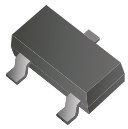
# General Purpose Transistor

# MMBT3906-G (PNP)

## RoHS Device

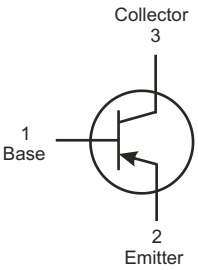


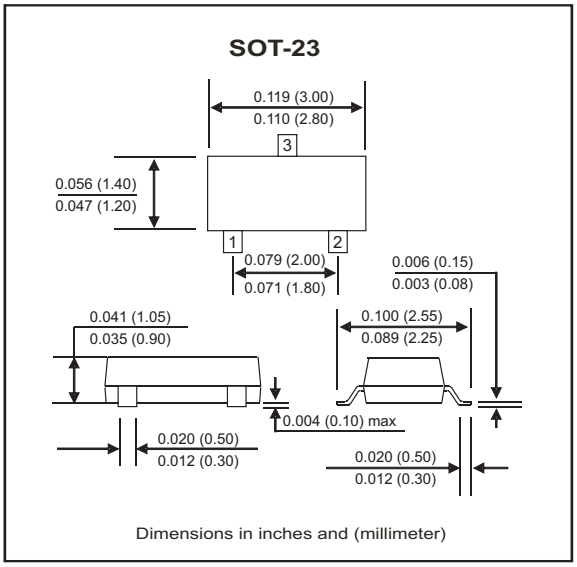
## Features

-Epitaxial planar die construction

-As complementary type, the NPN

transistor MMBT3904-G is recommended




## Maximum Ratings (at TA=25°C unless otherwise noted)

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Collector-Base voltage | $V_{CBO}$ | | | -40 | V |
| Collector-Emitter voltage | $V_{CEO}$ | | | -40 | V |
| Emitter-Base voltage | $V_{EBO}$ | | | -5 | V |
| Collector current-Continuous | $I_C$ | | | -0.2 | A |
| Collector dissipatioin | $P_C$ | | | 0.2 | W |
| Storage temperature and junction temperature | $T_{STG}$ , $T_J$ | -55 | | +150 | °C |

## Electrical Characteristics (at TA=25°C unless otherwise noted)

| Parameter | Conditions | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|
| Collector-Base breakdown voltage | $I_C$ =-100μA , $I_E$=0 | $V_{(BR)CBO}$ | -40 | | V |
| Collector-Emitter breakdown voltage | $I_C$ =-1mA , $I_B$=0 | $V_{(BR)CEO}$ | -40 | | V |
| Emitter-Base breakdown voltage | $I_E$ =-100μA , $I_C$=0 | $V_{(BR)EBO}$ | -5 | | V |
| Collector cut-off current | $V_{CB}$=-40V , $I_E$=0 | $I_{CBO}$ | | -0.1 | μA |
| Collector cut-off current | $V_{CE}$=-40V , $I_B$=0 | $I_{CEO}$ | | -0.1 | μA |
| Emitter cut-off current | $V_{EB}$=-5V , $I_C$=0 | $I_{EBO}$ | | -0.1 | μA |
| DC current gain | $V_{CE}$=-1V , $I_C$=-10mA | $h_{FE(1)}$ | 100 | 300 | |
| | $V_{CE}$=-1V , $I_C$=-50mA | $h_{FE(2)}$ | 60 | | |
| | $V_{CE}$=-1V , $I_C$=-100mA | $h_{FE(3)}$ | 30 | | |
| Collector-Emitter saturation voltage | $I_C$=-50mA , $I_B$=-5mA | $V_{CE}$(sat) | | -0.4 | V |
| Base-Emitter saturation voltage | $I_C$=-50mA , $I_B$=-5mA | $V_{BE}$(sat) | | -0.95 | V |
| Transition frequency | $V_{CE}$=-20V , $I_C$=-10mA f=100MHz | $f_T$ | 300 | | Mhz |
| Delay time | $V_{CC}$=-3.0V , $V_{BE}$=-0.5V | td | | 35 | nS |
| Rise time | $I_C$=-10mA , $I_{B1}$=-1.0mA | tr | | 35 | nS |
| Storage time | $V_{CC}$=-3.0$V_{dc}$ , $I_C$=-10mA | ts | | 225 | nS |
| Fall time | $I_{B1}$=$I_{B2}$=-1.0mA | tf | | 75 | nS |

## RATING AND CHARACTERISTIC CURVES (MMBT3906-G)

Fig.1 - Static Characteristic

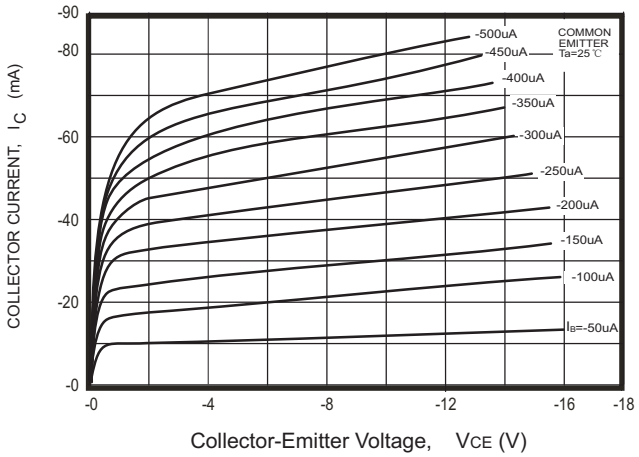



Fig.2 - hFE— Ic

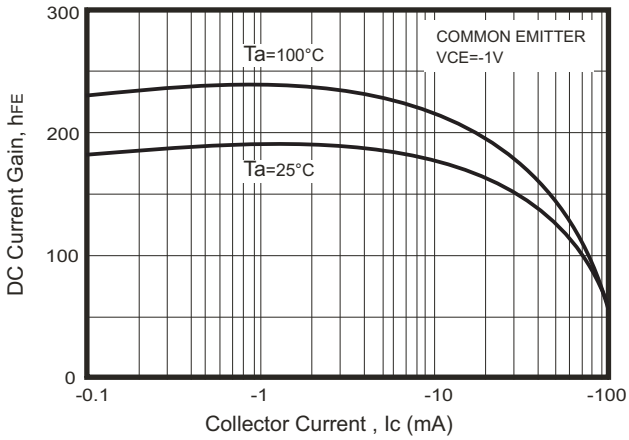



Fig.3 - VCEsat — Ic

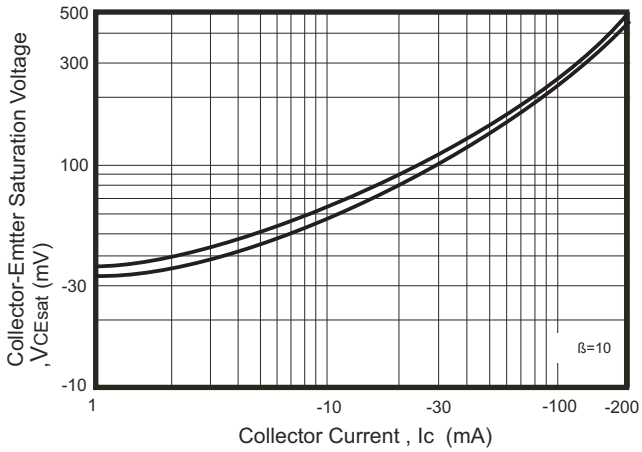



Fig.4 - VBEsat — Ic

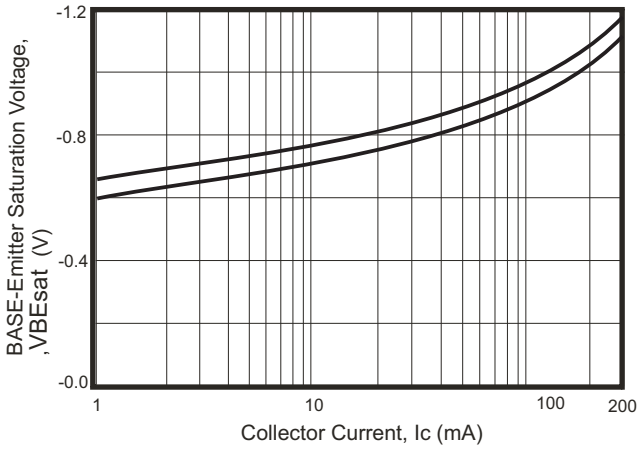



Fig.5 - Ic — VBE

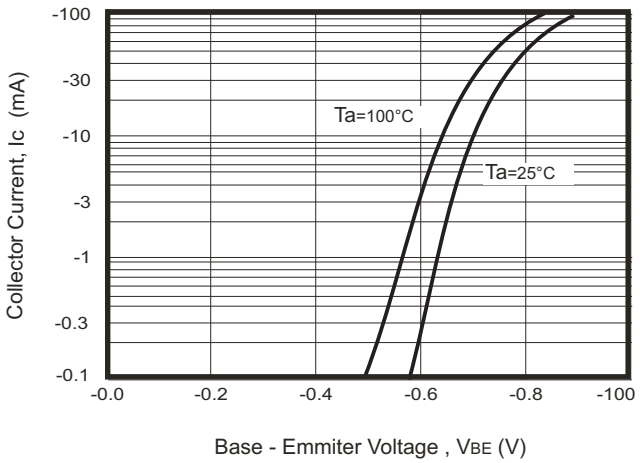
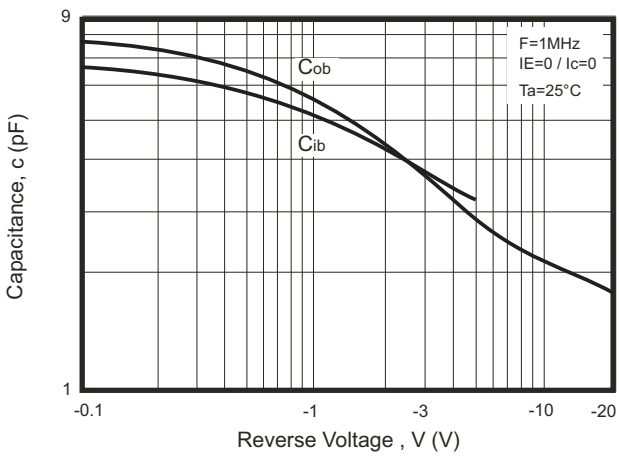



Fig.6 - Cob/Cib — VCB/VEB



## RATING AND CHARACTERISTIC CURVES (MMBT3906-G)

Fig.7 - $f_T$ — $I_C$

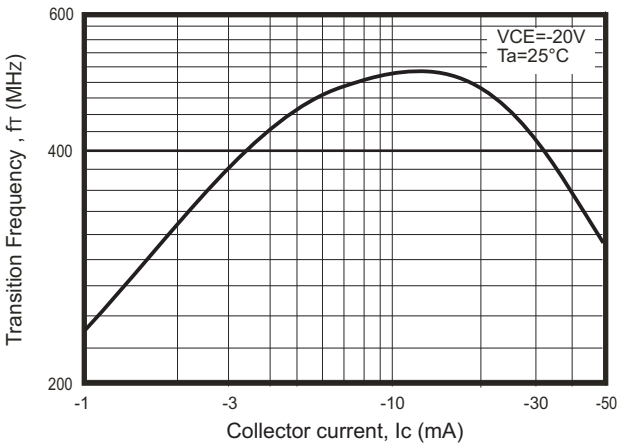
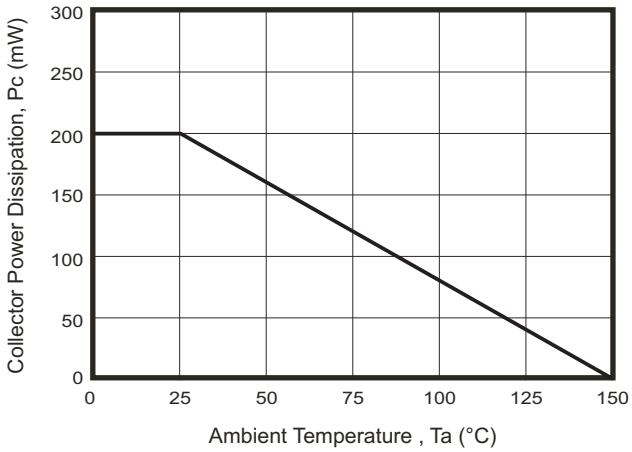
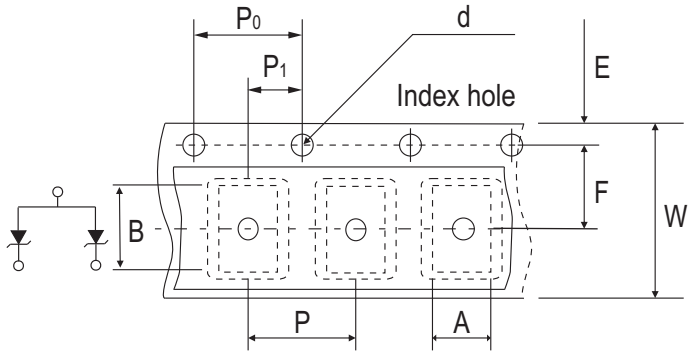
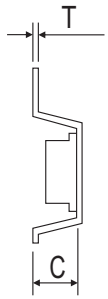


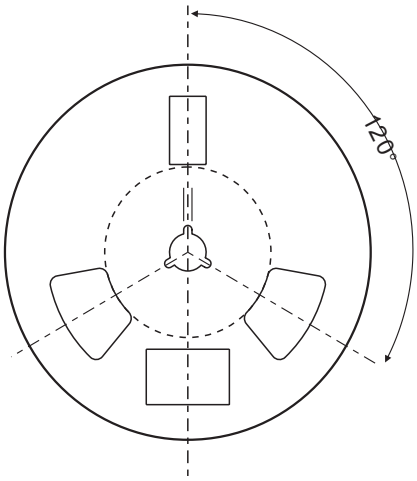

Fig.8 - $P_C$ – Ta

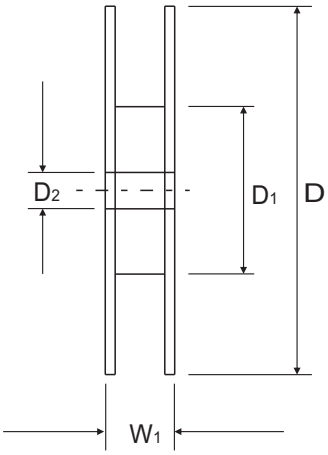


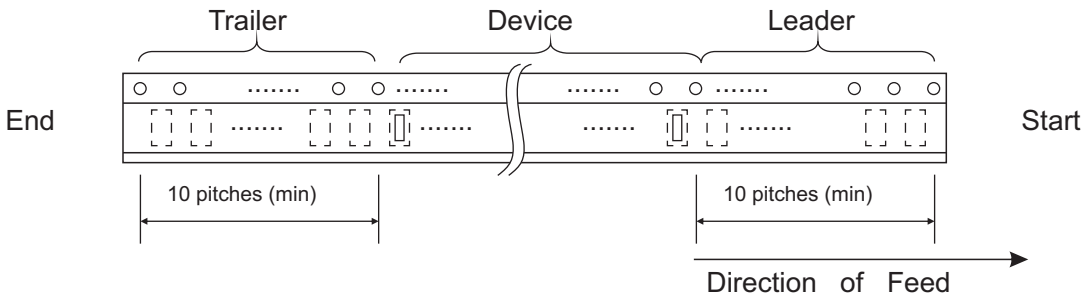
## Reel Taping Specification



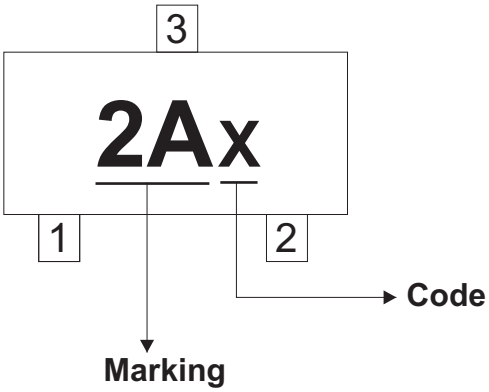




| | SYMBOL | A | B | C | d | D | D1 | D2 |
|---|---|---|---|---|---|---|---|---|
| SOT-23 | (mm) | 3.15 ± 0.10 | 2.77 ± 0.10 | 1.22 ± 0.10 | 1.50 + 0.10 | 178 ± 1.00 | 54.40 ± 0.40 | 13.00 ± 0.20 |
| | (inch) | 0.124 ± 0.004 | 0.109 ± 0.004 | 0.048 ± 0.004 | 0.059 + 0.004 | 7.008 ± 0.039 | 2.142 ± 0.016 | 0.512 ± 0.008 |

| | SYMBOL | E | F | P | P0 | P1 | W | W1 |
|---|---|---|---|---|---|---|---|---|
| SOT-23 | (mm) | 1.75 ± 0.10 | 3.50 ± 0.05 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 8.00 + 0.30 / - 0.10 | 9.50 ± 1.00 |
| | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.315 + 0.012 / - 0.004 | 0.374 ± 0.039 |

## Marking Code

| Part Number | Marking Code |
|---|---|
| MMBT3906-G | 2A |

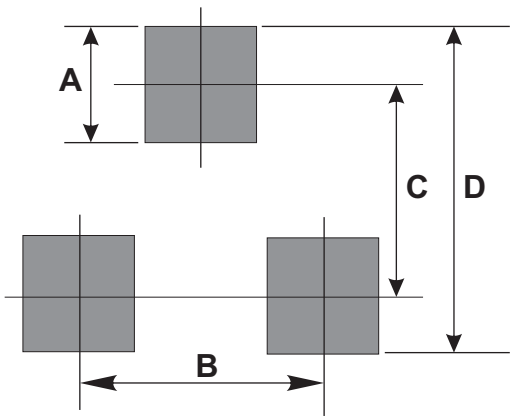



**Code:** Per A. D.

| Year(odd)-Month | Code | Year(Even)-Month | Code |
|---|---|---|---|
| XXX1-01 | J | XXX2-01 | W |
| XXX1-02 | O | XXX2-02 | N |
| XXX1-03 | L | XXX2-03 | Y |
| XXX1-04 | C | XXX2-04 | T |
| XXX1-05 | K | XXX2-05 | R |
| XXX1-06 | B | XXX2-06 | H |
| XXX1-07 | P | XXX2-07 | A |
| XXX1-08 | D | XXX2-08 | I |
| XXX1-09 | M | XXX2-09 | U |
| XXX1-010 | E | XXX2-010 | X |
| XXX1-011 | G | XXX2-011 | Z |
| XXX1-012 | F | XXX2-012 | S |

## Suggested PAD Layout

| SIZE | SOT-23 | |
|---|---|---|
| | (mm) | (inch) |
| A | 0.80 | 0.031 |
| B | 1.90 | 0.075 |
| C | 2.02 | 0.080 |
| D | 2.82 | 0.111 |




## Standard Packaging

| Case Type | REEL PACK | |
|---|---|---|
| | REEL ( pcs ) | Reel Size (inch) |
| SOT-23 | 3,000 | 7 |

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Comchip Technology:

MMBT3906-G