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2N4870 Unijunction Transistor (UJT) TO-92 Type Package

Description:

The 2N4870 is a PN unijunction transistor in a TO-92 type package designed for use in pulse and timing circuits, sensing circuits and thyristor trigger circuits.

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless other specified)

RMS Power Dissipation, P_D	300mW
Derate Above 25°C	3.0mW/ $^\circ\text{C}$
RMS Emitter Current, I_E	50mA
Peak-Pulse Emitter Current (Note 1), I_E	1.5A
Emitter Reverse Voltage, V_{B2E}	30V
Interbase Voltage (Note 2), V_{B2B1}	35V
Operating Junction Temperature Range, T_J	-65° to $+125^\circ\text{C}$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ\text{C}$

Note 1. Duty cycle $\leq 1\%$, PRR = 10 PPS

Note 2. Based upon power dissipation at $T_A = +25^\circ\text{C}$

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless other specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Intrinsic Standoff Ratio	η	$V_{B2B1} = 10\text{V}$, Note 3	0.56	-	0.76	
Interbase Resistance	R_{BB}		4.0	6.0	9.1	k Ω
Interbase Resistance Temperature Coefficient	αR_{BB}	$V_{B2B1} = 3\text{V}$, $I_E = 0$, $T_A = -65^\circ$ to $+125^\circ\text{C}$	0.1	-	0.9	%/ $^\circ\text{C}$
Emitter Saturation Voltage	$V_{BE1(sat)}$	$V_{B2B1} = 10\text{V}$, $I_E = 50\text{mA}$, Note 4	-	2.5	-	V
Modulated Interbase Current	$I_{B2(Mod)}$	$V_{B2B1} = 10\text{V}$, $I_E = 50\text{mA}$	-	15	-	mA
Emitter Reverse Current	I_{EB2O}	$V_{B2E} = 30\text{V}$, $I_{B1} = 0$	-	0.005	1.0	μA
Peak-Point Emitter Current	I_P	$V_{B2B1} = 25\text{V}$	-	1.0	5.0	μA
Valley-Point Current	I_V	$V_{B2B1} = 20\text{V}$, $R_{B2} = 100\Omega$, Note 4	2.0	5.0	-	mA
Base-One Peak Pulse Voltage	V_{OB1}		3.0	6.0	-	V

Note 3. Intrinsic standoff ratio, is defined in terms of peak-point voltage, V_P , by means of the equation: $V_P = \eta V_{B2B1} + V_F$, where V_F is approximately 0.49 volts at $+25^\circ\text{C}$ @ $I_F = 10\mu\text{A}$ and decreases with temperature at approximately 2.5mV/ $^\circ\text{C}$. 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 "call" button is pushed, and R_3 is adjusted to make the current meter, M_1 , read full scale. When the "call" button is released, the value of η is read directly from the meter, if full scale on the meter reads 1.0.

Note 4. Use pulse techniques: $PW \sim 300\mu\text{s}$, duty cycle $\leq 2.0\%$ to avoid internal heating, which may result in erroneous readings.

