

Silicon NPN Power Transistors

2SC5003

DESCRIPTION

- With TO-3PML package
- High voltage switching transistor
- Built-in damper diode

APPLICATIONS

- Display horizontal deflection output; switching regulator and general purpose

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | Base |
| 2 | Collector |
| 3 | Emitter |

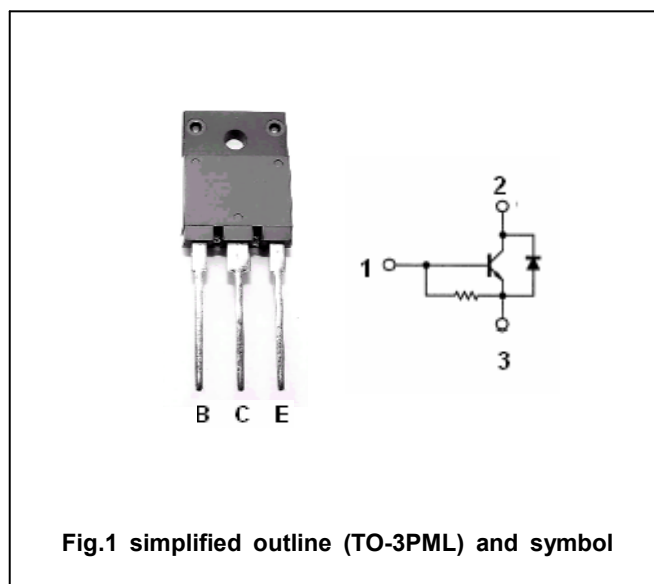


Fig.1 simplified outline (TO-3PML) and symbol

Absolute maximum ratings($T_a=25^\circ\text{C}$)

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|-----------|-----------------------------|------------------------|---------|------------------|
| V_{CBO} | Collector-base voltage | Open emitter | 1500 | V |
| V_{CEO} | Collector-emitter voltage | Open base | 800 | V |
| V_{EBO} | Emitter-base voltage | Open collector | 6 | 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 | $T_C=25^\circ\text{C}$ | 80 | W |
| T_j | Junction temperature | | 150 | $^\circ\text{C}$ |
| T_{stg} | Storage temperature | | -55~150 | $^\circ\text{C}$ |

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CHARACTERISTICS

T_j=25°C unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|----------------------|--------------------------------------|---|-----|------|-----|------|
| V _{(BR)EBO} | Base-emitter breakdown voltage | I _{EB} =300mA; I _B =0 | 6 | | | V |
| V _{CEsat} | Collector-emitter saturation voltage | I _C =5A; I _B =1.2A | | | 5 | V |
| V _{BEsat} | Base-emitter saturation voltage | I _C =5A; I _B =1.2A | | | 1.5 | V |
| I _{CBO1} | Collector cut-off current | V _{CB} =1200V; I _E =0 | | | 100 | μA |
| I _{CBO2} | Collector cut-off current | V _{CB} =1500V; I _E =0 | | | 1 | mA |
| I _{CEO} | Collector cut-off current | V _{CE} =800V; I _E =0 | | | 1 | mA |
| h _{FE-1} | DC current gain | I _C =1A; V _{CE} =5V | 8 | | | |
| h _{FE-2} | DC current gain | I _C =5A; V _{CE} =5V | 4 | | 9 | |
| V _{FEC} | Forward voltage | I _{EC} =7A | | | 2.0 | V |
| f _T | Transition frequency | I _E =-0.5A; V _{CE} =12V | | 4 | | MHz |
| C _{OB} | Output capacitance | V _{CB} =10V; f=1MHz | | 100 | | pF |

Switching times

| | | | | | | |
|------------------|--------------|--|--|--|-----|----|
| t _{stg} | Storage time | I _C =4A; I _{B1} =0.8A; I _{B2} =-1.6A; R _L =50Ω V _{CC} =200V | | | 4.0 | μs |
| t _f | Fall time | | | | 0.2 | μs |

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PACKAGE OUTLINE

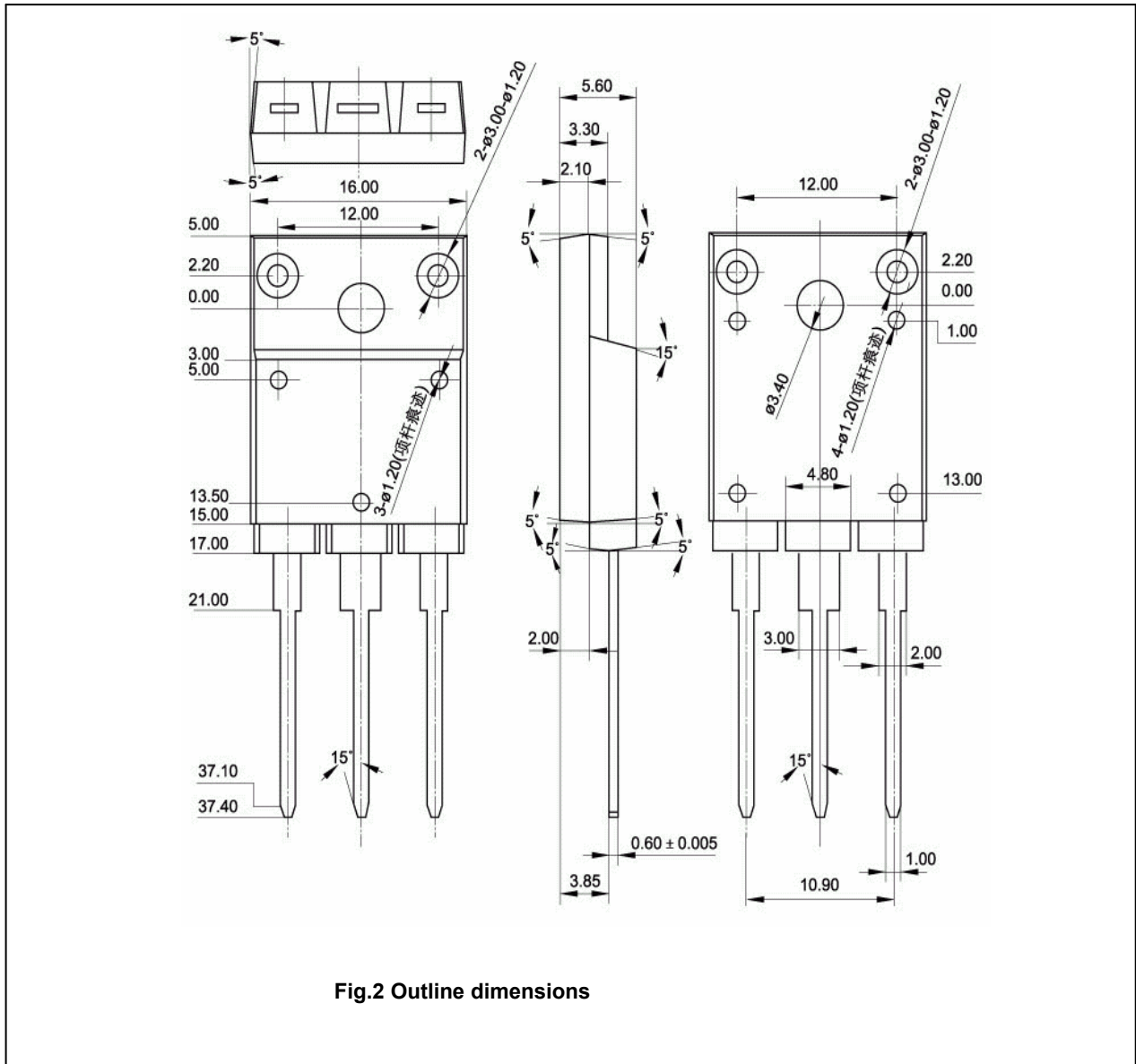


Fig.2 Outline dimensions

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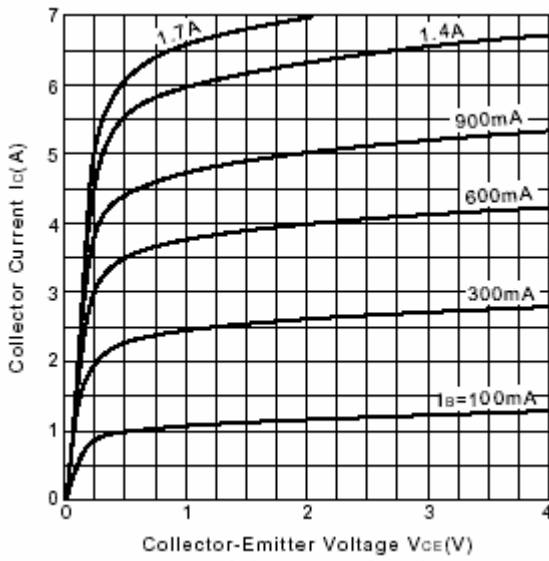


Fig.3 Static Characteristic

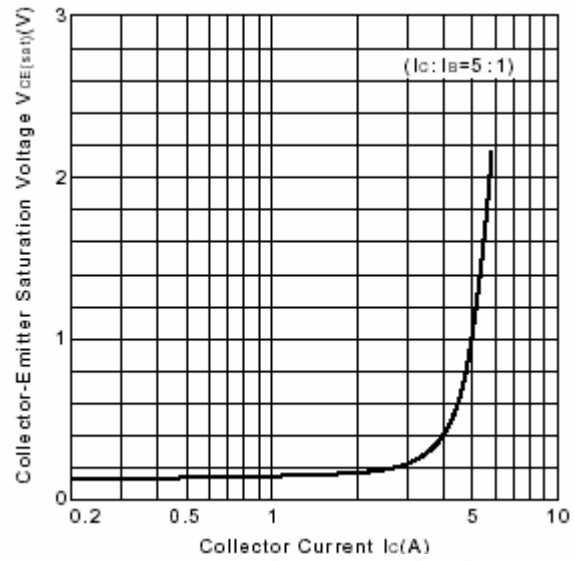


Fig.4 $V_{CE(sat)}$ - I_c Characteristics

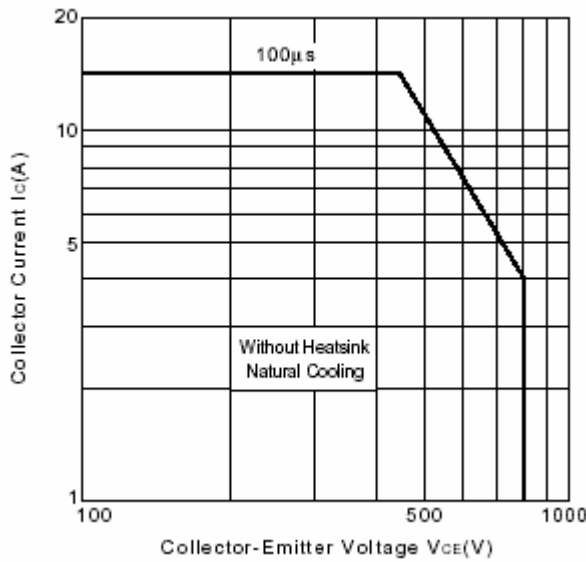


Fig.5 Safe Operating Area

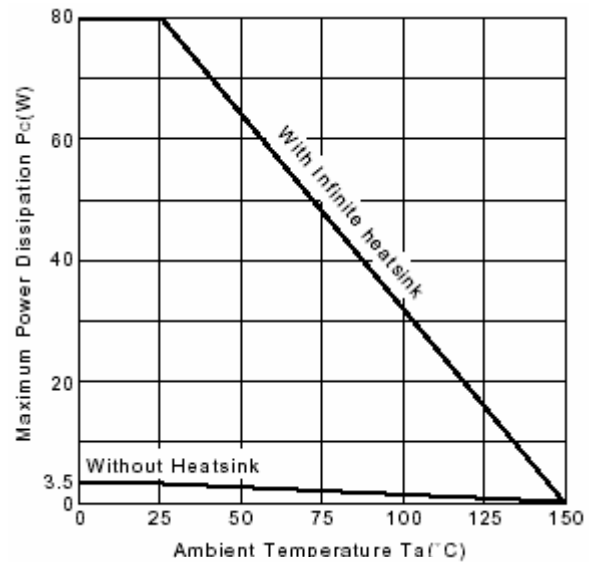


Fig.6 P_c - T_a Derating

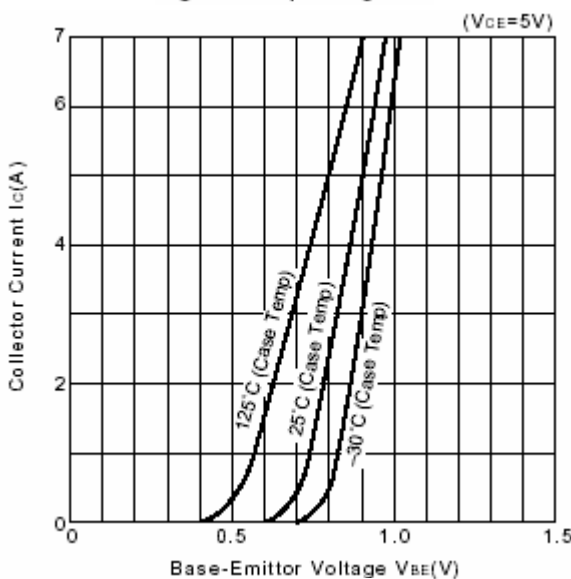


Fig.7 I_c - V_{BE}

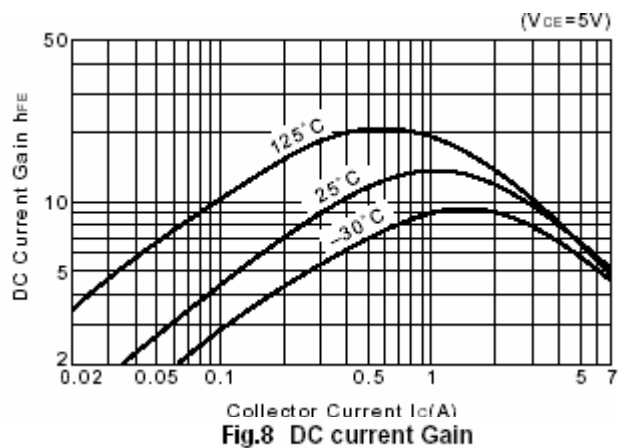


Fig.8 DC current Gain