PUTs

2N6119-2N6120

Planar, TO-18, Hermetic

T-25-09

FEATURES

- Hermetically Sealed TO-18 Metal Can
- Programmable Eta, R_{BB}, I_P and I_V
- Maximum Peak Point Current: 150nA
- Minimum Valley Current to 1.5mA
- Nano-Amp Leakage
- Passivated Planar Construction for Maximum Reliability and Parameter Uniformity

DESCRIPTION

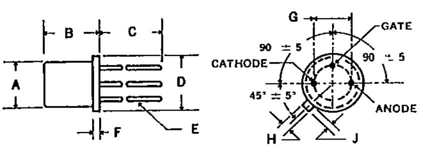
Functionally equivalent to standard unijunction transistors, Unitrode's Programmable Unijunction Transistors offer the distinct advantage of versatile programming. External resistors can be added to meet the designer's needs in programming Eta, R_{BB}, I_P and I_V functions. This series also features a hermetically sealed TO-18 package for optimum reliability in all environmental conditions. Applications include pulse and timing circuits, SCR trigger circuits, relaxation oscillators and sensing circuits. For additional information see Unitrode Application Note U-66.

ABSOLUTE MAXIMUM RATINGS

Anode-to-Cathode Voltage, V_{AK}	±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	8A
100μs, 1% Duty Cycle	5A
Power Dissipation	
25°C Ambient	400mW
Derating Factor	3.2mW/°C
Storage Temperature	−55°C to +125°C
Operating Temperature Range	−55°C to +125°C

MECHANICAL SPECIFICATIONS

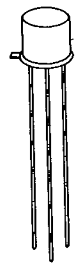
2N6119-2N6120



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

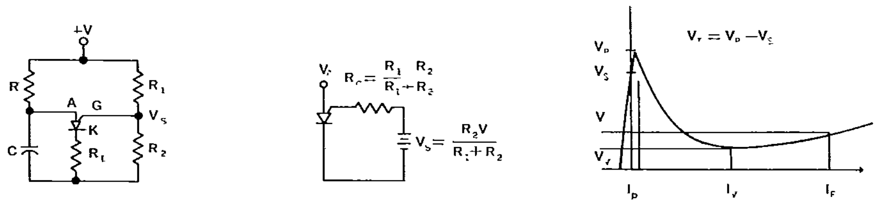
TO-18



SEMICONDUCTOR PRODUCTS
UNITRODE

ELECTRICAL SPECIFICATIONS (at 25°C unless noted)

Test	Symbol	Fig.	2N6119 Min.	2N6119 Max.	2N6120 Min.	2N6120 Max.	Units	Test Conditions
Peak Current	I_P	1	— —	5 2	— —	1.0 0.15	μA μA	$R_G = 10k, V_S = 10V$ $R_G = 1$ Meg.
Valley Current	I_V	1	70 — 1.5	— 50 —	25 — 1.0	— 25 —	μA μA mA	$R_G = 10k, V_S = 10V$ $R_G = 1$ Meg. $R_G = 200\Omega$
Offset Voltage	V_T	1	0.2 0.2	0.6 1.6	0.2 0.2	0.6 0.6	V V	$R_G = 10k, V_S = 10V$ $R_G = 1$ Meg.
Gate-to-Anode Leakage	I_{GAO}	2	— —	10 100	— —	10 100	nA nA	$T = 25°C, V_S = 40V$ $T = 75°C$
Gate-to-Cathode Leakage	I_{GKS}	3	—	100	—	100	nA	$V_S = 40V$
Forward Voltage	V_F	4	—	1.0	—	1.0	V	$I_F = 50mA$
Pulse Output Voltage	V_o	5	9	—	9	—	V	
Pulse Output Rate of Rise	t_r	5	—	80	—	80	ns	



a) Typical Circuit b) Equivalent Test Circuit c) Characteristic Curve

Figure 1

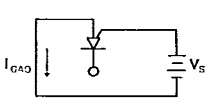


Figure 2

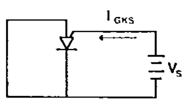


Figure 3

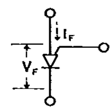


Figure 4

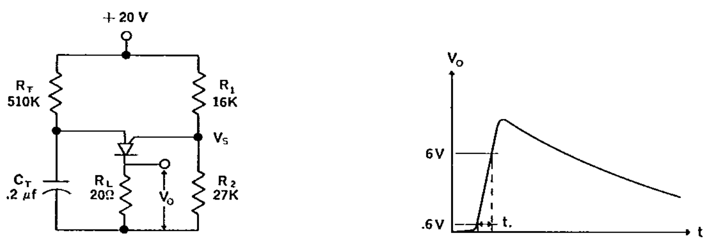


Figure 5

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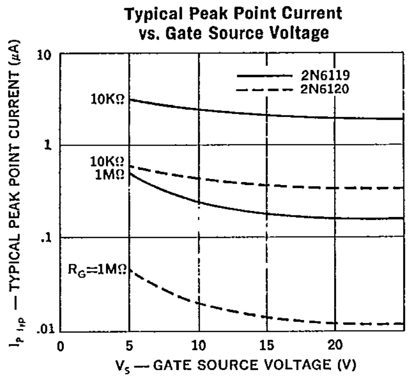
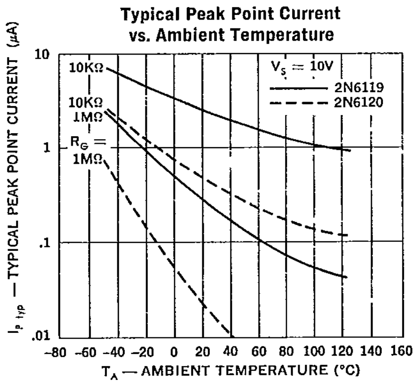
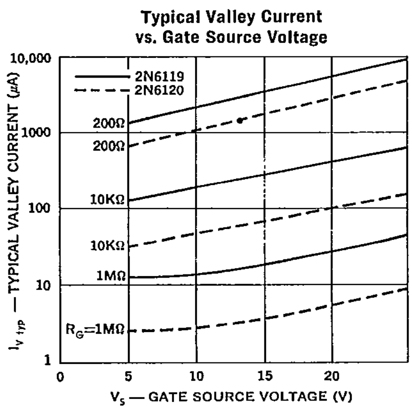
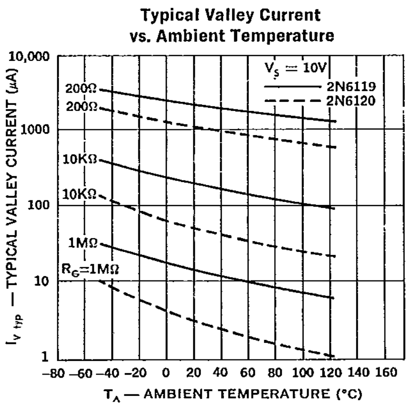
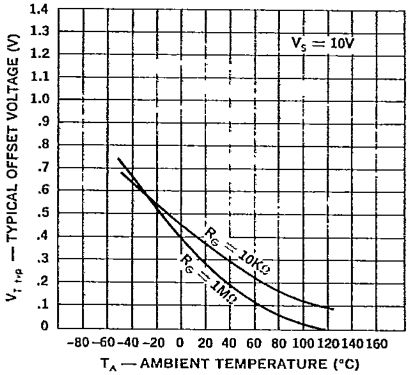

Typical Peak Point Current
vs. Gate Source Voltage
2N6119
2N6120
10KΩ
10KΩ
1MΩ
R_G=1MΩ
$I_{P\ typ}$ — TYPICAL PEAK POINT CURRENT (μA)
V_S — GATE SOURCE VOLTAGE (V)


Typical Peak Point Current
vs. Ambient Temperature
V_S = 10V
2N6119
2N6120
10KΩ
10KΩ
1MΩ
R_G =
1MΩ
$I_{P\ typ}$ — TYPICAL PEAK POINT CURRENT (μA)
T_A — AMBIENT TEMPERATURE (°C)

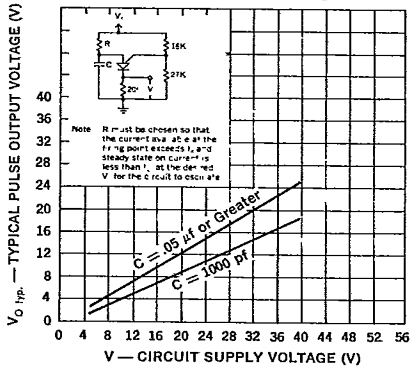

Typical Valley Current
vs. Gate Source Voltage
2N6119
2N6120
200Ω
200Ω
10KΩ
10KΩ
1MΩ
R_G=1MΩ
$I_{V\ typ}$ — TYPICAL VALLEY CURRENT (μA)
V_S — GATE SOURCE VOLTAGE (V)


Typical Valley Current
vs. Ambient Temperature
V_S = 10V
2N6119
2N6120
200Ω
200Ω
10KΩ
10KΩ
1MΩ
R_G=1MΩ
$I_{V\ typ}$ — TYPICAL VALLEY CURRENT (μA)
T_A — AMBIENT TEMPERATURE (°C)

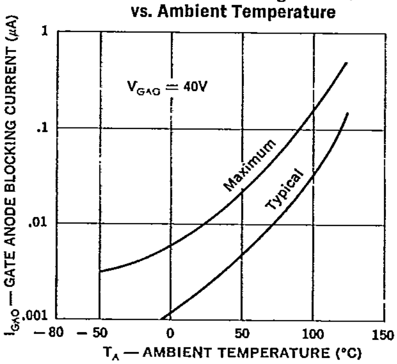
Typical Offset Voltage vs. Ambient Temperature



Typical Pulse Output vs. Circuit Supply Voltage



Gate-Anode Blocking Current vs. Ambient Temperature



Typical On-State Current vs. Voltage