Microsemi
Watertown, MA
Progress Powered by Technology

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Watertown, MA 02172
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2N3251A

Features

- Meets MIL-S-19500/323
- Collector-Base Voltage 60V
- Collector Current: 200 mA
- Fast Switching 370 nS

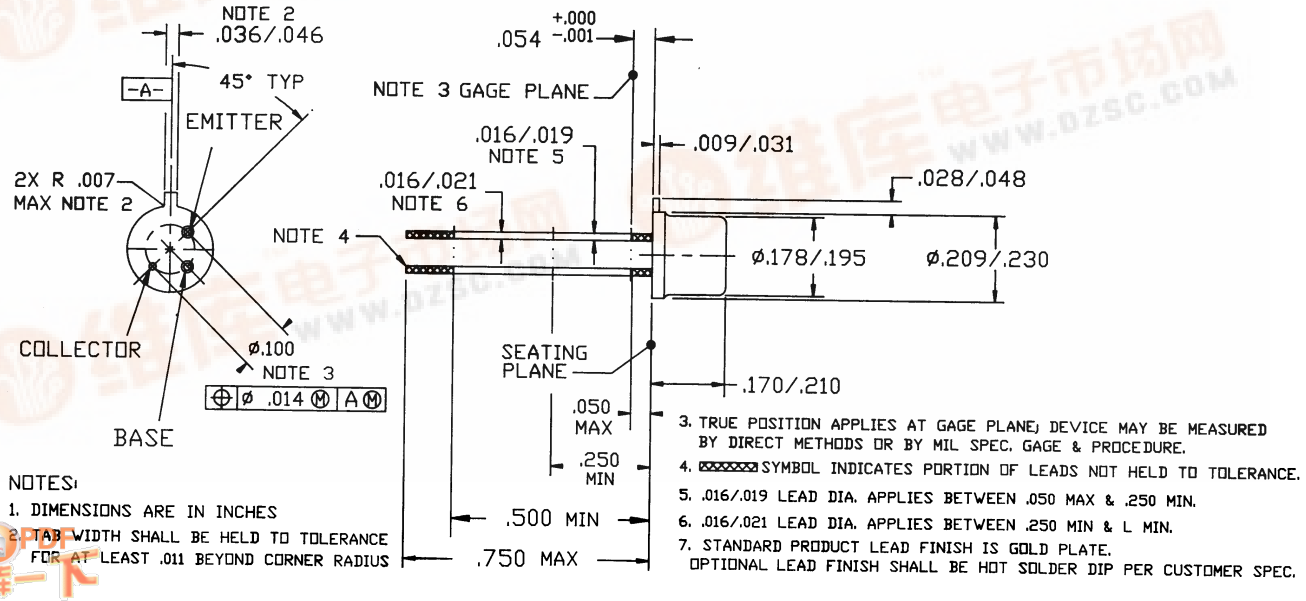
60 Volts
200 mAmps

PNP
BIPOLAR
TRANSISTOR

Maximum Ratings

RATING	SYMBOL	MAX.	UNIT
Collector-Emitter Voltage	V_{CEO}	-60	Vdc
Collector-Base Voltage	V_{CBO}	-60	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current	I_C	-200	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	 0.36 2.4	 Watts mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	 1.2 8	 Watts mW/°C
Operating Temperature Range	T_J	-65 to +175	°C
Storage Temperature Range	T_S	-65 to +175	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	146	°C/W

Mechanical Outline



NOTES:
1. DIMENSIONS ARE IN INCHES
2. TAB WIDTH SHALL BE HELD TO TOLERANCE FOR AT LEAST .011 BEYOND CORNER RADIUS
3. TRUE POSITION APPLIES AT GAGE PLANE; DEVICE MAY BE MEASURED BY DIRECT METHODS OR BY MIL SPEC. GAGE & PROCEDURE.
4. SYMBOL INDICATES PORTION OF LEADS NOT HELD TO TOLERANCE.
5. .016/.019 LEAD DIA. APPLIES BETWEEN .050 MAX & .250 MIN.
6. .016/.021 LEAD DIA. APPLIES BETWEEN .250 MIN & L MIN.
7. STANDARD PRODUCT LEAD FINISH IS GOLD PLATE. OPTIONAL LEAD FINISH SHALL BE HOT SOLDER DIP PER CUSTOMER SPEC.

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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)	BV_{CEO}	-60		--	Vdc
Collector-Base Breakdown Voltage (I_C = -10 µAdc)	BV_{CBO}	-60		--	Vdc
Emitter-Base Breakdown Voltage (I_E = -10 µAdc)	BV_{EBO}	-5.0		--	Vdc
Collector Cutoff Current (V_{CE} = -40 Vdc, V_{EB} = -3.0 Vdc) (at 150 C)	I_{CEX}	--		-20 -20	nA uA
Base Cutoff Current (V_{CE} = -40 Vdc, V_{EB} = -3.0 Vdc)	I_{BEX}	--		-50	nAdc
D.C. Current Gain (I_C = -0.1 mAdc, V_{CE} = -1.0 Vdc) (I_C = -1.0 mAdc, V_{CE} = -1.0 Vdc) (I_c = -1.0mAdc, V_{CE}= -1.0Vdc) @ -55C (I_C = -10 mAdc, V_{CE} = -1.0 Vdc)(1) (I_C = -50 mAdc, V_{CE} = -1.0 Vdc)(1)	h_{FE}	 80 90 40 100 30		 -- -- -- 300 --	--
Collector-Emitter Saturation Voltage(1) (I_C = -10 mAdc, I_B = -1.0 mAdc) (I_C = -50 mAdc, I_B = -5.0 mAdc)	$V_{CE(Sat)}$	 -- --		 -0.25 -0.5	Vdc
Base-Emitter Saturation Voltage(1) (I_C = -10 mAdc, I_B = -1.0 mAdc) (I_C = -50 mAdc, I_B = -5.0 mAdc)	$V_{BE(Sat)}$	 -0.6 --		 -0.9 -1.2	Vdc
Magnitude of common emitter small-signal short-circuit forward current transfer ratio (I_C = -10 mAdc, V_{CE} = -20 Vdc, f = 100MHz)	$\lvert h_{fe} \rvert$	3.0		9.0	
Output Capacitance (V_{CB} = -10 Vdc, I_E = 0, 100kHz ≤ f ≤ 1MHz)	C_{OBO}	 --		 6.0	pf
Input Capacitance (V_{EB} = -10 Vdc, I_C = 0, 100kHz ≤ f ≤ 1MHz)	C_{IBO}	 --		 8.0	pf
Input Impedance (I_C = -1.0 mA, V_{CE} = -10 V, f = 1.0 kHz)	h_{ie}	 2.0		 12	kohms
Voltage Feedback Ratio (I_C = -1.0 mA, V_{CE} = -10 V, f = 1.0 kHz)	h_{re}	 --		 20	x 10^{-4}
Small—Signal Current Gain (I_C = -1.0 mA, V_{CE} = -10 V, f = 1.0 kHz)	h_{fe}	 100		 400	--
Output Admittance (I_C = -1.0 mA, V_{CE} = -10 V, f = 1.0 kHz)	h_{oe}	 10		 60	µmhos
Collector Base Time Constant (I_C = -10 mA, V_{CE} = -20 V, f = 31.8 MHz)	$rb'C_C$	 5		 250	ps
Noise Figure (I_C = -100 µA, V_{CE} = -5.0 V, R_S = 1.0kΩ, f = 100 Hz)	NF	 --		 6.0	dB
Switching Speeds (V_{CC} = -3.0 Vdc, V_{BE} = +0.5 Vdc I_C = -10 mAdc, I_{B1} = -1.0 mA)	ton	--		70	ns
(V_{CC} = -10 mAdc, I_{B1} = I_{B1} = -1.0 mAdc) (V_{CC} = -3.0 V)	t_{off}	--		300	ns

(1) Pulse Test: PW = 300 µs, Duty Cycle = 2.0%