

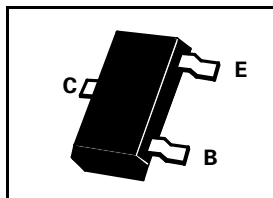
# SOT23 NPN SILICON PLANAR GENERAL PURPOSE TRANSISTORS

ISSUE 4 – FEBRUARY 1997



## FMMT4400 FMMT4401

PARTMARKING DETAILS: FMMT4400 - 1KZ  
FMMT4401 - 1L



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	60	V
Collector-Emitter Voltage	$V_{CEO}$	40	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Continuous Collector Current	$I_C$	600	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	FMMT4400		FMMT4401		UNIT	CONDITIONS
		MIN.	MAX.	MIN.	MAX.		
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40		40		V	$I_C=1mA, I_B=0$
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	60		60		V	$I_C=0.1mA, I_E=0$
Emitter-Base Breakdown Current	$V_{(BR)EBO}$	6		6		V	$I_E=0.1mA, I_C=0$
Collector-Emitter Cut-Off Current	$I_{CEX}$		0.1		0.1	$\mu A$	$V_{CE}=35V$ $V_{EB(off)} = 0.4V$
Base Cut-Off Current	$I_{BEX}$		0.1		0.1	$\mu A$	$V_{CE}=35V$ $V_{EB(off)} = 3V$
Static Forward Current Transfer Ratio	$h_{FE}$	20 40 50 20	150	20 40 80 100 40	300		$I_C=0.1mA, V_{CE}=1V$ $I_C=1mA, V_{CE}=1V$ $I_C=10mA, V_{CE}=1V$ $I_C=150mA, V_{CE}=1V^*$ $I_C=500mA, V_{CE}=2V^*$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		0.4 0.75		0.4 0.75	V	$I_C=150mA, I_B=15mA^*$ $I_C=500mA, I_B=50mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	0.75	0.95 1.2	0.75	0.95 1.2	V	$I_C=150mA, I_B=15mA^*$ $I_C=500mA, I_B=50mA^*$
Transition Frequency	$f_T$	200		250		MHz	$I_C=20mA, V_{CE}=10V$ $f=100kHz$
Output Capacitance	$C_{obo}$		6.5		6.5	pF	$V_{CB}=5V, I_E=0$ $f=100kHz$
Input Capacitance	$C_{ibo}$		30		30	pF	$V_{BE}=0.5V, I_C=0$ $f=100kHz$

\*Measured under pulsed conditions. Pulse width=300 $\mu s$ . Duty cycle  $\leq 2\%$

# FMMT4400

# FMMT4401

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

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS
Turn-On Time	$t_{on}$		35	ns	$V_{CC}=30\text{V}$ , $V_{BE(off)}=2\text{V}$ $I_C=150\text{mA}$ , $I_{B1}=15\text{mA}$ (See Fig.1)
Turn-Off Time	$t_{off}$		255	ns	$V_{CC}=30\text{V}$ , $I_C=150\text{mA}$ $I_{B1}=I_{B2}=15\text{mA}$ (See Fig. 2)