

# LOW $V_{CE(sat)}$ 2SC4131

Silicon NPN Epitaxial Planar Transistor

Application : DC-DC Converter, Emergency Lighting Inverter and General Purpose

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

| Symbol    | 2SC4131                      | Unit             |
|-----------|------------------------------|------------------|
| $V_{CBO}$ | 100                          | V                |
| $V_{CEO}$ | 50                           | V                |
| $V_{EBO}$ | 15                           | V                |
| $I_C$     | 15(Pulse25)                  | A                |
| $I_B$     | 4                            | A                |
| $P_C$     | 60( $T_c=25^\circ\text{C}$ ) | W                |
| $T_J$     | 150                          | $^\circ\text{C}$ |
| $T_{stg}$ | -55 to +150                  | $^\circ\text{C}$ |

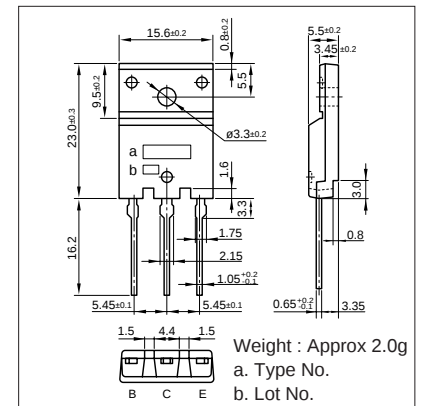
## Electrical Characteristics ( $T_a=25^\circ\text{C}$ )

| Symbol        | Conditions                             | 2SC4131   | Unit          |
|---------------|----------------------------------------|-----------|---------------|
| $I_{CBO}$     | $V_{CB}=100\text{V}$                   | 10max     | $\mu\text{A}$ |
| $I_{EBO}$     | $V_{EB}=15\text{V}$                    | 10max     | $\mu\text{A}$ |
| $V_{(BR)CEO}$ | $I_C=25\text{mA}$                      | 50min     | V             |
| $h_{FE}$      | $V_{CE}=1\text{V}$ , $I_C=5\text{A}$   | 60 to 360 |               |
| $V_{CE(sat)}$ | $I_C=5\text{A}$ , $I_B=80\text{mA}$    | 0.5max    | V             |
| $V_{BE(sat)}$ | $I_C=5\text{A}$ , $I_B=80\text{mA}$    | 1.2max    | V             |
| $f_r$         | $V_{CE}=12\text{V}$ , $I_E=-1\text{A}$ | 18typ     | MHz           |
| $C_{OB}$      | $V_{CB}=10\text{V}$ , $f=1\text{MHz}$  | 210typ    | pF            |

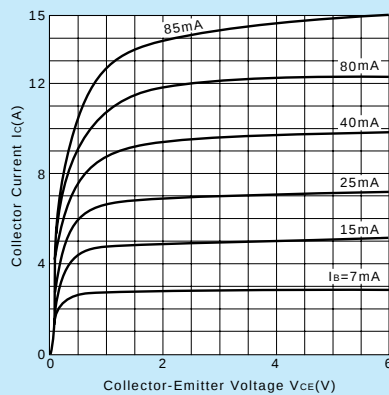
## Typical Switching Characteristics (Common Emitter)

| $V_{CC}$<br>(V) | $R_L$<br>( $\Omega$ ) | $I_C$<br>(A) | $V_{BB1}$<br>(V) | $V_{BB2}$<br>(V) | $I_{B1}$<br>(A) | $I_{B2}$<br>(A) | $t_{on}$<br>( $\mu\text{s}$ ) | $t_{stg}$<br>( $\mu\text{s}$ ) | $t_f$<br>( $\mu\text{s}$ ) |
|-----------------|-----------------------|--------------|------------------|------------------|-----------------|-----------------|-------------------------------|--------------------------------|----------------------------|
| 20              | 4                     | 5            | 10               | -5               | 0.08            | -0.08           | 0.5typ                        | 2.0typ                         | 0.4typ                     |

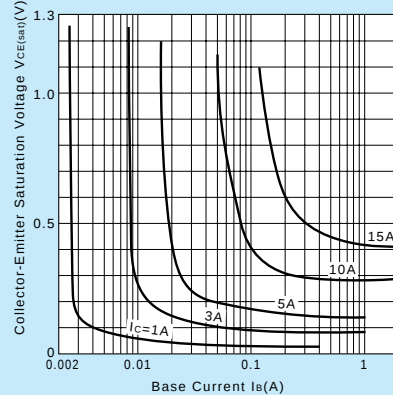
## External Dimensions FM100(TO3PF)



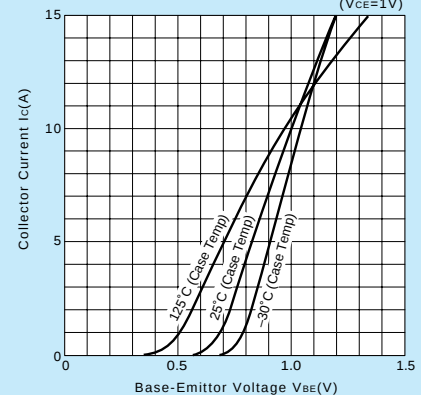
$I_C$ - $V_{CE}$  Characteristics (Typical)



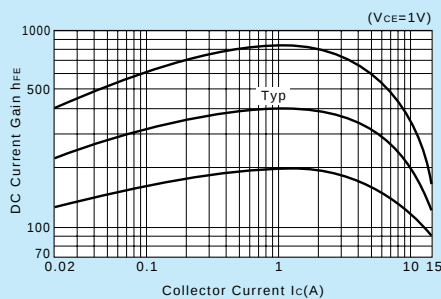
$V_{CE(sat)}$ - $I_B$  Characteristics (Typical)



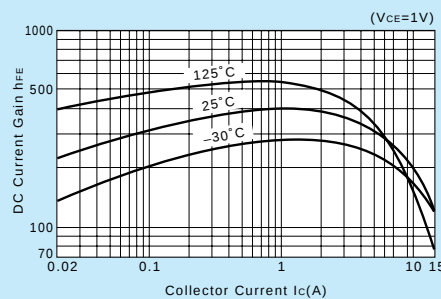
$I_C$ - $V_{BE}$  Temperature Characteristics (Typical)



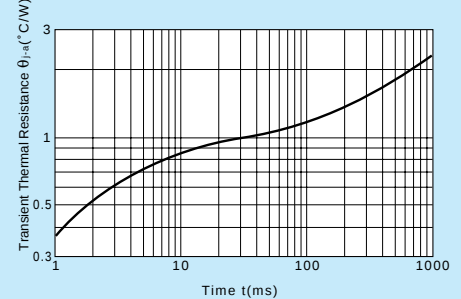
$h_{FE}$ - $I_C$  Characteristics (Typical)



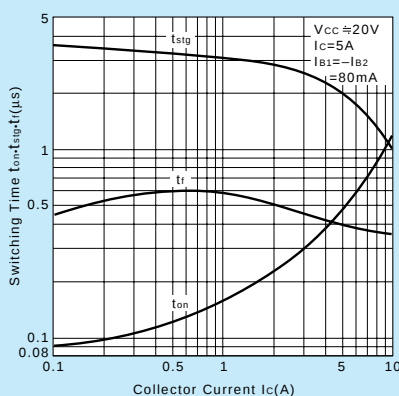
$h_{FE}$ - $I_C$  Temperature Characteristics (Typical)



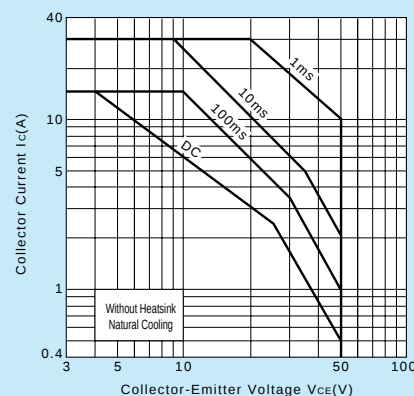
$\theta_{j-a}$ -t Characteristics



$t_{on}$ - $t_{stg}$ - $t_f$ - $I_C$  Characteristics (Typical)



Safe Operating Area (Single Pulse)



$P_C$ - $T_a$  Derating

