

2N4033

Features

- Meets MIL-S-19500/512
- Collector-Base Voltage 80V
- Collector Current: 1.0 A
- Fast Switching 250 nS

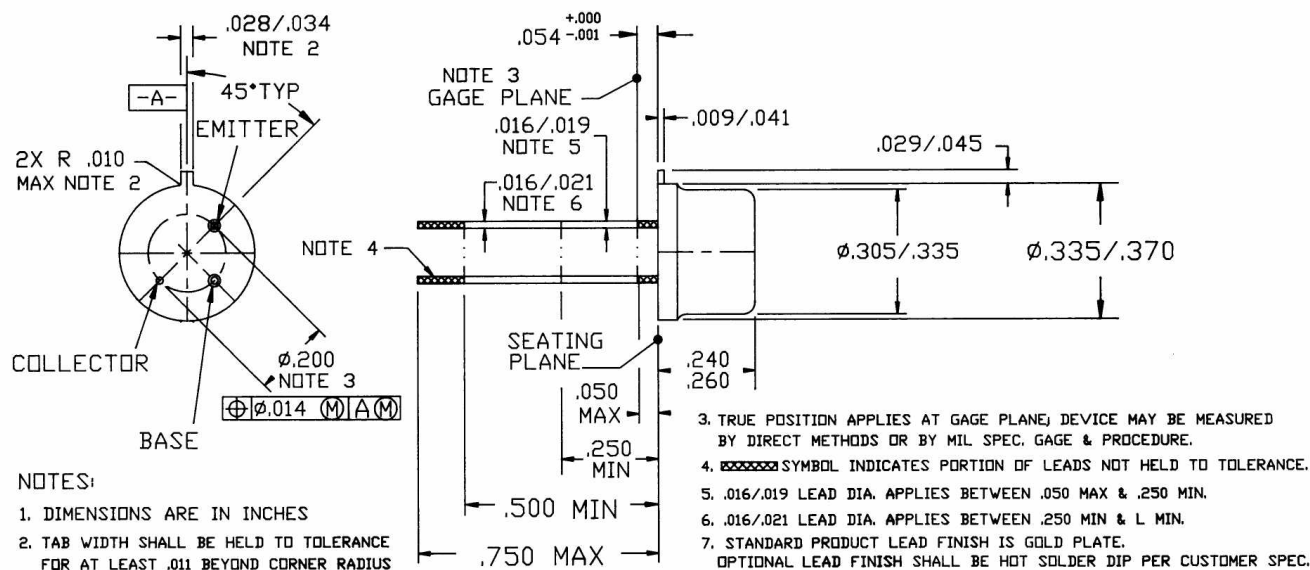
**80 Volts
1.0 Amps**

**PNP
BIPOLAR
TRANSISTOR**

Maximum Ratings

RATING	SYMBOL	MAX.	UNIT
Collector-Emitter Voltage	V_{CEO}	-80	Vdc
Collector-Base Voltage	V_{CBO}	-80	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current--Continuous	I_C	-1.0	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	0.8 4.56	W mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	4.0 22.8	W mW/ $^\circ\text{C}$
Operating Temperature Range	T_J	-55 to +200	$^\circ\text{C}$
Storage Temperature Range	T_s	-55 to +200	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	140	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	25	$^\circ\text{C/W}$

Mechanical Outline



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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 mA)	BV_{CEO}	-80		--	V
Collector-Base Breakdown Voltage (I _C = -10 μA)	BV_{CBO}	-80		--	V
Emitter-Base Breakdown Voltage (I _E = -10 uA)	BV_{EBO}	-5.0		--	V
Collector Cutoff Current (V _{CB} = -60 V) (V _{CB} = -60 V, T _A = 150°C)	I_{CBO}	-- --		-10 -25	nA uA
Emitter Cutoff Current (V _{EB} = -3.0 V)	I_{EBO}	--		-25	nA
D.C. Current Gain (I _C = -500 mA, V _{CE} = -5.0 V @ -55°C)(1) (I _C = -100 μA, V _{CE} = -5.0 V) (I _C = -100 mA, V _{CE} = -5.0 V)(1) (I _C = -500 mA, V _{CE} = -5.0 V)(1) (I _C = -1.0 A, V _{CE} = -5 V)(1)	h_{FE}	30 50 100 70 25		-- -- 300 -- --	--
Collector-Emitter Saturation Voltage(1) (I _C = -150 mA, I _B = -15 mA) (I _C = -500 mA, I _B = -50 mA) (I _C = -1.0A, I _B = -100mA)	V_{CE(Sat)}	-- -- --		-0.15 -0.50 1.0	V
Base-Emitter Saturation Voltage(1) (I _C = -150 mA, I _B = -15 mA)	V_{BE(Sat)}	--		-0.9	V
Base-Emitter On Voltage (I _C = -500 mA, V _{CE} = -0.5 V)(1)	V_{BE(Sat)}	--		-1.2	V
Output Capacitance (V _{CE} = -10 V, 100kHz ≤ f ≤ 1.0MHz)	C_{OBO}	--		20	pF
Input Capacitance (V _{CE} = -0.5 V, 100kHz ≤ f ≤ 1.0 MHz)	C_{IBo}	--		80	pF
Small Signal Current Gain (I _C = -50 mA, V _{CE} = -10 V, f = 100 MHz)	/h_{fe}/	1.5		6.0	
Switching Speeds					ns
Delay Time (I _C = 500mAdc; I _B = 50mAdc)	t_d	--		15	
Rise Time (I _C = 500mAdc; I _B = 50mAdc)	t_r	--		25	
Storage Time (I _C = 500mAdc; I _{B1} = I _{B2} = 50mAdc)	t_s	--		175	
Fall Time (I _C = 500mAdc; I _{B1} = I _{B2} = 50mAdc)	t_f	--		35	