PUTs

2N6137

Military, Planar, TO-18, Hermetic

T-25-09

FEATURES

- Available as JAN and JANTX types per MIL standard 19500/493
- −55°C to +125°C Temperature Range for Timing and Oscillator Circuits
- $I_P \leqslant 10\mu A$ at $T = -55°C$
  $I_V \geqslant 40\mu A$ at $T = +125°C$
- Programmable η, R_{BB}, I_P and I_V
- Peak Recurrent Current: of 5A
- Low On-State Voltage Drop
- Hermetically Sealed Metal Case and Planar Passivated Construction for Maximum Reliability and Parameter Stability.

DESCRIPTION

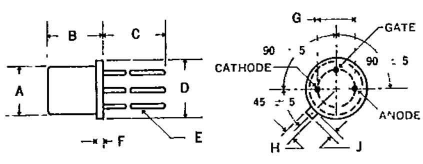
The Programmable Unijunction Transistor is functionally equivalent to a standard unijunction transistor with the advantage that external resistors can be used to program η, R_{BB}, I_P, and I_V, depending upon the designer's needs. The Unitrode device, in addition to allowing programmable versatility, is completely planar passivated and packaged in a TO-18 hermetically sealed package, which offers an order of magnitude improvement in inherent reliability over many similar devices. Applications include pulse and timing circuits, SCR trigger circuits, relaxation oscillators, and sensing circuits. For further application information see Unitrode Application Note U-66.

ABSOLUTE MAXIMUM RATINGS

Anode-to-Cathode Forward Voltage, V_{AK}	40V
Anode-to-Cathode Reverse Voltage, V_{AKR}	40V
Gate-to-Cathode Forward Voltage, V_{GK}	40V
Gate-to-Anode Reverse Voltage, V_{GAR}	40V
Gate-to-Cathode Reverse Voltage, V_{GKR}	5V
Peak Recurrent Forward Current, 10μs 1% Duty Cycle	5A
Peak Gate Current, I_{GM}	250mA
Average Gate Current, $I_{G(AV)}$	50mA
Power Dissipation	
25°C Ambient	300mW
Derating Factor	2.4mW/°C
Storage Temperature Range	−55°C to +125°C
Operating Temperature Range	−55°C to +125°C

MECHANICAL SPECIFICATIONS

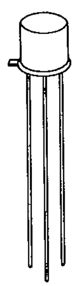
2N6137



GATE CONNECTED TO CASE

	INCHES	MILLIMETERS
A	178- 195 DIA	4 52-4 95 DIA
B	170- 210	4 31-5 33
C	5 MIN	12 70 MIN
D	.209- 230 DIA	5 31-5 84 DIA
E	017 ± 002 DIA / 001 DIA	432 ± 051 / 025
F	020 MAX	508 MAX
G	100± 010 DIA	2 54±.254 DIA.
H	041± 005	1 04± 127
J	028- 048	711-1.22

TO-18



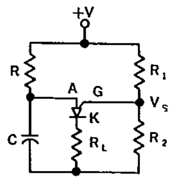
SEMICONDUCTOR PRODUCTS
UNITRODE

T-25-09

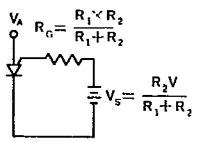
ELECTRICAL SPECIFICATIONS (at 25°C unless noted)†

Test	Symbol	Figure	Minimum	Typical	Maximum	Units	Test Conditions
SUBGROUP 1 Visual and Mechanical	—	—	—	—	—	—	
SUBGROUP 2							
Gate-anode blocking current	I_{GAO}	2	—	2	10	nA	V_{GA} = Rating
Gate-cathode blocking current	I_{GKS}	3	—	5	100	nA	V_{GK} = Rating
SUBGROUP 3							
Peak-point anode current	I_P	1	— —	1 2.5	2 5	μA μA	R_G = 1 Meg R_G = 10K } V_S = 10V
Peak-point offset voltage	V_T	1	0.2 0.2	0.26 0.35	1.6 0.6	V V	R_G = 1 Meg R_G = 10K } V_S = 10V
Valley-point anode current	I_V	1	— 70 1.5	15 200 2	50 — —	μA μA mA	R_G = 1 Meg R_G = 10K R_G = 200Ω } V_S = 10V
SUBGROUP 4							
Forward on-state voltage	V_F	4	—	0.85	1.0	V	I_F = 50mA
Peak pulse voltage	V_o	5	9	12	—	V	
Peak pulse voltage rise time	t_r	5	—	50	80	ns	
SUBGROUP 5							
Gate-anode blocking current (125°C Test)	I_{GAO}	2	—	150	500	nA	V_{GA} = Rating
Valley-point anode current (125°C Test)	I_V	1	40	100	—	μA	R_G = 10K, V_S = 10V
Peak-point anode current (—55°C Test)	I_P	1	—	7.5	10	μA	R_G = 10K, V_S = 10V

† All values in table are JEDEC registered



a) Typical Circuit



b) Equivalent Test Circuit

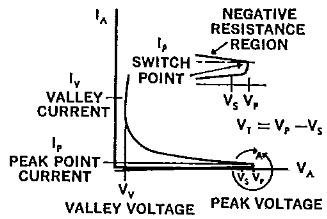


Figure 1

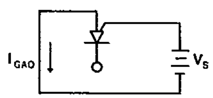


Figure 2

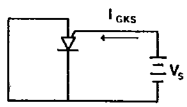


Figure 3

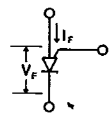
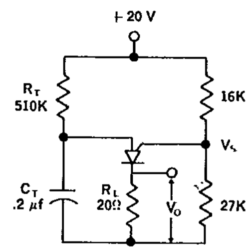


Figure 4

Note: Conditions for oscillation

$$\frac{V_{BB} - V_P}{R} > I_P$$

$$\frac{V_{BB} - V_V}{R} < I_V$$



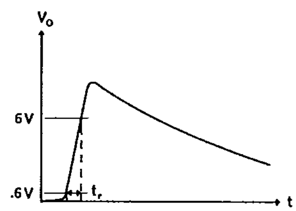


Figure 5

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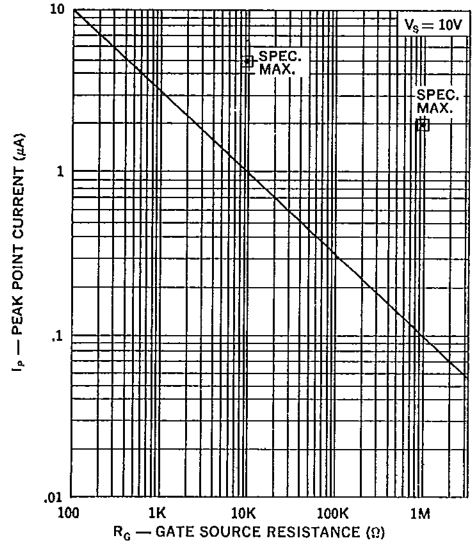
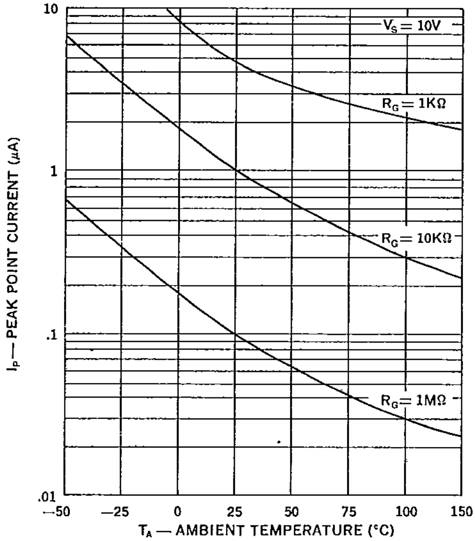
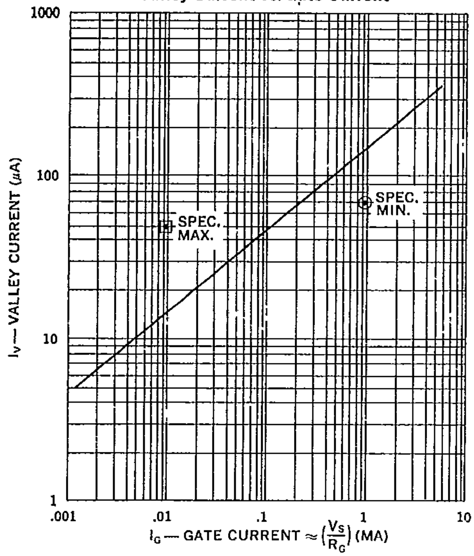
Peak Point Current vs. Gate Source Resistance



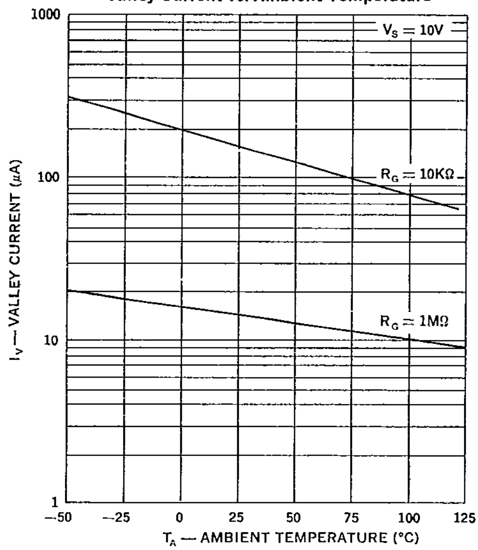
Peak Point Current vs. Ambient Temperature



Valley Current vs. Gate Current



Valley Current vs. Ambient Temperature



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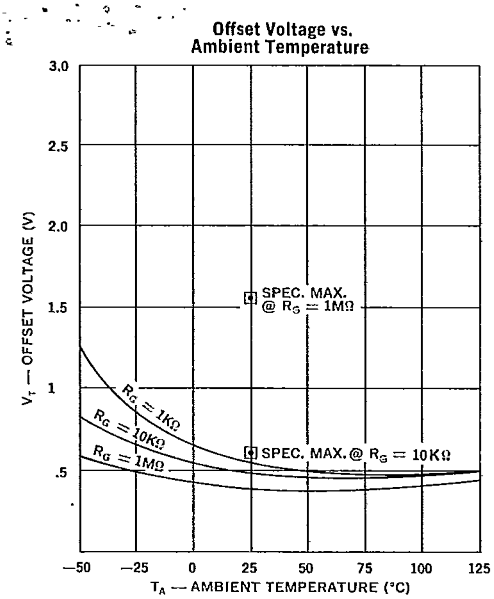

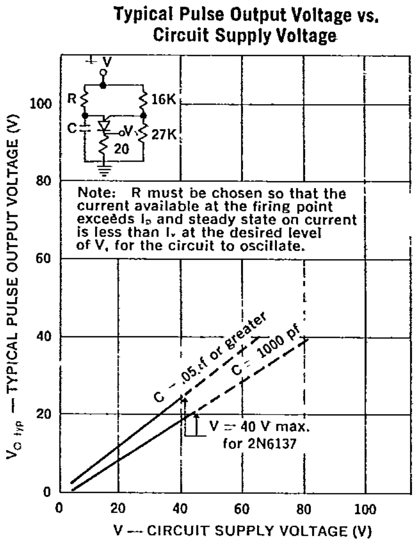

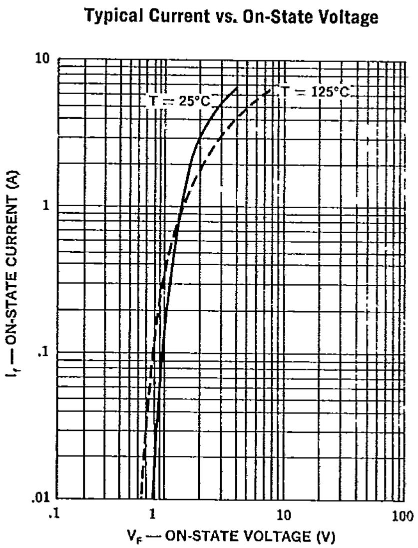

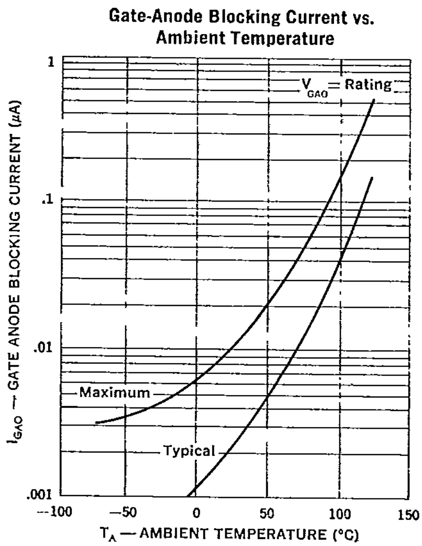

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