Threshold Switches

<div align="right">

TCA 105
**TCA 105 W**
TCA 105 B
TCA 105 BW

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TCA 105, TCA 105 B, TCA 105 BW and TCA 105 W comprise an oscillator stage, a threshold switch and two anti-valent output stages. In addition, these circuits contain a voltage stabilization and are especially well suited for an application in proximity switches, light beam- and other contactless switching applications.

- Wide range of battery voltage 4.5 to 30 V
- High output current 50 mA
- TTL compatible
- Triggerable with dc-signals

Type	Ordering codes
TCA 105	Q67000-A527
TCA 105 W	Q67000-A600
TCA 105 B	Q67000-A587
TCA 105 BW	Q67000-A601

Package outlines

TCA 105, TCA 105 B
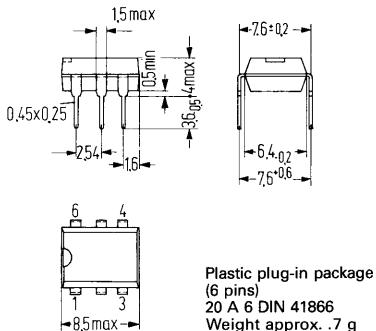
TCA 105 W, TCA 105 W

Plastic plug-in package
(6 pins)
20 A 6 DIN 41866
Weight approx. .7 g
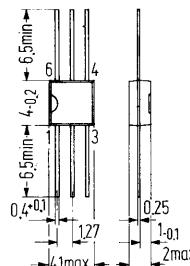
Plastic miniature package
Weight approx. .1 g

Dimensions in mm

Colour code

TCA 105 W orange/white
TCA 105 BW orange/red

Maximum ratings

		TCA 105 TCA 105 W	TCA 105 B TCA 105 BW	
Supply voltage	V_{CC}	30	20	V
Output voltage (pin 4.5)	V_q	30	20	V
Output current	I_q	50	50	mA
Switching frequency	f	40	40	kHz
Junction temperature	T_j	150	150	°C
Storage temperature	T_S	−55 to +125	−55 to +125	°C
Thermal resistance: System-ambient air				
TCA 105, TCA 105 B	R_{thSamb}	140	140	K/W
TCA 105 W, TCA 105 BW	R_{thSamb}	200	200	K/W

Range of operation

Supply voltage	V_{CC}	4.5 to 30	4.5 to 20	V
Oscillating frequency range	I_{osc}	1 to 4.5	1 to 4.5	MHz
Ambient temperature in operation	T_{amb}	−25 to +85	−25 to +85	°C

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Operating characteristics

Static measurement, pins 3 and 1 connected
(V_{CC} = 12 V, T_{amb} = 25 °C)

		min	typ	max	
Supply current	I_{CC}		3.4	5	mA
Input threshold voltage with compensation resistor R_C	V_i	300	400	480	mV
Input threshold current	I_i		−60		μA
Hysteresis	ΔK_i	25	35	50	mV
Saturation voltage (I_q = 16 mA)	V_{qsat}		.25	.35	V
Saturation voltage (I_q = 50 mA)	V_{qsat}		.7	1.15	V
Output voltage	V_q	dependant on V_{CC}			
Leakage current V_{CC} = 30 V and/or 20 V	I_{qlk}			60	μA
Switching time in TTL-operation (I_q = 16 mA)	t		3		μS

Test circuit
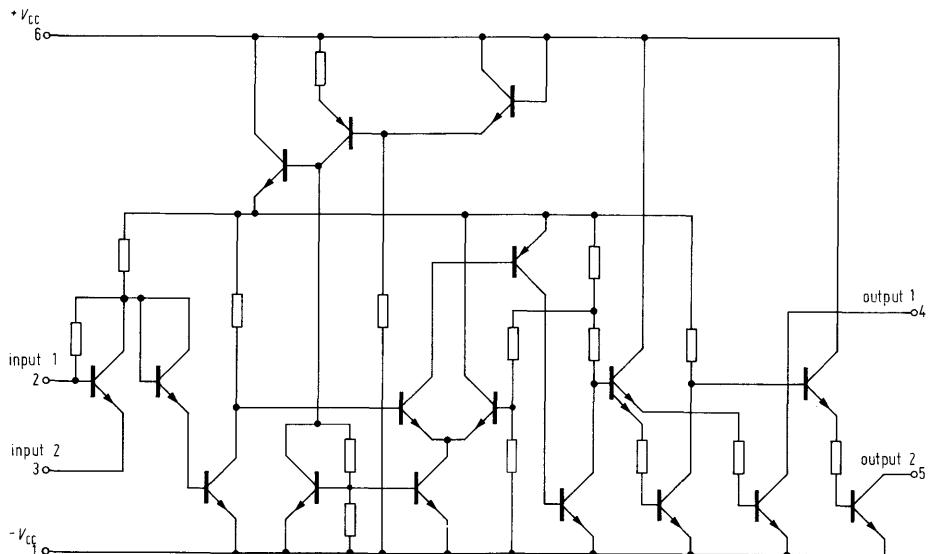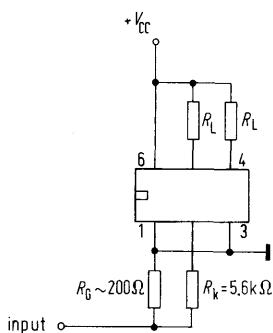
Applications

Inductive slot switch

metal sheet damps
oscillation

SIFERRIT pot core 9 mm ∅
B65935-A0000-X025

Number of turns: n = 25
(litz wire 12 × .04 mm)
Distance between pot core halves:
2.5 to 3.5 mm
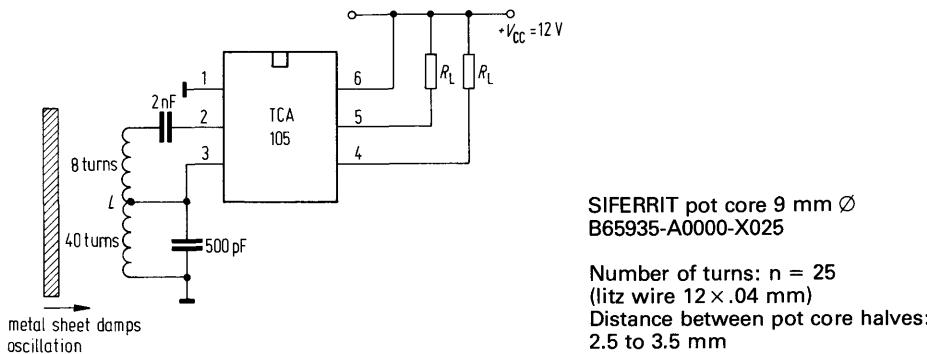
Light beam switch
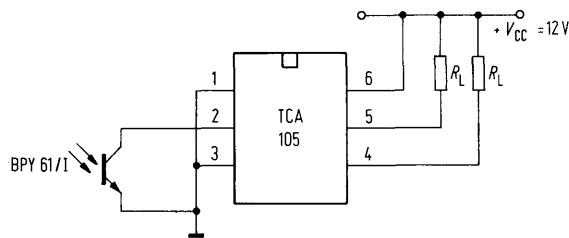
Battery voltage indicator

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Supply current $I_{cc} = f(V_{cc})$
$T_{amb} = 25\,°C; R_L = \infty$
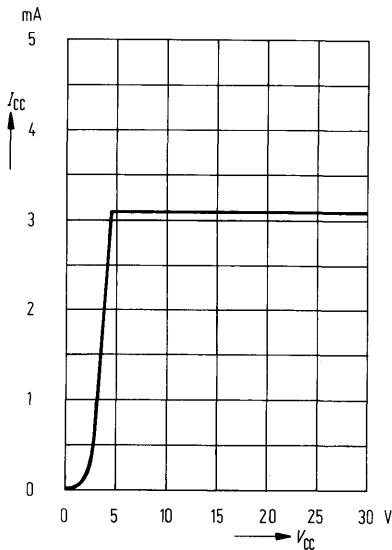
Saturation voltage $V_{qsat} = f(I_q)$
$T_{amb} = 25\,°C; V_{cc} = 12\,V$
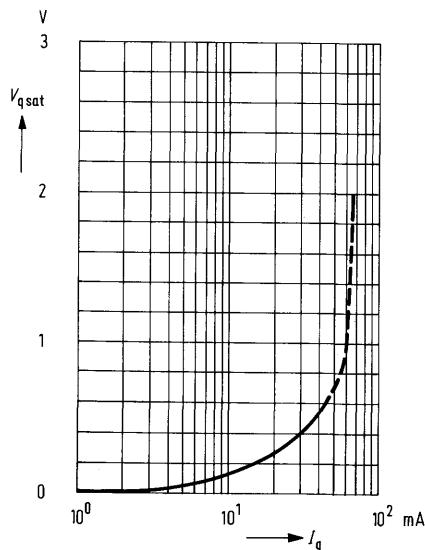
Input threshold voltage $V_i = f(T_{amb})$
$V_{cc} = 12\,V; R_K = 0$
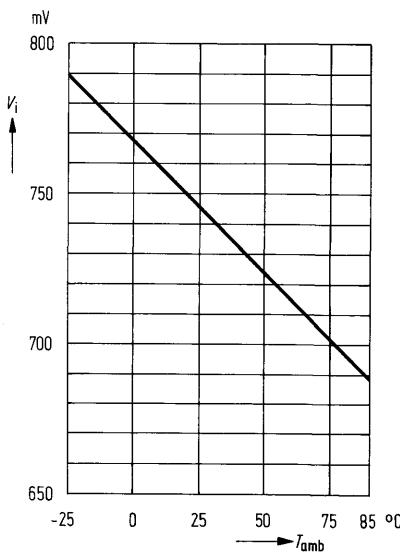
Input current $I_i = f(T_{amb})$
$V_{cc} = 12\,V; R_K = 5.6\,K$

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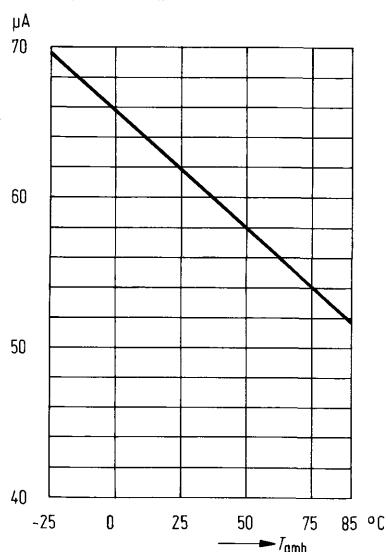
Input threshold voltage $V_i = f(T_{amb})$
$V_{CC} = 12$ V; $R_K = 5.6$ kΩ
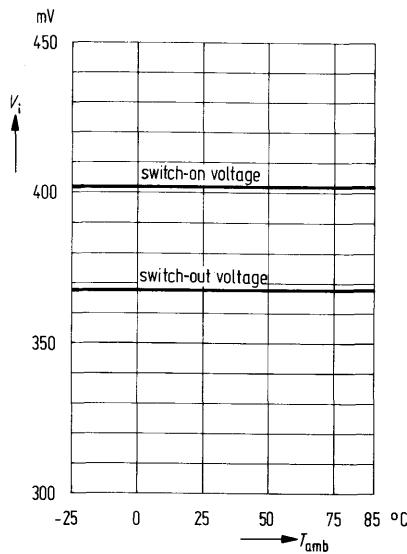
Input threshold voltage $V_i = f(V_{CC})$
$T_{amb} = 25$ °C; $R_K = 5.6$ kΩ