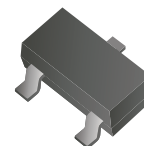


FMMT619-G (NPN)

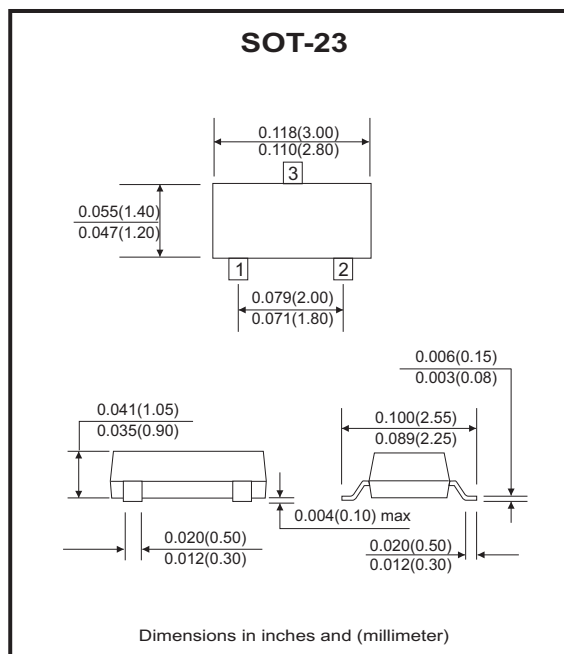
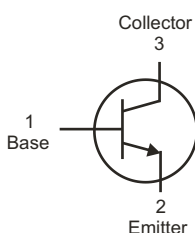
RoHS Device



Features

-Low Saturation Voltage.

Diagram:



Maximum Ratings (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Units |
|--|-----------------|-------------|-----------------------------|
| Collector-Base voltage | V_{CB0} | 50 | V |
| Collector-Emitter voltage | V_{CEO} | 50 | V |
| Emitter-Base voltage | V_{EBO} | 5.0 | V |
| Collector current-continuous | I_C | 2 | A |
| Power dissipation | P_C | 350 | mW |
| Thermal resistance from junction to ambient | $R_{\theta JA}$ | 357 | $^{\circ}\text{C}/\text{W}$ |
| Maximum power dissipation (Note 1) | P_{CM} | 625 | mW |
| Thermal resistance from junction to ambient (Note 1) | $R_{\theta JA}$ | 200 | $^{\circ}\text{C}/\text{W}$ |
| Junction temperature | T_J | 150 | $^{\circ}\text{C}$ |
| Storage temperature range | T_{STG} | -55 to +150 | $^{\circ}\text{C}$ |

Notes:

1. Maximum power dissipation is calculated assuming that the device is mounted on a ceramic substrate measuring 15*15*0.6mm.

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REV: A

Electrical Characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|---|----------------|--|------|------|------|-------|
| Collector-Base breakdown voltage | $V_{(BR)CBO}$ | $I_C=100\mu\text{A}, I_E=0$ | 50 | - | - | V |
| Collector-Emitter breakdown voltage (Note 1) | $V_{(BR)CEO}$ | $I_C=10\text{mA}, I_B=0$ | 50 | - | - | 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} | $V_{CB}=40\text{V}, I_E=0$ | | - | 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 | - | - | |
| | $h_{FE(3)}$ | $V_{CE}=2\text{V}, I_C=1\text{A}$ | 200 | - | - | |
| | $h_{FE(4)}$ | $V_{CE}=2\text{V}, I_C=2\text{A}$ | 100 | - | - | |
| | $h_{FE(5)}$ | $V_{CE}=2\text{V}, I_C=6\text{A}$ | - | 40 | - | |
| Collector-Emitter saturation voltage (Note 1) | $V_{CE(sat)1}$ | $I_C=0.1\text{A}, I_B=10\text{mA}$ | - | - | 20 | mV |
| | $V_{CE(sat)2}$ | $I_C=1\text{A}, I_B=10\text{mA}$ | - | - | 200 | mV |
| | $V_{CE(sat)3}$ | $I_C=2\text{A}, I_B=100\text{mA}$ | - | - | 220 | mV |
| Base-Emitter saturation voltage (Note 1) | $V_{BE(sat)}$ | $I_C=2\text{A}, I_B=50\text{mA}$ | - | - | 1 | V |
| Base-Emitter on voltage (Note 1) | $V_{BE(on)}$ | $I_C=2\text{A}, V_{CE}=2\text{V}$ | - | - | 1 | V |
| Output capacitance | C_{ob} | $V_{CB}=10\text{V}, f=1\text{MHz}$ | - | - | 20 | 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 | $t_{(off)}$ | | - | 750 | - | 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 $\leq 2.0\%$.

RATING AND CHARACTERISTIC CURVES (FMMT619-G)

Fig.1 - Static Characteristic

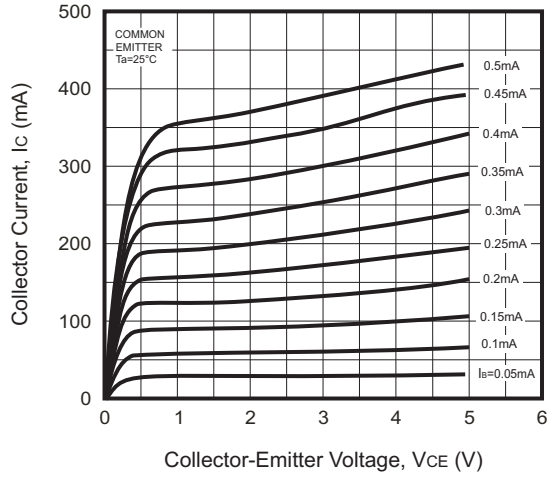


Fig.2 - $h_{FE} - I_c$

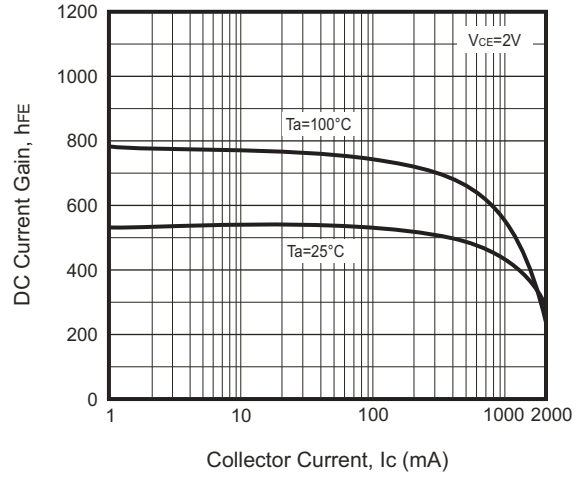


Fig.3 - $V_{BEsat} - I_c$

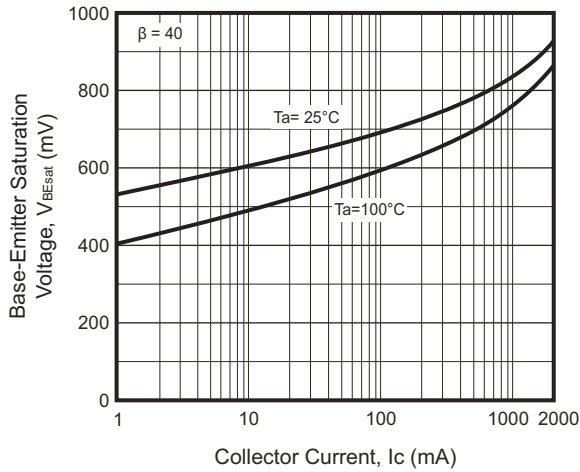


Fig.4 - $V_{CEsat} - I_c$

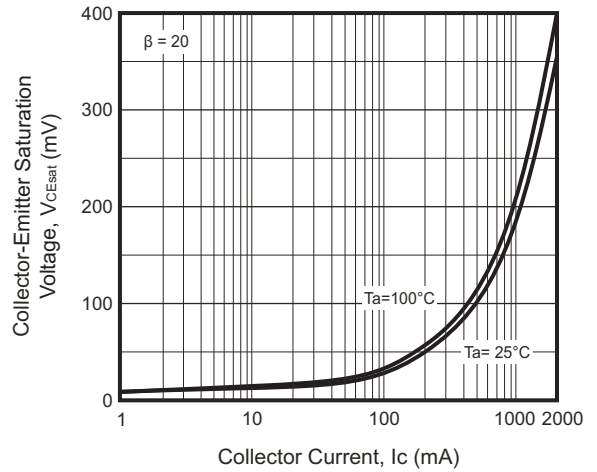


Fig.5 - $f_T - I_c$

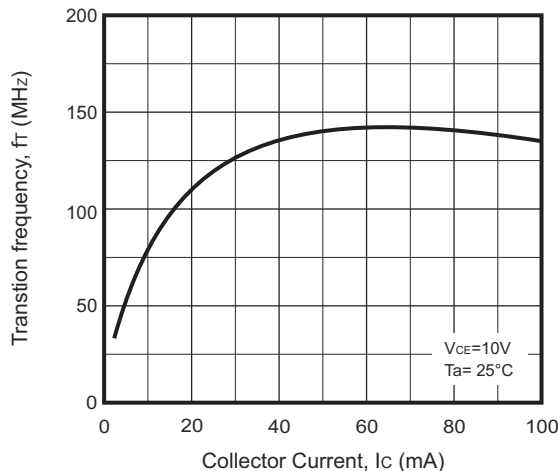
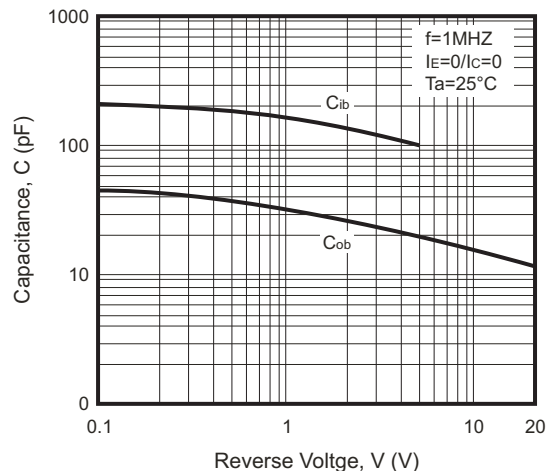


Fig.6 - $C_{ob}/C_{ib} - V_{CB}/V_{EB}$



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RATING AND CHARACTERISTIC CURVES (FMMT619-G)

Fig.7 - $V_{BE} - I_c$

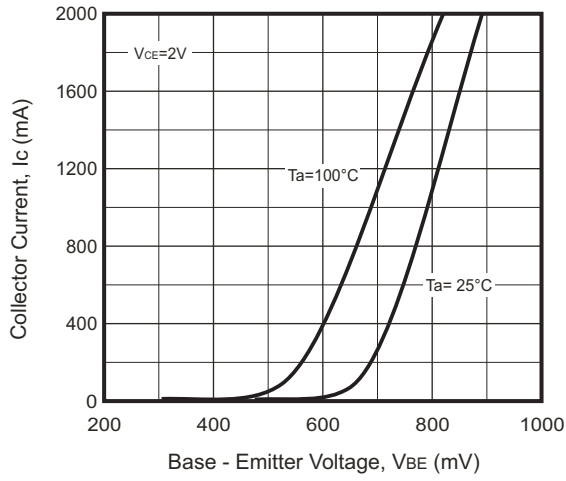
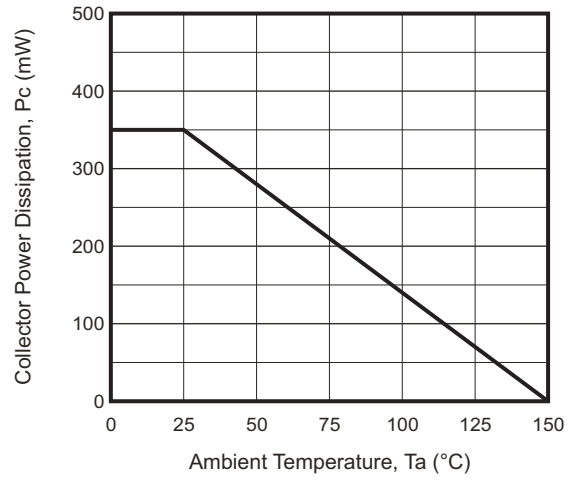
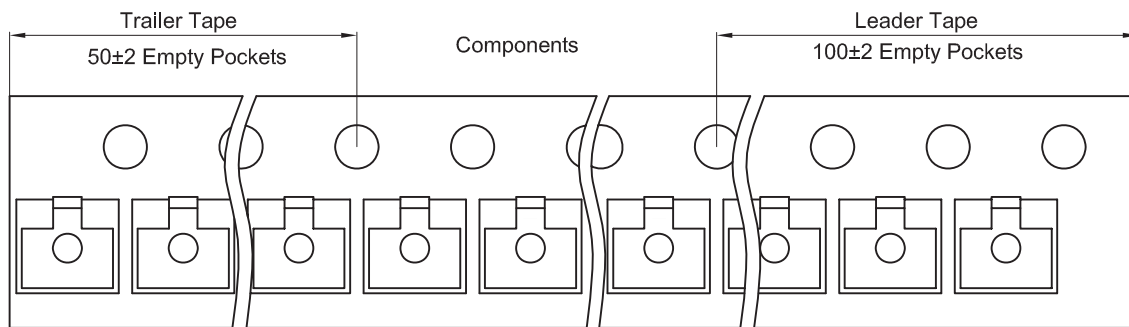
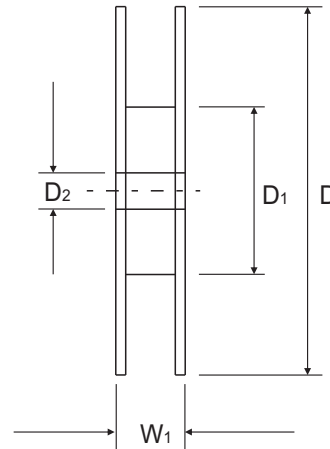
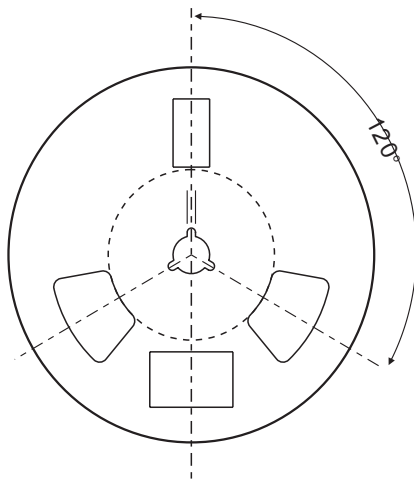
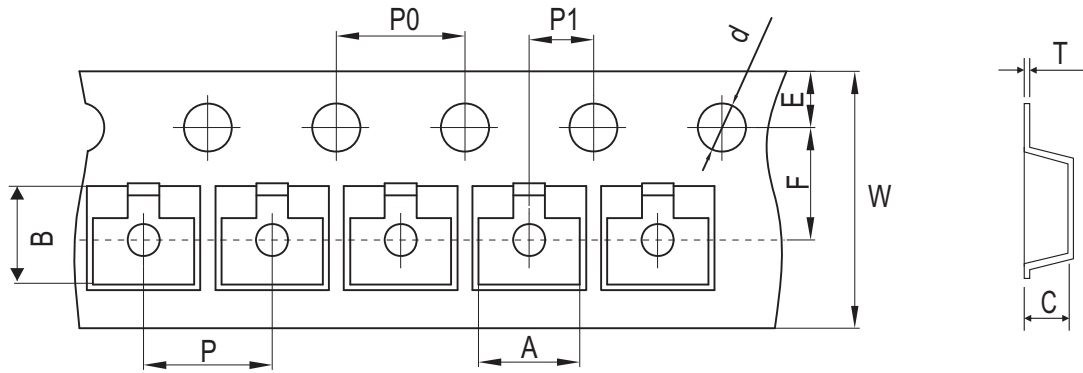


Fig.8 - $P_c - T_a$



Reel Taping Specification



| SOT-23 | SYMBOL | A | B | C | d | D | D1 | D2 |
|--------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | (mm) | 3.15 ± 0.10 | 2.77 ± 0.10 | 1.22 ± 0.10 | 1.50 ± 0.10 | 178.00 ± 2.00 | 54.40 ± 1.00 | 13.00 ± 1.00 |
| | (inch) | 0.124 ± 0.004 | 0.109 ± 0.004 | 0.048 ± 0.004 | 0.059 ± 0.004 | 7.087 ± 0.079 | 2.142 ± 0.039 | 0.512 ± 0.039 |

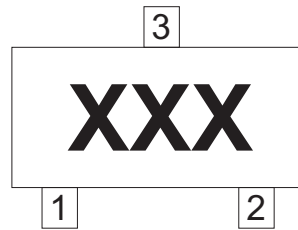
| SOT-23 | SYMBOL | E | F | P | P0 | P1 | W | W1 |
|--------|--------|---------------|---------------|---------------|---------------|---------------|-------------------------|---------------|
| | (mm) | 1.75 ± 0.10 | 3.50 ± 0.10 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 8.00 + 0.30 / - 0.10 | 12.30 ± 1.00 |
| | (inch) | 0.069 ± 0.004 | 0.138 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.315 + 0.012 / - 0.004 | 0.484 ± 0.039 |

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REV: A

Marking Code

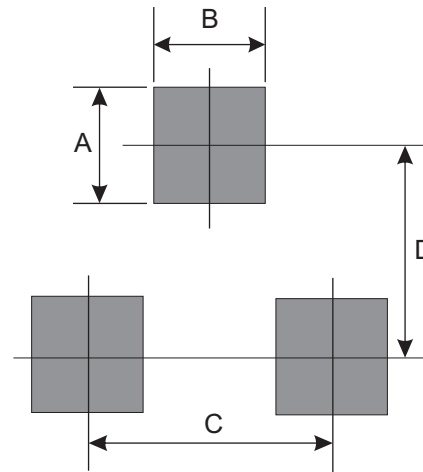
| Part Number | Marking Code |
|-------------|--------------|
| FMMT619-G | 619 |



xx = Product type marking code

Suggested PAD Layout

| SIZE | SOT-23 | |
|------|--------|--------|
| | (mm) | (inch) |
| A | 0.80 | 0.031 |
| B | 0.60 | 0.024 |
| C | 1.90 | 0.075 |
| D | 2.02 | 0.080 |



Note:

- 1.General tolerance: $\pm 0.05\text{mm}$.
- 2.The pad layout is for reference purposes only.

Standard Packaging

| Case Type | REEL PACK | |
|-----------|--------------|------------------|
| | REEL (pcs) | Reel Size (inch) |
| SOT-23 | 3,000 | 7 |

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