

**AT-MMBT4401WD**  
**NPN TRANSISTOR**

**FEATURES**

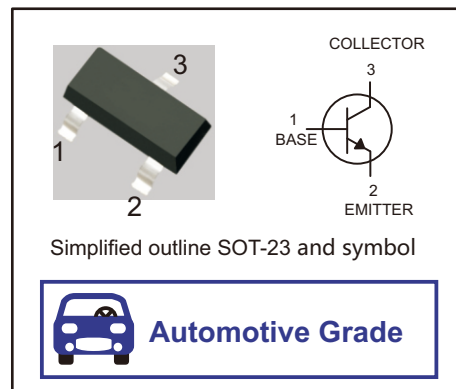
- This device is designed for general-purpose amplifier
- Applications at collector currents to 600 mA.
- Qualified to AEC-Q101 Standards for High Reliability

**MAXIMUM RATINGS (Ta=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Collector–Base Voltage	V <sub>CB0</sub>	60	V
Collector–Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter–Base Voltage	V <sub>EBO</sub>	6	V
Collector Current — Continuous	I <sub>c</sub>	600	mA
Collector Power Dissipation	P <sub>c</sub>	300	mW
Thermal Resistance From Junction To Ambient	R <sub>thJA</sub>	417	°C/W
Operation Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55~+150	°C

**PINNING**

PIN	DESCRIPTION
1	BASE
2	EMITTER
3	COLLECTOR

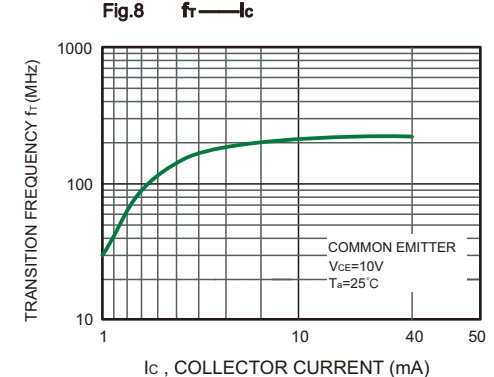
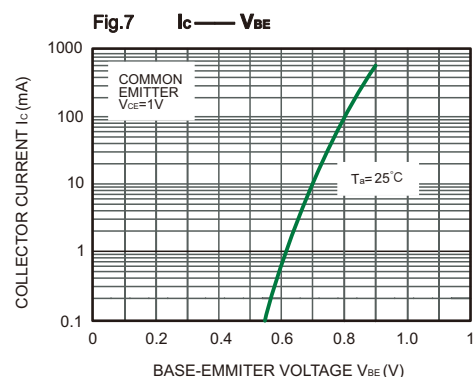
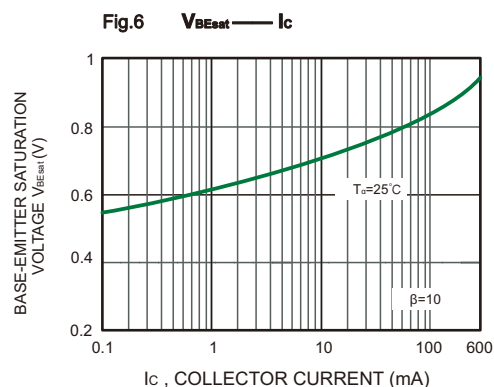
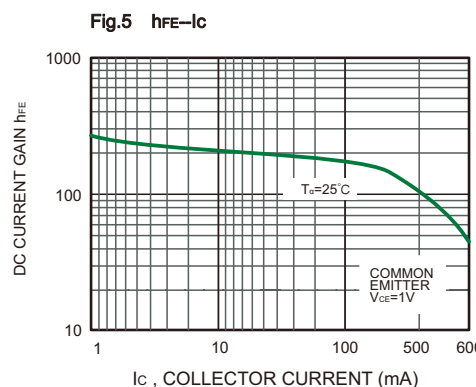
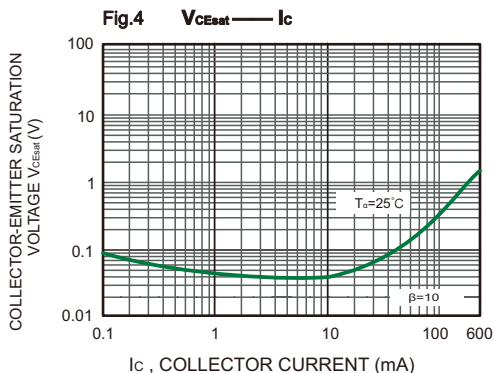
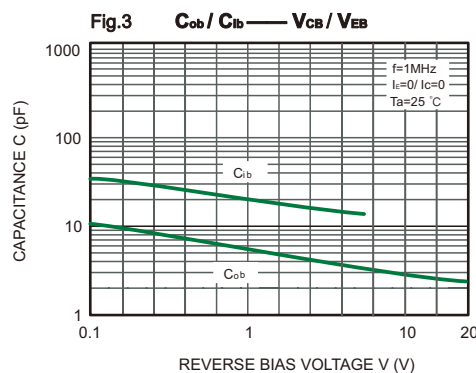
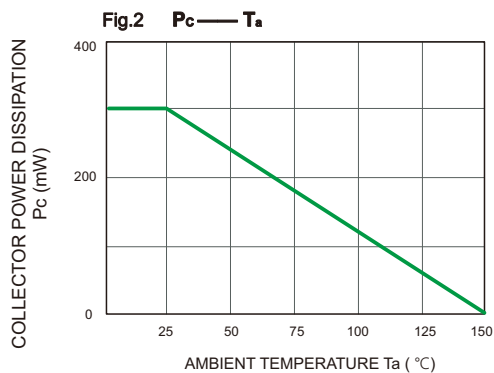
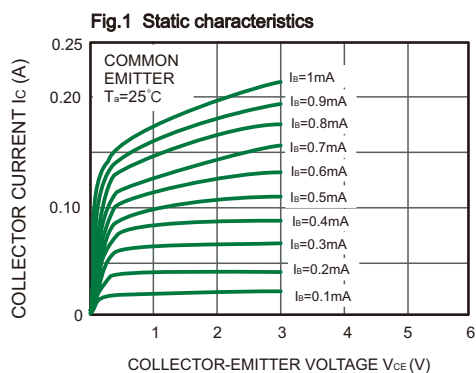


**ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>c</sub> = 100uA, I <sub>E</sub> = 0	60			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>c</sub> = 1 mA, I <sub>B</sub> = 0	40			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = 100uA, I <sub>C</sub> = 0	6			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 50V, I <sub>E</sub> = 0			0.1	uA
Collector cut-off current	I <sub>CEx</sub>	V <sub>CE</sub> = 35V, V <sub>EB</sub> = 0.4V			0.1	uA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 5V, I <sub>C</sub> = 0			0.1	uA
DC current gain	h <sub>FE1</sub>	V <sub>CE</sub> = 1V, I <sub>C</sub> = 0.1mA	20			
	h <sub>FE2</sub>	V <sub>CE</sub> = 1V, I <sub>C</sub> = 1mA	40			
	h <sub>FE3</sub>	V <sub>CE</sub> = 1V, I <sub>C</sub> = 10mA	80			
	h <sub>FE4</sub>	V <sub>CE</sub> = 1V, I <sub>C</sub> = 150mA	100		300	
	h <sub>FE5</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 500mA	40			
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA			0.4	V
		I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA			0.75	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = 150mA, I <sub>B</sub> = 15mA			0.95	V
		I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA			1.2	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 20mA, f = 100MHz	250			MHz
Delay time	t <sub>d</sub>	V <sub>CC</sub> = 30V, V <sub>BE(off)</sub> = -2V			15	ns
Rise time	t <sub>r</sub>	I <sub>C</sub> = 150mA, I <sub>B1</sub> = 15mA			20	ns
Storage time	t <sub>s</sub>	V <sub>CC</sub> = 30V, I <sub>C</sub> = 150mA			225	ns
Fall time	t <sub>f</sub>	I <sub>B1</sub> = I <sub>B2</sub> = 15mA			60	ns

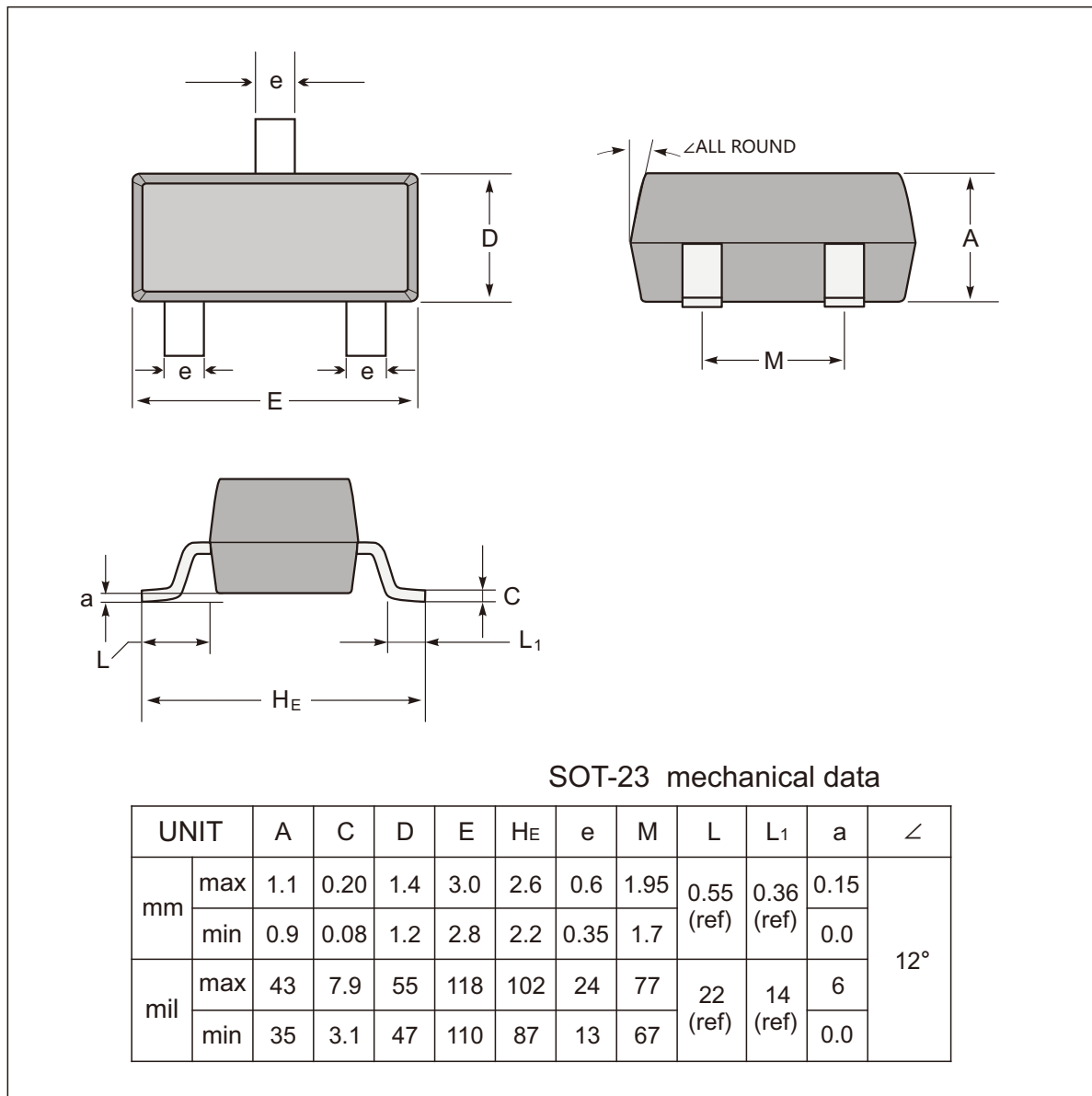


### TYPICAL CHARACTERISTICS

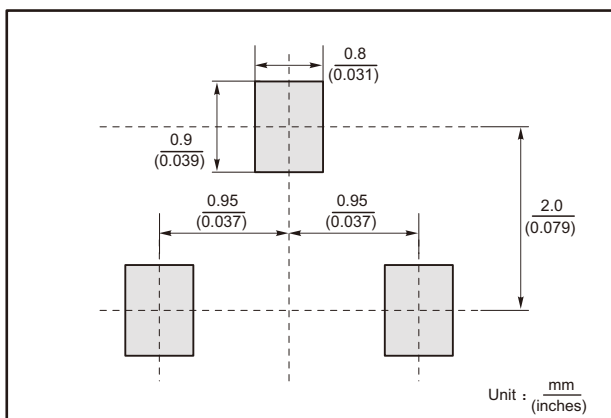




### SOT-23 Package Outline Dimensions



#### The recommended mounting pad size



#### Marking

Type number	Marking code
MMBT4401WD	2X



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