

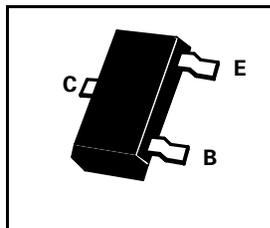
SOT23 PNP SILICON PLANAR SWITCHING TRANSISTORS

ISSUE 4 – MARCH 2000

FMMT3905 FMMT3906

PARTMARKING DETAILS - FMMT3905 - 2W
FMMT3906 - 2A

COMPLEMENTARY TYPES - FMMT3905 - FMMT3903
FMMT3906 - FMMT3904



ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|--------------------------------------------|----------------|-------------|-------------|
| Collector-Base Voltage | V_{CBO} | -40 | V |
| Collector-Emitter Voltage | V_{CEO} | -40 | V |
| Emitter-Base Voltage | V_{EBO} | -5 | V |
| Continuous Collector Current | I_C | -200 | mA |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | P_{tot} | 330 | mW |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +150 | $^{\circ}C$ |

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

| PARAMETER | SYMBOL | FMMT3905 | | FMMT3906. | | UNIT | CONDITIONS. |
|---------------------------------------|---------------|----------------------------|----------------|-----------------------------|----------------|------|------------------------------------------------------------------------------------------------------------------------------------------------|
| | | MIN | MAX | MIN | MAX | | |
| Breakdown Voltages | $V_{(BR)CBO}$ | -40 | | -40 | | V | $I_C=-10\mu A, I_E=0$ |
| | $V_{(BR)CEO}$ | -40 | | -40 | | V | $I_C=-1mA, I_B=0^*$ |
| | $V_{(BR)EBO}$ | -5 | | -5 | | V | $I_E=-10\mu A, I_C=0$ |
| Cut-Off Currents | I_{CEX} | | -50 | | -50 | nA | $V_{CE}=-30V, V_{BE(off)}=-3V$ |
| | I_{BEX} | | -50 | | -50 | nA | $V_{CE}=-30V, V_{EB(off)}=-3V$ |
| Static Forward Current Transfer Ratio | h_{FE} | 30 40 50 30 15 | 150 | 60 80 100 60 30 | 300 | | $I_C=-0.1mA, V_{CE}=-1V^*$ $I_C=-1mA, V_{CE}=-1V^*$ $I_C=-10mA, V_{CE}=-1V^*$ $I_C=-50mA, V_{CE}=-1V^*$ $I_C=-100mA, V_{CE}=-1V^*$ |
| Saturation Voltages | $V_{CE(sat)}$ | | -0.25 -0.4 | | 0.25 0.4 | V | $I_C=-10mA, I_B=-1mA^*$ $I_C=-50mA, I_B=-5mA^*$ |
| | $V_{BE(sat)}$ | -0.65 | -0.85 -0.95 | -0.65 | -0.85 -0.95 | V | $I_C=-10mA, I_B=-1mA^*$ $I_C=-50mA, I_B=-5mA^*$ |
| Transition Frequency | f_T | 200 | | 250 | | MHz | $I_C=-10mA, V_{CE}=-20V$ $f=100MHz$ |
| Output Capacitance | C_{obo} | | 4.5 | | 4.5 | pF | $V_{CB}=-5V, I_E=0, f=100KHz$ |
| Input Capacitance | C_{ibo} | | 10 | | 10 | pF | $V_{BE}=0.5V, I_C=0, f=100KHz$ |
| Noise Figure | N | | 5 | | 4 | dB | $I_C=-200mA, V_{CE}=-5V$ $R_g=2k\Omega, f=30Hz$ to 15kHz at -3dB points |

*Measured under pulsed conditions. Pulse width=200 μs . Duty cycle =1%

FMMT3905

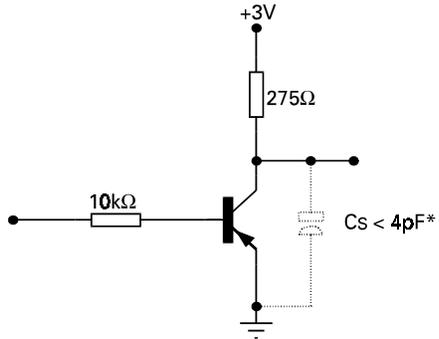
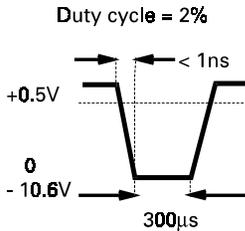
FMMT3906

SWITCHING CHARACTERISTICS (at $T_{amb}=25\text{ }^{\circ}\text{C}$ unless otherwise stated)

| PARAMETER | SYMBOL | FMMT3905 | | FMMT3906 | | UNIT | CONDITIONS |
|--------------|--------|----------|-----|----------|-----|------|--------------------------------------------------------------------------------------------------------------|
| | | MIN | MAX | MIN | MAX | | |
| Delay Time | t_d | | 35 | | 35 | ns | $V_{CC}=-3\text{V}$, $V_{BE(off)}=-0.5\text{V}$ $I_C=-10\text{mA}$, $I_{B1}=-1\text{mA}$ (See Fig.1) |
| Rise Time | t_r | | 35 | | 35 | ns | |
| Storage Time | t_s | | 200 | | 225 | ns | $V_{CC}=-3\text{V}$, $I_C=-10\text{mA}$ $I_{B1}=-I_{B2}=-1\text{mA}$ (See Fig.2) |
| Fall Time | t_f | | 60 | | 75 | ns | |

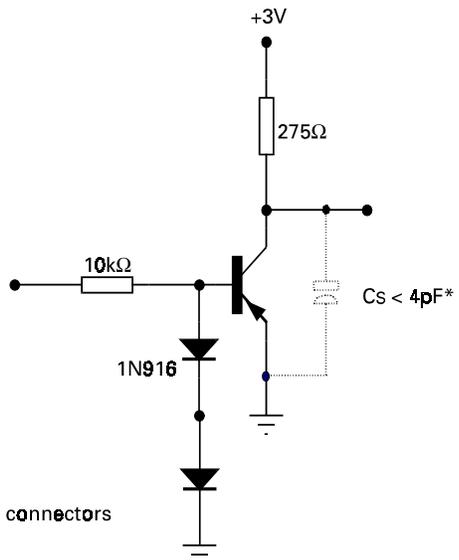
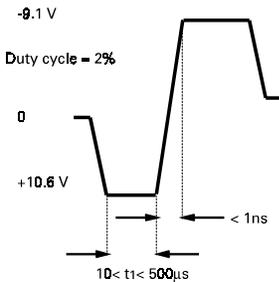
Delay and Rise Time

Equivalent Test Circuit



Storage and Fall Time

Equivalent Test Circuit



* Total shunt capacitance of test jig and connectors