

MMBT3906TB

PNP General Purpose Switching Transistor

Voltage

-40V

Current

-200mA

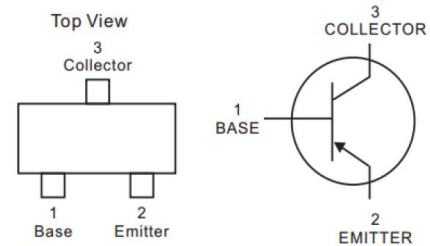
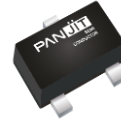
Features

- PNP epitaxial silicon, planar design
- Collector-Emitter Voltage $V_{CE} = -40V$
- Collector Current $I_C = -200mA$
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 Standard

Mechanical Data

- Case : SOT-523 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.002 grams

SOT-523



Maximum Ratings and Thermal Characteristics ($T_A = 25^\circ C$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current (DC)	I_C	-200	mA
Collector Power Dissipation	P_D	150	mW
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance from Junction to Ambient ^(Note 1)	$R_{\theta JA}$	833	$^\circ C/W$

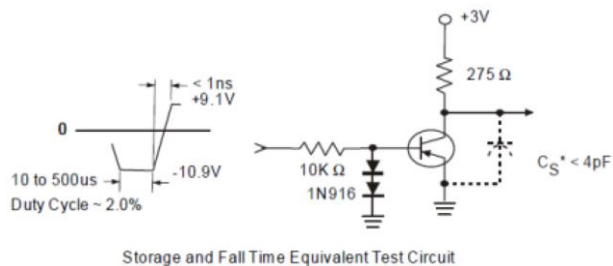
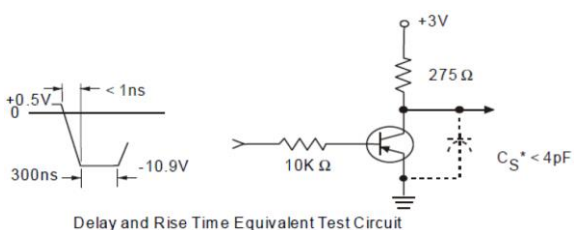
Note 1 : Mounted on FR4 PCB at 1 inch square copper pad.

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Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
OFF Characteristics						
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = -1\text{mA}$, $I_B = 0\text{A}$	-40	-	-	V
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = -10\mu\text{A}$, $I_E = 0\text{A}$	-40	-	-	V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = -10\mu\text{A}$, $I_C = 0\text{A}$	-5	-	-	V
Base Cutoff Current	I_{BL}	$V_{CE} = -30\text{V}$, $V_{EB} = -3\text{V}$	-	-	-50	nA
Collector Cutoff Current	I_{CEX}	$V_{CE} = -30\text{V}$, $V_{EB} = -3\text{V}$	-	-	-50	nA
ON characteristics						
DC Current Gain ^(Note 2)	h_{FE}	$V_{CE} = -1\text{V}$, $I_C = -0.1\text{mA}$	60	-	-	-
		$V_{CE} = -1\text{V}$, $I_C = -1\text{mA}$	80	-	-	
		$V_{CE} = -1\text{V}$, $I_C = -10\text{mA}$	100	-	300	
		$V_{CE} = -1\text{V}$, $I_C = -50\text{mA}$	60	-	-	
		$V_{CE} = -1\text{V}$, $I_C = -100\text{mA}$	30	-	-	
Collector-Emitter Saturation Voltage ^(Note 2)	$V_{CE(SAT)}$	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$	-	-	-250	mV
		$I_C = -50\text{mA}$, $I_B = -5\text{mA}$	-	-	-400	
Base-Emitter Saturation Voltage ^(Note 2)	$V_{BE(SAT)}$	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$	-650	-	-850	mV
		$I_C = -50\text{mA}$, $I_B = -5\text{mA}$	-	-	-950	
Collector-Base Capacitance	C_{CBO}	$V_{CB} = -5\text{V}$, $I_E = 0\text{A}$, $f = 1\text{MHz}$	-	-	4.5	pF
Emitter-Base Capacitance	C_{EBO}	$V_{EB} = -0.5\text{V}$, $I_C = 0\text{A}$, $f = 1\text{MHz}$	-	-	10	pF
Delay Time	T_d	$V_{CC} = -3\text{V}$, $V_{BE} = -0.5\text{V}$	-	-	35	nS
Rise Time	T_r	$I_C = -10\text{mA}$, $I_B = -1\text{mA}$	-	-	35	nS
Storage Time	T_s	$V_{CC} = -3\text{V}$, $I_C = -10\text{mA}$	-	-	225	nS
Fall Time	T_f	$I_{B1} = I_{B2} = -1\text{mA}$	-	-	75	

Note 2 : Pulse Test: Pulse Width < 300 μs , Duty Cycle < 2%





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TYPICAL CHARACTERISTIC CURVES

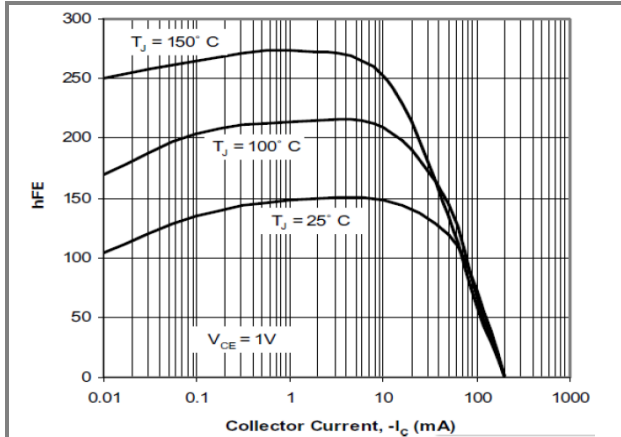


Fig.1 Typical Hfe vs. Collector Current

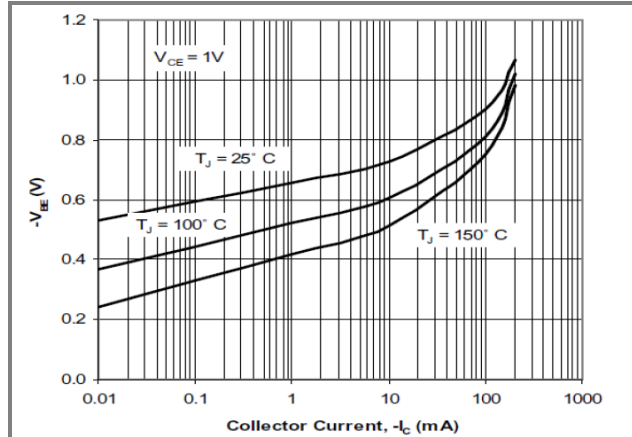


Fig.2 Typical VBE vs. Collector Current

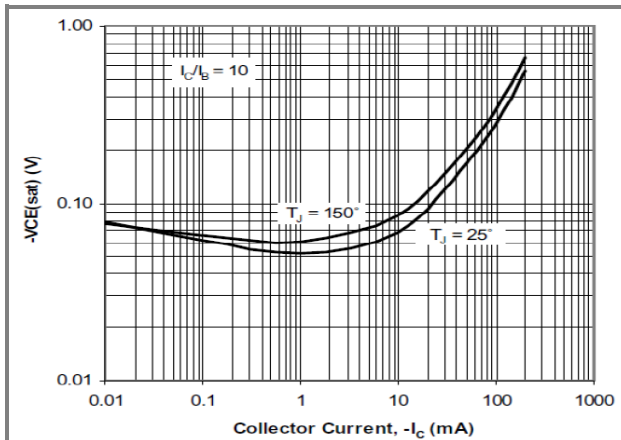


Fig.3 Typical Vce(sat) vs. Collector Current

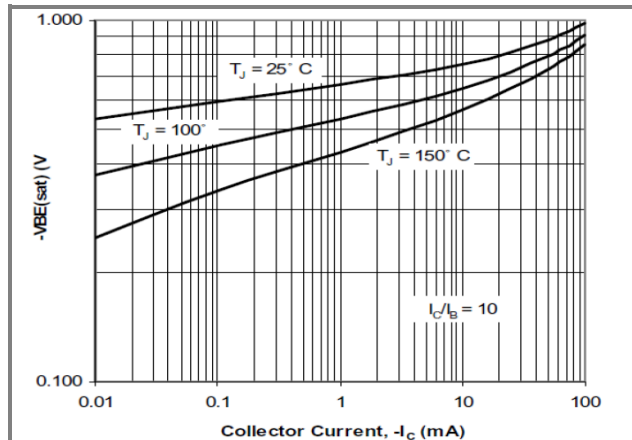


Fig.4 Typical Vbe(sat) vs. Collector Current

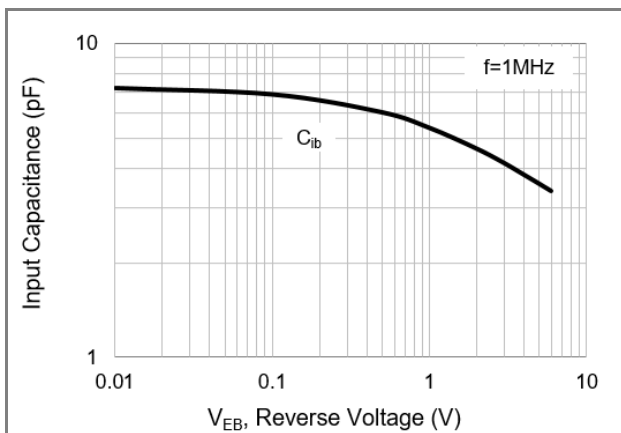


Fig.5 Input Capacitance

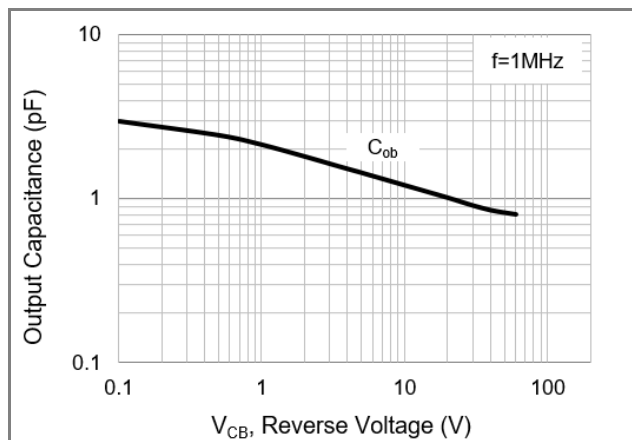


Fig.6 Output Capacitance

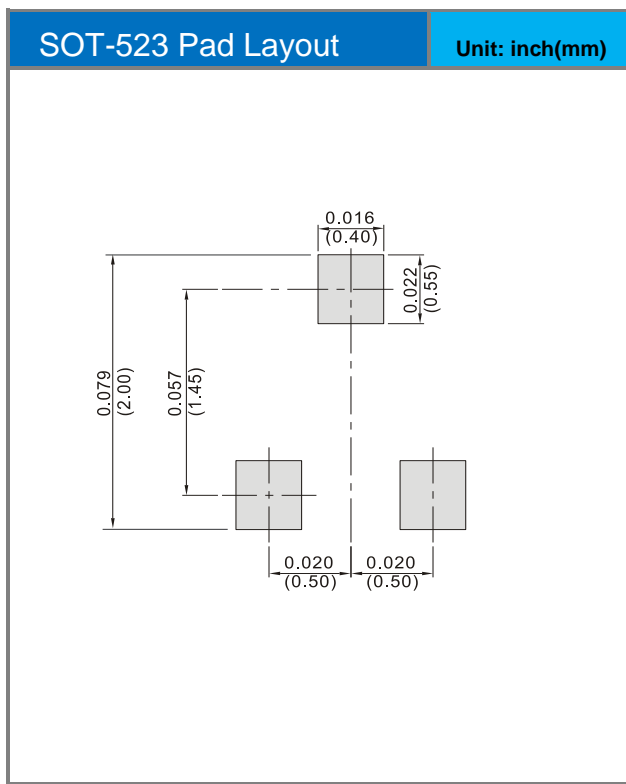
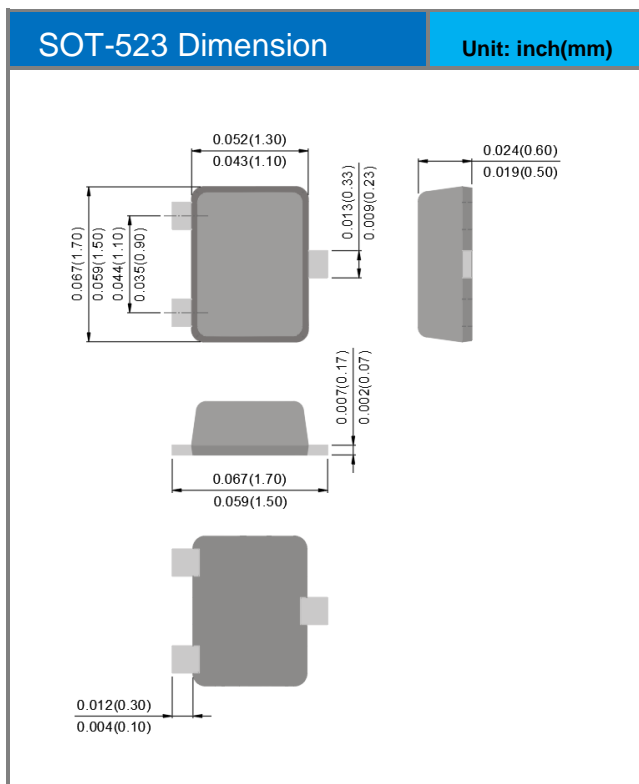


MMBT3906TB

Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
MMBT3906TB_R1_00001	SOT-523	4K pcs / 7" reel	6E	Halogen free RoHS compliant

Packaging Information & Mounting Pad Layout





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