MMBT3906

SMALL SIGNAL PNP TRANSISTOR

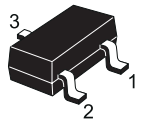
PRELIMINARY DATA

Type	Marking
MMBT3906	36

- SILICON EPITAXIAL PLANAR PNP TRANSISTOR
- MINIATURE SOT-23 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE AND REEL PACKING
- THE NPN COMPLEMENTARY TYPE IS MMBT3904

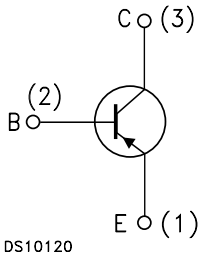
APPLICATIONS

- WELL SUITABLE FOR PORTABLE EQUIPMENT
- SMALL LOAD SWITCH TRANSISTOR WITH HIGH GAIN AND LOW SATURATION VOLTAGE



SOT-23

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	-60	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	-40	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	-6	V
I_C	Collector Current	-200	mA
P_{tot}	Total Dissipation at T_C = 25 ^oC	350	mW
T_{stg}	Storage Temperature	-65 to 150	^oC
T_j	Max. Operating Junction Temperature	150	^oC

THERMAL DATA

$R_{thj\text{-}amb}$ •	Thermal Resistance Junction-Ambient	Max	357.1	°C/W

• Device mounted on a PCB area of 1 cm^2

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEX}	Collector Cut-off Current (V_{BE} = 3 V)	V_{CE} = -30 V			-50	nA
I_{BEX}	Collector Cut-off Current (V_{BE} = 3 V)	V_{CE} = -30 V			-50	nA
$V_{(BR)CEO}$*	Collector-Emitter Breakdown Voltage (I_B = 0)	I_C = -1 mA	-40			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage (I_E = 0)	I_C = -10 µA	-60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_C = 0)	I_E = -10 µA	-6			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = -10 mA I_B = -1 mA I_C = -50 mA I_B = -5 mA			-0.25 -0.4	V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = -10 mA I_B = -1 mA I_C = -50 mA I_B = -5 mA	 -0.65		-0.85 -0.95	V V
h_{FE}*	DC Current Gain	I_C = -0.1 mA V_{CE} = -1 V I_C = -1 mA V_{CE} = -1 V I_C = -10 mA V_{CE} = -1 V I_C = -50 mA V_{CE} = -1 V I_C = -100 mA V_{CE} = -1 V	60 80 100 60 30		300	
f_T	Transition Frequency	I_C = -10mA V_{CE} = -20 V f = 100MHz	250			MHz
NF	Noise Figure	V_{CE} = -5 V I_C = -0.1 mA f = 10 Hz to 15.7 KHz R_G = 1 KΩ		4		dB
C_{CBO}	Collector-Base Capacitance	I_E = 0 V_{CB} = -5 V f = 100 KHz		6		pF
C_{EBO}	Emitter-Base Capacitance	I_C = 0 V_{EB} = -0.5 V f = 100 KHz		25		pF
t_d	Delay Time	I_C = -10 mA I_B = -1 mA V_{CC} = -3V			35	ns
t_r	Rise Time				35	ns
t_s	Storage Time	I_C = -10 mA I_{B1} = -I_{B2} = -1 mA V_{CC} = -3V			225	ns
t_f	Fall Time				72	ns

∗ Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %

SOT-23 MECHANICAL DATA

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.85		1.1	33.4		43.3
B	0.65		0.95	25.6		37.4
C	1.20		1.4	47.2		55.1
D	2.80		3	110.2		118
E	0.95		1.05	37.4		41.3
F	1.9		2.05	74.8		80.7
G	2.1		2.5	82.6		98.4
H	0.38		0.48	14.9		18.8
L	0.3		0.6	11.8		23.6
M	0		0.1	0		3.9
N	0.3		0.65	11.8		25.6
O	0.09		0.17	3.5		6.7