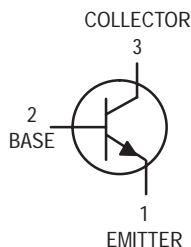


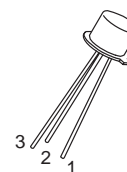
# Amplifier Transistor

## NPN Silicon



# 2N2484

Motorola Preferred Device



CASE 22-03, STYLE 1  
TO-18 (TO-206AA)

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	$V_{CEO}$	60	Vdc
Collector–Base Voltage	$V_{CBO}$	60	Vdc
Emitter–Base Voltage	$V_{EBO}$	6.0	Vdc
Collector Current — Continuous	$I_C$	50	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	360 2.06	mW mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.2 6.85	Watts mW/°C
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200	°C

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient <sup>(1)</sup>	$R_{\theta JA}$	485	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	146	°C/W

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage <sup>(2)</sup> ( $I_C = 10$ mAdc, $I_B = 0$ )	$V_{(BR)CEO}$	60	—	—	Vdc
Collector–Emitter Breakdown Voltage ( $I_C = 10$ $\mu$ Adc, $I_E = 0$ )	$V_{(BR)CBO}$	60	—	—	Vdc
Emitter–Base Breakdown Voltage ( $I_E = 10$ $\mu$ Adc, $I_C = 0$ )	$V_{(BR)EBO}$	6.0	—	—	Vdc
Collector Cutoff Current ( $V_{CB} = 45$ Vdc, $I_E = 0$ ) ( $V_{CB} = 45$ Vdc, $I_E = 0$ , $T_A = 150^\circ\text{C}$ )	$I_{CBO}$	—	—	10 10	nAdc $\mu$ Adc
Emitter Cutoff Current ( $V_{EB} = 5.0$ Vdc, $I_C = 0$ )	$I_{EBO}$	—	—	10	nAdc

- $R_{\theta JA}$  is measured with the device soldered into a typical printed circuit board.
- Pulse Test: Pulse Width  $\leq 300$   $\mu$ s, Duty Cycle  $\leq 2.0\%$ .

Preferred devices are Motorola recommended choices for future use and best overall value.

LIFETIME BUY

LAST SHIP 21/03/00  
LAST ORDER 23/09/99

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  unless otherwise noted) (Continued)

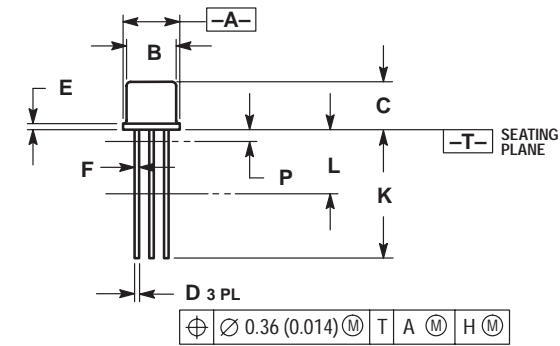
Characteristic	Symbol	Min	Typ	Max	Unit
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 1.0\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ ) ( $I_C = 10\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ ) ( $I_C = 10\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $T_A = -55^\circ\text{C}$ ) ( $I_C = 100\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ ) ( $I_C = 500\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ ) ( $I_C = 1.0\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ ) ( $I_C = 10\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ ) <sup>(2)</sup>	$h_{FE}$	30 100 20 175 200 250 —	190 250 40 275 300 350 400	— 500 — — — — 800	—
Collector–Emitter Saturation Voltage ( $I_C = 1.0\ \text{mAdc}$ , $I_B = 0.1\ \text{mAdc}$ )	$V_{CE(sat)}$	—	0.25	0.35	Vdc
Base–Emitter On Voltage ( $I_C = 0.1\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ )	$V_{BE(on)}$	0.5	0.65	0.70	Vdc

## SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product ( $I_C = 0.05\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $f = 20\ \text{MHz}$ ) ( $I_C = 0.5\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $f = 20\ \text{MHz}$ )	$f_T$	15 60	50 100	— —	MHz
Output Capacitance ( $V_{CB} = 5.0\ \text{Vdc}$ , $I_E = 0$ , $f = 1.0\ \text{MHz}$ )	$C_{obo}$	—	3.0	6.0	pF
Input Capacitance ( $V_{EB} = 0.5\ \text{Vdc}$ , $I_C = 0$ , $f = 1.0\ \text{MHz}$ )	$C_{ibo}$	—	4.0	6.0	pF
Input Impedance ( $I_C = 1.0\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $f = 1.0\ \text{kHz}$ )	$h_{ie}$	3.5	—	24	k $\Omega$
Voltage Feedback Ratio ( $I_C = 1.0\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $f = 1.0\ \text{kHz}$ )	$h_{re}$	—	—	800	$\times 10^{-6}$
Small–Signal Current Gain ( $I_C = 1.0\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $f = 1.0\ \text{kHz}$ )	$h_{fe}$	150	—	900	—
Output Admittance ( $I_C = 1.0\ \text{mAdc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $f = 1.0\ \text{kHz}$ )	$h_{oe}$	—	—	40	$\mu\text{mhos}$
Noise Figure ( $I_C = 10\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $R_S = 10\ \text{k}\Omega$ , $f = 100\ \text{Hz}$ , $\text{BW} = 20\ \text{Hz}$ ) ( $I_C = 10\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $R_S = 10\ \text{k}\Omega$ , $f = 1.0\ \text{kHz}$ , $\text{BW} = 200\ \text{Hz}$ ) ( $I_C = 10\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $R_S = 10\ \text{k}\Omega$ , $f = 10\ \text{kHz}$ , $\text{BW} = 2.0\ \text{kHz}$ ) ( $I_C = 10\ \mu\text{Adc}$ , $V_{CE} = 5.0\ \text{Vdc}$ , $R_S = 10\ \text{k}\Omega$ , $f = 1.0\ \text{kHz}$ )	NF	— — — —	8.0 — — —	10 3.0 2.0 3.0	dB

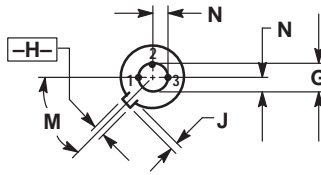
2. Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

PACKAGE DIMENSIONS



STYLE 1:  
 PIN 1. EMITTER  
 2. BASE  
 3. COLLECTOR

$\oplus \text{ } \varnothing 0.36 (0.014) \text{ } \textcircled{M} \text{ } T \text{ } A \text{ } \textcircled{M} \text{ } H \text{ } \textcircled{M}$



CASE 22-03  
 (TO-206AA)  
 ISSUE R

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION J MEASURED FROM DIMENSION A MAXIMUM.
4. DIMENSION F APPLIES BETWEEN DIMENSION P AND L. DIMENSION D APPLIES BETWEEN DIMENSION L AND K MINIMUM. LEAD DIAMETER IS UNCONTROLLED IN DIMENSION P AND BEYOND DIMENSION K MINIMUM.
5. DIMENSION E INCLUDES THE TAB THICKNESS. (TAB THICKNESS IS 0.51(0.002) MAXIMUM).


DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.209	0.230	5.31	5.84
B	0.178	0.195	4.52	4.95
C	0.170	0.210	4.32	5.33
D	0.016	0.021	0.406	0.533
E	---	0.030	---	0.762
F	0.016	0.019	0.406	0.483
G	0.100 BSC		2.54 BSC	
H	0.036	0.046	0.914	1.17
J	0.028	0.048	0.711	1.22
K	0.500	---	12.70	---
L	0.250	---	6.35	---
M	45° BSC		45° BSC	
N	0.050 BSC		1.27 BSC	
P	---	0.050	---	1.27

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LIFETIME BUY

LAST ORDER 23/09/99 LAST SHIP 21/03/00

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