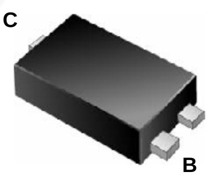
FAIRCHILD

June 2015

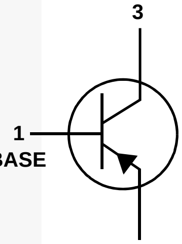
MMBT3906SL
PNP Epitaxial Silicon Transistor

Features

- General-Purpose Amplifier Transistor
- Ultra Small Surface Mount Package for All Types (Max. 0.43mm Tall)
- Suitable for General Switching and Amplification
- Well Suited for Portable Application
- As Complementary type, NPN MMBT3904SL is Recommended.
- Pb Free



SOT-923F Marking : AB



Ordering Information

Part Number	Top Mark	Package	Packing Method
MMBT3906SL	AB	SOT-923F 3L	Tape and Reel

Absolute Maximum Ratings(1)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-200	mA
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

Note:

1. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
P_D	Power Dissipation, by $R_{\theta JA}$	227	mW
	Derate Above 25°C	1.81	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient[2]	550	°C/W

Note:
2. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics[3]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = -10 µA, I_E = 0	-40		V
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = -1 mA, I_B = 0	-40		V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = -10 µA, I_C = 0	-5		V
I_{CEX}	Collector Cut-Off Current	V_{CE} = -30 V, $V_{EB(OFF)}$ = -0.3 V		-50	nA
h_{FE}	DC Current Gain	V_{CE} = -1.0 V, I_C = -0.1 mA	60		
		V_{CE} = -1.0 V, I_C = -1 mA	80		
		V_{CE} = -1.0 V, I_C = -10 mA	100	300	
		V_{CE} = -1.0 V, I_C = -50 mA	60		
		V_{CE} = -1.0 V, I_C = -100 mA	30		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = -10 mA, I_B = -1.0 mA		-0.25	V
		I_C = -50 mA, I_B = -5.0 mA		-0.40	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = -10 mA, I_B = -1.0 mA	-0.65	-0.85	V
		I_C = -50 mA, I_B = -5.0 mA		-0.95	
f_T	Current Gain-Bandwidth Product	V_{CE} = -20 V, I_C = -10 mA, f = 100 MHz	250		MHz
C_{ob}	Output Capacitance	V_{CB} = -5 V, I_E = 0, f = 1 MHz		7.0	pF
C_{ib}	Input Capacitance	V_{EB} = -0.5 V, I_C = 0, f = 1 MHz		15	pF
t_d	Delay Time	V_{CC} = -3 V, I_C = -10 mA, I_{B1} = $-I_{B2}$ = -1 mA		35	ns
t_r	Rise Time			35	ns
t_s	Storage Time			225	ns
t_f	Fall Time			75	ns

Note:
3. DC Item are tested by pulse test: pulse width ≤ 300 µs, duty cycle ≤ 2.0%.

Typical Performance Characteristics

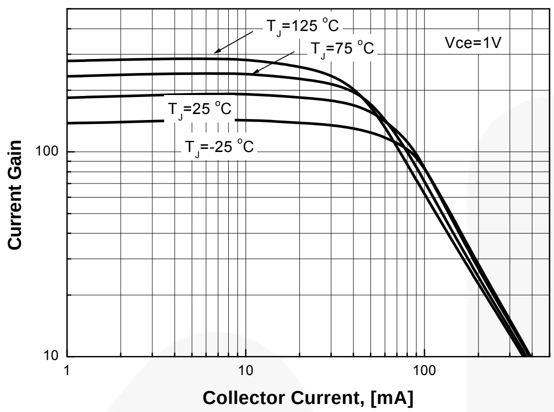


Figure 1. DC Current Gain

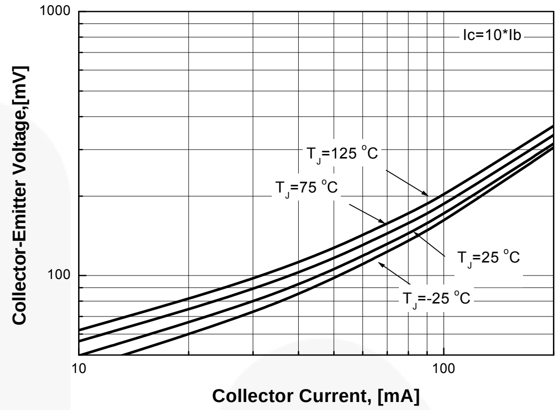


Figure 2. Collector-Emitter Saturation Voltage

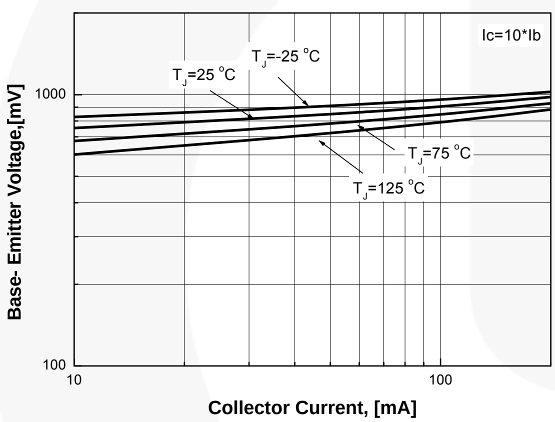


Figure 3. Base- Emitter Saturation Voltage

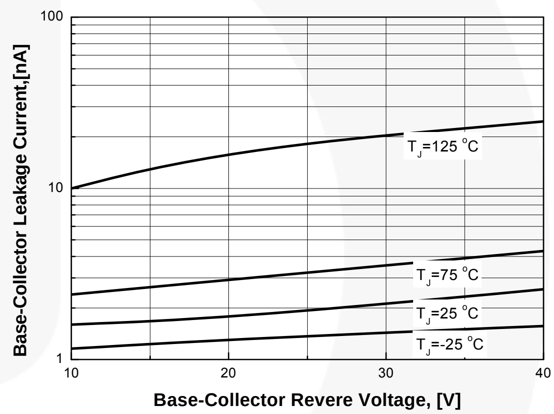


Figure 4. Collector- Base Leakage Current

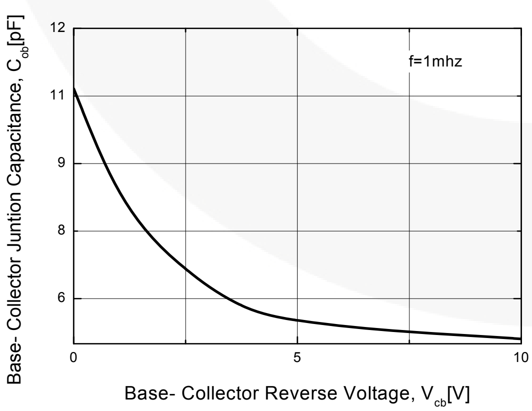


Figure 5. Collector- Base Capacitance

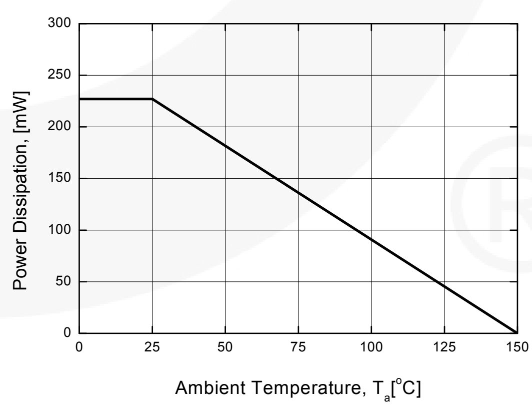
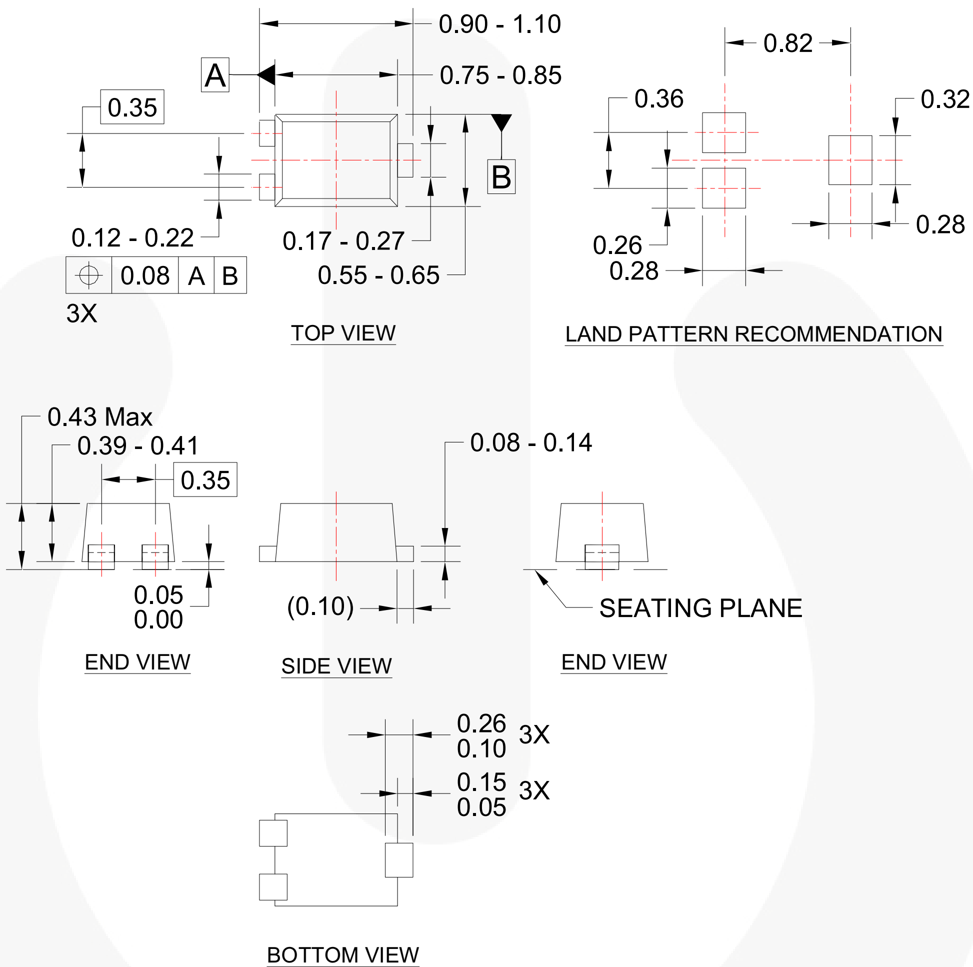


Figure 6. Power Derating

Physical Dimensions



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C) DIMENSIONS ARE INCLUSIVE OF BURRS, AND MOLD FLASH.
D) DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994
E) DRAWING FILE NAME : SOT923F1REV2

Figure 7. 3-LEAD, SOT923F, 0.4 mm TALL, FLAT TERMINAL

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Rev. I74