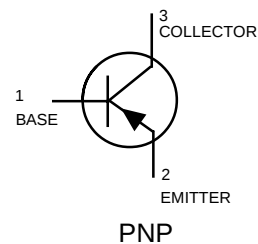
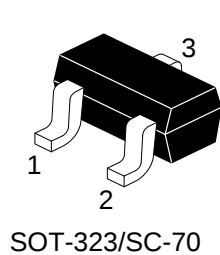


General Purpose Transistors PNP Silicon

FEATURES:

- We declare that the material of product compliance with RoHS requirements.

Circuit Diagram & Pin Configuration:



DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
TMBT3906W	2A	3000/Tape&Reel

● MAXIMUM RATINGS(Ta = 25°C)

Parameter	Symbol	Limits	Unit
Collector–Emitter Voltage	V _{CEO}	–40	Vdc
Collector–Base Voltage	V _{CBO}	–40	Vdc
Emitter–Base Voltage	V _{EBO}	–5	Vdc
Collector Current — Continuous	I _C	–200	mAdc

● THERMAL CHARACTERISTICS

Total Device Dissipation, (Note 1) @ T _A = 25°C	P _D	150	mW
Thermal Resistance, Junction–to–Ambient	R _{θJA}	833	°C/W
Junction and Storage temperature	T _J , T _{stg}	–55 ~ +150	°C

1. Device mounted on FR4 glass epoxy printed circuit board using the minimum recommended footprint.

● ELECTRICAL CHARACTERISTICS (Ta= 25°C)
OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage(Note 2) (I _C = –1.0 mA, I _B = 0)	V _{BR(CEO)}	–40	–	–	V
Collector–Base Breakdown Voltage (I _C = –10 μA, I _E = 0)	V _{BR(CBO)}	–40	–	–	V
Emitter–Base Breakdown Voltage (I _E = –10 μA, I _C = 0)	V _{BR(EBO)}	–5	–	–	V
Collector Cutoff Current (V _{CE} = –30 Vdc, V _{EB} = –3.0Vdc)	I _{CEX}	–	–	–50	nA
Base Cutoff Current (V _{CE} = –30 Vdc, V _{EB} = –3.0Vdc)	I _{BL}	–	–	–50	nA

2.Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%.

● ELECTRICAL CHARACTERISTICS (Ta= 25°C)(Continued)
ON CHARACTERISTICS (Note 1.)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain (I _C = -0.1 mA _{dc} , V _{CE} = -1.0 V _{dc}) (I _C = -1.0 mA _{dc} , V _{CE} = -1.0 V _{dc}) (I _C = -10 mA _{dc} , V _{CE} = -1.0 V _{dc}) (I _C = -50 mA _{dc} , V _{CE} = -1.0 V _{dc}) (I _C = -100 mA _{dc} , V _{CE} = -1.0 V _{dc})	h _{FE}	60 80 100 60 30	— — — — —	— — 300 — —	
Collector-Emitter Saturation Voltage(3) (I _C = -10 mA _{dc} , I _B = -1.0 mA _{dc}) (I _C = -50mA _{dc} , I _B = -5.0 mA _{dc})	V _{CE(sat)}	— —	— —	-0.25 -0.4	V
Base-Emitter Saturation Voltage (I _C = -10 mA _{dc} , I _B = -1.0 mA _{dc}) (I _C = -50mA _{dc} , I _B = -5.0 mA _{dc})	V _{BE(sat)}	-0.65 —	— —	-0.85 -0.95	V

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product (I _C = -10mA _{dc} , V _{CE} = -20V _{dc} , f = 100MHz)	f _r	250	—	—	MHz
Output Capacitance (V _{CB} = -5.0 V _{dc} , I _E = 0, f = 1.0 MHz)	C _{obo}	—	—	4.5	pF
Input Capacitance (V _{EB} = -0.5 V _{dc} , I _C = 0, f = 1.0 MHz)	C _{ibo}	—	—	10	pF
Input Impedance (V _{CE} = -10 V _{dc} , I _C = -1.0 mA _{dc} , f = 1.0 kHz)	h _{ie}	2	—	12	kΩ
Voltage Feedback Ratio (V _{CE} = -10 V _{dc} , I _C = -1.0 mA _{dc} , f = 1.0 kHz)	h _{re}	0.1	—	10	X 10 ⁻⁴
Small-Signal Current Gain (V _{CE} = -10 V _{dc} , I _C = -1.0 mA _{dc} , f = 1.0 kHz)	h _{fe}	100	—	400	
Output Admittance (V _{CE} = -10 V _{dc} , I _C = -1.0 mA _{dc} , f = 1.0 kHz)	h _{oe}	3	—	60	μmhos
Noise Figure (V _{CE} = -5V, I _C = -100μA, R _s = 1.0kΩ, f = 1.0kHz)	NF	—	—	4	dB

SWITCHING CHARACTERISTICS

Delay Time	(V _{CC} = -3.0 V _{dc} , V _{BE} = 0.5 V _{dc} , I _C = -10 mA _{dc} , I _{B1} = -1.0 mA _{dc})	t _d	—	—	35	ns
Rise Time		t _r	—	—	35	
Storage Time		t _s	—	—	225	
Fall Time		t _f	—	—	75	

3. Pulse Test: Pulse Width ≤ 300 μs; Duty Cycle ≤ 2.0%.

Electrical Characteristics Curves

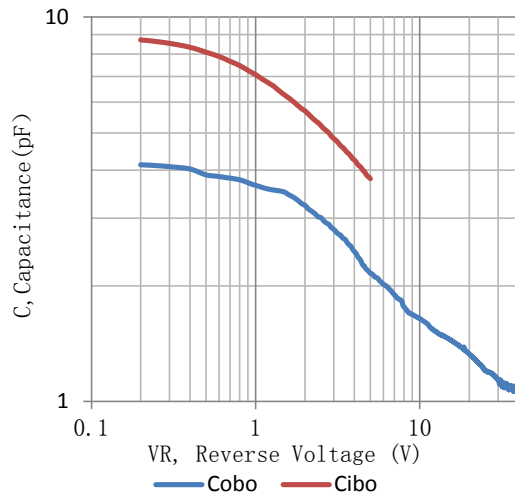


Figure 1. Capacitance

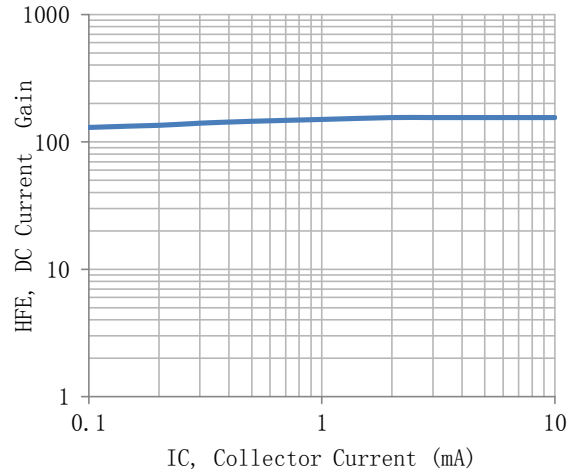


Figure 2. Current Gain

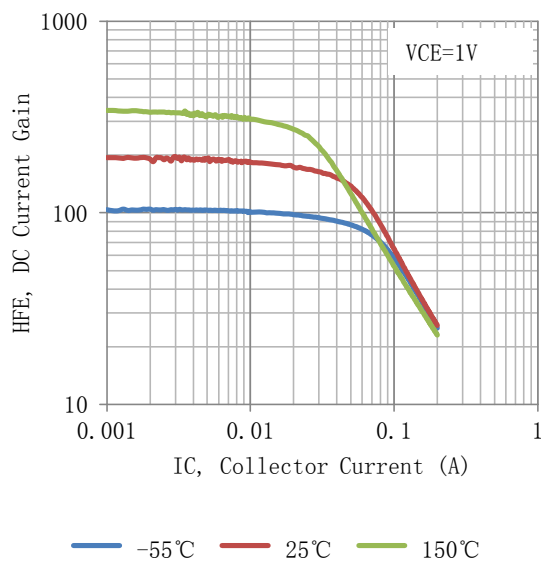


Figure 3. DC Current Gain

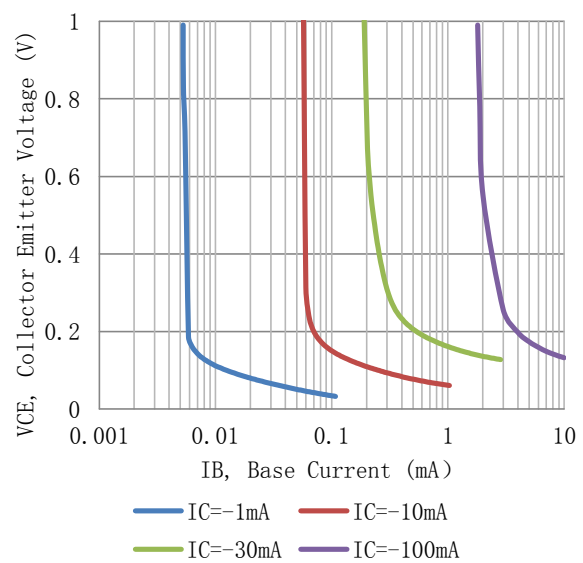


Figure 4. Collector Saturation Region

Electrical Characteristics Curves

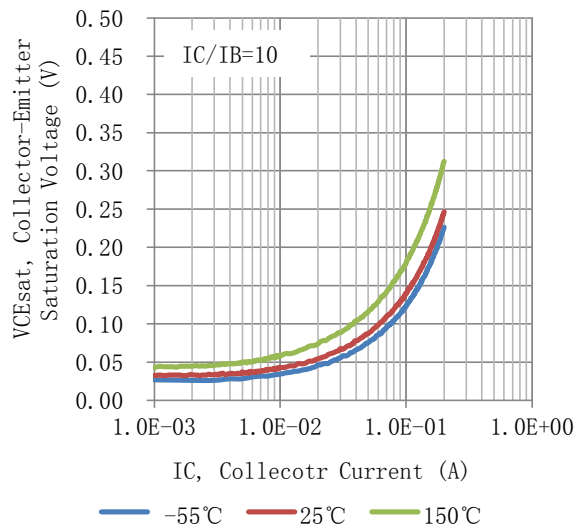


Figure 5. Collector-Emitter Saturation Voltage vs. Collector Current

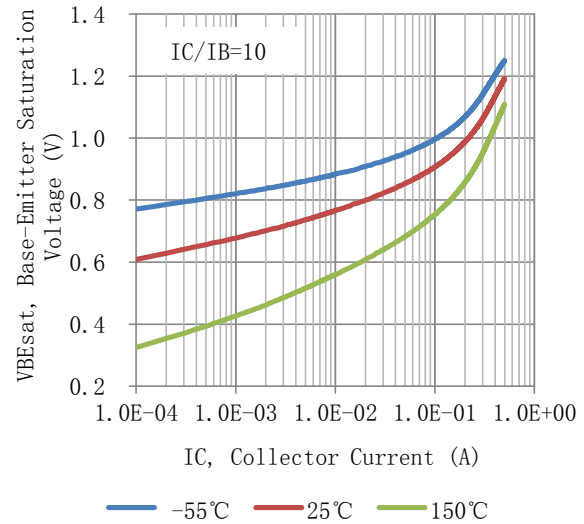


Figure 6. Base-Emitter Saturation Voltage vs. Collector Current

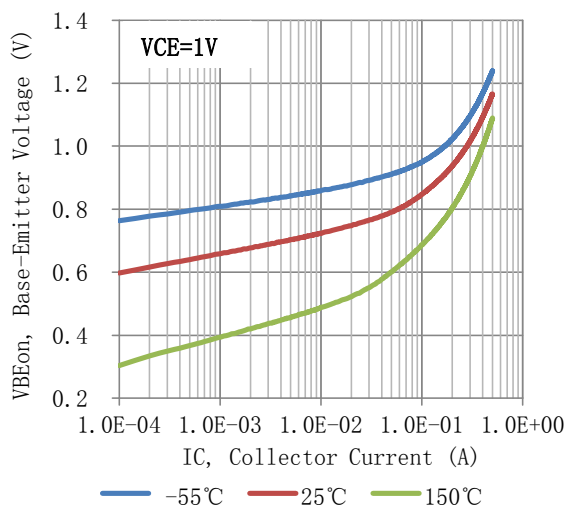
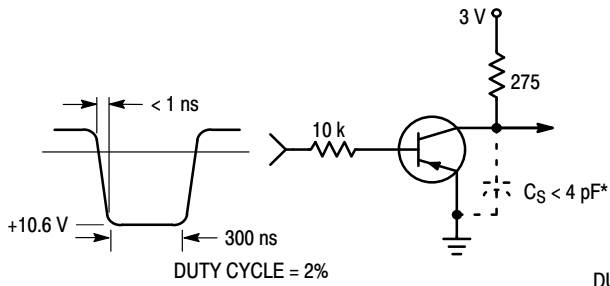


Figure 7. Base-Emitter Voltage vs. Collector Current



* Total shunt capacitance of test jig and connectors

Figure 8. Delay and Rise Time Equivalent Test

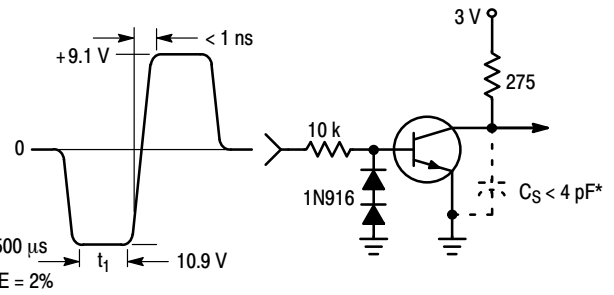
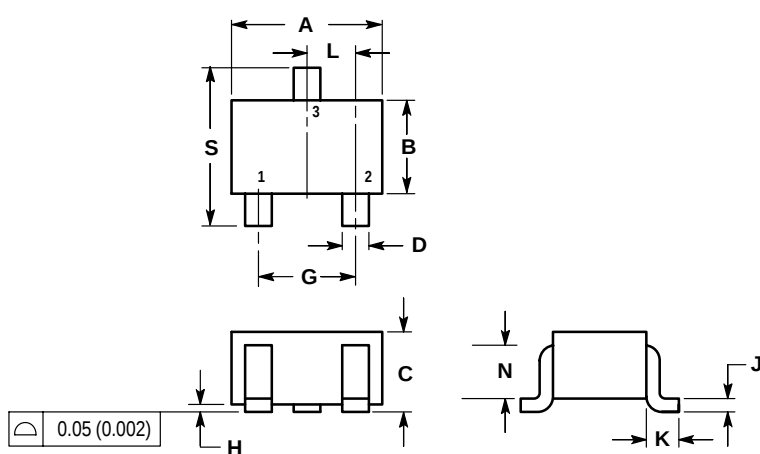


Figure 9. Storage and Fall Time Equivalent Test

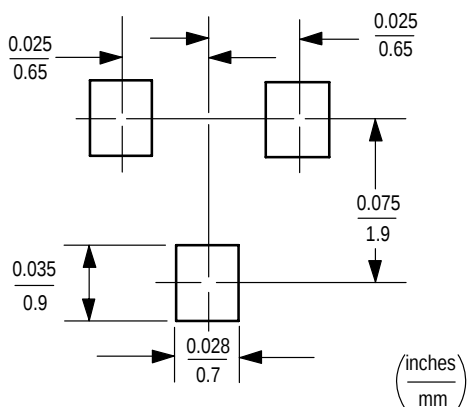
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NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.032	0.040	0.80	1.00
D	0.012	0.016	0.30	0.40
G	0.047	0.055	1.20	1.40
H	0.000	0.004	0.00	0.10
J	0.004	0.010	0.10	0.25
K	0.017 REF		0.425 REF	
L	0.026 BSC		0.650 BSC	
N	0.028 REF		0.700 REF	
S	0.079	0.095	2.00	2.40



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