

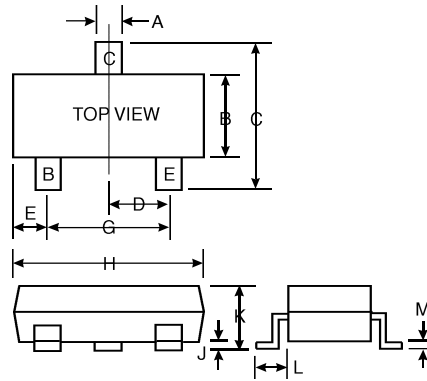


### Features

Epitaxial Planar Die Construction  
Complementary NPN Type Available (MMBT5551)  
Ideal for Medium Power Amplification and Switching

### Mechanical Data

Case: SOT-23, Molded Plastic  
Terminals: Solderable per MIL-STD-202, Method 208  
Terminal Connections: See Diagram  
Marking: K4M, 2L  
Weight: 0.008 grams (approx.)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.19	1.40
C	2.10	2.50
D	0.89	1.05
E	0.45	0.61
G	1.78	2.05
H	2.65	3.05
J	0.013	0.15
K	0.89	1.10
L	0.45	0.61
M	0.076	0.178
All Dimensions in mm		

### Maximum Ratings @ T<sub>A</sub> = 25 C unless otherwise specified

Characteristic	Symbol	MMBT5401	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-160	V
Collector-Emitter Voltage	V <sub>CE0</sub>	-150	V
Emitter-Base Voltage	V <sub>EB0</sub>	-5.0	V
Collector Current - Continuous (Note 1)	I <sub>C</sub>	-200	mA
Power Dissipation (Note 1)	P <sub>d</sub>	350	mW
Thermal Resistance, Junction to Ambient (Note 1)	R <sub>JA</sub>	357	K/W
Operating and Storage and Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	C

- Notes:
- Valid provided that terminals are kept at ambient temperature.
  - Pulse test: Pulse width 300 s, duty cycle 2%.

## Electrical Characteristics @ $T_A = 25\text{ C}$ unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 2)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-160		V	$I_C = -100\text{ A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-150		V	$I_C = -1.0\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5.0		V	$I_E = -10\text{ A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$		-50	nA A	$V_{CB} = -120\text{V}, I_E = 0$ $V_{CB} = -120\text{V}, I_E = 0, T_A = 100\text{ C}$
Emitter Cutoff Current	$I_{EBO}$		-50	nA	$V_{EB} = -3.0\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 2)					
DC Current Gain	$h_{FE}$	50 60 50	240		$I_C = -1.0\text{mA}, V_{CE} = -5.0\text{V}$ $I_C = -10\text{mA}, V_{CE} = -5.0\text{V}$ $I_C = -50\text{mA}, V_{CE} = -5.0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		-0.2 -0.5	V	$I_C = -10\text{mA}, I_B = -1.0\text{mA}$ $I_C = -50\text{mA}, I_B = -5.0\text{mA}$
Base- Emitter Saturation Voltage	$V_{BE(SAT)}$		-1.0	V	$I_C = -10\text{mA}, I_B = -1.0\text{mA}$ $I_C = -50\text{mA}, I_B = -5.0\text{mA}$
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	$C_{obo}$		6.0	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}, I_E = 0$
Small Signal Current Gain	$h_{fe}$	40	200		$V_{CE} = -10\text{V}, I_C = -1.0\text{mA},$ $f = 1.0\text{kHz}$
Current Gain-Bandwidth Product	$f_T$	100	300	MHz	$V_{CE} = -10\text{V}, I_C = -10\text{mA},$ $f = 100\text{MHz}$
Noise Figure	NF		8.0	dB	$V_{CE} = -5.0\text{V}, I_C = -200\text{ A},$ $R_S = 10\ \Omega, f = 1.0\text{kHz}$

- Notes:
- Valid provided that terminals are kept at ambient temperature.
  - Pulse test: Pulse width 300  $\mu$ s, duty cycle 2%.