

Threshold Switch

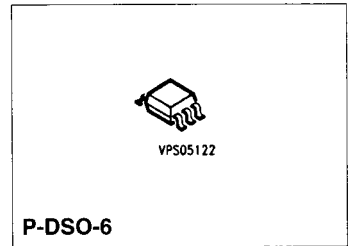
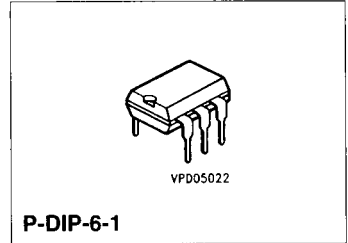
TCA 105

Bipolar IC

3

Features

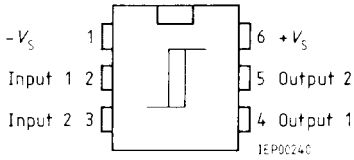
- Wide range of supply voltage, 4.5 to 30 V
- High output current, 50 mA
- TTL-compatible
- Triggerable with DC signal



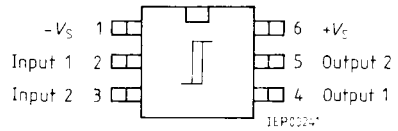
| Type | Ordering Code | Package |
|-------------|---------------|---------------|
| ■ TCA 105 | Q67000-A527 | P-DIP-6-1 |
| ■ TCA 105 B | Q67000-A587 | P-DIP-6-1 |
| ■ TCA 105 G | Q67000-A988 | P-DSO-6 (SMD) |

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

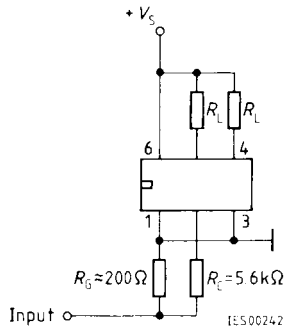
TCA 105, TCA 105 B



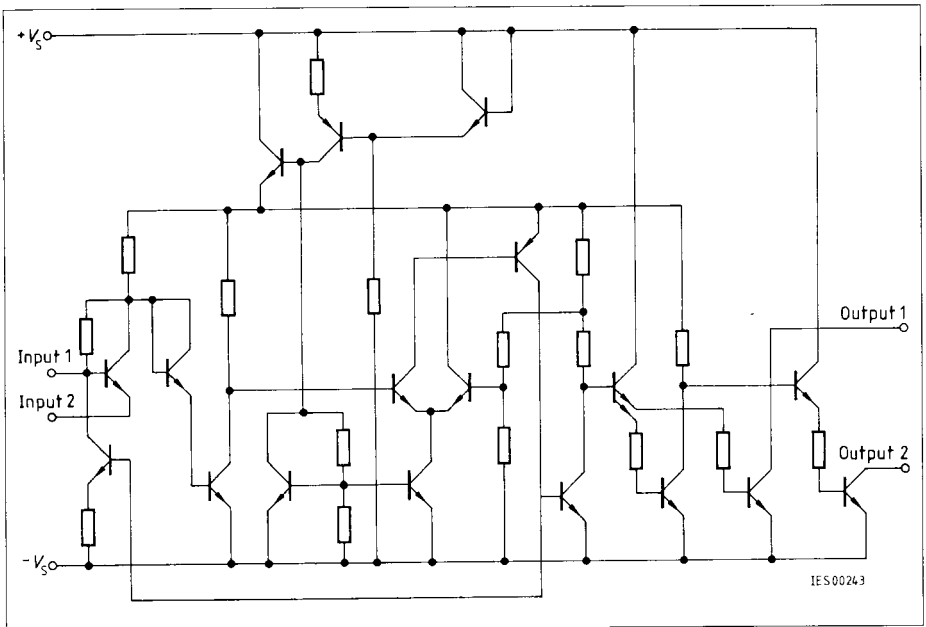
TCA 105 G



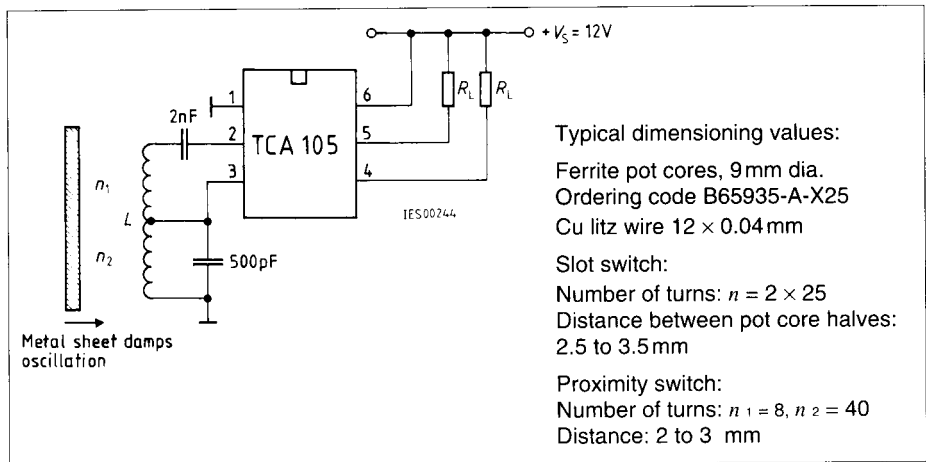
Pin Configuration
(top view)



Test Circuit

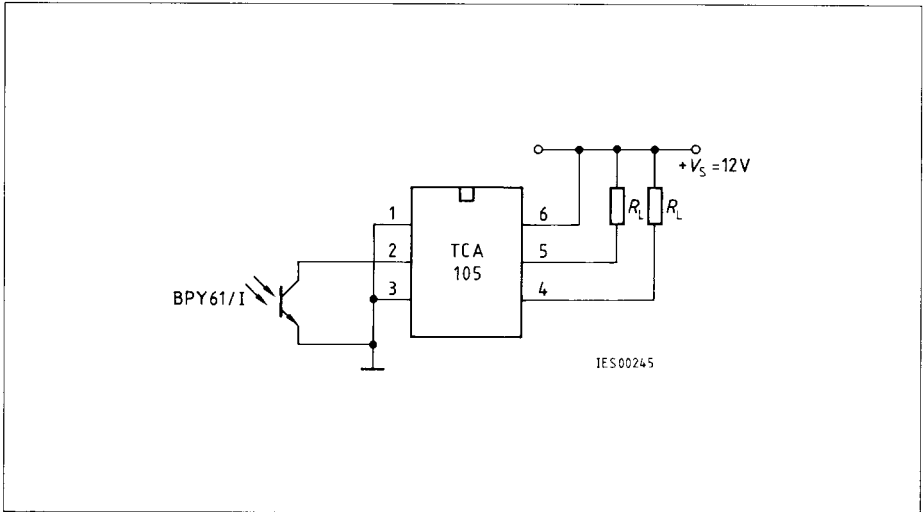


Circuit Diagram

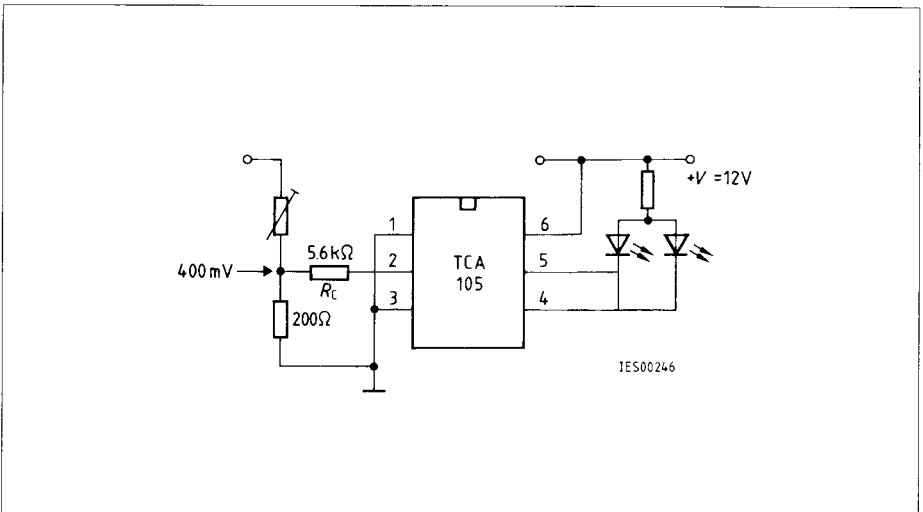


Application Example
Inductive Slot Switch or Proximity Switch

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_O | 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 | $^{\circ}\text{C}$ |
| Storage temperature range | T_{stg} | - 55 to 125 | - 55 to 125 | $^{\circ}\text{C}$ |
| 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 | $^{\circ}\text{C}$ |
| Oscillating frequency | f_{osc} | 1 to 4.5 | 1 to 4.5 | MHz |

¹⁾ Negative input voltages are not permitted

Characteristics

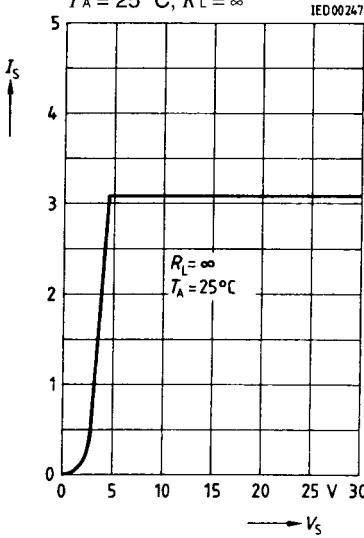
Static measurement, pins 3 and 1 interconnected

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

| 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 | V_{hy} | 20 | 35 | 50 | mV |
| L-output voltage $I_O = 16\text{ mA}$ | V_{OL} | | 0.25 | 0.35 | V |
| H-output voltage | V_{OH} | corresponds to V_S | | | |
| Reverse current, $V_S = 30\text{ V}$ and/or 20 V | I_{OH} | | | 60 | μA |
| L-output voltage $I_O = 50\text{ mA}$ | V_{OL} | | 0.7 | 1.15 | V |
| Switching time in TTL operation $I_O = 16\text{ mA}$ | t | | 3 | | μs |

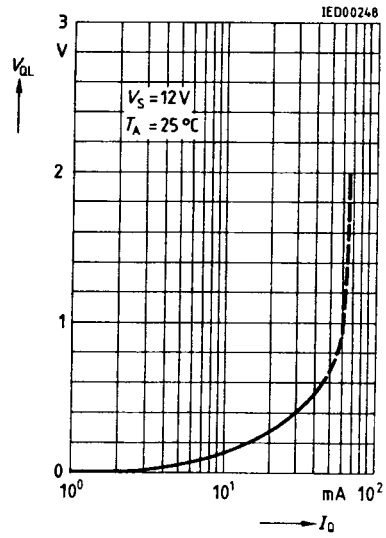
**Current Consumption
Supply Current versus
Supply Voltage**

$T_A = 25\text{ }^\circ\text{C}; R_L = \infty$



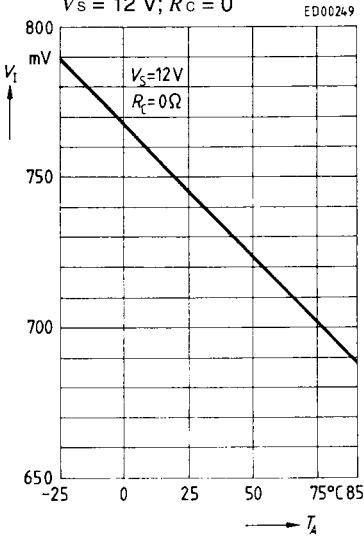
**L-Output Voltage versus
Output Current**

$T_A = 25\text{ }^\circ\text{C}; V_S = 12\text{ V}$



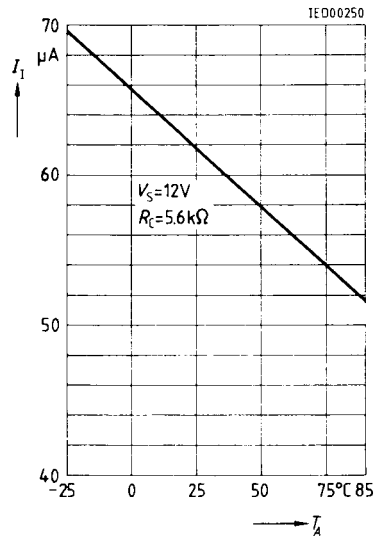
**Switching Threshold
Input Voltage versus
Ambient Temperature**

$V_S = 12\text{ V}; R_C = 0$

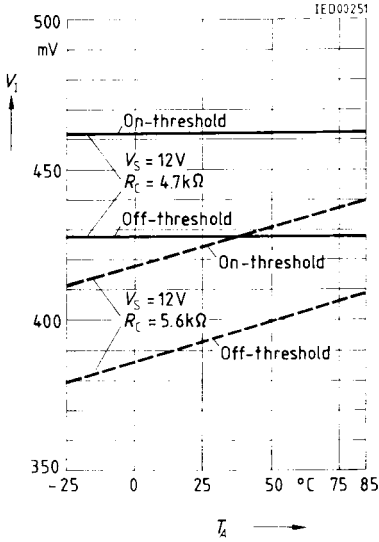


**Input Current versus
Ambient Temperature**

$V_S = 12\text{ V}; R_C = 5.6\text{ k}\Omega$

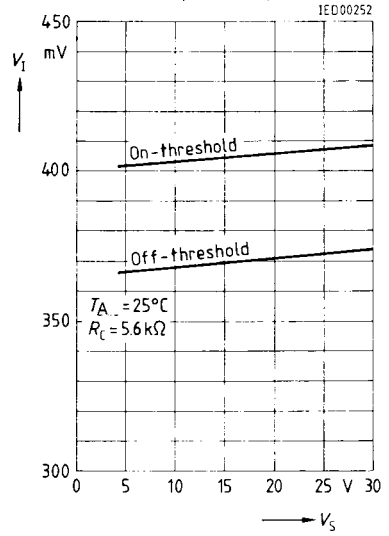


**Switching Threshold
Input Voltage versus
Ambient Temperature**



**Switching Threshold
Input Voltage versus
Supply Voltage**

$T_A = 25^{\circ}\text{C}; R_C = 5.6\text{k}\Omega$



This datasheet has been downloaded from:

www.DatasheetCatalog.com

Datasheets for electronic components.