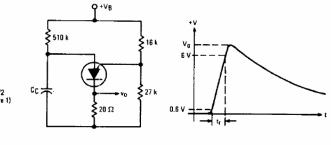




PEAK CURRENT (Ip) TEST CIRCUIT









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MPU131-MPU133

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EFFECT OF SUPPLY VOLTAGE EFFECT OF TEMPERATURE 500 1000 TA = 25°C RG = 10 kΩ 300 (SEE FIGURE 1) 500 = 10 kΩ 200 ٦f IV, VALLEY CURRENT (#A) 300 IV, VALLEY CURRENT (MA) 200 100 100 kΩ 100 kΩ 100 50 50 20 VS = 10 VOLTS 10 MΩ 30 (SEE FIGURE 1) 10 20 1.0 MΩ 10 5.0 +100 20 +25 +50 +75 5.0 10 15 -50 -25 a TA, AMBIENT TEMPERATURE (°C) VS, SUPPLY VOLTAGE (VOLTS) PEAK OUTPUT VOLTAGE FORWARD VOLTAGE 25 10 Cc = 0.2 µF TIL TA = 25°C (SEE FIGURE 3) = 25°C 5.0 Vo. PEAK GUTPUT VOLTAGE (VOLTS) PEAK FORWARD VOLTAGE (VOLTS) ++++ 20 2.0 1,0 15 0.5 \mathbf{F} 0.2 1000 pF 0.1 0.05 Υ. 0.02 t 0.01 11 ۵ 35 40 0 5.0 10 15 20 25 30 2.0 0.01 0.02 0.05 0.1 0.2 0.5 1.0 5.0 VS, SUPPLY VOLTAGE (VOLTS) IF, PEAK FORWARD CURRENT (AMP) STANDARD UNIJUNCTION COMPARED TO PROGRAMMABLE UNIJUNCTION STANDARD UNIJUNCTION E¢ 0 R2 R PN 111 R2 = R \$ + R2 R1 + R2 R 1 CC Ŕя BI TYPICAL APPLICATION EQUIVALENT CIRCUIT CIRCUIT SYMBOL PROGRAMMABLE UNIJUNCTION 0 B2 Eq R2 PZPZ R88 = R1+R2 G • R1 • R1 + R2 Co κ δR1 EQUIVALENT CIRCUIT WITH EXTERNAL "PROGRAM" RESISTORS R1 and R2 TYPICAL APPLICATION CIRCUIT SYMBOL

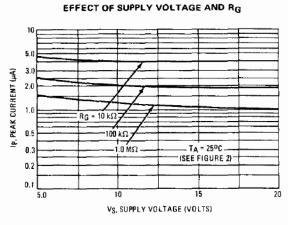


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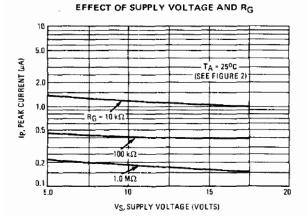


MPU131

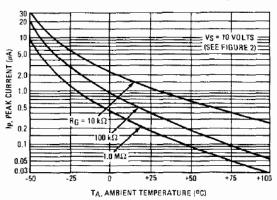


100 50 21 VS = 10 VOLTS PEAK CURRENT (µA) (SEE FIGURE 2) 10 5.0 2.0 10 kΩ 1.0 ßß <u>s</u>È 100 kΩ 0.5 LOŃΩ 0.2 0.1 -50 .21 +25 +50100 TA, AMBIENT TEMPERATURE (PC)

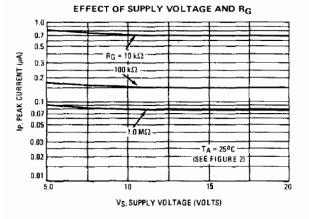
MPU132



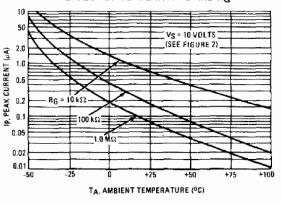
EFFECT OF TEMPERATURE AND RG



MPU 133



EFFECT OF TEMPERATURE AND RG



EFFECT OF TEMPERATURE AND RG