

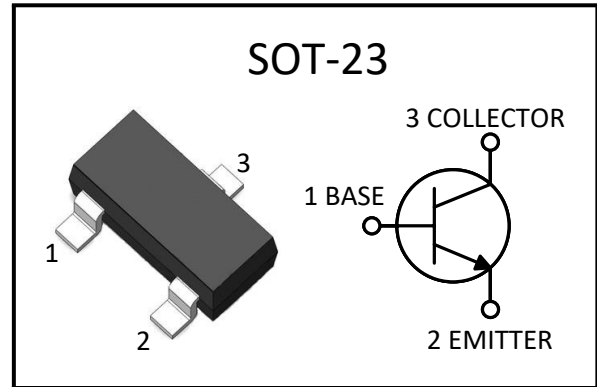
## FMMT619

NPN Plastic-Encapsulate Transistor

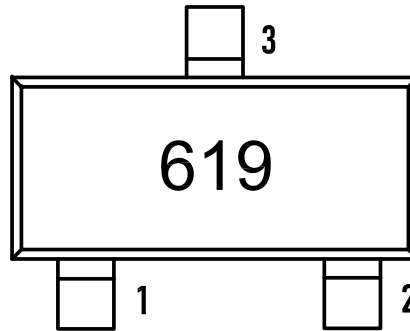
### Features

- $V_{CE}=50V$
- $I_C=2A$
- $f_T=100MHz @V_{CE}=10V, I_C=50mA, f=100MHz$
- Low Saturation voltage.

### Package



### Marking



### Ordering information

| Order code | Package | Marking | Base qty | Delivery mode |
|------------|---------|---------|----------|---------------|
| FMMT619    | SOT-23  | 619     | 3K       | Tape and reel |

### Absolute Maximum Ratings @ $T_A=25^{\circ}C$ unless otherwise noted

| Symbol          | Parameter  | Value        | Unit        |
|-----------------|--|--------------|-------------|
| $V_{CBO}$       | Collector-Base Voltage                           | 50           | V           |
| $V_{CEO}$       | Collector-Emitter Voltage                        | 50           | V           |
| $V_{EBO}$       | Emitter-Base Voltage                             | 5            | V           |
| $I_C$           | Collector Current                                | 2            | A           |
| $P_C$           | Collector Power Dissipation                      | 350          | mW          |
| $R_{\theta JA}$ | Thermal Resistance From Junction To Ambient      | 357          | mW          |
| $T_J, T_{stg}$  | Operation Junction And Storage Temperature Range | -55 to + 150 | $^{\circ}C$ |



# FMMT619

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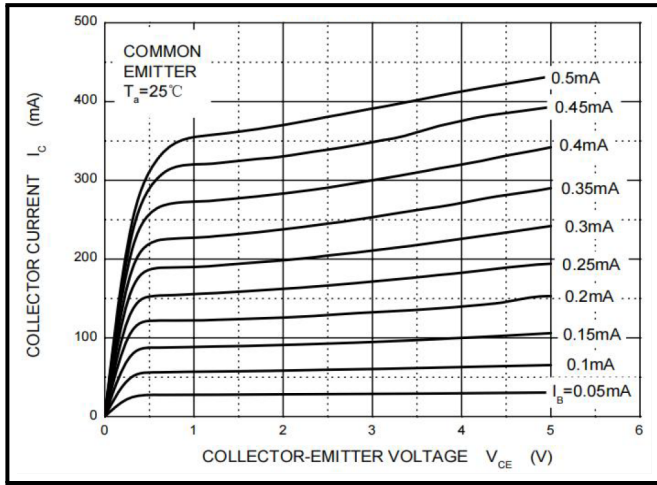
**Electrical Characteristics** ( $T_A=+25^{\circ}\text{C}$ , unless otherwise specified)

| Symbol        | Parameter                            | Test condition   | Min. | Typ. | Max. | Unit |
|---------------|--------------------------------------|--|------|------|------|------|
| $V_{(BR)CBO}$ | Collector-base breakdown voltage     | $I_C=100\mu\text{A}, I_E=0$  | 50   | –    | –    | V    |
| $V_{(BR)CEO}$ | Collector-emitter breakdown voltage  | $I_C=10\text{mA}, I_B=0$   | 50   | –    | –    |      |
| $V_{(BR)EBO}$ | Emitter-base breakdown voltage       | $I_E=100\mu\text{A}, I_C=0$  | 5    | –    | –    |      |
| $I_{CBO}$     | Collector cut-off current            | $V_{CB}=40\text{V}, I_E=0$   | –    | –    | 0.1  | uA   |
| $I_{EBO}$     | Emitter cut-off current              | $V_{EB}=4\text{V}, I_C=0$  | –    | –    | 0.1  |      |
| $V_{CE(sat)}$ | Collector-emitter saturation voltage | $I_C=0.1\text{A}, I_B=10\text{mA}$                                   | –    | –    | 20   | mV   |
|               |                                      | $I_C=1\text{A}, I_B=10\text{mA}$                                     | –    | –    | 200  |      |
|               |                                      | $I_C=2\text{A}, I_B=100\text{mA}$                                    | –    | –    | 220  |      |
| $V_{BE(sat)}$ | Base-emitter saturation voltage      | $I_C=2\text{A}, I_B=50\text{mA}$                                     | –    | –    | 1.0  | V    |
| $V_{BE(on)}$  | Base-Emitter Turn On Voltage         | $I_C=2\text{A}, V_{CE}=2.0\text{V}$                                  | –    | –    | 1.0  | V    |
| $h_{FE}$      | DC current gain                      | $V_{CE}=2\text{V}, I_C=10\text{mA}$                                  | 200  | –    | –    |      |
|               |                                      | $V_{CE}=2\text{V}, I_C=200\text{mA}$                                 | 300  | –    | –    |      |
|               |                                      | $V_{CE}=2\text{V}, I_C=1\text{A}$                                    | 200  | –    | –    |      |
|               |                                      | $V_{CE}=2\text{V}, I_C=2\text{A}$                                    | 100  | –    | –    |      |
|               |                                      | $V_{CE}=2\text{V}, I_C=6\text{A}$                                    | 20   | 40   | –    |      |
| $f_T$         | Transition frequency                 | $V_{CE}=10\text{V}, I_C=50\text{mA}, f=100\text{MHZ}$                | 100  | –    | –    | MHZ  |
| $C_{obo}$     | Output capacitance                   | $V_{CB}=10\text{V}, f=1\text{MHZ}$                                   | –    | –    | 20   | pF   |
| $t_{(on)}$    | Turn-on time                         | $V_{CC}=10\text{V}, I_C=1.0\text{A},$<br>$I_{B1}=I_{B2}=10\text{mA}$ | –    | 170  | –    | ns   |
| $t_{(off)}$   | Turn-off time                        |  | –    | 750  | –    | ns   |

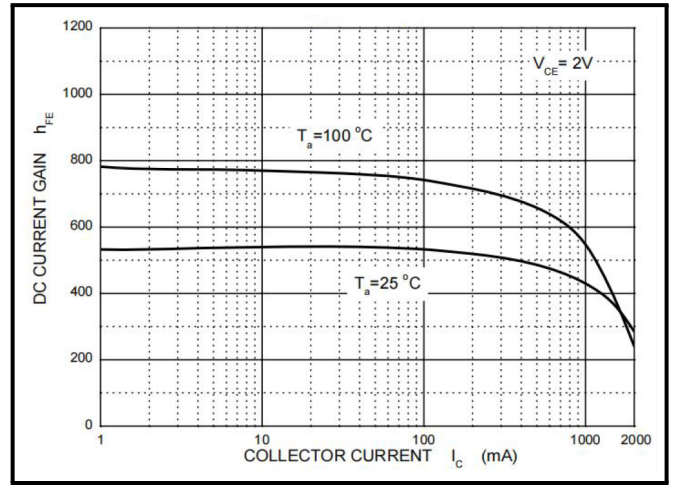


**Typical Performance Characteristics ( $T_J = 25^\circ\text{C}$ , unless otherwise noted)**

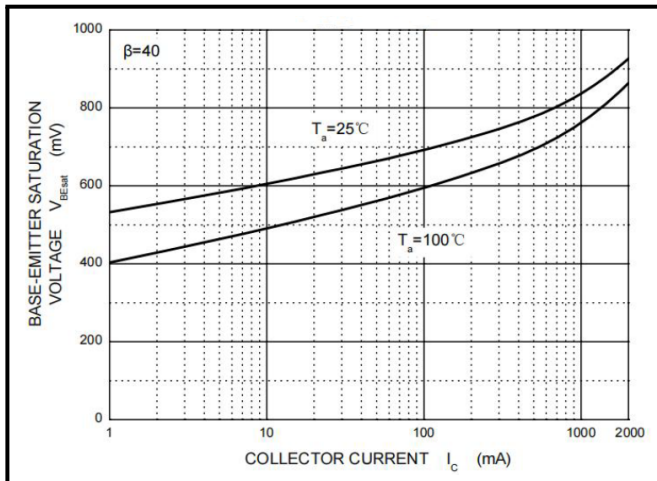
**Figure 1 : Static Characteristic**



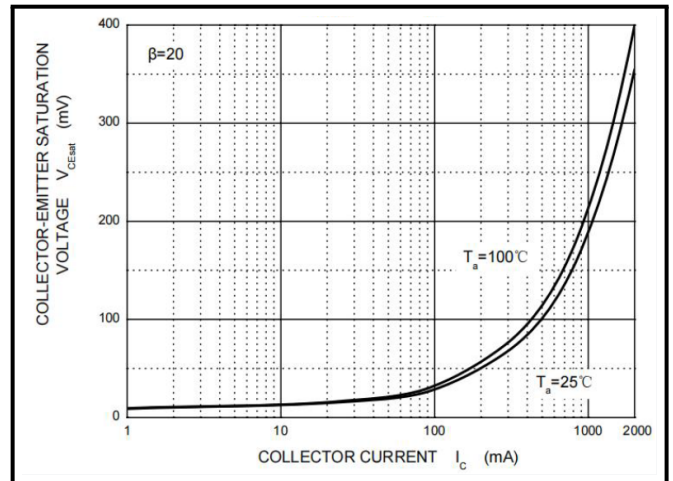
**Figure 2 :  $h_{FE} - I_c$**



**Figure 3 :  $V_{BE(sat)} - I_c$**

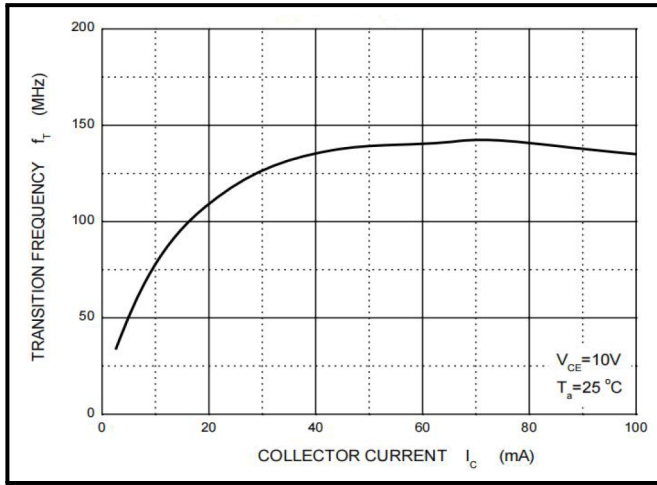


**Figure 4 :  $V_{CE(sat)} - I_c$**

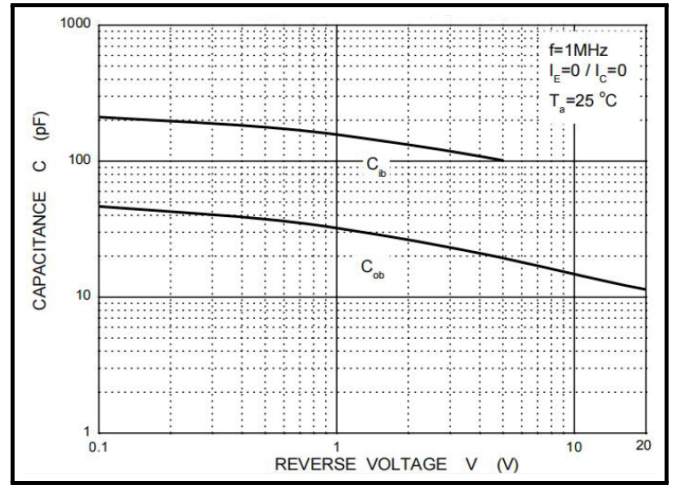


**Typical Performance Characteristics ( $T_J = 25^\circ\text{C}$ , unless otherwise noted)**

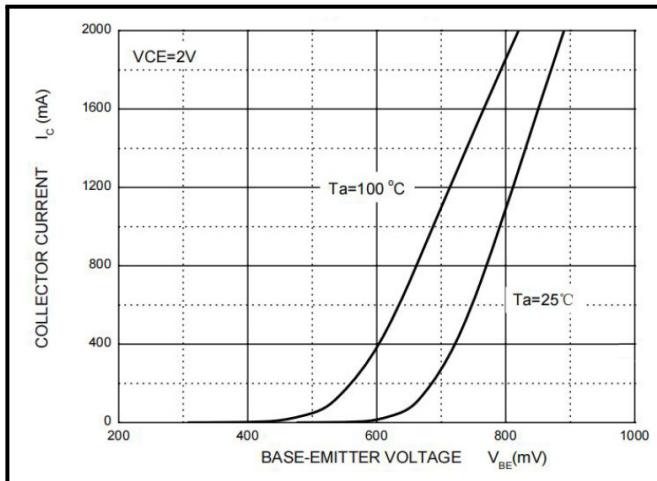
**Figure 5 :  $f_T$  —  $I_C$**



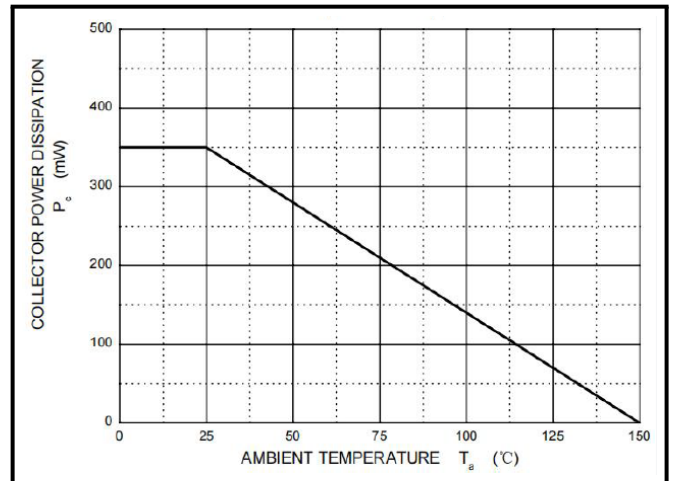
**Figure 6 :  $C_{ob}/C_{ib}$  —  $V_{CB}/V_{EB}$**



**Figure 7 :  $I_C$  —  $V_{BE}$**



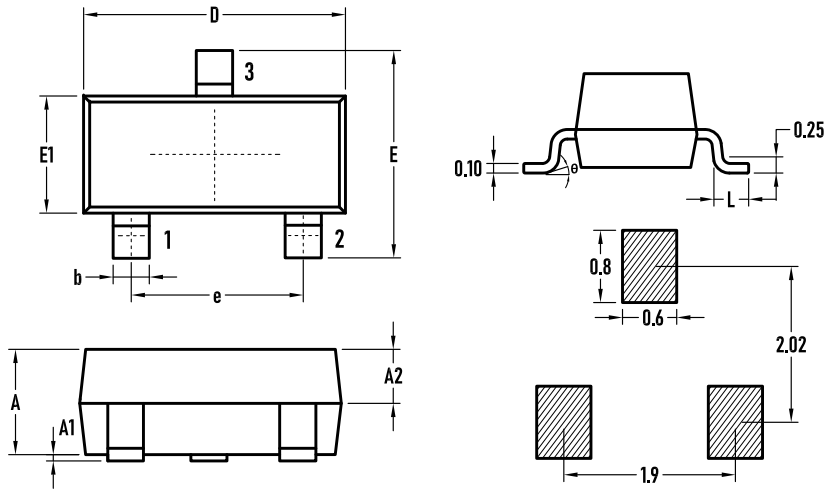
**Figure 8 :  $P_C$  —  $T_a$**



**FMMT619**

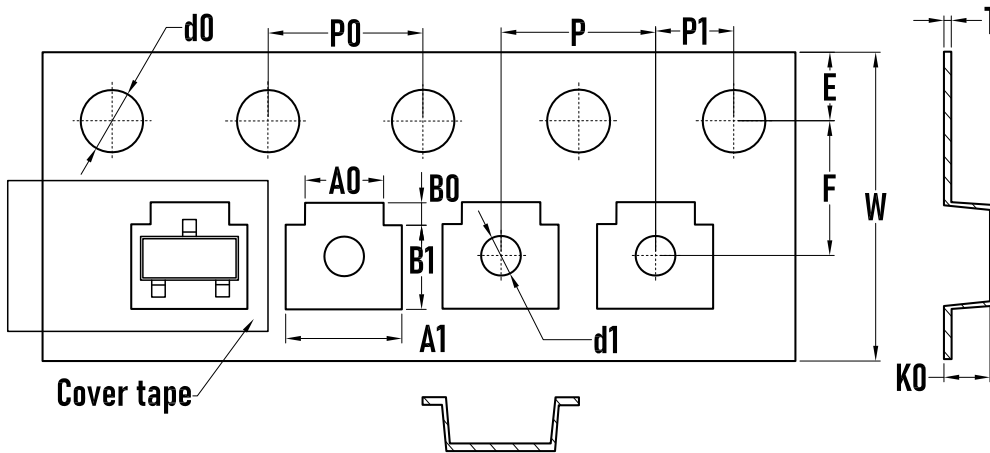
**NPN Plastic-Encapsulate Transistor**

**Outline Drawing - SOT-23**



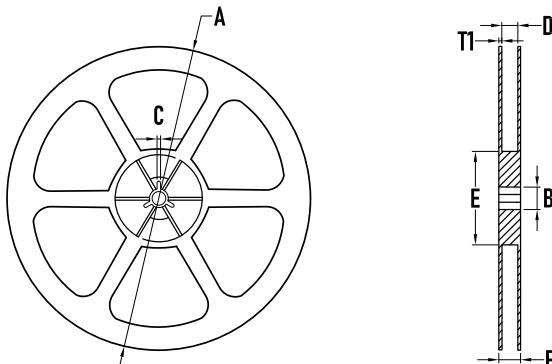
| SYMBOL | MILLIMETER |      |      |
|--------|------------|------|------|
|        | MIN.       | Typ  | MAX  |
| A      | 0.95       | 1.00 | —    |
| A1     | 0.02       | 0.06 | 0.10 |
| A2     | —          | 0.60 | —    |
| D      | 2.85       | 2.90 | 2.95 |
| b      | 0.37       | 0.40 | 0.43 |
| E      | 2.35       | 2.40 | 2.45 |
| E1     | 1.25       | 1.30 | 1.35 |
| e      | 1.85       | 1.90 | 1.95 |
| L      | 0.35       | 0.40 | 0.48 |
| θ      | 0          | —    | 6°   |

**Packaging Tape - SOT-23**



| SYMBOL | MILLIMETER |
|--------|------------|
| A0     | 2.10±0.10  |
| A1     | 3.10±0.10  |
| B0     | 0.65±0.10  |
| B1     | 2.75±0.10  |
| d0     | 1.55±0.10  |
| d1     | 1.00±0.05  |
| E      | 1.75±0.10  |
| F      | 3.50±0.10  |
| K0     | 1.10±0.10  |
| P      | 4.00±0.10  |
| P0     | 4.00±0.10  |
| P1     | 2.00±0.10  |
| W      | 8.00±0.30  |
| T      | 0.20 ±0.05 |

**Packaging Reel**



| SYMBOL   | MILLIMETER |
|----------|------------|
| A        | 177.8±0.2  |
| B        | 3.1        |
| C        | 13.50      |
| D        | 9.6±0.3    |
| E        | 75±0.2     |
| F        | 12.3±0.3   |
| T1       | 1.0±0.2    |
| Quantity | 3000PCS    |

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Specifications are subject to change without notice.

Please refer to <http://www.born-tw.com> for current information.

Revision: 2022-Jan-1-A

