



PNP 2N2906 – 2N2906A

GENERAL PURPOSE AMPLIFIERS TRANSISTORS

The 2N2906 and 2N2906A are PNP transistors mounted in TO-18 metal package. They are intended for high speed switching and general purpose applications. NPN complements are 2N2221 and 2N2221A .
Compliance to RoHS

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | | Value | | Unit |
|-----------|---------------------------------------|-----------------------|-------------|---------|------------------|
| | | | 2N2906 | 2N2906A | |
| V_{CEO} | Collector-Emitter Voltage ($I_B=0$) | | -40 | -60 | V |
| V_{CBO} | Collector-Base Voltage ($I_E=0$) | | -60 | | V |
| V_{EBO} | Emitter-Base Voltage ($I_C=0$) | | -5 | | V |
| I_C | Collector Current | | -600 | | mA |
| I_{CM} | Peak Collector Current | | -800 | | mA |
| I_{BM} | Peak Base Current | | -200 | | mA |
| P_D | Total Power Dissipation | $T_{amb} = 25^\circ$ | 0.4 | | W |
| | | $T_{case} = 25^\circ$ | 1.2 | | W |
| T_J | Junction Temperature | | 200 | | $^\circ\text{C}$ |
| T_{Stg} | Storage Temperature range | | -65 to +150 | | $^\circ\text{C}$ |
| T_{amb} | Operating Ambient Temperature | | -65 to +150 | | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|-------------|---|-------|--------------------|
| R_{thJ-a} | Thermal Resistance, Junction to ambient in free air | 438 | $^\circ\text{C/W}$ |
| R_{thJ-c} | Thermal Resistance, Junction to case | 146 | $^\circ\text{C/W}$ |

PNP 2N2906 – 2N2906A

ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | | Min | Typ | Max | Unit | |
|---------------|--|--|---|---------|-----|-----|------|---------------|
| I_{CBO} | Collector Cutoff Current | $V_{CB} = -50\text{ V}$ $I_E = 0$ | $T_a = 25^\circ\text{C}$ | 2N2906A | - | - | -10 | nA |
| | | | | 2N2906 | - | - | -20 | |
| I_{CBO} | Collector Cutoff Current | | $T_a = 150^\circ\text{C}$ | 2N2906A | - | - | -10 | μA |
| | | | | 2N2906 | - | - | -20 | |
| I_{EBO} | Emitter Cutoff Current (*) | $V_{EB} = -5\text{ V}, I_C = 0$ | | 2N2906A | - | - | -50 | nA |
| | | | | 2N2906 | - | - | - | |
| V_{CEO} | Collector Emitter Breakdown Voltage | $I_C = -10\text{ mA}, I_B = 0$ | | 2N2906A | -60 | - | - | V |
| | | | | 2N2906 | -40 | - | - | |
| V_{CBO} | Collector Base Breakdown Voltage | $I_C = -10\text{ }\mu\text{A}, I_E = 0$ | | 2N2906A | -60 | - | - | V |
| | | | | 2N2906 | -60 | - | - | |
| V_{EBO} | Emitter Base Breakdown Voltage | $I_E = -10\text{ }\mu\text{A}, I_C = 0$ | | 2N2906A | -5 | - | - | V |
| | | | | 2N2906 | -5 | - | - | |
| h_{FE} | DC Current Gain | | $I_C = -0.1\text{ mA}, V_{CE} = -10\text{ V}$ | 2N2906A | 40 | - | - | - |
| | | | | 2N2906 | 20 | - | - | |
| | | | $I_C = -1\text{ mA}, V_{CE} = -10\text{ V}$ | 2N2906A | 40 | - | - | |
| | | | | 2N2906 | 25 | - | - | |
| | | | $I_C = -10\text{ mA}, V_{CE} = -10\text{ V}$ | 2N2906A | 40 | - | - | |
| | | | | 2N2906 | 35 | - | - | |
| | | | $I_C = -150\text{ mA}, V_{CE} = -10\text{ V}$ | 2N2906A | 40 | - | 120 | |
| | | | | 2N2906 | 40 | - | - | |
| | | | $I_C = -500\text{ mA}, V_{CE} = -10\text{ V}$ | 2N2906A | 40 | - | - | |
| | | | | 2N2906 | 20 | - | - | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*) | | $I_C = -150\text{ mA}, I_B = -15\text{ mA}$ | 2N2906A | - | - | -0.4 | V |
| | | | | 2N2906 | - | - | -1.6 | |
| | | | $I_C = -500\text{ mA}, I_B = -50\text{ mA}$ | 2N2906A | - | - | -1.3 | |
| | | | | 2N2906 | - | - | -2.6 | |
| $V_{BE(SAT)}$ | Base-Emitter saturation Voltage (*) | | $I_C = -150\text{ mA}, I_B = -15\text{ mA}$ | 2N2906A | - | - | -1.3 | |
| | | | | 2N2906 | - | - | -2.6 | |
| | | | $I_C = -500\text{ mA}, I_B = -50\text{ mA}$ | 2N2906A | - | - | -1.3 | |
| | | | | 2N2906 | - | - | -2.6 | |
| f_T | Transition frequency | $I_C = -50\text{ mA}, V_{CE} = -20\text{ V}$ $f = 100\text{ MHz (*)}$ | | 2N2906A | 200 | - | - | MHz |
| | | | | 2N2906 | 200 | - | - | |
| t_d | Delay time | $I_C = -150\text{ mA}, I_B = -15\text{ mA}$ $-V_{CC} = -30\text{ V}$ | | 2N2906A | - | - | 10 | ns |
| t_r | Rise time | | | 2N2906 | - | - | 40 | |
| C_c | Collector capacitance | $I_E = I_e = 0, V_{CB} = -10\text{ V}$ $f = 1\text{ MHz}$ | | 2N2906A | - | - | 8 | μF |
| | | | | 2N2906 | - | - | 8 | |
| C_e | Emitter capacitance | $I_C = I_c = 0, V_{EB} = -2\text{ V}$ $f = 1\text{ MHz}$ | | 2N2906A | - | - | 30 | μF |
| | | | | 2N2906 | - | - | 30 | |

(*) Pulse conditions : $t_p < 300\text{ }\mu\text{s}$, $\delta = 2\%$

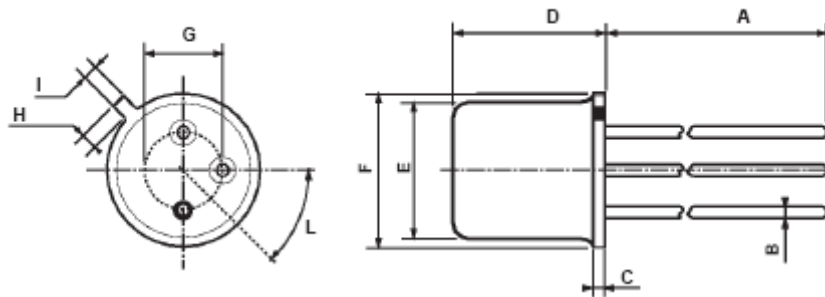
PNP 2N2906 – 2N2906A

SWITCHING TIME

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|-----------|---------------|---|-----|-----|-----|------|
| t_{on} | Turn-on time | $I_{Con} = -150 \text{ mA}$ $I_{Bon} = -15 \text{ mA}$ $I_{Boff} = 15 \text{ mA}$ | - | - | 45 | ns |
| t_d | Delay time | | - | - | 15 | |
| t_r | Rise time | | - | - | 35 | |
| t_{off} | Turn-off time | | - | - | 300 | |
| T_s | Storage time | | - | - | 250 | |
| T_f | Fall time | | - | - | 50 | |

ECHANICAL DATA CASE TO-18 (PNP)

| DIMENSIONS (mm) | | |
|-----------------|------|------|
| | min | max |
| A | 12.7 | - |
| B | - | 0.49 |
| C | 0.9 | - |
| D | - | 5.3 |
| E | - | 4.9 |
| F | - | 5.8 |
| G | 2.54 | - |
| H | - | 1.2 |
| I | - | 1.16 |
| L | 45° | - |



| | |
|---------|-----------|
| Pin 1 : | emitter |
| Pin 2 : | base |
| Pin 3 : | Collector |
| Case : | Collector |

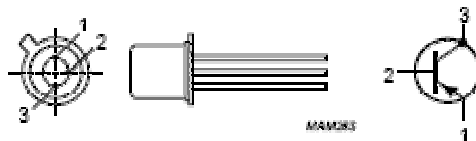


Fig.1 Simplified outline (TO-18) and symbol.

Revised August 2012

Information furnished is believed to be accurate and reliable. However, Comset Semiconductors assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. Data are subject to change without notice. Comset Semiconductors makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Comset Semiconductors assume any liability arising out of the application or use of any product and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Comset Semiconductors' products are not authorized for use as critical components in life support devices or systems.