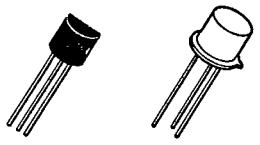
Unijunction Transistors and Switches T-37-21

2N4870, 2N4871, GET4870, GET4871

Silicon Unijunction Transistors



TO-92 TO-18

The GE/RCA 2N4870, 2N4871, and GET4870, GET4871 are unijunction silicon transistors intended for general-purpose industrial applications where circuit economy is of primary importance. The 2N4870, 1 and GET4870, 1 are ideal for use in firing circuits for silicon controlled rectifiers, timing circuits, relaxation oscillators and other typical unijunction transistor applications. These unijunction transistors are supplied in JEDEC TO-92 package (2N4870, 2N4871) and in JEDEC TO-18 package (GET4870, GET4871).

MAXIMUM RATINGS, *Absolute-Maximum Values:*

EMITTER REVERSE VOLTAGE	30 V
INTERBASE VOLTAGE	35 V
RMS EMITTER CURRENT	50 mA
PEAK EMITTER CURRANT (Note 1)	1.5 A
POWER DISSIPATION (Note 2)	300 mW
OPERATING TEMPERATURE RANGE	−65° to +125°C
STORAGE TEMPERATURE RANGE	−65° to +150°C

NOTES:
1. Duty cycle ≤ 1% PRR = 10 PPS.
2. Derate 3 mW/°C increase in ambient temperature. The total power dissipation (available power to Emitter and Base-Two) must be limited by the external circuitry.

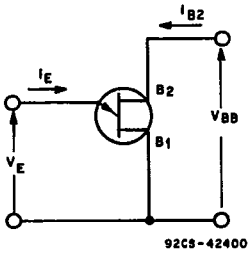


Fig. 1—Unijunction transistor symbol and nomenclature used for current and voltage circuit.

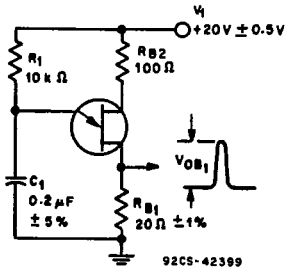


Fig. 2—Typical base-1 peak-pulse voltage circuit.

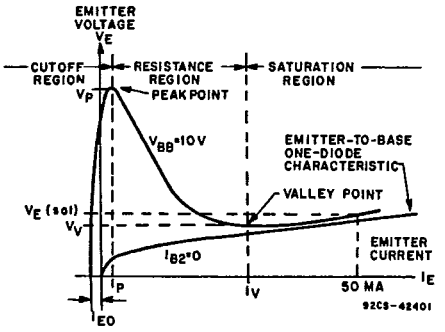


Fig. 3—Static emitter characteristics waveforms.

File Number **1949**

2N4870, 2N4871, GET4870, GET4871

T-37-21

ELECTRICAL CHARACTERISTICS, At Ambient Temperature (T_A) = 25°C Unless Otherwise Specified

CHARACTERISTICS	SYMBOL	LIMITS						UNITS
		2N4870			2N4871			
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX	
Intrinsic Standoff Ratio (V_{BB} = 10 V)(Note 1)	η	0.56	–	0.75	0.7	–	0.85	–
Interbase Resistance (V_{BB} = 3 V, I_E = 0)	R_{BBO}	4	6	9.1	4	6	9.1	kΩ
Emitter Saturation Voltage (V_{BB} = 10 V, I_E = 50 mA)	V_E(sat)	–	2.5	–	–	2.5	–	V
Modulated Interbase Current (V_{BB} = 10 V, I_E = 50 mA	I_{B2}(mod)	–	2.2	–	–	2.7	–	mA
Emitter Reverse Current (V_{B2} = 30 V, I_{B1} = 0)	I_{EO}	–	0.05	1	–	0.05	1	μA
Peak Point Emitter Current (V_{BB} = 25 V)	I_P	–	1	5	–	1	5	
Valley Point Current (V_{BB} = 20 V, R_{B2} = 100 Ω)	I_V	2	5	–	4	7	–	mA
Base-One Peak Pulse Voltage (Note 2)(Fig. 2)	V_{OB1}	3	6	–	5	8	–	V

NOTES:

1. The intrinsic standoff ratio, η, is essentially constant with temperature and interbase voltage.
   η is defined by the equation:
   $$V_P = \eta V_{BB} + V_D$$
   Where V_P = Peat Point Emitter Voltage
   V_{BB} = Interbase Voltage
   V_D = Junction diode Drop (Approx. 0.5 V)
2. The Base-1 Peak Pulse Voltage is measured in the circuit below. This specification is used to ensure a minimum pulse amplitude for applications in SCR firing circuits and other types of pulse circuits.

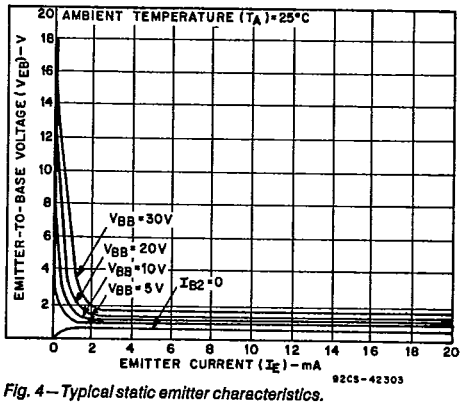


Fig. 4—Typical static emitter characteristics.

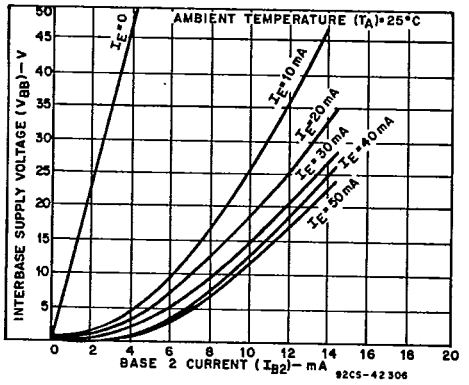


Fig. 5—Typical static interbase characteristics.

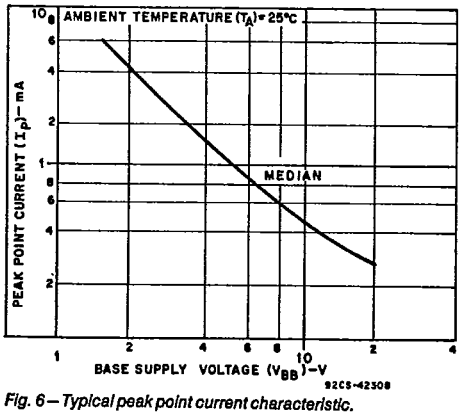


Fig. 6—Typical peak point current characteristic.

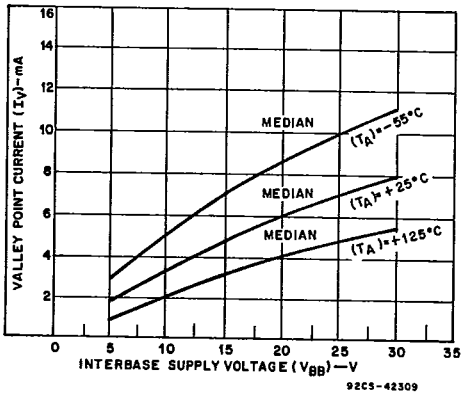


Fig. 7—Typical valley point current characteristic.

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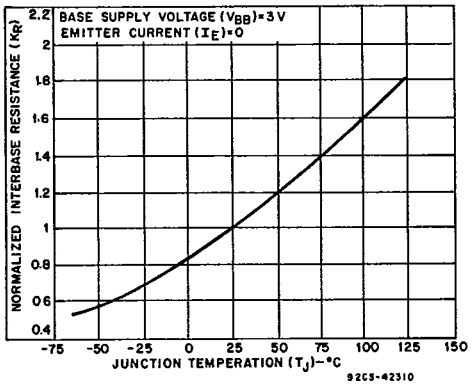

Fig. 8—Normalized interbase resistance characteristic.

TERMINAL CONNECTIONS

TO-92
Lead 1 - Emitter
Lead 2 - Base 1
Lead 3 - Base 2

TERMINAL CONNECTIONS

TO-18
Lead 1 - Emitter
Lead 2 - Base 1
Lead 4 - Base 2