

High  $h_{FE}$   
Low  $V_{CE(sat)}$

# 2SC3852/3852A

Silicon NPN Epitaxial Planar Transistor

Application : Driver for Solenoid and Motor, Series Regulator and General Purpose

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

| Symbol    | 2SC3852                      | 2SC3852A | Unit             |
|-----------|------------------------------|----------|------------------|
| $V_{CBO}$ | 80                           | 100      | V                |
| $V_{CEO}$ | 60                           | 80       | V                |
| $V_{EBO}$ | 6                            |          | V                |
| $I_C$     | 3                            |          | A                |
| $I_B$     | 1                            |          | A                |
| $P_C$     | 25( $T_c=25^\circ\text{C}$ ) |          | W                |
| $T_j$     | 150                          |          | $^\circ\text{C}$ |
| $T_{stg}$ | -55 to +150                  |          | $^\circ\text{C}$ |

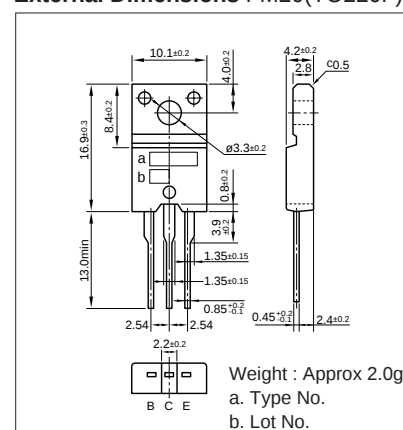
## Electrical Characteristics ( $T_a=25^\circ\text{C}$ )

| Symbol        | Conditions                                | 2SC3852 | 2SC3852A | Unit          |
|---------------|-------------------------------------------|---------|----------|---------------|
| $I_{CBO}$     | $V_{CB} =$                                | 10max   |          | $\mu\text{A}$ |
| $I_{EBO}$     | $V_{EB} = 6\text{V}$                      | 100max  |          | $\mu\text{A}$ |
| $V_{(BR)CEO}$ | $I_C = 25\text{mA}$                       | 60min   | 80min    | V             |
| $h_{FE}$      | $V_{CE} = 4\text{V}, I_C = 0.5\text{A}$   | 500min  |          |               |
| $V_{CE(sat)}$ | $I_C = 2\text{A}, I_B = 50\text{mA}$      | 0.5max  |          | V             |
| $f_T$         | $V_{CE} = 12\text{V}, I_E = -0.2\text{A}$ | 15typ   |          | MHz           |
| $COB$         | $V_{CB} = 10\text{V}, f = 1\text{MHz}$    | 50typ   |          | pF            |

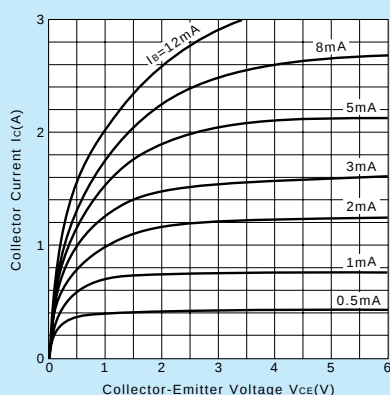
## Typical Switching Characteristics (Common Emitter)

| $V_{CC}$<br>(V) | $R_L$<br>( $\Omega$ ) | $I_C$<br>(A) | $V_{BB1}$<br>(V) | $V_{BB2}$<br>(V) | $I_{B1}$<br>(mA) | $I_{B2}$<br>(mA) | $t_{on}$<br>( $\mu\text{s}$ ) | $t_{stg}$<br>( $\mu\text{s}$ ) | $t_f$<br>( $\mu\text{s}$ ) |
|-----------------|-----------------------|--------------|------------------|------------------|------------------|------------------|-------------------------------|--------------------------------|----------------------------|
| 20              | 20                    | 1.0          | 10               | -5               | 15               | -30              | 0.8typ                        | 3.0typ                         | 1.2typ                     |

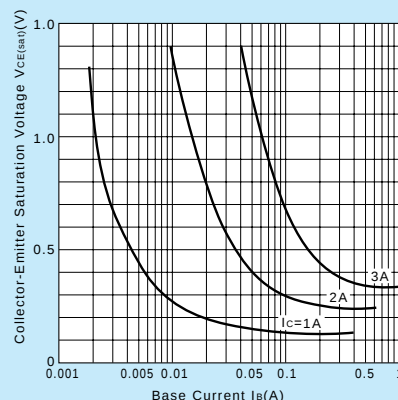
## External Dimensions FM20(TO220F)



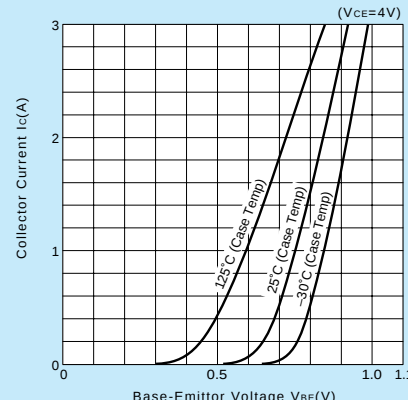
$I_C - V_{CE}$  Characteristics (Typical)



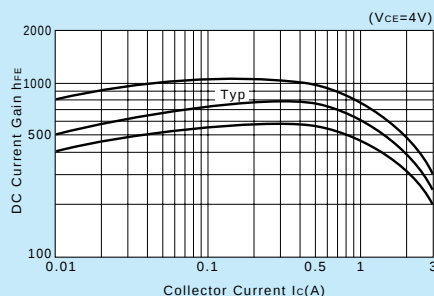
$V_{CE(sat)} - I_B$  Characteristics (Typical)



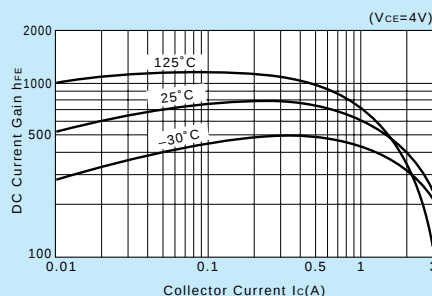
$I_C - V_{BE}$  Temperature Characteristics (Typical)



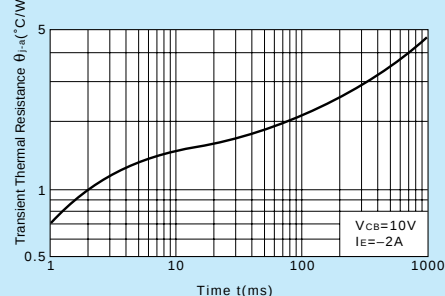
$h_{FE} - I_C$  Characteristics (Typical)



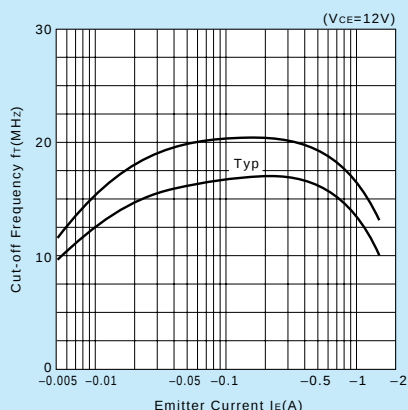
$h_{FE} - I_C$  Temperature Characteristics (Typical)



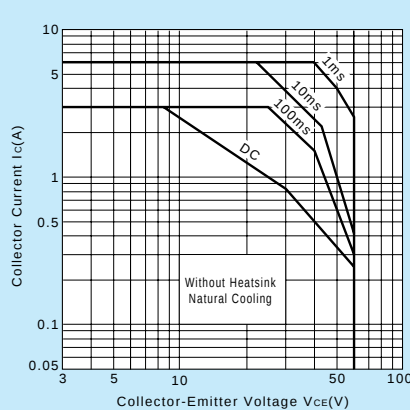
$\theta_{j-a} - t$  Characteristics



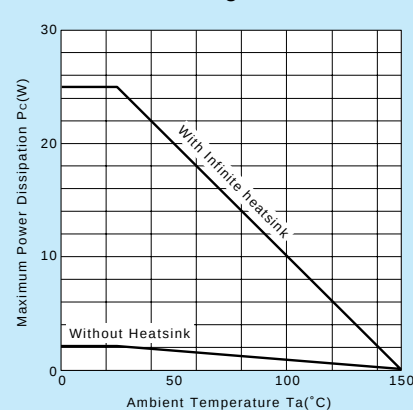
$f_T - I_E$  Characteristics (Typical)



Safe Operating Area (Single Pulse)



$P_C - T_a$  Derating



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