

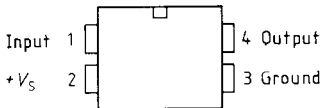
Threshold Switch

TCA 345 A

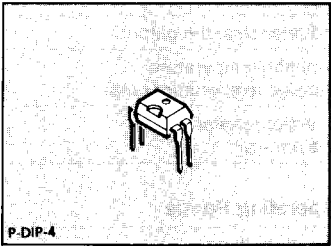
Features

- TTL-compatible
- High output current
- Very high input impedance
- Good stability due to hysteresis
- Few external components

Pin Configuration
(top view)



Bipolar IC



Type	Ordering Code	Package
■ □ TCA 345 A	Q67000-A564	P-DIP-4

■ = Not for new design

Threshold switches featuring linear, supply voltage-dependent threshold value. Inductive loads may be switched at the output without protective diode.

TCA 345 A

Absolute Maximum Ratings

Parameter	Symbol	Limit Values	Unit
Supply voltage	V_S	10	V
Output current	I_Q	70	mA
Input voltage	V_i	0 to V_S	V
Inductance at the output	L_Q	500	mH
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 125	°C
Thermal resistance system – air	$R_{th SA}$	140	K/W

Operating Range

Supply voltage	V_S	2 to 10	V
Ambient temperature	T_A	-25 to 85	°C

Characteristics

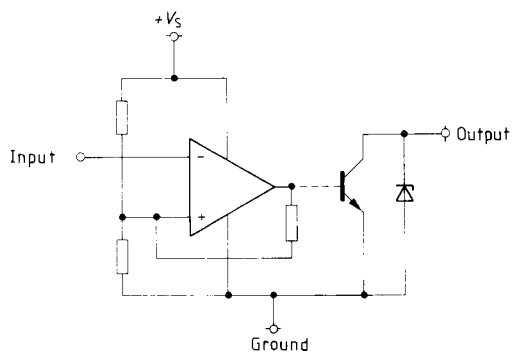
$$T_A = 25^\circ\text{C}$$

Parameter	Symbol	Limit Values			Unit
		min.	typ.	max.	
Current consumption at output current $I_Q = 0 \text{ mA}; V_S = 2 \text{ V}$ $= 5 \text{ V}$	$I_{S H}$ $I_{S H}$		0.55 1.35	0.80 2.00	mA mA
$I_Q = 40 \text{ mA}; V_S = 2 \text{ V}$ $= 5 \text{ V}$	$I_{S L}$ $I_{S L}$		1.85 7.00	3.00 9.00	mA mA
L output voltage at $I_Q = 40 \text{ mA}$ $V_S = 2 \text{ V}$	$V_{Q L}$		150	300	mV
Output reverse current $V_Q = 10 \text{ V}$	$I_{Q H}$			30	μA
Switching threshold $V_S = 2 \text{ to } 10 \text{ V}^{1)}$	V_I	$0.63 \times V_S$	$0.66 \times V_S$	$0.69 \times V_S$	V
Linearity error of the switching threshold (referred to $V_S = 2 \text{ V}$)				3.0	%
Hysteresis (in % of V_S) $V_S = 2 \text{ V}$	ΔV_I	6.0	10	15	%
Hysteresis (in % of V_S) $V_S = 5 \text{ V}$	ΔV_I	6.0	20		%
Hysteresis (in % of V_S) $V_S = 10 \text{ V}$	ΔV_I	6.0	20		%
Input current	I_I		10	30	nA
Z voltage via output	V	11.0	13.6	15.0	V
Temperature response of switching threshold			30		ppm/K

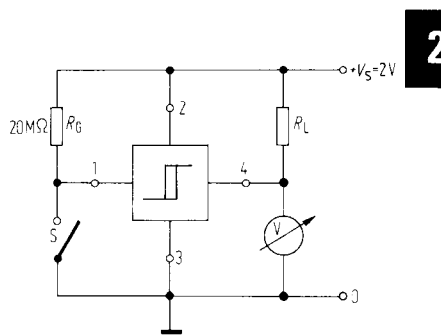
¹⁾ measured with increasing input voltage

TCA 345 A

Circuit Diagram

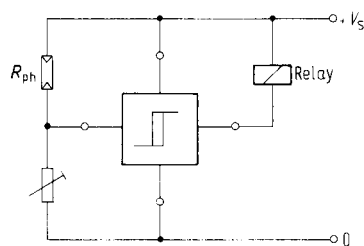


Test Circuit

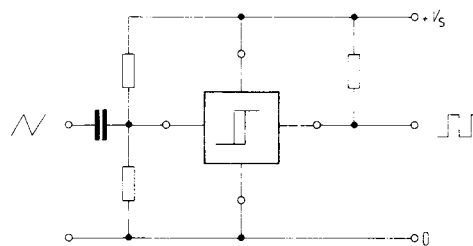


Application Circuits

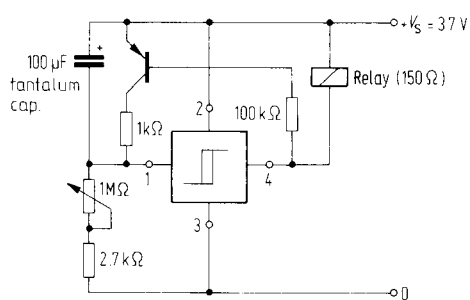
Twilight Switch
(switches on light at nightfall)



Triangle-square Converter

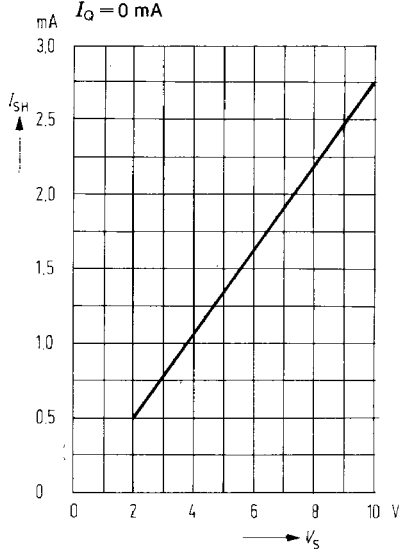


Clock Generator

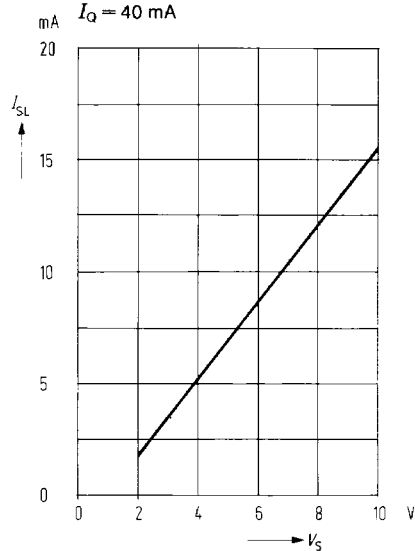


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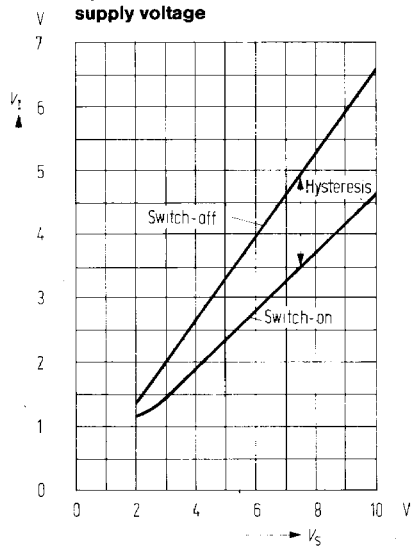
Current consumption I_{SH} versus supply voltage
 $I_Q = 0 \text{ mA}$



Current consumption I_{SL} versus supply voltage
 $I_Q = 40 \text{ mA}$



Switching threshold Input voltage versus supply voltage



Output voltage versus output current

