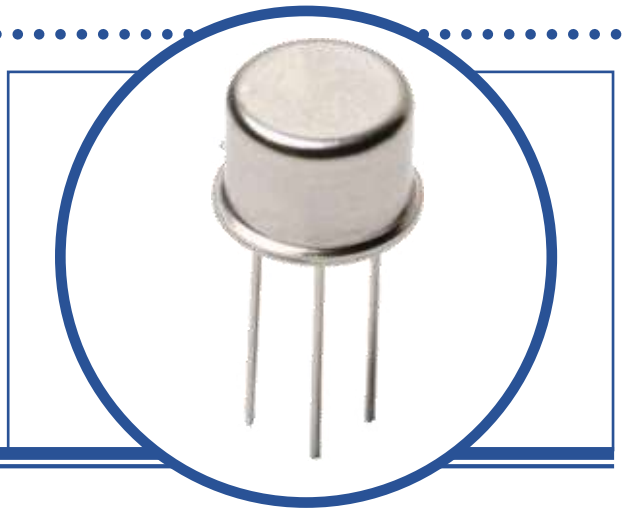
# SILICON PLANAR EPITAXIAL PNP TRANSISTOR

TT electronics
Semelab Limited

## 2N2905A



- Hermetic TO-39 Metal package.
- High Speed Saturated Switching
- Screening Options Available

## ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C unless otherwise stated)

| | | | |
|---|---|---|---|
| $V_{CBO}$ | Collector – Base Voltage | | -60V |
| $V_{CEO}$ | Collector – Emitter Voltage | | -60V |
| $V_{EBO}$ | Emitter – Base Voltage | | -5V |
| $I_C$ | Continuous Collector Current | | -600mA |
| $P_D$ | Total Power Dissipation at | $T_C$ = 25°C | 3.0W |
| | | Derate Above 25°C | 22.2mW/°C |
| $P_D$ | Total Power Dissipation at | $T_A$ = 25°C | 0.8W |
| | | Derate Above 25°C | 5.9mW/°C |
| $T_J$ | Junction Temperature Range | | -65 to +200°C |
| $T_{stg}$ | Storage Temperature Range | | -65 to +200°C |

### THERMAL PROPERTIES

| Symbols | Parameters | Max. | Units |
|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance, Junction To Ambient | 195 | °C/W |
| $R_{\theta JC}$ | Thermal Resistance, Junction To Case | 50 | °C/W |

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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# SILICON PLANAR EPITAXIAL PNP TRANSISTOR 2N2905A

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## ELECTRICAL CHARACTERISTICS ($T_C$ = 25°C unless otherwise stated)

| Symbols | Parameters | Test Conditions | | Min. | Typ | Max. | Units |
|---|---|---|---|---|---|---|---|
| $I_{CES}$ | Collector to emitter Cut-off current | $V_{CE}$ = -60V | | | | -1.0 | µA |
| $I_{CBO}$ | Collector Cut-Off Current | | $V_{CB}$ = -60V | | | -10 | µA |
| | | $T_A$= +150°C | $V_{CB}$ = -50V | | | -10 | µA |
| $I_{EBO}$ | Emitter Cut-Off Current | | $V_{EB}$ = -5.0V | | | -10 | µA |
| | | | $V_{EB}$ = -3.5V | | | -50 | nA |
| $h_{FE}$[1] | Forward-current transfer ratio | $V_{CE}$ = -10V | $I_C$ = -0.1mA | 75 | | | |
| | | | $I_C$ = -1.0mA | 100 | | 450 | |
| | | | $I_C$ = -10mA | 100 | | | |
| | | | $I_C$ = -150mA | 100 | | 300 | |
| | | | $I_C$ = -500mA | 50 | | | |
| | | $T_A$= -55°C | $I_C$ = -1.0mA | 50 | | | |
| $V_{(BR)CEO}$[1] | Collector-Emitter Breakdown Voltage | $I_C$ = -10mA | | -60 | | | V |
| $V_{CE(sat)}$[1] | Collector-Emitter Saturation Voltage | $I_C$ = -150mA | $I_B$ = -15mA | | | -0.4 | V |
| | | $I_C$ = -500mA | $I_B$ = -50mA | | | -1.6 | V |
| $V_{BE(sat)}$[1] | Base-Emitter Saturation Voltage | $I_C$ = -150mA | $I_B$ = -15mA | | | -1.3 | V |
| | | $I_C$ = -500mA | $I_B$ = -50mA | | | -2.6 | V |

## DYNAMIC CHARACTERISTICS

| | | | | | | |
|---|---|---|---|---|---|---|
| $t_{on}$ | Turn-on time | $V_{CC}$ = -30V, $I_{B1}$ = -15mA | $I_C$ = -150mA | | 45 | ns |
| $t_{off}$ | Turn-off time | $V_{CC}$ = -6V, $I_{B1}$ = -15mA | $I_C$ = -150mA | | 300 | ns |
| $C_{obo}$ | Output Capacitance | $V_{CB}$ = -10V, f = 1.0MHz | $I_E$ = 0 | | 8 | pF |
| $C_{ibo}$ | Input Capacitance | $V_{EB}$ = -10V, f = 1.0MHz | $I_C$ = 0 | | 30 | pF |
| $\|h_{fe}\|$ | Small Signal Current Gain | $V_{CE}$ = -20V, f = 100MHz | $I_C$ = -50mA | 2.0 | | | |
| $h_{fe}$ | Small-signal short-circuit forward-current transfer ratio | $V_{CE}$ = -10V, f = 1.0kHz | $I_C$ = -1.0mA | 100 | | | |

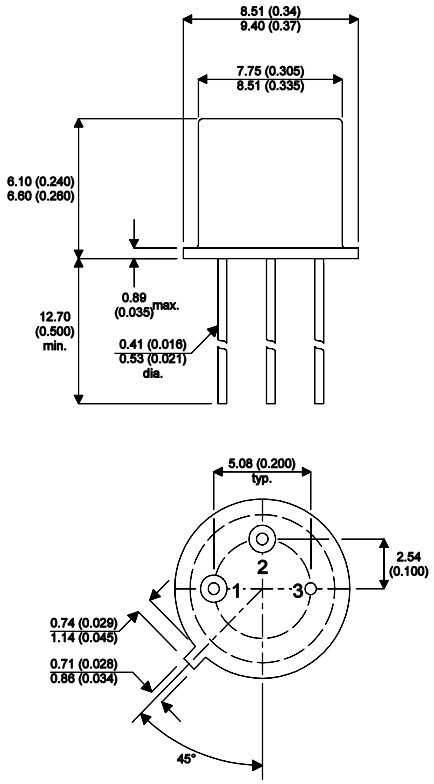
**Notes**
(1) Pulse Width ≤ 300us, δ ≤ 2%

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## MECHANICAL DATA

Dimensions in mm (inches)




**TO-39 (TO-205AD) METAL PACKAGE**
**Underside View**

Pin 1 - Emitter  Pin 2 - Base  Pin 3 - Collector