

Threshold Switch

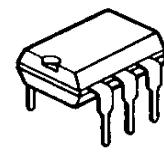
TCA 105

Bipolar IC

3

Features

- Wide range of supply voltage, 4.5 to 30 V
- High output current, 50 mA
- TTL-compatible
- Triggerable with DC signal



VPD05022

P-DIP-6-1

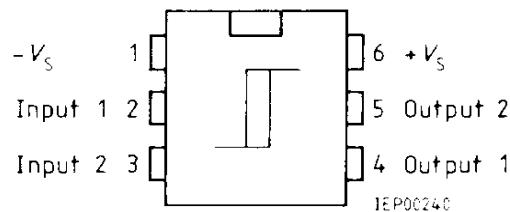
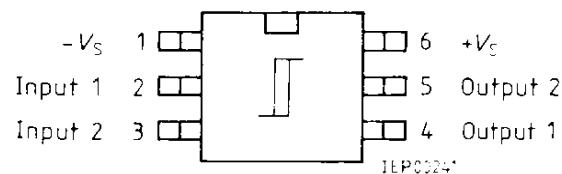
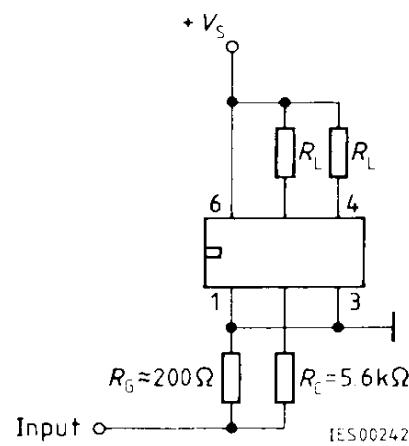


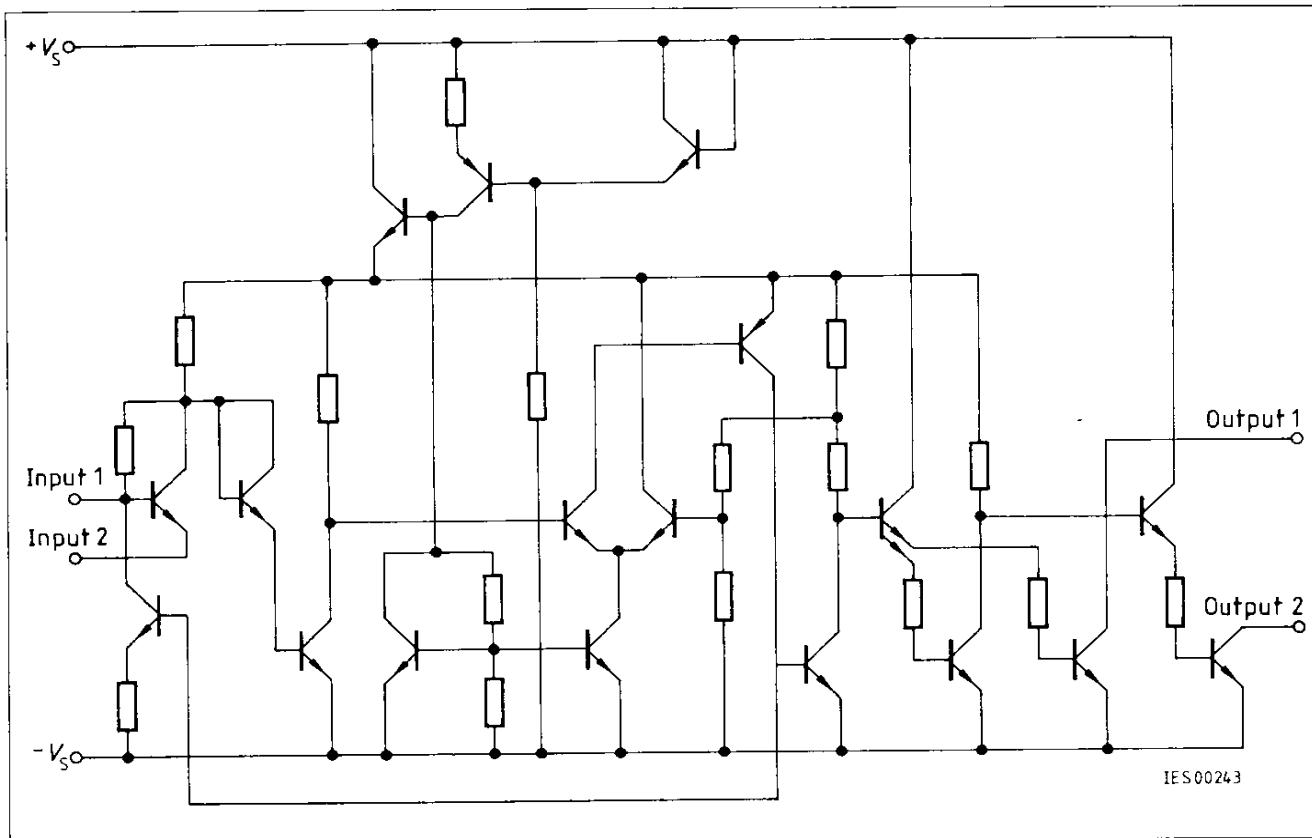
VPS05122

P-DSO-6

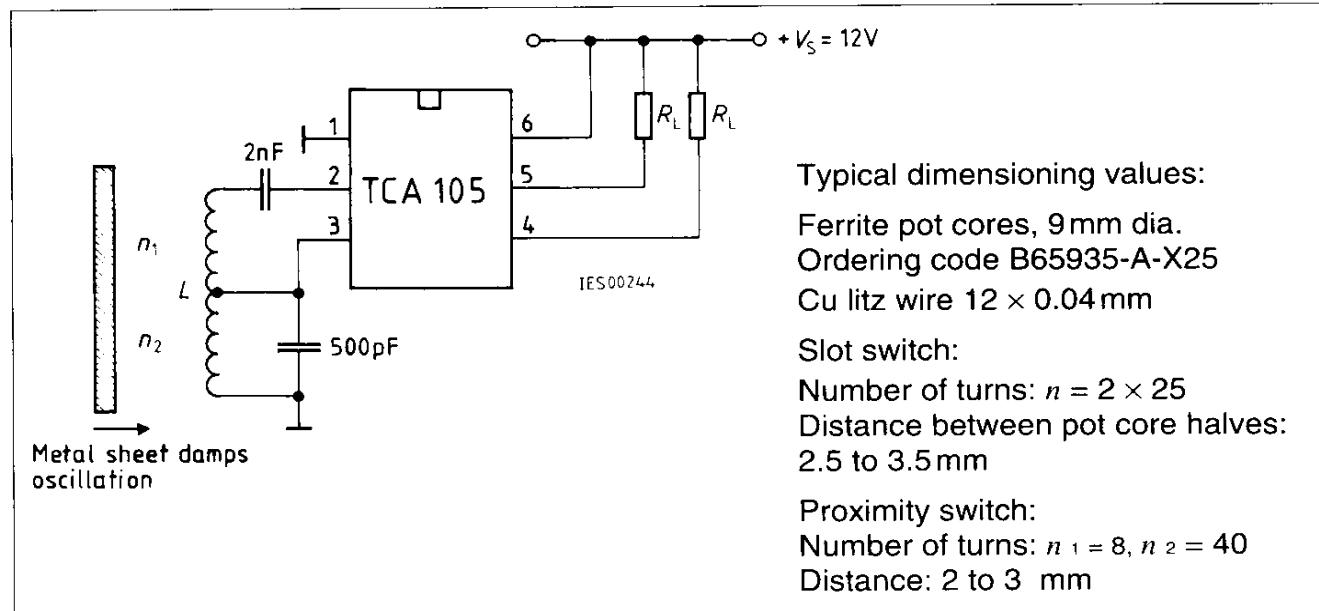
Type	Ordering Code	Package
S TCA 105	Q67000-A527	P-DIP-6-1
S TCA 105 B	Q67000-A587	P-DIP-6-1
S TCA 105 G	Q67000-A988	P-DSO-6 (SMD)

The TCA 105 contains an oscillator stage, a threshold switch, and two anti-parallel output stages. The IC is especially suitable for application in proximity switches, light reflection switches, and other contactless switching applications.

TCA 105, TCA 105 B**TCA 105 G****Pin Configuration
(top view)****Test Circuit**

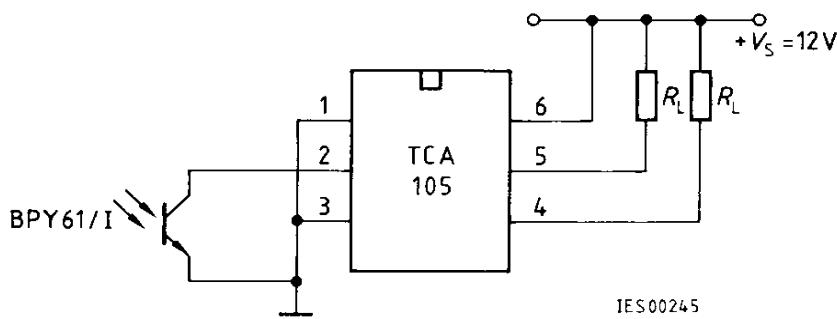
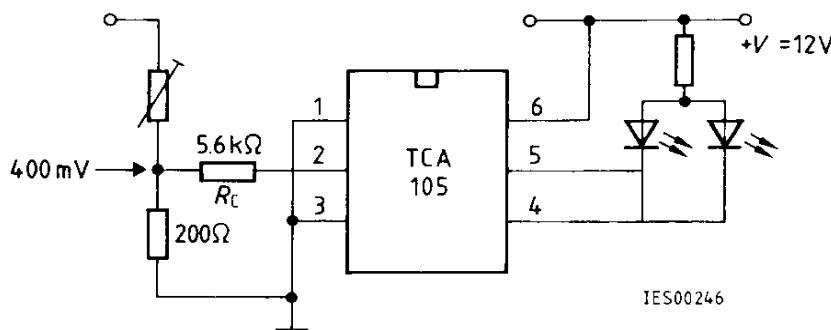


Circuit Diagram



Application Example

Inductive Slot Switch or Proximity Switch

Applications Examples**Light-Operated Switch** (switching amplifier for phototransistor BPY 61)**Voltage Monitor**

Absolute Maximum Ratings

Parameters	Symbol	Limit Values		Unit
		TCA 105	TCA 105 B	
Supply voltage	V_S	30	20	V
Output voltage (pin 4, pin 5)	V_O	30	20	V
Output current	I_Q	50	50	mA
Switching frequency	f_S	40	40	kHz
Input voltage	V_I	$\geq 0^{1)}$	$\geq 0^{1)}$	V
Junction temperature	T_j	150	150	°C
Storage temperature range	T_{stg}	– 55 to 125	– 55 to 125	°C
Thermal resistance (system – air) TCA 105, TCA 105 B TCA 105 G	$R_{th\ SA}$	115	115	K/W
	$R_{th\ SA}$	200		K/W

Operating Range

Supply voltage	V_S	4.75 to 30	4.75 to 20	V
Ambient temperature	T_A	– 25 to 85	– 25 to 85	°C
Oscillating frequency	f_{osc}	1 to 4.5	1 to 4.5	MHz

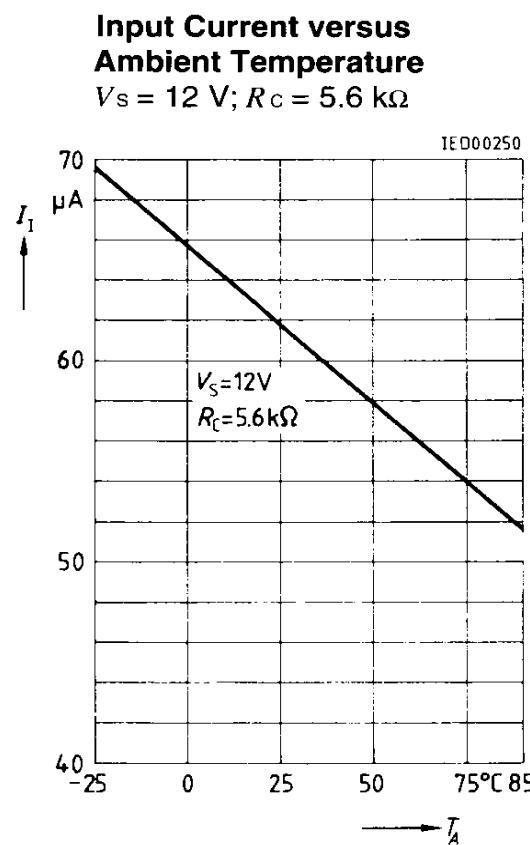
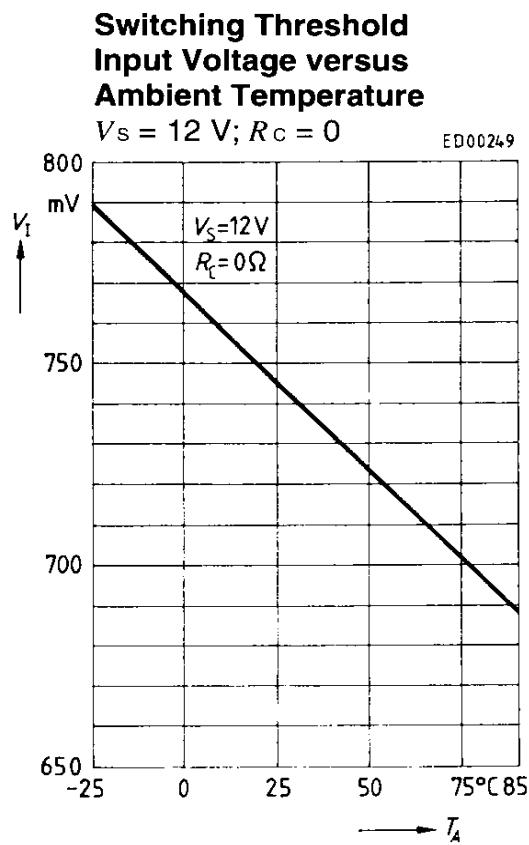
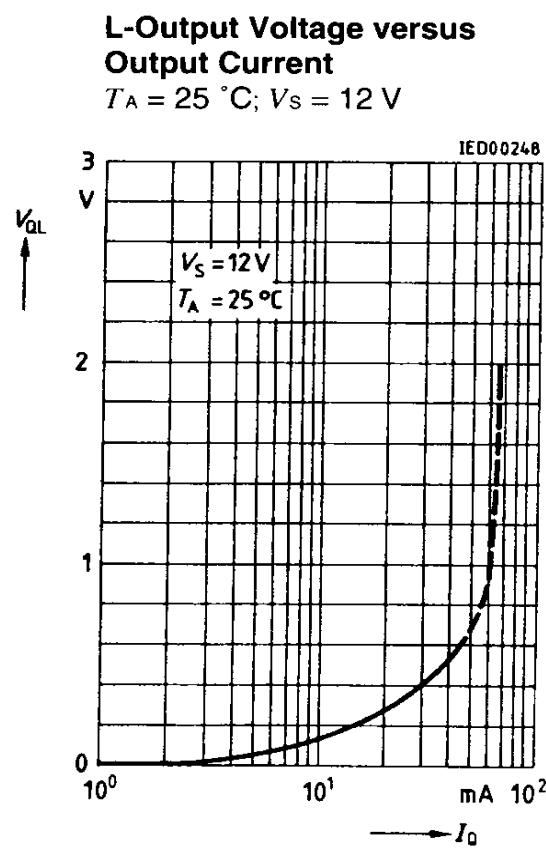
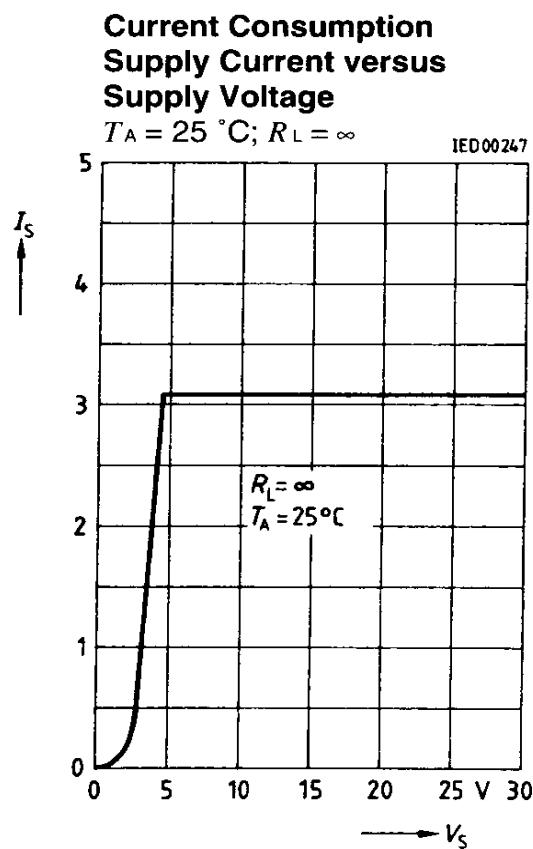
¹⁾ Negative input voltages are not permitted

Characteristics

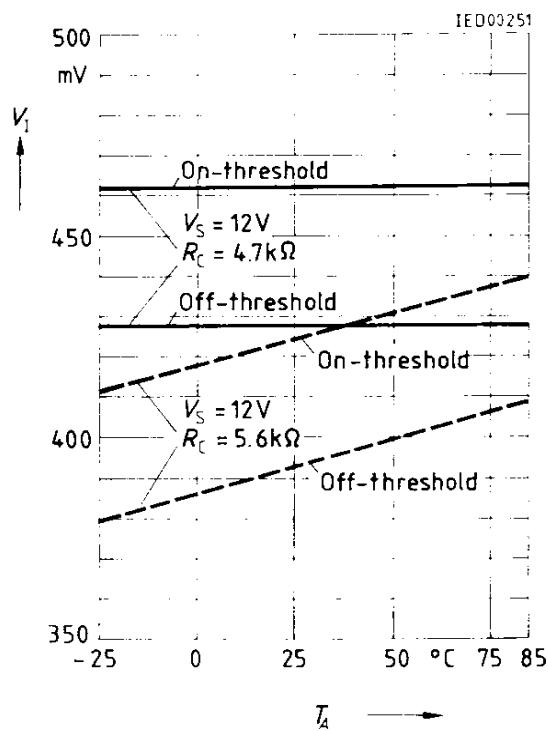
Static measurement, pins 3 and 1 interconnected

 $V_s = 12 \text{ V}$, $T_A = 25^\circ\text{C}$, $R_c = 5.6 \text{ k}\Omega$

Parameters	Symbol	Limit Values			Unit
		min.	typ.	max.	
Supply current	I_s		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 L-output voltage $I_Q = 16 \text{ mA}$	V_{hy} V_{Q_L}	20	35 0.25	50 0.35	mV V
H-output voltage	V_{Q_H}	corresponds to V_s			
Reverse current, $V_s = 30 \text{ V}$ and/or 20 V	I_{Q_H}			60	µA
L-output voltage $I_Q = 50 \text{ mA}$	V_{Q_L}		0.7	1.15	V
Switching time in TTL operation $I_Q = 16 \text{ mA}$	t		3		µs



**Switching Threshold
Input Voltage versus
Ambient Temperature**



**Switching Threshold
Input Voltage versus
Supply Voltage**

