# SO642

## SMALL SIGNAL NPN TRANSISTOR

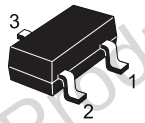
**PRELIMINARY DATA**

| Type | Marking |
|---|---|
| SO642 | N91 |

- SILICON EPITAXIAL PLANAR NPN HIGH VOLTAGE TRANSISTOR
- MINIATURE SOT-23 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE AND REEL PACKING
- THE PNP COMPLEMENTARY TYPE IS SO692

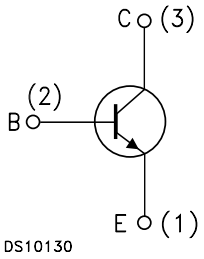
**APPLICATIONS**

- VIDEO AMPLIFIER CIRCUITS (RGB CATHODE CURRENT CONTROL)
- TELEPHONE WIRELINE INTERFACE (HOOK SWITCHES, DIALER CIRCUITS)




**SOT-23**

**INTERNAL SCHEMATIC DIAGRAM**




Obsolete Product(s) - Obsolete Product(s)

**ABSOLUTE MAXIMUM RATINGS**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage ($I_E$ = 0) | 300 | V |
| $V_{CEO}$ | Collector-Emitter Voltage ($I_B$ = 0) | 300 | V |
| $V_{EBO}$ | Emitter-Base Voltage ($I_C$ = 0) | 6 | V |
| $I_C$ | Collector Current | 0.1 | A |
| $I_{CM}$ | Collector Peak Current | 0.3 | A |
| $P_{tot}$ | Total Dissipation at $T_C$ = 25 $^oC$ | 310 | mW |
| $T_{stg}$ | Storage Temperature | -65 to 150 | $^oC$ |
| $T_j$ | Max. Operating Junction Temperature | 150 | $^oC$ |

## THERMAL DATA

| | | | | |
|---|---|---|---|---|
| $R_{thj\text{-}amb}$ • | Thermal Resistance Junction-Ambient | Max | 403.2 | $^oC/W$ |

• Device mounted on a PCB area of 1 $cm^2$

## ELECTRICAL CHARACTERISTICS ($T_{case}$ = 25 $^oC$ unless otherwise specified)

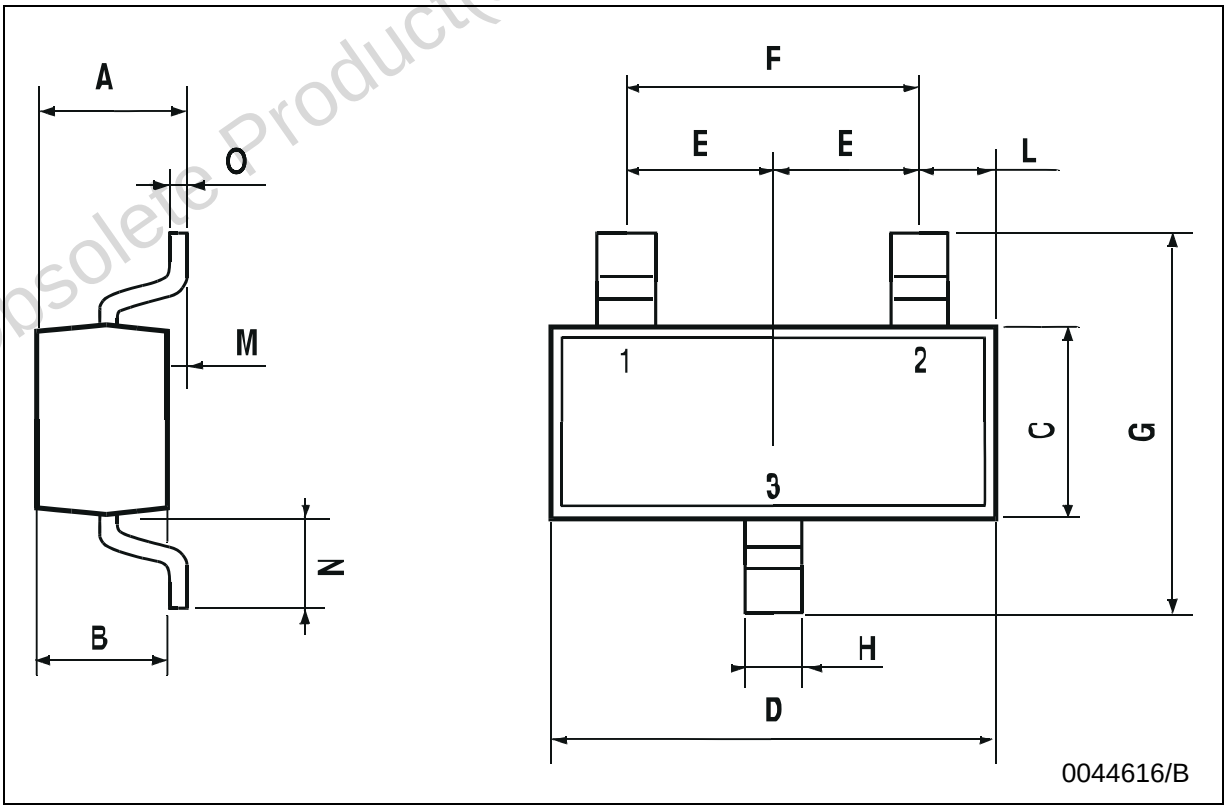
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CBO}$ | Collector Cut-off Current ($I_E$ = 0) | $V_{CB}$ = 200 V | | | 100 | nA |
| $V_{(BR)CBO}$ | Collector-Emitter Breakdown Voltage ($I_E$ = 0) | $I_C$ = 100 µA | 300 | | | V |
| $V_{(BR)CEO}$* | Collector-Emitter Breakdown Voltage ($I_B$ = 0) | $I_C$ = 1 mA | 300 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage ($I_C$ = 0) | $I_E$ = 100 µA | 6 | | | V |
| $V_{CE(sat)}$* | Collector-Emitter Saturation Voltage | $I_C$ = 20 mA $I_B$ = 2 mA | | | 0.5 | V |
| $V_{BE(sat)}$* | Base-Emitter Saturation Voltage | $I_C$ = 20 mA $I_B$ = 2 mA | | | 0.9 | V |
| $h_{FE}$* | DC Current Gain | $I_C$ = 1 mA $V_{CE}$ = 10 V<br>$I_C$ = 10 mA $V_{CE}$ = 10 V<br>$I_C$ = 30 mA $V_{CE}$ = 10 V | 25<br>40<br>40 | | | |
| $f_T$ | Transition Frequency | $I_C$ = 10 mA $V_{CE}$ = 20 V f = 20 MHz | 50 | | | MHz |
| $C_{CBO}$ | Collector-Base Capacitance | $I_E$ = 0 $V_{CB}$ = 10 V f = 1MHz | | 6 | | pF |
| $C_{EBO}$ | Emitter-Base Capacitance | $I_C$ = 0 $V_{EB}$ = 2 V f = 1MHz | | 22 | | pF |

∗ Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %

Obsolete Product(s) - Obsolete Product(s)

## SOT-23 MECHANICAL DATA

| DIM. | mm | | | mils | | |
|---|---|---|---|---|---|---|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 0.85 | | 1.1 | 33.4 | | 43.3 |
| B | 0.65 | | 0.95 | 25.6 | | 37.4 |
| C | 1.20 | | 1.4 | 47.2 | | 55.1 |
| D | 2.80 | | 3 | 110.2 | | 118 |
| E | 0.95 | | 1.05 | 37.4 | | 41.3 |
| F | 1.9 | | 2.05 | 74.8 | | 80.7 |
| G | 2.1 | | 2.5 | 82.6 | | 98.4 |
| H | 0.38 | | 0.48 | 14.9 | | 18.8 |
| L | 0.3 | | 0.6 | 11.8 | | 23.6 |
| M | 0 | | 0.1 | 0 | | 3.9 |
| N | 0.3 | | 0.65 | 11.8 | | 25.6 |
| O | 0.09 | | 0.17 | 3.5 | | 6.7 |




Obsolete Product(s) - Obsolete Product(s)

Obsolete Product(s) - Obsolete Product(s)

Information furnished is believed to be accurate and reliable. However, STMicroelectronics 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. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 2002 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

**http://www.st.com**