

Silicon NPN Power Transistors

2SC3680

DESCRIPTION

- With TO-3PN package
- High voltage switching transistor

APPLICATIONS

- Switching regulator and general purpose applications

PINNING

| PIN | DESCRIPTION |
|-----|--------------------------------------|
| 1 | Base |
| 2 | Collector;connected to mounting base |
| 3 | Emitter |

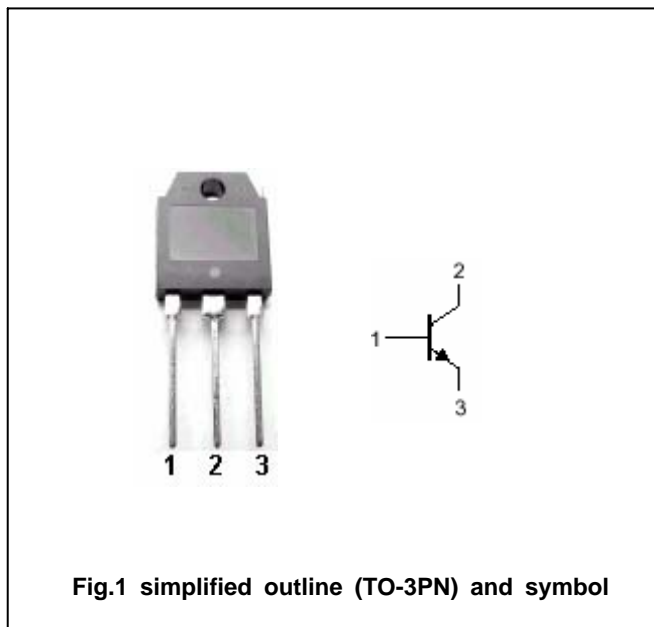


Fig.1 simplified outline (TO-3PN) and symbol

Absolute maximum ratings(Ta=)

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|-----------|-----------------------------|----------------|---------|------|
| V_{CBO} | Collector-base voltage | Open emitter | 900 | V |
| V_{CEO} | Collector-emitter voltage | Open base | 800 | V |
| V_{EBO} | Emitter-base voltage | Open collector | 7 | V |
| I_C | Collector current | | 7 | A |
| I_{CM} | Collector current-peak | | 14 | A |
| I_B | Base current | | 3.5 | A |
| P_C | Collector power dissipation | $T_C=25$ | 120 | W |
| T_j | Junction temperature | | 150 | |
| T_{stg} | Storage temperature | | -55~150 | |

Silicon NPN Power Transistors

2SC3680

CHARACTERISTICS

T_j=25 unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|--|-----|------|-----|------|
| V _{(BR)CEO} | Collector-emitter breakdown voltage | I _C =10mA ; I _B =0 | 800 | | | V |
| V _{CEsat} | Collector-emitter saturation voltage | I _C =3A , I _B =0.6A | | | 0.5 | V |
| V _{BEsat} | Base-emitter saturation voltage | I _C =3A ; I _B =0.6A | | | 1.2 | V |
| I _{CBO} | Collector cut-off current | V _{CB} =800V; I _E =0 | | | 100 | μ A |
| I _{EBO} | Emitter cut-off current | V _{EB} =7V; I _C =0 | | | 100 | μ A |
| h _{FE} | DC current gain | I _C =3A ; V _{CE} =4V | 10 | | 30 | |
| C _{ob} | Output capacitance | I _E =0 ; V _{CB} =10V; f=1MHz | | 105 | | pF |
| f _T | Transition frequency | I _C =2A ; V _{CE} =12V | | 6 | | MHz |

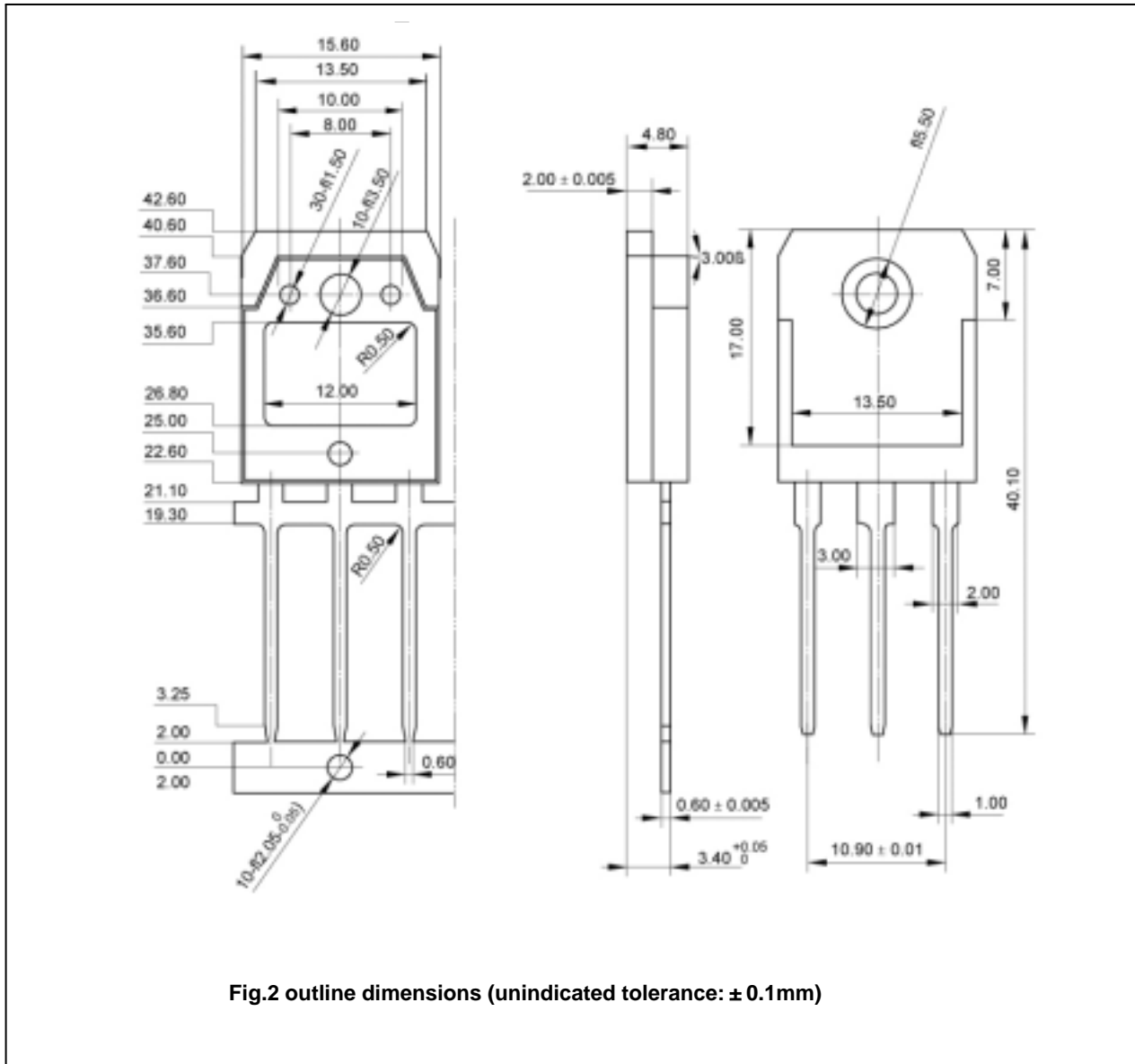
Switching times

| | | | | | | |
|------------------|--------------|--|--|--|-----|-----|
| t _{on} | Turn-on time | I _C =3A; I _{B1} =0.45A; I _{B2} =-1.5A; R _L =83 V _{CC} =250V | | | 1.0 | μ s |
| t _{stg} | Storage time | | | | 5.0 | μ s |
| t _f | Fall time | | | | 1.0 | μ s |

Silicon NPN Power Transistors

2SC3680

PACKAGE OUTLINE



Silicon NPN Power Transistors

2SC3680

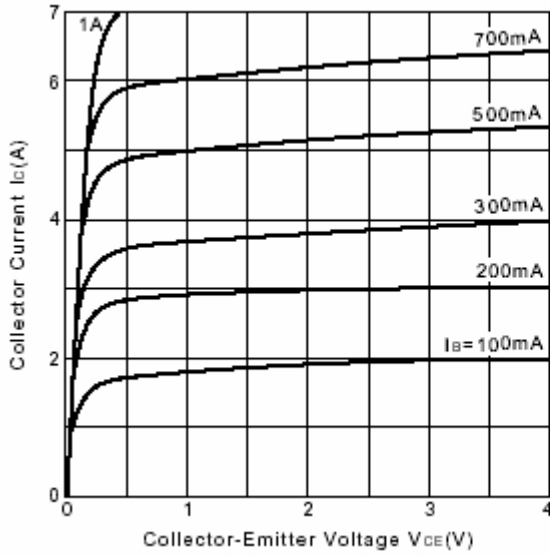


Fig.3 Static Characteristic

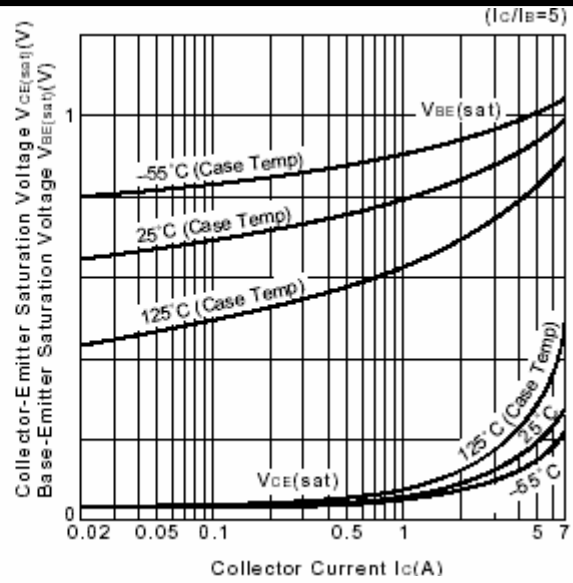


Fig.4 Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

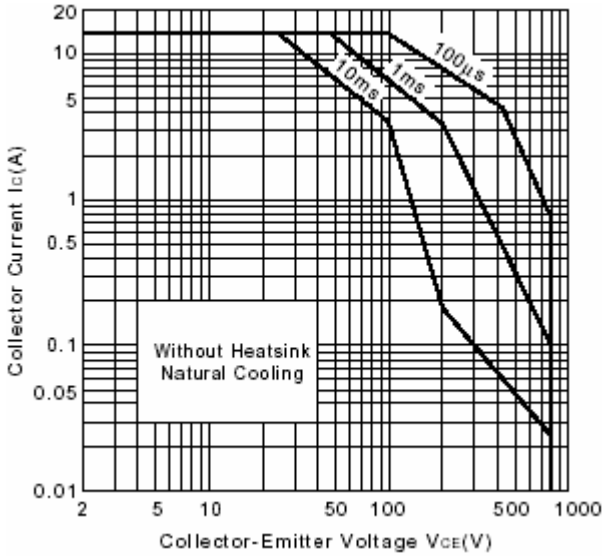


Fig.5 Safe Operating Area

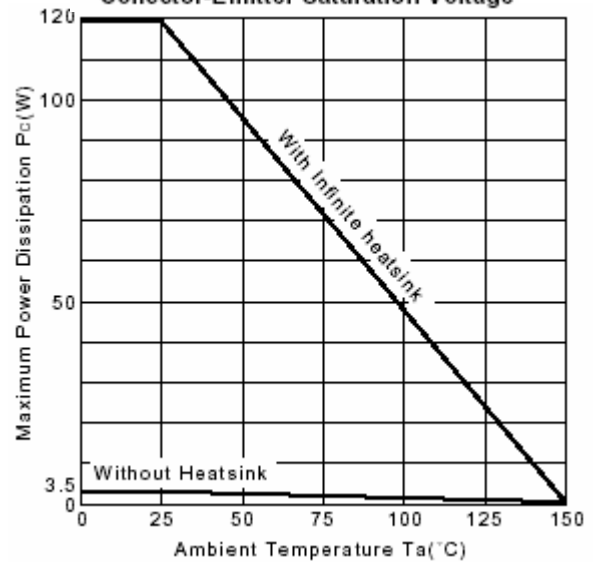


Fig.6 Power Derating

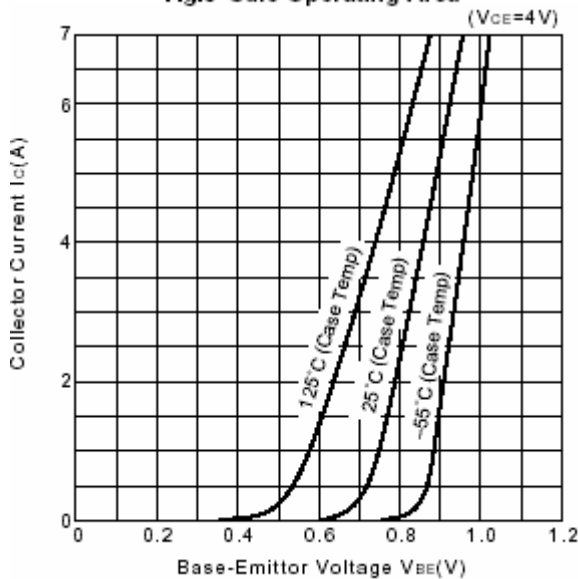


Fig.7 $I_c - V_{BE}$

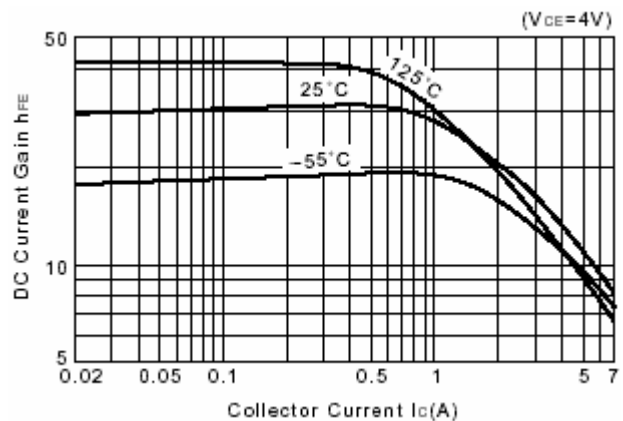


Fig.8 DC current Gain