



TIP35CW TIP36CW

Complementary Silicon High Power Transistors

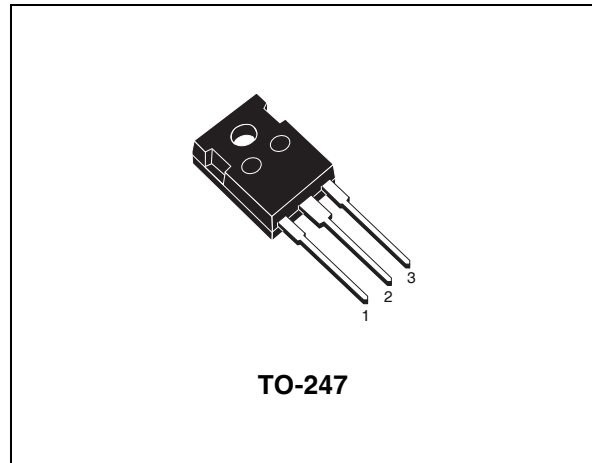
Features

- STMicroelectronics PREFERRED SALESTYPES

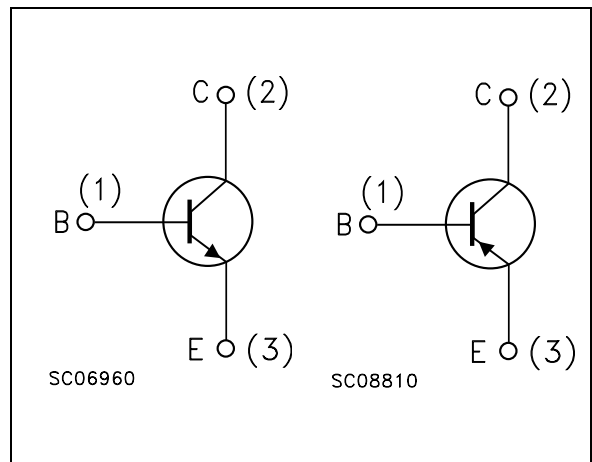
Description

The device is a silicon Epitaxial-Base NPN transistor mounted in TO-247 plastic package. It is intended for use in power amplifier and switching applications.

The complementary PNP type is TIP36CW.



Internal Schematic Diagram



Order Codes

| Part Number | Marking | Package | Packing |
|-------------|----------|---------|---------|
| TIP35CW | TIP35C W | TO-247 | Tube |
| TIP36CW | TIP36C W | TO-247 | Tube |

1 A Absolute Maximum Ratings

Table 1. Absolute Maximum Rating

| Symbol | Parameter | | Value | Unit |
|-----------|---|-----|------------|------------|
| | | NPN | TIP35CW | |
| | | PNP | TIP36CW | |
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | | 100 | V |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | | 100 | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | | 5V | |
| I_C | Collector Current | | 25 | A |
| I_{CM} | Collector Peak Current ($t_p < 5ms$) | | 50 | A |
| I_B | Base Current | | 5 | A |
| P_{tot} | Total Dissipation at $T_c = 25^\circ C$ | | 125 | W |
| T_{stg} | Storage Temperature | | -65 to 150 | $^\circ C$ |
| T_J | Max. Operating Junction Temperature | | 150 | $^\circ C$ |

Note: For PNP types voltage and current values are negative.

Table 2. Thermal Data

| Symbol | Parameter | | Value | Unit |
|----------------|----------------------------------|-----|-------|--------------|
| $R_{thj-case}$ | Thermal Resistance Junction-Case | Max | 1 | $^\circ C/W$ |

2 Electrical Characteristics

Table 3. Electrical Characteristics ($T_{\text{case}} = 25^{\circ}\text{C}$; unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|--|---|----------|------|----------|--------|
| I_{CEO} | Collector Cut-off Current ($I_{\text{B}} = 0$) | $V_{\text{CE}} = 60 \text{ V}$ | | | 1 | mA |
| I_{EBO} | Emitter Cut-off Current ($I_{\text{C}} = 0$) | $V_{\text{EB}} = 5 \text{ V}$ | | | 1 | mA |
| I_{CES} | Collector Cut-off Current ($V_{\text{BE}} = 0$) | $V_{\text{CE}} = \text{Rated } V_{\text{CEO}}$ | | | 0.7 | mA |
| $V_{\text{CEO(sus)}}$ <i>Note: 1</i> | Collector-Emitter Sustaining Voltage ($I_{\text{B}} = 0$) | $I_{\text{C}} = 30 \text{ mA}$ | 100 | | | V |
| h_{FE} <i>Note: 1</i> | DC Current Gain | $I_{\text{C}} = 1.5 \text{ A}$ $V_{\text{CE}} = 4 \text{ V}$ $I_{\text{C}} = 15 \text{ A}$ $V_{\text{CE}} = 4 \text{ V}$ | 25 10 | | 50 | |
| $V_{\text{CE(sat)}}$ <i>Note: 1</i> | Collector-Emitter Saturation Voltage | $I_{\text{C}} = 15 \text{ A}$ $I_{\text{B}} = 1.5 \text{ A}$ $I_{\text{C}} = 25 \text{ A}$ $I_{\text{B}} = 5 \text{ A}$ | | | 1.8 4 | V V |
| $V_{\text{BE(on)}}$ <i>Note: 1</i> | Base-Emitter Voltage | $I_{\text{C}} = 15 \text{ A}$ $V_{\text{CE}} = 4 \text{ V}$ $I_{\text{C}} = 25 \text{ A}$ $V_{\text{CE}} = 4 \text{ V}$ | | | 2 4 | V V |
| f_{T} | Transition Frequency | $I_{\text{C}} = 1 \text{ A}$ $V_{\text{CE}} = 10 \text{ V}$ $f = 1 \text{ MHz}$ | 3M | | | Hz |
| h_{fe} | Small Signal Current Gain | $I_{\text{C}} = 1 \text{ A}$ $V_{\text{CE}} = 10 \text{ V}$ $f = 1 \text{ MHz}$ | 25 | | | |

Note: 1 Pulsed duration = 300 μs , duty cycle $\leq 1.5\%$.

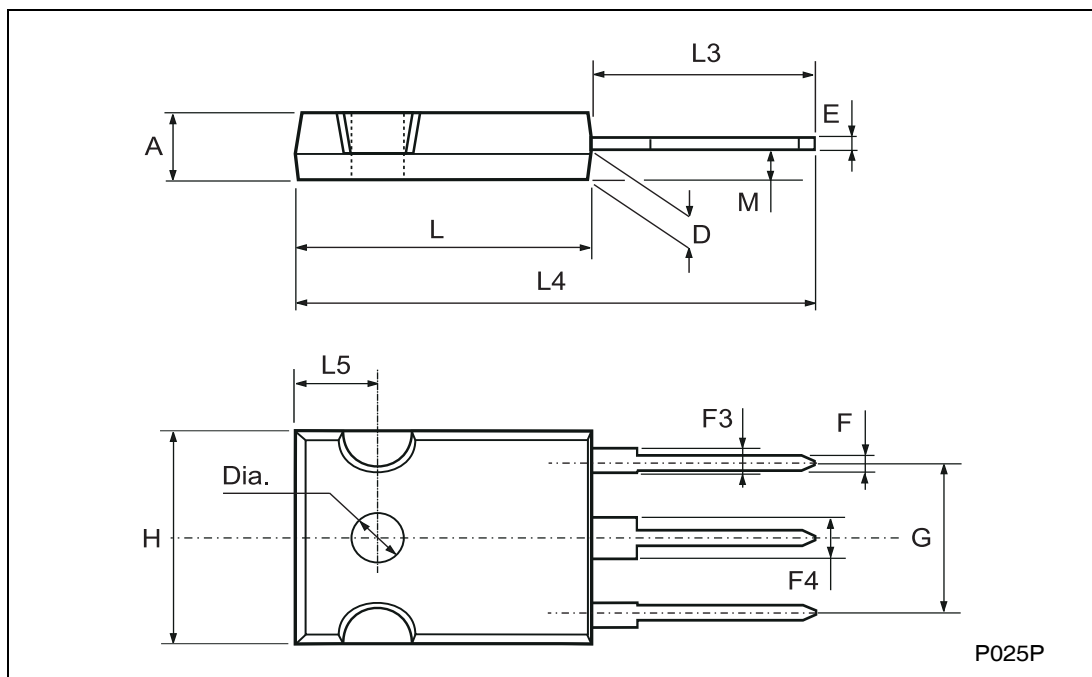
2 For PNP types voltage and current values are negative.

3 Package Mechanical Data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

TO-247 MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 4.7 | | 5.3 | 0.185 | | 0.209 |
| D | 2.2 | | 2.6 | 0.087 | | 0.102 |
| E | 0.4 | | 0.8 | 0.016 | | 0.031 |
| F | 1 | | 1.4 | 0.039 | | 0.055 |
| F3 | 2 | | 2.4 | 0.079 | | 0.094 |
| F4 | 3 | | 3.4 | 0.118 | | 0.134 |
| G | | 10.9 | | | 0.429 | |
| H | 15.3 | | 15.9 | 0.602 | | 0.626 |
| L | 19.7 | | 20.3 | 0.776 | | 0.779 |
| L3 | 14.2 | | 14.8 | 0.559 | | 0.582 |
| L4 | | 34.6 | | | 1.362 | |
| L5 | | 5.5 | | | 0.217 | |
| M | 2 | | 3 | 0.079 | | 0.118 |



4 R evision History

| Date | Revision | Changes |
|-------------|----------|--------------------------|
| 02-Nov-2005 | 1 | Initial release. |
| 12-Dec-2005 | 2 | Added the ECOPACK Label. |

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. Specifications 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 registered trademark of STMicroelectronics.
All other names are the property of their respective owners

© 2005 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

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

www.st.com