2N3906

SMALL SIGNAL PNP TRANSISTOR

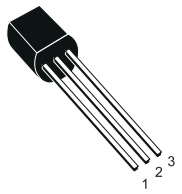
PRELIMINARY DATA

Type	Marking
2N3906	2N3906

- SILICON EPITAXIAL PLANAR NPN TRANSISTOR
- TO-92 PACKAGE SUITABLE FOR THROUGH-HOLE PCB ASSEMBLY
- THE NPN COMPLEMENTARY TYPE IS 2N3904

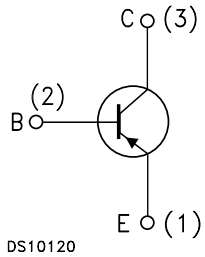
APPLICATIONS

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



TO-92

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	625	mW
T_{stg}	Storage Temperature	-65 to 150	^oC
T_j	Max. Operating Junction Temperature	150	^oC

THERMAL DATA

$R_{thj-amb}$ •	Thermal Resistance Junction-Ambient	Max	200	$^oC/W$
$R_{thj-Case}$ •	Thermal Resistance Junction-Case	Max	83.3	$^oC/W$

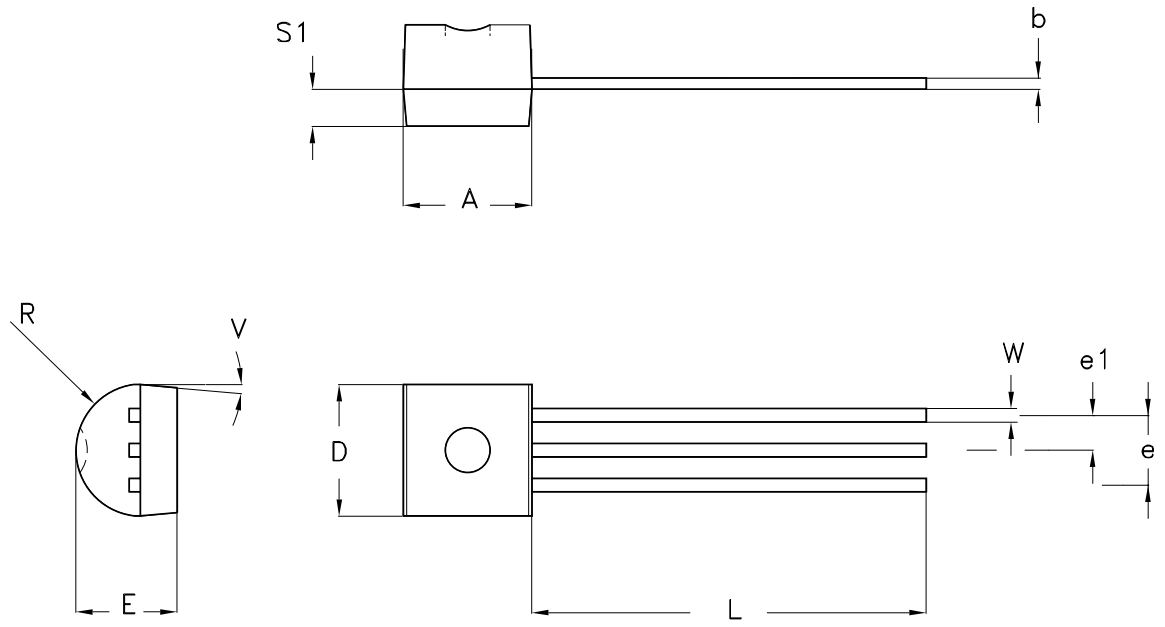
ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

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}	Base 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 = 100 MHz	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 %

TO-92 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.32		4.95	0.170		0.195
b	0.36		0.51	0.014		0.020
D	4.45		4.95	0.175		0.194
E	3.30		3.94	0.130		0.155
e	2.41		2.67	0.095		0.105
e1	1.14		1.40	0.045		0.055
L	12.70		15.49	0.500		0.609
R	2.16		2.41	0.085		0.094
S1	1.14		1.52	0.045		0.059
W	0.41		0.56	0.016		0.022
V	4 degree		6 degree	4 degree		6 degree



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