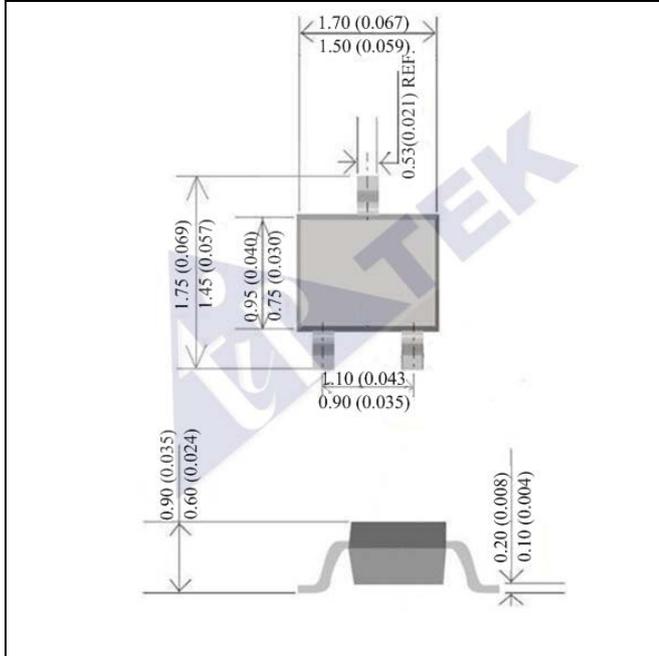


GENERAL PURPOSE TRANSISTORS NPN Silicon



CASE : SOT-523

DIMENSIONS IN MILLIMETERS AND (INCHES)

FEATURES

- NPN SILICON EPITAXIAL PLANAR TRANSISTOR FOR SWITCHING AND AMPLIFIER APPLICATIONS
- COLLECTOR-EMITTER VOLTAGE $V_{CE} = 40V$
- COLLECTOR CURRENT $I_C = 200\text{ mA}$
- PB FREE PRODUCT ARE AVAILABLE :98.5% SN ABOVE CAN MEET ROHSENVIRONMENT SUBSTANCE DIRECTIVE REQUEST

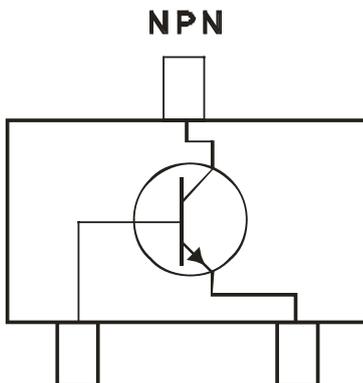
MECHANICAL DATA

- CASE : SOT-523
- TERMINALS : SOLDERABLE PER MIL-STD-202G, METHOD 208
- Pb Free: MMBT3904T
Halogen Free: MMBT3904T-H

MAXIMUM RATINGS

RATINGS AT 25°C AMBIENT TEMPERATURE UNLESS OTHERWISE SPECIFIED.			
PATING	SYMBOL	MMBT3904T	UNITS
COLLECTOR - EMITTER VOLTAGE	V_{CEO}	40	V
COLLECTOR - BASE VOLTAGE	V_{CBO}	60	V
EMITTER - BASE VOLTAGE	V_{EBO}	6.0	V
COLLECTOR CURRENT - CONTINUOUS	I_C	200	mA
COLLECTOR DISSIPATION @ $T_A = 25^\circ\text{C}$	P_C	200	mW
OPERATING AND STORAGE JUNCTION TEMPERATURE RANGE	$T_J; T_{STG}$	- 55 TO +150	$^\circ\text{C}$

NOTE:1.Indicates Data in addition to JEDEC Requirements.



ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS (AT T_A = 25°C UNLESS OTHERWISE NOTED)				
CHARACTERISTIC	SYMBOL	MIN	MAX	UNITS
OFF CHARACTERISTICS				
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}	60	–	V
Emitter–Base Breakdown Voltage (I _E = 10 μA, I _C = 0)	V _{(BR)EBO}	6.0	–	V
Emitter Cut-off Current (V _{CE} = 30V, V _{EB} = 3V)	I _{EBO}	–	50	nA
Collector Cut-off Current (V _{CE} = 30V, V _{EB} = 3V)	I _{CEX}	–	50	nA
ON CHARACTERISTICS (NOTE 2)				
Dc Current Gain (I _C = 0.1 mA, V _{CE} = 1.0 V) (I _C = 1.0 mA, V _{CE} = 1.0 V) (I _C = 10 mA, V _{CE} = 1.0 V) (I _C = 50 mA, V _{CE} = 1.0 V) (I _C = 100 mA, V _{CE} = 1.0 V)	h _{FE}	40 70 100 60 30	– – 300 – –	–
Collector–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA) (I _C = 50 mA, I _B = 5.0 mA)	V _{CE(sat)}		0.2 0.3	V
Base–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA) (I _C = 50 mA, I _B = 5.0 mA)	V _{BE(sat)}	0.65	0.85 0.95	V
SMALL–SIGNAL CHARACTERISTICS				
Collector Output Capacitance (V _{CB} = 5 V, I _E = 0, f = 1.0 MHz)	C _{ob}		4	pF
Current–Gain – Bandwidth Product (I _C = 10 mA, V _{CE} = 20 V, f = 100 MHz)	f _T	200	–	MHz

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

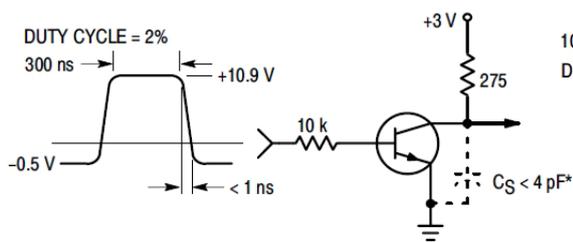


Figure 1. Delay and Rise Time Equivalent Test Circuit

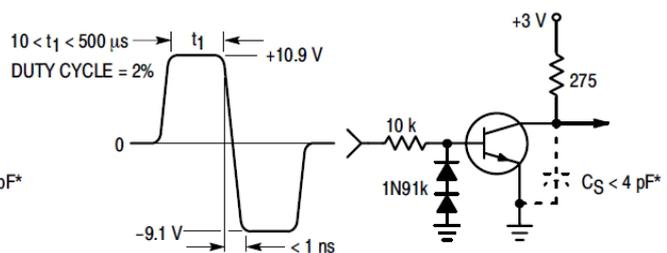


Figure 2. Storage and Fall Time Equivalent Test Circuit

* Total shunt capacitance of test jig and connectors