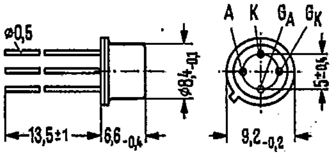
PNPN Thyristor Tetrode BRY 21

SIEMENS AKTIENGESELLSCHAF T-25-11

The BRY 21 is an extinguishable PNPN silicon planar thyristortetrode in TO 12 case (5 C 4 DIN 41 873). The anode gate (G_A) is electrically connected to the case. The BRY 21 is particularly suitable for use as a medium fast switch.

Type	Ordering code
BRY 21	Q62702-R81



Approx. weight 1 g

Dimensions in mm

Maximum ratings

Anode gate reverse voltage	V_{GAR}	80	V
Continuous reverse voltage	$-V_R$	80	V
Gate to cathode reverse voltage	V_{GKR}	5	V
Forward current[1]	I_F	500	mA
Peak current	I_{FSM}	5	A
Gate to cathode control current	I_{GK}	100	mA
Anode to gate control current	I_{GA}	300	mA
Junction temperature range	T_j	−55 to +125	°C
Storage temperature range	T_{stg}	−55 to +200	°C
Total power dissipation ($T_{case} \leq 45$ °C)	P_{tot}	1.3	W

Thermal resistance

Junction to case	R_{thJC}	≤60	K/W
Junction to ambient air	R_{thJA}	≤220	K/W

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

Breakover voltage (R_{GK} = 5 kΩ; $T_{amb} \leq 125$ °C)	$V_{(BO)}$	80	V
Off-state current (V_D = 80 V; R_{GK} = 5 kΩ; T_{amb} = 25 °C)	I_D	<200	nA
(V_D = 80 V; R_{GK} = 5 kΩ; T_{amb} = 125 °C)	I_D	<25	µA
Reverse current (V_R = 80 V; R_{GK} = 5 kΩ; T_{amb} = 25 °C)	I_R	<200	nA
(V_R = 80 V; R_{GK} = 5 kΩ; T_{amb} = 125 °C)	I_R	<25	µA
Cathode-gate reverse current (V_{GKR} = 5 V; T_{amb} = 25 °C)	$-I_{GKR}$	<10	µA
Anode-gate reverse voltage (V_{GAR} = 80 V)	I_{GAR}	<200	nA

---

[1] dI/dt are unlimited

Forward voltage			
(I_F = 100 mA; R_{GK} = 5 kΩ)	V_F	<1.3	V
(I_F = 300 mA; R_{GK} = 5 kΩ)	V_F	<1.7	V
Holding current (R_{GK} = 5 kΩ)	I_H	2 (0.3 to 6.5)	mA
Gate trigger current (V_{AA} = 15 V; R_L = 1 kΩ; t_{IGKT} > 50 µs)	I_{GKT}	50 (<100)	µA
Turn-off current (V_{AA} = 15 V; R_L = 500 Ω; t_{JGKQ} > 50 µs;)	I_{GKQ}	10 (<15)	mA
Gate trigger voltage (V_{AA} = 15 V; R_L = 1 kΩ)	V_{GKT}	0.4 to 0.8	V
Anode gate trigger current (V_{AA} = 15 V; R_L = 1 kΩ)	I_{GAT}	<3	mA
Anode gate trigger voltage (V_{AA} = 15 V; R_L = 1 kΩ; R_{GK} = 5 kΩ)	V_{GAT}	0.4 to 0.8	V

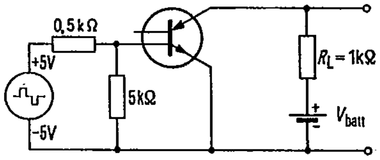
Dynamic characteristics (T_{amb} = 25°C)

Anode/cathode capacitance (V_C = 20 V; f = 1 MHz)	C_{AK}	3.5	pF

Switching times

Gate controlled turn-on time (V_G = ± 5 V; V_{AA} = 15 V)	t_{gt}	0.1 (<0.3)	µs
Gate controlled turn-off time R_{GK} = 5 kΩ; R_g = 500 Ω)	t_{gq}	<5	µs
Turn-off time (V_{AA} = 15 V; R_L = 1 kΩ; R_{GK} = 5 kΩ)	t_q	7	µs
Critical rate of voltage rise[1] (V_{AA} = 80 V; R_{GK} = 100 kΩ)	dv/dt	>5	V/µs

Test circuit for switching times



---

[1] If the anode gate is connected to the anode supply voltage via a 220 kΩ resistor, the permissible voltage rise at the anode is unlimited.