Watertown, MA
Microsemi
Progress Powered by Technology

580 Pleasant St.
Watertown, MA 02172
PH: (617) 926-040
FAX: (617) 924-1235

2N3700

Features

- Meets MIL-S-19500/391
- Collector-Base Voltage 140V
- Fast Switching 30 nS

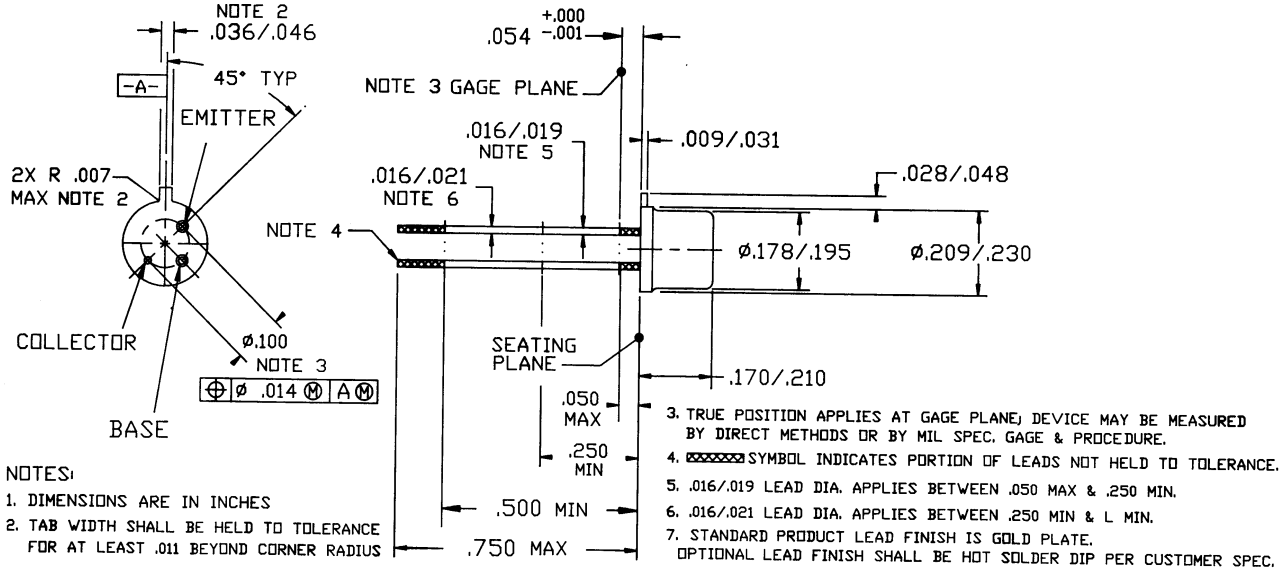
140 Volts
1 Amp

NPN
BIPOLAR
TRANSISTOR

Maximum Ratings

RATING	SYMBOL	MAX.	UNIT
Collector-Emitter Voltage	V_{CEO}	80	Vdc
Collector-Base Voltage	V_{CBO}	140	Vdc
Emitter-Base Voltage	V_{EBO}	7.0	Vdc
Total Device Dissipation @ TA = 25°C Derate above 25°C	P_D	 0.5 2.85	 Watts mW/°C
Total Device Dissipation @ TA = 25°C Derate above 25°C	P_D	 1.8 10.3	 Watts mW/°C
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_S	-55 to +175	°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	300	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83	°C/W

Mechanical Outline



Microsemi
Watertown, MA
Progress Powered by Technology

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

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Off Characteristics					
Collector-Emitter Breakdown Voltage (I_C = 30 mAdc, I_B = 0)	BV_{CEO}	80		--	Vdc
Collector-Base Breakdown Voltage (I_C = 100 µAdc, I_E = 0)	BV_{CEO}	140		--	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 µAdc, I_C = 0)	BV_{EBO}	7.0		--	Vdc
Collector Cutoff Current (V_{CB} = 90 Vdc, I_E = 0) (V_{CB} = 90 Vdc, I_E = 0, T_A = + 150°C	I_{CES}	 -- --		 0.01 10	µAdc
Emitter Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)	I_{EBO}	 --		 10	nAdc
D.C. Current Gain (I_C = 0.1 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} = 10 Vdc, T_C = -55°C)(1) (I_C = 500 mAdc, V_{CE} = 10 Vdc)(1) (I_C = 1.0 mAdc, V_{CE} = 10 Vdc)	h_{FE}	 50 90 100 40 50 15		 200 -- 300 -- 200 --	--
Collector-Emitter Saturation Voltage(1) (I_C = 150 mAdc, I_B = 15 mAdc) (I_C = 500 mAdc, I_B = 50 mAdc)	$V_{CE(Sat)}$	 -- --		 0.2 0.5	Vdc
Base-Emitter Saturation Voltage(1) (I_C = 150 mAdc, I_B 15 mAdc)	$V_{BE(Sat)}$	 --		 1.1	Vdc
Small-signal short circuit forward current transfer ratio (I_C = 50 mAdc, V_{CE} = 10 Vdc, f = 20 MHz)	$\lvert h_{fe} \rvert$	 5		 20	
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, 100kHz ≤ f ≤ 1MHz)	C_{OBO}	 --		 12	pf
Input Capacitance (V_{EB} = 0.5 Vdc, I_C = 0, 100kHz ≤ f ≤ 1MHz)	C_{IBO}	 --		 60	pf
Small—Signal Current Gain (I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 MHz)	h_{fe}	 80		 400	--
Collector Base Time Constant (I_E = 10 mAdc, V_{CB} = 10 Vdc, f = 79.8 MHz)	$rb'C_C$			 400	ps
Noise Figure (I_C = 100 uAdc, V_{CE} = 10 Vdc, Rg = 1.0 k ohms, f = 200Hz)	NF	 --		 4	dB

(1) Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 1.0%.