

**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	30	V <sub>dc</sub>
Collector-Base Voltage	V <sub>CBO</sub>	30	V <sub>dc</sub>
Emitter-Base Voltage	V <sub>EBO</sub>	4.0	V <sub>dc</sub>
Collector Current — Continuous	I <sub>C</sub>	200	mAdc
Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C	P <sub>D</sub>	350 2.8	mW mW/°C
Total Device Dissipation @ T <sub>C</sub> = 25°C Derate above 25°C	P <sub>D</sub>	1.0 8.0	Watt mW/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board,* T <sub>A</sub> = 25°C Derate above 25°C	P <sub>D</sub>	225 1.8	mW mW/°C
Thermal Resistance Junction to Ambient	R <sub>θJA</sub>	556	°C/W
Total Device Dissipation Alumina Substrate,** T <sub>A</sub> = 25°C Derate above 25°C	P <sub>D</sub>	300 2.4	mW mW/°C
Thermal Resistance Junction to Ambient	R <sub>θJA</sub>	417	°C/W
Junction and Storage Temperature	T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

\*FR-5 = 1.0 x 0.75 x 0.062 in.

\*\*Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

**DEVICE MARKING**

MMBT4125L = ZD

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted.)**

Characteristic	Symbol	Min	Max	Unit
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**OFF CHARACTERISTICS**

Collector-Emitter Breakdown Voltage(1) (I <sub>C</sub> = 1.0 mAdc, I <sub>E</sub> = 0)	V <sub>(BR)CEO</sub>	30	—	V <sub>dc</sub>
Collector-Base Breakdown Voltage (I <sub>C</sub> = 10 μAdc, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	30	—	V <sub>dc</sub>
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 10 μAdc, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	4.0	—	V <sub>dc</sub>
Collector Cutoff Current (V <sub>CB</sub> = 20 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	—	50	nAdc
Emitter Cutoff Current (V <sub>BE</sub> = 3.0 Vdc, I <sub>C</sub> = 0)	I <sub>EBO</sub>	—	50	nAdc

**ON CHARACTERISTICS**

DC Current Gain(1) (I <sub>C</sub> = 2.0 mAdc, V <sub>CE</sub> = 1.0 Vdc) (I <sub>C</sub> = 50 mAdc, V <sub>CE</sub> = 1.0 Vdc)	h <sub>FE</sub>	50 25	150 —	—
Collector-Emitter Saturation Voltage(1) (I <sub>C</sub> = 50 mAdc, I <sub>B</sub> = 5.0 mAdc)	V <sub>CE(sat)</sub>	—	0.4	V <sub>dc</sub>
Base-Emitter Saturation Voltage(1) (I <sub>C</sub> = 50 mAdc, I <sub>B</sub> = 5.0 mAdc)	V <sub>BE(sat)</sub>	—	0.95	V <sub>dc</sub>

**SMALL-SIGNAL CHARACTERISTICS**

Current-Gain — Bandwidth Product (I <sub>C</sub> = 10 mAdc, V <sub>CE</sub> = 20 Vdc, f = 100 MHz)	f <sub>T</sub>	200	—	MHz
Input Capacitance (V <sub>BE</sub> = 0.5 Vdc, I <sub>C</sub> = 0, f = 100 kHz)	C <sub>ibo</sub>	—	10	pF
Collector-Base Capacitance (V <sub>CB</sub> = 5.0 Vdc, I <sub>E</sub> = 0, f = 100 kHz)	C <sub>cb</sub>	—	4.5	pF
Small-Signal Current Gain (I <sub>C</sub> = 2.0 mAdc, V <sub>CE</sub> = 10 Vdc, f = 1.0 kHz)	h <sub>fe</sub>	50	200	—
Current Gain — High Frequency (I <sub>C</sub> = 10 mAdc, V <sub>CE</sub> = 20 Vdc, f = 100 MHz)	h <sub>fe</sub>	2.0	—	—
Noise Figure (I <sub>C</sub> = 100 μAdc, V <sub>CE</sub> = 5.0 Vdc, R <sub>S</sub> = 1.0 kohm, Noise Bandwidth = 10 Hz to 15.7 kHz)	NF	—	5.0	dB

(1) Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2.0%.

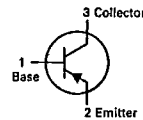
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MOTOROLA SC XSTRS/R F

**MMBT4125L**

T-27-09

CASE 318-03, STYLE 6  
SOT-23 (TO-236AB)



**GENERAL PURPOSE TRANSISTOR**

PNP SILICON

Refer to 2N4125 for graphs.

MOTOROLA SMALL-SIGNAL TRANSISTORS, FETs AND DIODES

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