

NOT RECOMMENDED FOR NEW DESIGNS

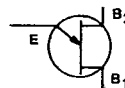
T-37-21

PN Unijunction Transistors
Silicon Annular Unijunction Transistors

... designed for economical, general purpose use in pulse, timing, oscillator and thyristor trigger circuits.

MU10

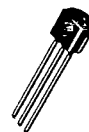
PN UJTs



MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Rating	Symbol	Value	Unit
RMS Power Dissipation, Note 1	P_D	300	mW
RMS Emitter Current	I_E	50	mA
Peak-Pulse Emitter Current, Note 2	i_E	1	Amp
Emitter Reverse Voltage	V_{EB2}	30	Volts
Interbase Voltage Based upon Power Dissipation at $T_A = 25^\circ\text{C}$	V_{B2B1}	35	Volts
Operating Junction Temperature Range	T_J	-65 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +150	$^\circ\text{C}$

Notes: 1. Derate 3 mW/ $^\circ\text{C}$ increase in ambient temperature.
 2. Duty Cycle \leq 1%, PRR = 10 PPS (See Figure 5).



CASE 29-04
 STYLE 9
 (TO-226AA)
 MU10

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

Characteristic	Symbol	Min	Typ	Max	Unit
Intrinsic Standoff Ratio (Test Circuit Figure 4), Note 1 ($V_{B2B1} = 10\text{ V}$)	η	0.50	—	0.85	—
Interbase Resistance ($V_{B2B1} = 3\text{ V}$, $I_E = 0$)	r_{BB}	4	—	10	k Ω
Emitter Saturation Voltage, Note 2 ($V_{B2B1} = 10\text{ V}$, $I_E = 50\text{ mA}$)	$V_{EB1(sat)}$	—	2	—	Volts
Modulated Interbase Current ($V_{B2B1} = 10\text{ V}$, $I_E = 50\text{ mA}$)	$I_{B2(mod)}$	—	—	50	mA
Emitter Reverse Current ($V_{EB2} = 30\text{ V}$, $I_{B1} = 0$)	I_{EB20}	—	—	1	μA
Peak-Point Emitter Current ($V_{B2B1} = 25\text{ V}$)	I_P	—	—	5	μA
Valley-Point Current** ($V_{B2B1} = 20\text{ V}$, $R_{B2} = 100\text{ Ohms}$)	I_V	1	—	—	mA
Base-One Peak Pulse Voltage (Test Circuit Figure 3)	V_{OB1}	3	—	—	Volts

Notes: 1. η , intrinsic standoff ratio, is defined in terms of the peak-point voltage, V_P , by means of the equation: $V_P = \eta V_{B2B1} + V_F$, where V_F is about 0.45 volt at 25°C ($I_F = 10\ \mu\text{A}$) and decreases with temperature at about 2.5 mV/ $^\circ\text{C}$. The test circuit is shown in Figure 4. Components R_1 , C_1 , and the UJT form a relaxation oscillator; the remaining circuitry serves as a peak-voltage detector. The forward drop of Diode D_1 compensates for V_F . To use, the "cal" button is pushed, and R_3 is adjusted to make the current meter, M_1 , read full scale. When the "cal" button is released, the value of η is read directly from the meter, if full scale on the meter reads 1.

2. Pulse Test: Pulse Width \approx 300 μs , Duty Cycle \leq 2% to avoid internal heating, which may result in erroneous readings.

FIGURE 1 - UNIUNCTION TRANSISTOR SYMBOL AND NOMENCLATURE

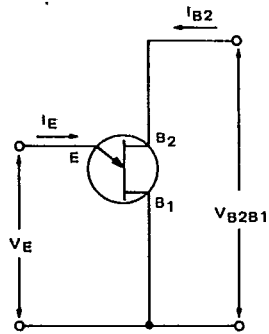


FIGURE 2 - STATIC EMITTER CHARACTERISTICS CURVES

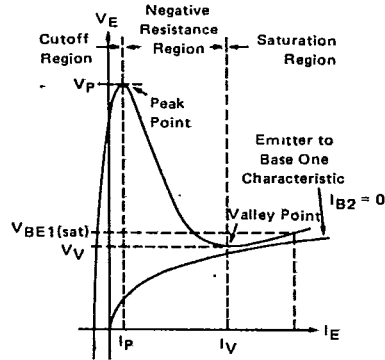


FIGURE 3 - V_{OB1} TEST CIRCUIT

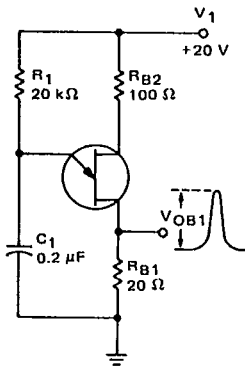
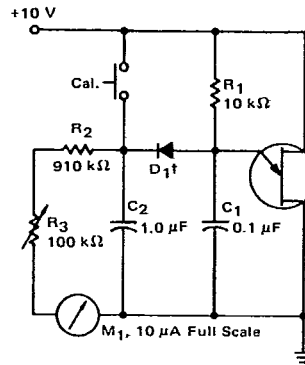


FIGURE 4 - η TEST CIRCUIT



† D₁ diode with the following characteristics:
 V_F = 0.45 V @ I_F = 10 μA
 I_R ≤ 2.0 μA @ V_R = 20 V

FIGURE 5 - PRR TEST CIRCUIT AND WAVEFORM

