

2N3980

PN UNIJUNCTION TRANSISTOR

High-reliability discrete products and engineering services since 1977

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number. ٠
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

MAXIMONINATINGS							
Rating	Symbol	Value	Unit				
RMS power dissipation (1)	PD	360	mW				
RMS emitter current	le	60	mA				
Peak pulse emitter current ⁽²⁾	i _e	1	Amp				
Emitter reverse voltage	V _{B2E}	30	Volts				
Interbase voltage	V _{B2B1}	35	Volts				
Storage temperature range	T _{stg}	-65 to 200	°C				

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

Characteristic	Symbol	Min	Тур	Max	Unit	
Intrinsic standoff ratio						
$V_{B2B1} = 10V^{(1)}$	ŋ	0.68	-	0.82	-	
Interbase resistance	D	4		8	kΩ	
$V_{B2B1} = 3V$, $I_E = 0$	R _{BB}		6			
Interbase resistance temperature coefficient	a D		0.4 - 0.9		%/°C	
$V_{B2B1} = 3V$, $I_E = 0$, $T_A = -65$ to $+100^{\circ}C$	αR_{BB}	0.4		0.9		
Emitter saturation voltage					N - 11	
$V_{B2B1} = 10V, I_E = 50mA^{(2)}$	V _{EB1(sat)}	-	2.5	3	Volts	
Modulated interbase current						
$V_{B2B1} = 10V, I_E = 50mA$	I _{B2(mod)}	12	15	-	mA	
Emitter reverse current						
$V_{B2E} = 30V, I_{B1} = 0$	I _{EB20}	-	5	10	nA	
V _{B2E} = 30V, I _{B1} = 0, T _A = 125°C		-	-	1	μΑ	
Peak point emitter current					μΑ	
V _{B2B1} = 25V	Ip	-	0.6	2		
Valley point current					<u> </u>	
$V_{B2B1} = 20V, R_{B2} = 100\Omega^{(2)}$	Iv	1	4	10	mA	
Base one peak pulse voltage ⁽³⁾) (alt-	
Figure 3	V _{ob1}	6	8	-	Volts	
Naximum oscillation frequency						
Figure 4	f _(max)	-	400	-	kHz	

Note 1: Intrinsic standoff ratio,

ŋ is defined by equation:

 $V_{8281} = \text{Interbase voltage}$ $V_F = \text{emitter to base-one junction diode drop (0.45V @ 10\mu\text{A})$ Note 2: Use pulse techniques: PW \approx 300µs duty cycle \leq 2% to avoid internal heating due to interbase modulation which may result in erroneous readings.

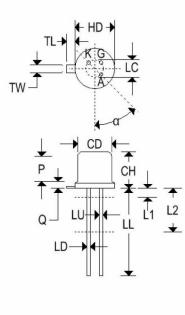
Note 3: Base-one peak pulse voltage is measured in circuit of Figure 3. This specification is used to ensure minimum pulse amplitude for applications in ACR firing circuits and other types of pulse circuits.

MECHANICAL CHARACTERISTICS



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Case:	TO-18
Marking:	Body painted, alpha-numeric
Pin out:	See below



	TO-18					
Dim	Inc	hes	Millim	neters		
	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		
Lı	-	0.050	-	1.270		
L ₂	0.250	-	6.350	-		
Ρ	0.100	-	2.540	ſ		
Q		0.040	i,	1.020		
TL	0.028	0.048	0.710	1.220		
τw	0.036	0.046	0.910	1.170		
α	45°TP		45°TP			

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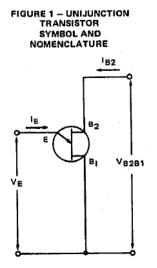
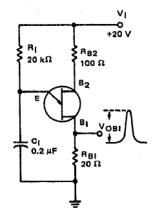


FIGURE 3 – VOB1 TEST CIRCUIT (Typical Relaxation Oscillator)



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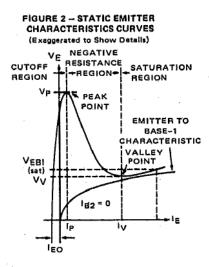


FIGURE 4 -- f(max) MAXIMUM FREQUENCY-TEST CIRCUIT

