

# Germanium PNP Transistor

## **MA201**

AF High Voltage Transistor

105V / 200mA

# DATASHEET

OEM –Motorola

Source: Motorola Databook 1972

**MA200** thru **MA206** (GERMANIUM)**CASE 31(1)**  
(TO-5)

All leads isolated from case

**MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Rating	Symbol	MA200 MA202	MA201 MA203	MA204	MA205	MA206	Unit
Collector-Base Voltage	$V_{CB}$	105	105	90	75	60	Vdc
Collector-Emitter Voltage	$V_{CE}$	105	105	90	75	60	Vdc
Emitter-Base Voltage	$V_{EB}$	10	20	20	20	10	Vdc
Collector Current	$I_C$	200					mAdc
Emitter Current	$I_E$	200					mAdc
Junction and Storage Temperature Range	$T_J, T_{stg}$	-65 to +100					$^\circ\text{C}$
Thermal Resistance	$\theta_{JA}$	0.5					$^\circ\text{C}/\text{mW}$
Collector Dissipation at $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	150 2.0					mW mW/ $^\circ\text{C}$

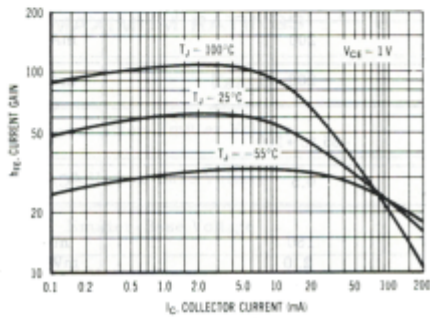
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Collector-Base Cutoff Current ( $V_{CB} = 105\text{ V}, I_E = 0$ ) MA 200 thru MA203	$I_{CBO}$	—	12.0	50	$\mu\text{A}$
( $V_{CB} = 90\text{ V}, I_E = 0$ ) MA204		—	—	—	
( $V_{CB} = 75\text{ V}, I_E = 0$ ) MA205		—	—	—	
( $V_{CB} = 60\text{ V}, I_E = 0$ ) MA206		—	—	—	
Collector-Base Cutoff Current ( $V_{CB} = 2.5\text{ V}, I_E = 0$ )	$I_{CBO}$	—	5.0	14	$\mu\text{A}$
Emitter-Base Cutoff Current ( $V_{EB} = 10\text{ V}, I_C = 0$ ) MA200, MA202, MA206	$I_{EBO}$	—	3.0	50	$\mu\text{A}$
( $V_{EB} = 20\text{ V}, I_C = 0$ ) MA201, MA203, MA204, MA205		—	3.0	50	
Collector-Emitter Saturation Voltage ( $I_C = 5\text{ mAdc}, I_B = 0.25\text{ mAdc}$ )	$V_{CE(sat)}$	—	0.11	0.35	Vdc
Base-Emitter Saturation Voltage ( $I_C = 5\text{ mAdc}, I_B = 0.25\text{ mAdc}$ )	$V_{BE(sat)}$	—	0.22	0.40	Vdc
DC Current Gain ( $I_C = 5\text{ mAdc}, V_{CE} = 0.35\text{ Vdc}$ ) MA200, MA201, MA204, MA205, MA206 MA202, MA203	$h_{FE}$	20 40	— —	— —	—
DC Collector-Emitter Punch-Through Voltage ( $V_{CB}$ necessary to obtain $V_{EB}$ of -1 V max, using instrument with $Z_{in} > 11$ megohm to measure $V_{BE}$ ) MA200, MA201, MA202, MA203 MA204 MA205 MA206	$V_{PT}$	105 90 75 60	— — — —	— — — —	Vdc
Small-Signal Short-Circuit Forward Current Transfer Ratio Cutoff Frequency ( $V_{CB} = 6\text{ Vdc}, I_E = 1\text{ mAdc}$ )	$f_{\alpha b}$	—	1.0	—	MHz

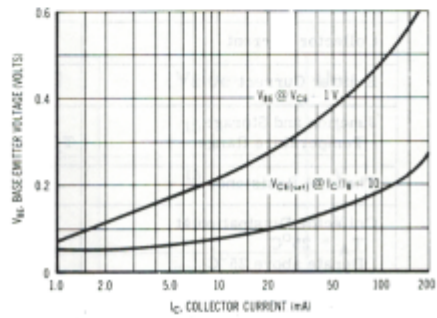
**MA200 thru MA206 (continued)**

**DC CHARACTERISTICS**  
( $T_J = 25^\circ\text{C}$  unless otherwise noted)

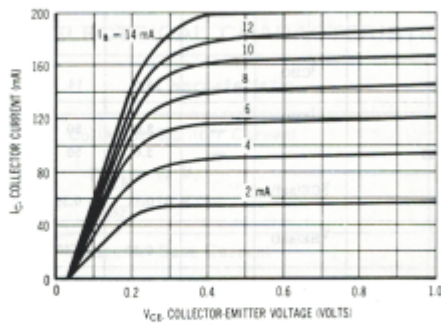
**CURRENT GAIN**



**"ON" VOLTAGES**



**COLLECTOR SATURATION REGION**



**COLLECTOR HIGH VOLTAGE REGION**

