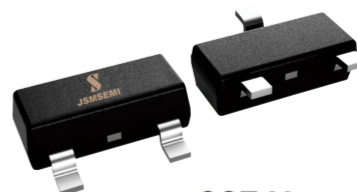


## FEATURE

- Extremely low saturation voltage
- Complementary PNP type: FMMT718

## APPLICATION

- Gate Driving MOSFETs and IGBTs
- DC-DC converters
- Charging circuit
- Power switches



**SOT-23**

1. BASE
2. EMITTER
3. COLLECTOR

## MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol          | Parameter                                        | Value    | Unit                 |
|-----------------|--------------------------------------------------|----------|----------------------|
| $V_{CB0}$       | Collector-Base Voltage                           | 20       | V                    |
| $V_{CE0}$       | Collector-Emitter Voltage                        | 20       | V                    |
| $V_{EB0}$       | Emitter-Base Voltage                             | 5        | V                    |
| $I_B$           | Base Current                                     | 0.5      | A                    |
| $I_C$           | Collector Current -Continuous                    | 2.5      | A                    |
| $P_C$           | Total Collector Dissipation                      | 350      | mW                   |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient      | 357      | $^{\circ}\text{C/W}$ |
| $T_J, T_{stg}$  | Operation Junction and Storage Temperature Range | -55~+150 | $^{\circ}\text{C}$   |

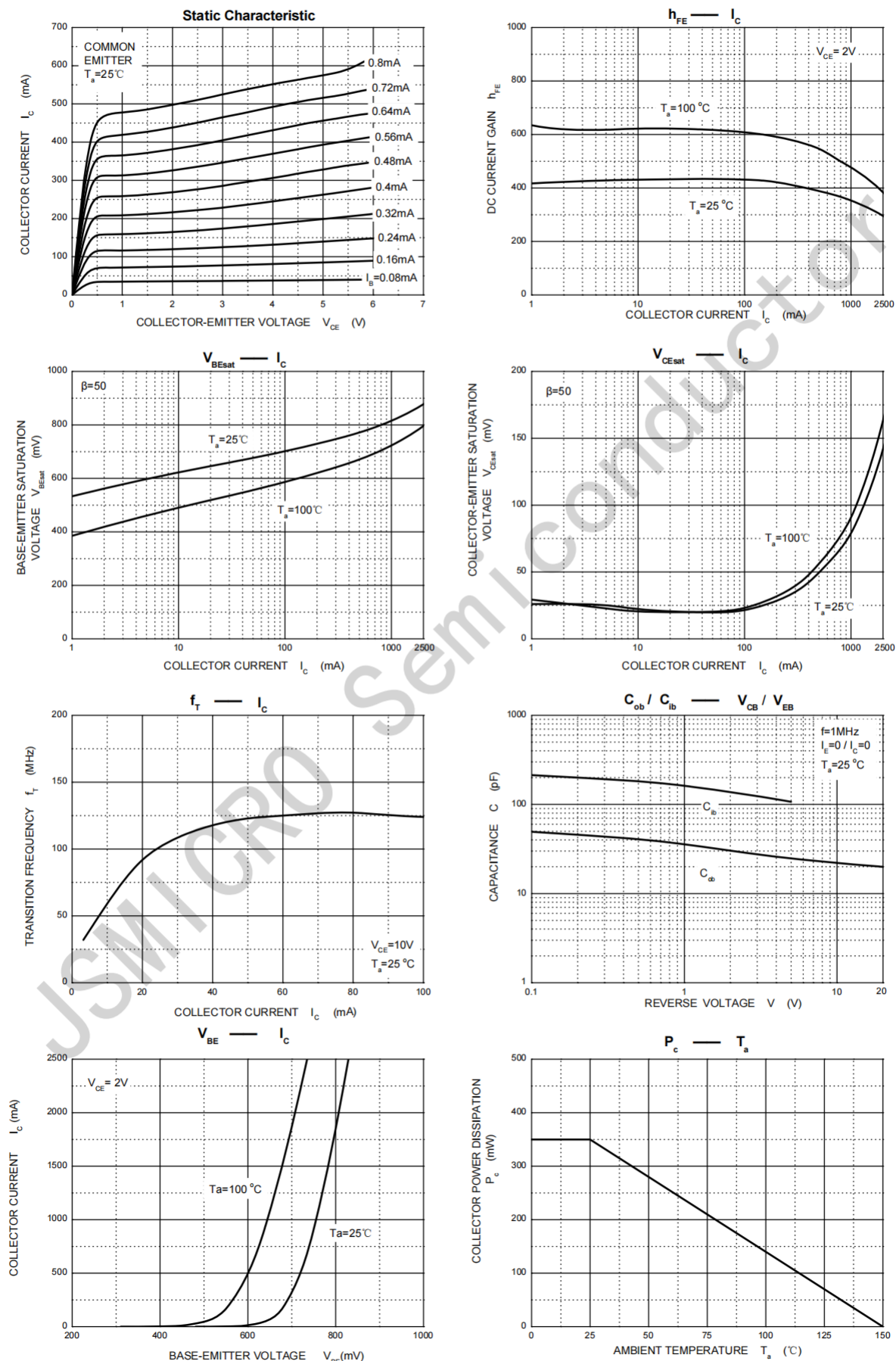
**ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$  unless otherwise specified)**

| Parameter                                     | Symbol         | Test conditions                                                | Min | Typ | Max | Unit |
|-----------------------------------------------|----------------|----------------------------------------------------------------|-----|-----|-----|------|
| Collector-base breakdown voltage              | $V_{(BR)CBO}$  | $I_C=100\mu\text{A}, I_E=0$                                    | 20  |     |     | V    |
| Collector-emitter breakdown voltage (note 1)  | $V_{(BR)CEO}$  | $I_C=10\text{mA}, I_B=0$                                       | 20  |     |     | V    |
| Emitter-base breakdown voltage                | $V_{(BR)EBO}$  | $I_E=100\mu\text{A}, I_C=0$                                    | 5   |     |     | V    |
| Collector cut-off current                     | $I_{CBO}$      | $V_{CB}=16\text{V}, I_E=0$                                     |     |     | 100 | nA   |
| Emitter cut-off current                       | $I_{EBO}$      | $V_{EB}=4\text{V}, I_C=0$                                      |     |     | 100 | nA   |
| DC current gain (note 1)                      | $h_{FE(1)}$    | $V_{CE}=2\text{V}, I_C=10\text{mA}$                            | 200 |     |     |      |
|                                               | $h_{FE(2)}$    | $V_{CE}=2\text{V}, I_C=0.2\text{A}$                            | 300 |     |     |      |
|                                               | $h_{FE(3)}$    | $V_{CE}=2\text{V}, I_C=2\text{A}$                              | 200 |     |     |      |
|                                               | $h_{FE(4)}$    | $V_{CE}=2\text{V}, I_C=4\text{A}$                              | 100 |     |     |      |
| Collector-emitter saturation voltage (note 1) | $V_{CE(sat)1}$ | $I_C=0.1\text{A}, I_B=10\text{mA}$                             |     |     | 15  | mV   |
|                                               | $V_{CE(sat)2}$ | $I_C=1\text{A}, I_B=10\text{mA}$                               |     |     | 150 | mV   |
|                                               | $V_{CE(sat)3}$ | $I_C=2.5\text{A}, I_B=50\text{mA}$                             |     |     | 200 | mV   |
| Base-emitter saturation voltage (note 1)      | $V_{BE(sat)}$  | $I_C=2.5\text{A}, I_B=50\text{mA}$                             |     |     | 1   | V    |
| Base-emitter on voltage (note 1)              | $V_{BE(on)}$   | $I_C=2.5\text{A}, V_{CE}=2\text{V}$                            |     |     | 1   | V    |
| Output capacitance                            | $C_{ob}$       | $V_{CB}=10\text{V}, f=1\text{MHz}$                             |     |     | 30  | pF   |
| Turn-on time                                  | $t_{(on)}$     | $V_{CC}=10\text{V}, I_C=1\text{A}, I_{B1}=-I_{B2}=10\text{mA}$ |     | 170 |     | ns   |
| Turn-off time                                 | $t_{(off)}$    |                                                                |     | 400 |     | ns   |
| Transition frequency                          | $f_T$          | $V_{CE}=10\text{V}, I_C=50\text{mA}, f=100\text{MHz}$          | 100 |     |     | MHz  |

**Notes :**

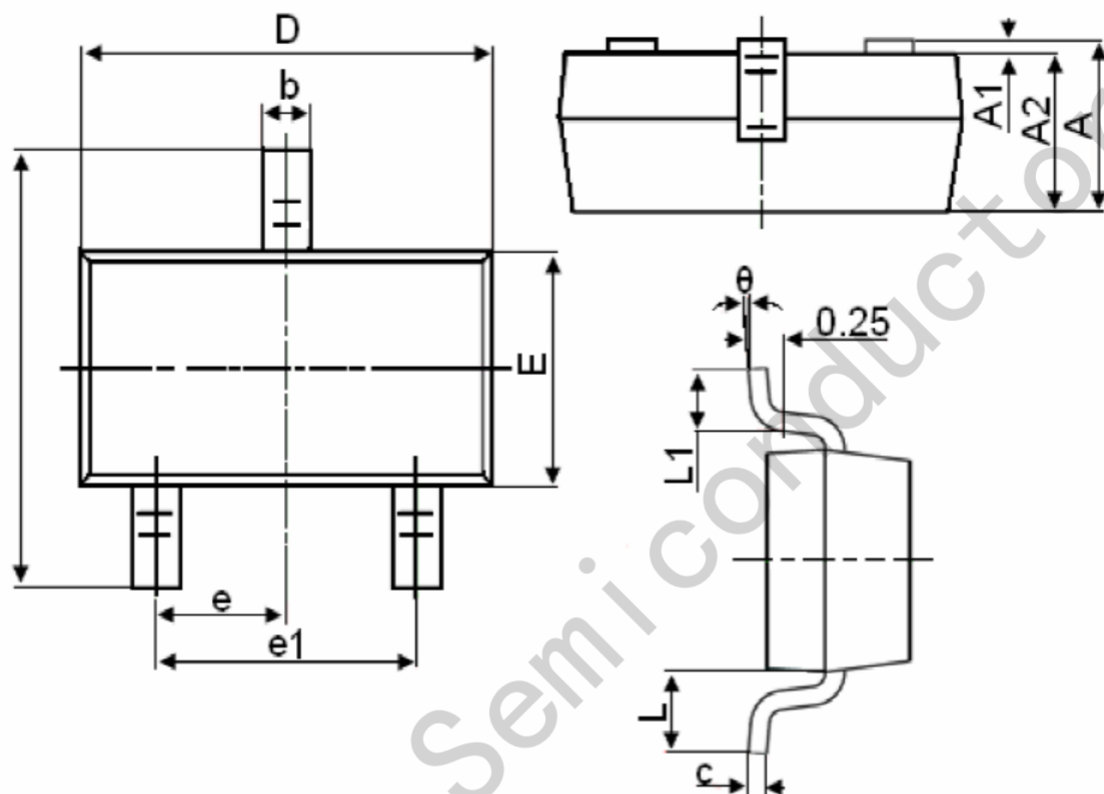
 1. Pulse test: Pulse width $\leq 300\mu\text{s}$ , duty cycle $\leq 2.0\%$ .

## Typical Characteristics



## Package Information

SOT-23



| Symbol | Dimensions in Millimeters(mm) |       | Dimensions In Inches |       |
|--------|-------------------------------|-------|----------------------|-------|
|        | Min                           | Max   | Min                  | Max   |
| A      | 0.900                         | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                         | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                         | 1.050 | 0.035                | 0.041 |
| b      | 0.300                         | 0.500 | 0.012                | 0.020 |
| c      | 0.080                         | 0.150 | 0.003                | 0.006 |
| D      | 2.800                         | 3.000 | 0.110                | 0.118 |
| E      | 1.200                         | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                         | 2.550 | 0.089                | 0.100 |
| e      | 0.950TYP                      |       | 0.037TYP             |       |
| e1     | 1.800                         | 2.000 | 0.071                | 0.079 |
| L      | 0.550REF                      |       | 0.022REF             |       |
| L1     | 0.300                         | 0.500 | 0.012                | 0.020 |
| θ      | 0°                            | 8°    | 0°                   | 8°    |