

PNPN Thyristor Tetrode

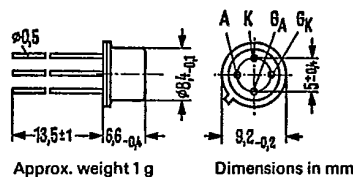
BRY 20

25C 04763 D T-25-11

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BRY 20 is an extinguishable PNPN silicon planar thyristor tetrode in TO 12 case (5 C 4 DIN 41 873). The anode gate (G_A) is electrically connected to the case. The BRY 20 is particularly suitable for use as a medium fast switch.

Type	Ordering code
BRY 20	Q60217-Y20



Approx. weight 1 g

Dimensions in mm

Maximum ratings

Anode gate reverse voltage	V_{GAR}	40	V
Continuous reverse voltage	$-V_R$	40	V
Gate to cathode reverse voltage	V_{GKR}	5	V
Rated surge forward current, see diagram $I_{FRM} = f(t) I_{FSM}$		5	A
Continuous forward current	I_F	500	mA
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 ($T_{case} \leq 45^\circ\text{C}$)	P_{tot}	1.3	W

Thermal resistance

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

Static characteristics ($T_{amb} = 25^\circ\text{C}$)

Off-state current

 $(V_D = 40\text{ V}; R_{GK} = 5\text{ k}\Omega; I_{GA} = 0)$

I_D	3 (< 200)	nA
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 $(V_D = 30\text{ V}; R_{GK} = 5\text{ k}\Omega; I_{GA} = 0)$

I_D	2 (< 200)	nA
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Reverse current

 $(V_R = 40\text{ V}; R_{GK} = 5\text{ k}\Omega; I_{GA} = 0)$

I_R	< 200	nA
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 $(V_R = 40\text{ V}; R_{GK} = 5\text{ k}\Omega; T_{amb} = 125^\circ\text{C})$

I_R	< 25	μA
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Cathode-gate reverse current

 $(V_{GK} = 5\text{ V}; I_{AK} = 0)$

$-I_{GKR}$	< 10	μA
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Anode-gate reverse current

 $V_{GA} = 40\text{ V}$

I_{GAR}	< 200	nA
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Forward voltage

 $(I_F = 100\text{ mA}; R_{GK} = 5\text{ k}\Omega; I_{GA} = 0)$

V_F	< 1.3	V
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Breakover voltage (-55 to +125°C)

 $(R_{GK} = 5\text{ k}\Omega; I_{GA} = 0)$

$V_{(BO)}$	< 40	V
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Holding current ($R_{GK} = 5\text{ k}\Omega$)

I_H	2 (0.3 to 6.5)	mA ¹⁾
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1) Closer tolerance available on request

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Operating point: $V_{batt} = 15\text{ V}$; $R_L = 1\text{ k}\Omega$; $I_{GA} = 0$

Gate trigger current

 I_{GKT} 50 (<100) μA

Turn-off current

 I_{GKQ} 2.5 (<5) mA

Gate trigger voltage

 V_{GKT} 0.4 (to 0.8) V Operating point: $V_{batt} = 15\text{ V}$; $R_L = 500\text{ }\Omega$; $G_A I_G = 0$

Gate trigger current

 I_{GKT} 50 (<100) μA

Turn-off current

 I_{GKQ} 10 (<15) mA Operating point: $V_{batt} = 15\text{ V}$; $R_L = 0.5\text{ k}\Omega$; $R_{GK} = 5\text{ k}\Omega$

Anode gate trigger current

 I_{GAT} <3 mA

Anode gate trigger voltage

 V_{GAT} 0.4 to 0.8 V

Dynamic characteristics

Operating point: $V_{batt} = 15\text{ V}$; $R_L = 1\text{ k}\Omega$; $R_{GK} = 5\text{ k}\Omega$; $I_{GKT} = I_{GKQ} = 5\text{ mA}$

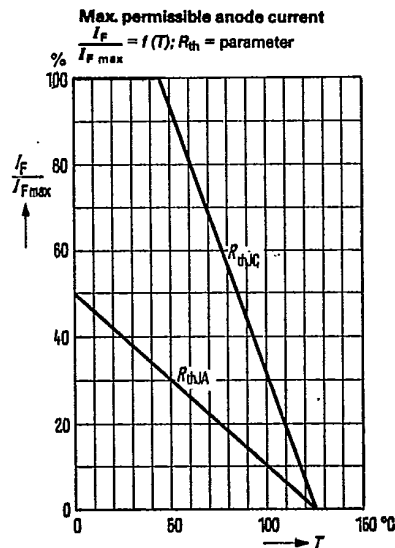
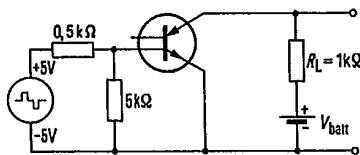
Gate controlled turn-on time

 t_g 100 (<300) ns

Gate controlled turn-off time

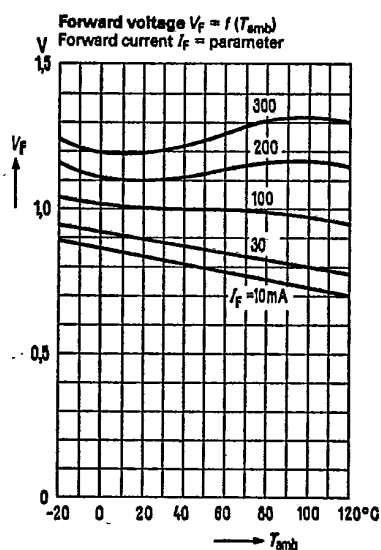
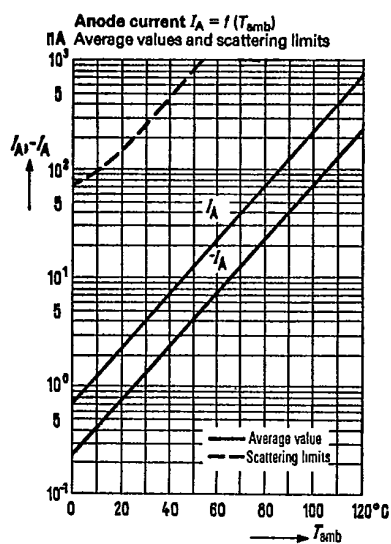
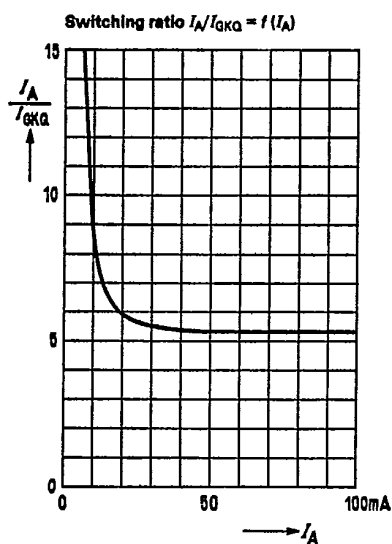
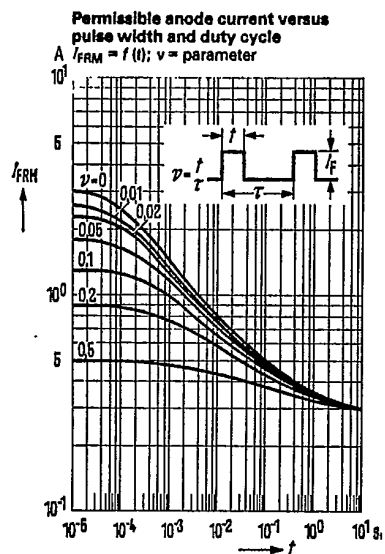
 t_{gq} <5 μs Junction capacitance ($V_{AK} = 20\text{ V}$) C_{AK} 3.5 pF Turn-off time ($V_{AA} = 15\text{ V}$; $R_L = 1\text{ k}\Omega$; $R_{AK} = 5\text{ k}\Omega$) t_q 7 μs Critical rate of voltage rise¹⁾ du/dt >5 $\text{V}/\mu\text{s}$ ($V_{AA} = 40\text{ V}$; $R_{GK} = 100\text{ k}\Omega$)

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.

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