2N3501

NPN BIPOLAR TRANSISTOR

150 Volts 500mAmps TO-39 Package

Micro Commercial Components
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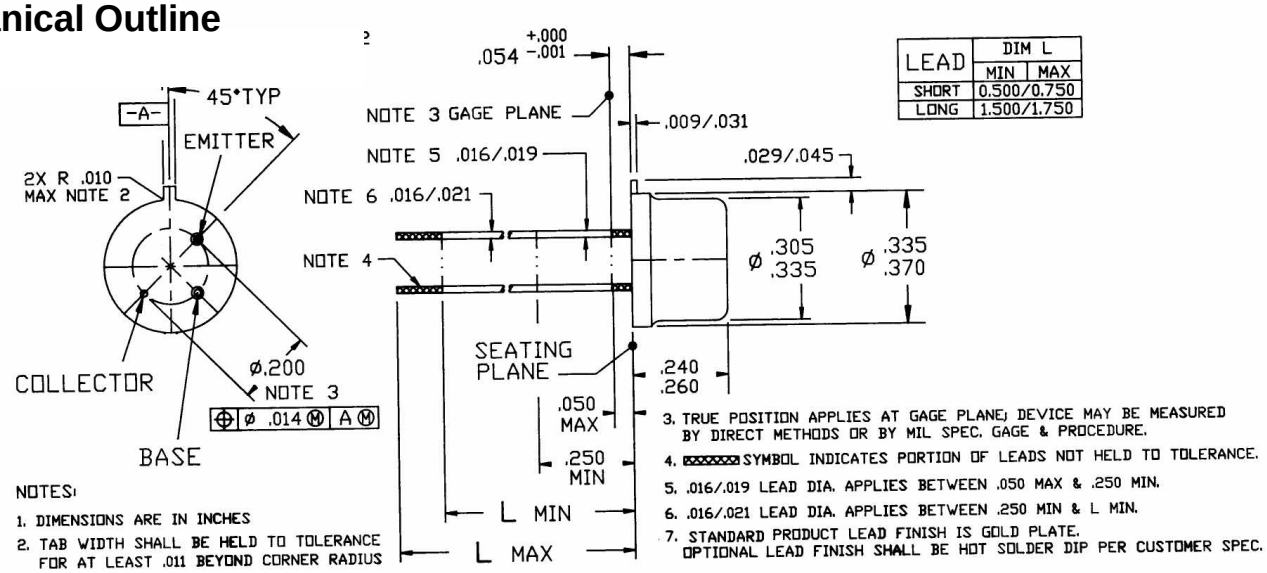
Features

- Meets MIL-S-19500/366
- Collector-Base Voltage 150V
- Collector Current: 500 mA
- Fast Switching 1265 nS

Maximum Ratings

RATING	SYMBOL	MAX.	UNIT
Collector-Emitter Voltage	V_{CEO}	150	Vdc
Collector-Base Voltage	V_{CBO}	150	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	Vdc
Collector Current—Continuous	I_C	300	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	 1.0 5.71	 Watt mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	 5.0 28.6	 Watts mW/°C
Operating Temperature Range	T_J	-55 to +200	°C
Storage Temperature Range	T_S	-55 to +200	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	175	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	35	°C/W

Mechanical Outline



FOR LONG LEAD ADD SUFFIX "L"
ie: 2N3501L

2N3501

Electrical Parameters (T_A @ 25°C unless otherwise specified)

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Off Characteristics					
Collector-Emitter Breakdown Voltage(1) (I_C = 10 mAdc, I_B = 0)	BV_{CEO}	150	--	--	Vdc
Collector-Base Breakdown Voltage (I_C = 10 µAdc, I_E = 0)	BV_{CBO}	150	--	--	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 µAdc, I_C = 0)	BV_{EBO}	6.0	--	--	Vdc
Collector Cutoff Current (V_{CB} = 75 Vdc, I_E = 0) (V_{CB} = 75 Vdc, I_E = 0, T_A = 150°C)	I_{CBO}	-- --	-- --	0.05 50	µAdc
Emitter Cutoff Current ($V_{EB(off)}$ = 4.0 Vdc, I_C = 0)	I_{EBO}	--	--	25	nAdc
D.C. Current Gain (I_C = 0.1 mAdc, V_{CE} = 10 Vdc) (I_C = 1.0 mAdc, V_{CE} = 10 Vdc) (I_C = 10 mAdc, V_{CE} = 10 Vdc)(1) (I_C = 150 mAdc, V_{CE} = 10 Vdc)(1) (I_c = 150 mAdc, $V_{CE = 10Vdc)}$ @ 55C (I_C = 300 mAdc, V_{CE} = 10 Vdc)(1)	h_{FE}	 35 50 75 100 45 20	 -- -- -- -- -- --	 -- -- -- 300 -- --	--
Collector-Emitter Saturation Voltage(1) (I_C = 10 mAdc, I_B = 1.0 mAdc) (I_C = 150 mAdc, I_B = 15 mAdc)	$V_{CE(Sat)}$	 --	 --	 0.2 0.4	Vdc
Base-Emitter Saturation Voltage(1) (I_C = 10 mAdc, I_B = 1.0 mAdc) (I_C = 150 mAdc, I_B = 15 mAdc)	$V_{BE(Sat)}$	 -- --	 -- --	 0.8 1.2	Vdc
Magnitude of common emitter small-signal short-circuit forward current transfer ratio (V_{CE} = 20 Vdc, I_C = 20 mAdc, f = 100 MHz)	$\lvert h_{fe} \rvert$	1.5	--	8 --	
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, 100kHz ≤ f ≤ 1MHz)	C_{OBO}	--	--	8.0	pf
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, 100kHz ≤ f ≤ 100MHz)	C_{IBO}	--	--	80	pf
Small -signal Current Gain (I_c = 10mAdc, V_{CE} = 10Vdc, f = 1.0 kHz)	h_{fe}	75	--	300	
Noise figure (V_{CE} = 10Vdc, I_C = 0.5mAdc; R_g = 1kohms, f = 1MHz)	NF			16	dB
Noise figure (V_{CE} = 10Vdc, I_C = 0.5mAdc; R_g = 1kohms, f = 1MHz)	NF			6	dB
Turn - on time (V_{EB} = 12Vdc, I_C = 150mAdc, I_{B1} = 15mAdc)	t_{on}			115	nS
Turn - off time (I_C = 150mAdc, I_{B1} = I_{B2} = -15mAdc)	t_{off}			1150	nS

(1) Pulse Test: Pulse Width ≤ 300 ms, Duty Cycle ≤ 2.0%