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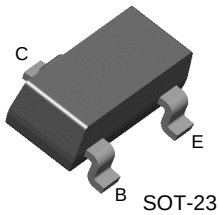
MMBT5401

PNP General Purpose Amplifier

- This device is designed as a general purpose amplifier and switch for applications requiring high voltage.



SOT-23
Mark: 2L

PNP Epitaxial Silicon Transistor

Absolute Maximum Ratings* T_a=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	-150	V
V_{CBO}	Collector-Base Voltage	-160	V
V_{EBO}	Emitter-Base Voltage	-5.0	V
I_C	Collector Current - Continuous	-600	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 ~ 150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Notes:
1. These ratings are based on a maximum junction temperature of 150 degrees C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Electrical Characteristics T_a=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
BV_{CEO}	Collector-Emitter Breakdown Voltage *	I_C = -1.0mA, I_B = 0	-150		V
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = -100μA, I_E = 0	-160		V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = -10μA, I_C = 0	-5.0		V
I_{CBO}	Collector Cutoff Current	V_{CB} = -120V, I_E = 0 V_{CB} = -120V, I_E = 0, T_a = 100°C		-50 -50	nA μA
I_{EBO}	Emitter Cutoff Current	V_{EB}= -3.0V, I_C=0		-50	nA
On Characteristics *					
h_{FE}	DC Current Gain	I_C = -1.0mA, V_{CE} = -5.0V I_C = -10mA, V_{CE} = -5.0V I_C = -50mA, V_{CE} = -5.0V	50 60 50	 240 	
V_{CE} (sat)	Collector-Emitter Saturation Voltage	I_C = -10mA, I_B = -1.0mA I_C = -50mA, I_B = -5.0mA		-0.2 -0.5	V V
V_{BE} (sat)	Base-Emitter Saturation Voltage	I_C = -10mA, I_B = -1.0mA I_C = -50mA, I_B = -5.0mA		-1.0 -1.0	V V
Small Signal Characterics					
f_T	Current Gain Bandwidth Product	I_C = -10mA, V_{CE} = -10V, f = 100MHz	100	300	MHz
C_{ob}	Output Capacitance	V_{CB} = -10V, I_E = 0, f = 1MHz		6.0	pF
N_F	Noise Figure	I_C = -250μA, V_{CE} = -5.0V, R_S = 1.0KΩ f = 10Hz to 15.7KHz		8.0	dB

* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

Thermal Characteristics T_a=25°C unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

Typical Characteristics

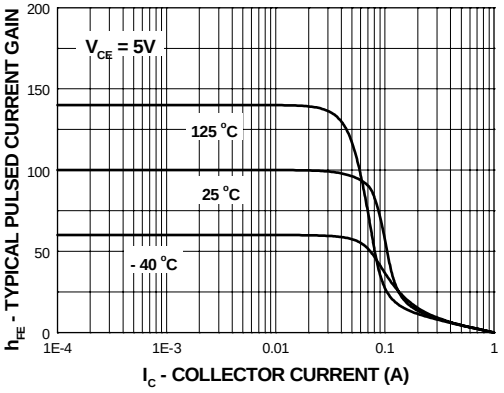


Figure 1. Typical Pulsed Current Gain vs Collector Current

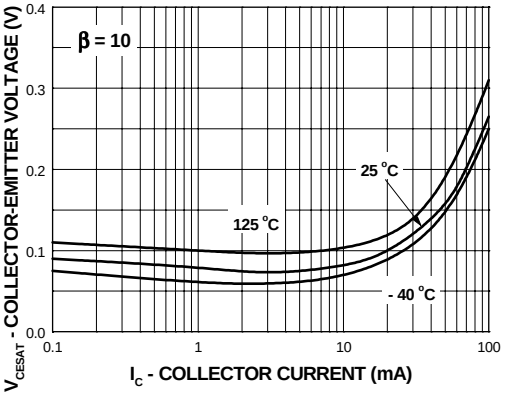


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

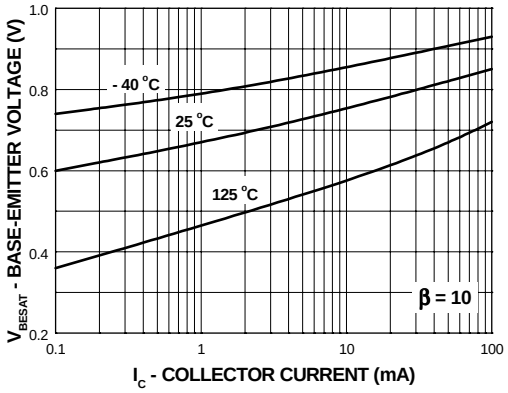


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

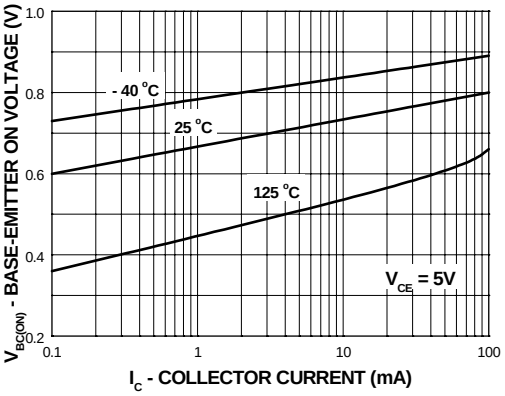


Figure 4. Base-Emitter On Voltage vs Collector Current

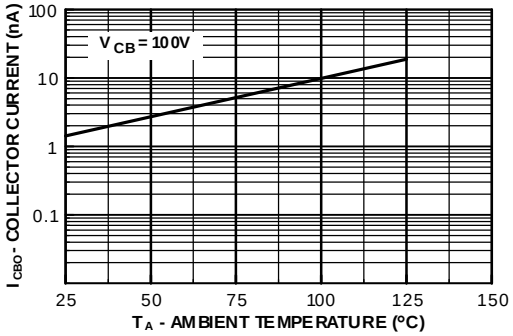


Figure 5. Collector-Cutoff Current vs Ambient Temperature

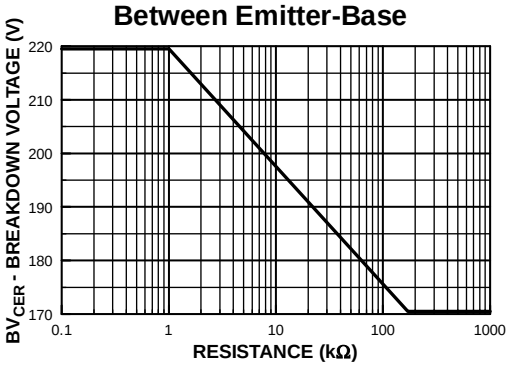


Figure 6. Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

Typical Characteristics (Continued)

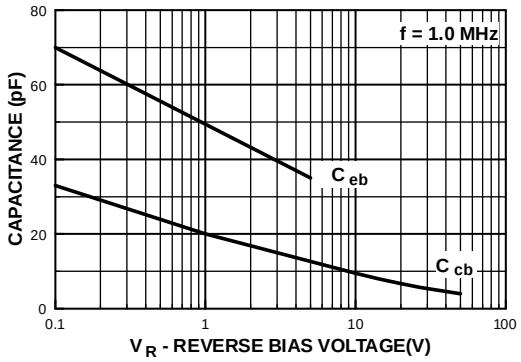


Figure 7. Input and Output Capacitance vs Reverse Voltage

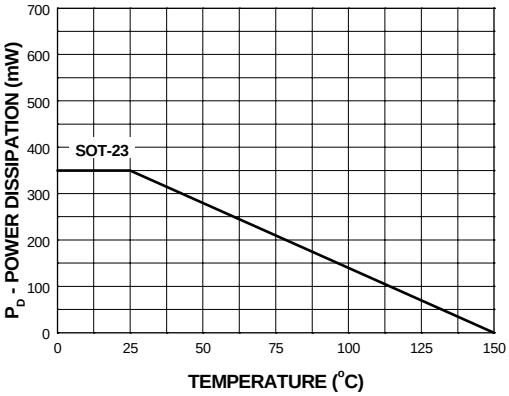
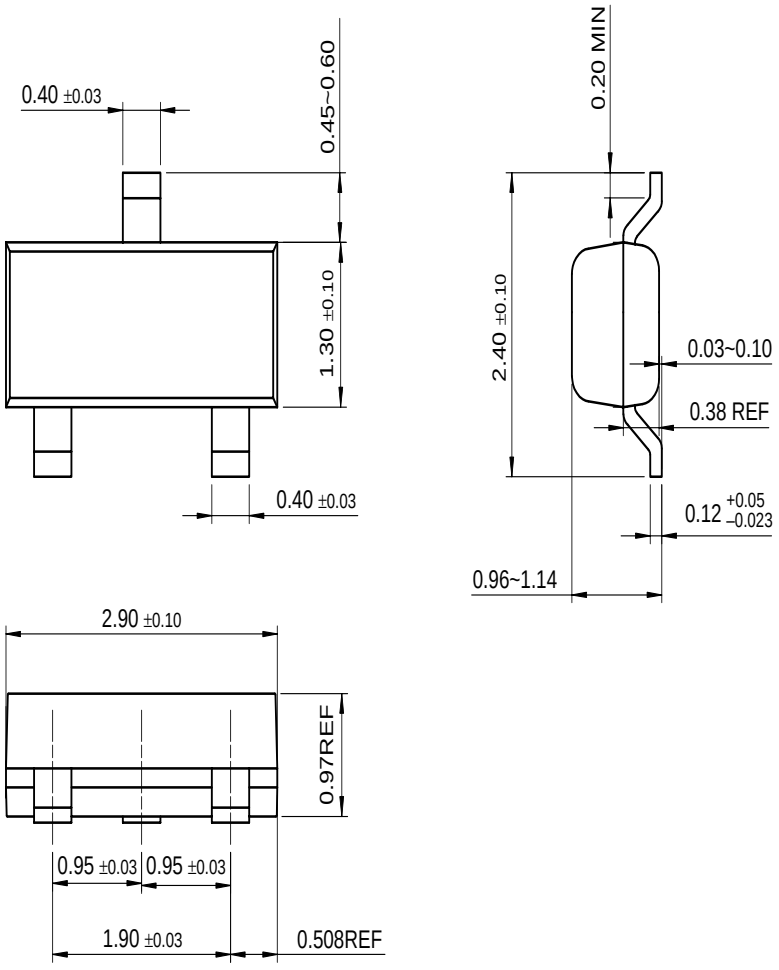


Figure 8. Power Dissipation vs Ambient Temperature

Package Dimensions

SOT-23



Dimensions in Millimeters

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