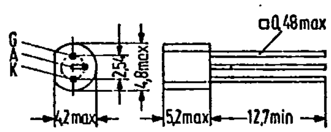
Programmable Unijunction Transistor

BRY 56

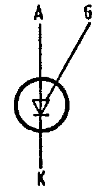
T-25-09

Programmable silicon planar unijunction transistor in TO 92 plastic package (10 A 3 DIN 41868).

Type	Ordering code
BRY 56[1]	Q68000-A803
BRY 56 A	Q68000-A803-S1
BRY 56 B	Q68000-A803-S2
BRY 56 C	Q68000-A803-S3



Plastic package
Dimensions in mm



Maximum ratings		BRY 56 A BRY 56 B BRY 56 C	
Voltage gate terminal cathode	V_{GC}	70	V
Voltage gate terminal anode	V_{GA}	70	V
Anode current, average value			
($T_{amb} \leqq 25$ °C)	$I_{A\,AV}$	175	mA
($T_{case} \leqq 85$ °C)	$I_{A\,AV}$	250	mA
Anode current, peak value			
(t = 10 µs; V_T = 0.001)	I_{AM}	2.5	A
Current increase to I_A = 2.5 A	dI_A/dt	20	A/µs
Overload current surge	$i_{A\,surge}$		
(t = 10 µs; T_j = 150 °C)		3	A
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−65 to +150	°C
Total power dissipation ($T_{amb} \leqq 75$ °C)[2]	P_{tot}	300	mW

Thermal resistance

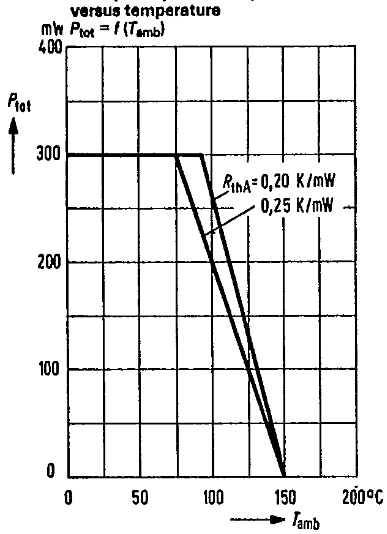
Junction to ambient air[2]	R_{thJA}	≦250	K/W

1) If a transistor is ordered without an exact indication of the current amplification wanted, then a transistor with a current amplification group available at stock will be delivered.
2) If mounted on PCBs with max. 3 mm long leads and a copper area of min. 10 x 10 mm for the anode terminal, then $R_{thJA} \leqq 200$ K/W, the power dissipation of 300 mW is then permitted up to T_{amb} = 90 °C.

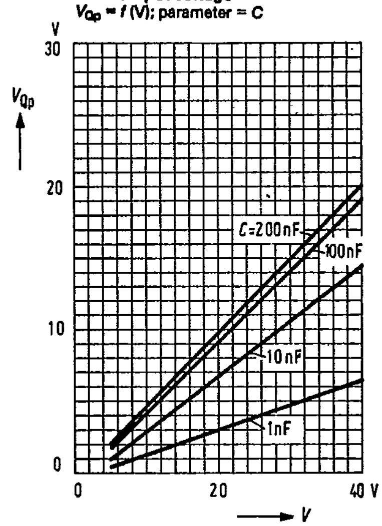
Static characteristics (T_{amb} = 25 °C)

		BRY 56 A	BRY 56 B	BRY 56 C	
Peak point current at V_S = 10 V; R_g = 10 kΩ	I_P	<220	180 to 1100	900 to 5000	nA
Valley point current at V_S = 10 V, R_g = 10 kΩ	I_V	≥2	≥10	≥50	µA
Peak point current at V_S = 10 V; R_g = 100 kΩ	I_P	≥2	≥2	≥2	µA
Valley point current at V_S = 10 V; R_g = 100 kΩ	I_V	≥5	≥5	≥5	µA
Forward voltage (I_A = 100 mA)	V_F	≥1.4	≥1.4	≥1.4	V
Cutoff current gate terminal anode (V_S = 70 V; I_K = 0)	I_{GAO}	≤10	≤10	≤10	nA
Cutoff current gate terminal cathode (V_S = 70 V; V_{AK} = 0)	I_{GKS}	≤100	≤100	≤100	nA
Offset voltage	V_T	V_P-V_S	–	–	V

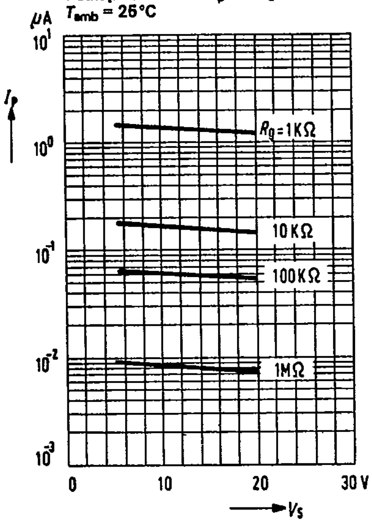
Total perm. power dissipation versus temperature
$P_{tot} = f(T_{amb})$



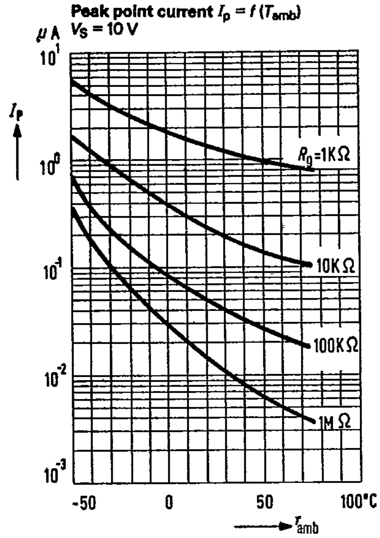
Peak output voltage
$V_{Qp} = f(V)$; parameter = C



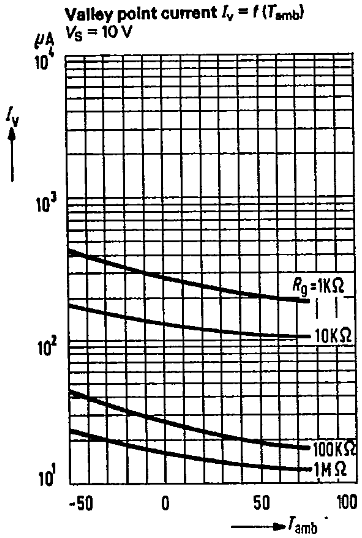
Peak point current $I_p = f(V_S)$
$T_{amb} = 25°C$



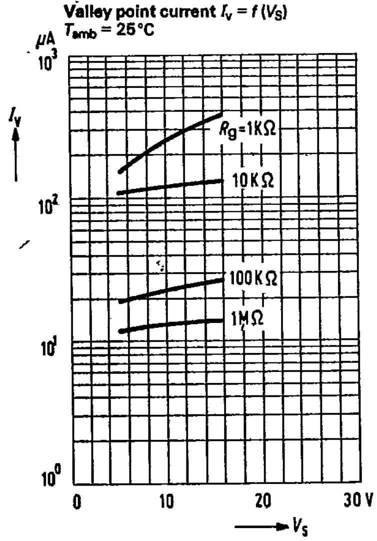
Peak point current $I_p = f(T_{amb})$
$V_S = 10 V$

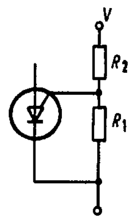


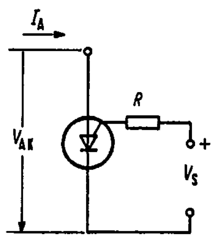
Valley point current $I_v = f(T_{amb})$
$V_S = 10 V$

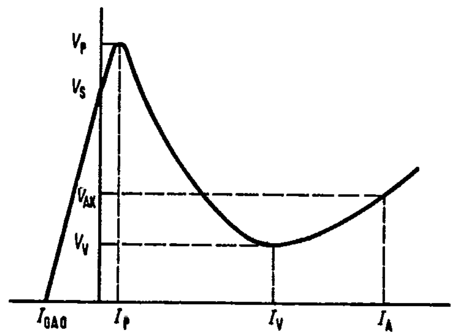


Valley point current $I_v = f(V_S)$
$T_{amb} = 25°C$



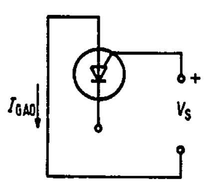


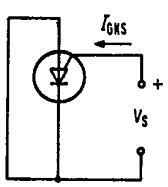




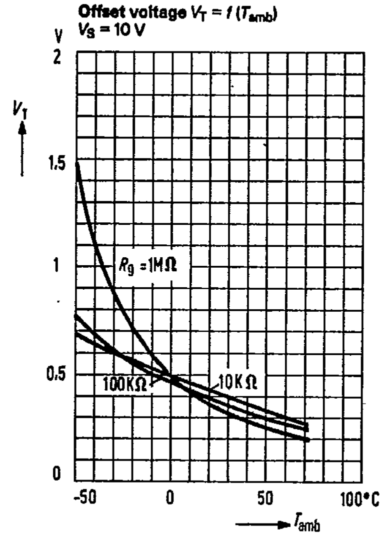
$$R_g = \frac{R_1 \cdot R_2}{R_1 + R_2}$$

$$V_S = \frac{R_1}{R_1 + R_2} \cdot V$$





Offset voltage $V_T = f(T_{amb})$
$V_S = 10$ V



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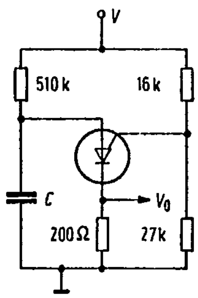
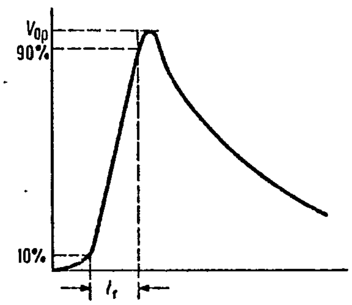
Rise time of output voltage at $V = 20$ V, $C = 10$ nF: $t_r \leq 80$ ns
Peak value of output voltage at $V = 20$ V, $C = 0.2$ µF: $V_{Qp} \geq 6$ V





Test circuit