

# 2N3107 THROUGH 2N3110

NPN SILICON AF MEDIUM POWER AMPLIFIERS & SWITCHES

THE 2N3107 THROUGH 2N3110 ARE NPN SILICON PLANAR EPITAXIAL TRANSISTORS FOR AF MEDIUM POWER DRIVERS AND OUTPUTS, AS WELL AS FOR SWITCHING APPLICATIONS UP TO 1 AMPERE. THEY ARE COMPLEMENTARY TO THE PNP 2N4032, 2N4030.

CASE TO-39



C E B

## ABSOLUTE MAXIMUM RATINGS

		2N3107 2N3108	2N3109 2N3110
Collector-Base Voltage	V <sub>CBO</sub>	100V	80V
Collector-Emitter Voltage	V <sub>CEO</sub>	60V	40V
Emitter-Base Voltage	V <sub>EBO</sub>	7V	7V
Collector Current	I <sub>C</sub>		1A
Total Power Dissipation (T <sub>C</sub> ≤ 25°C)	P <sub>tot</sub>		5W
(T <sub>A</sub> ≤ 25°C)			800mW
Operating Junction & Storage Temperature	T <sub>j</sub> , T <sub>stg</sub>		-65 to 200°C

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	MAX	UNIT	TEST CONDITIONS
Collector-Base Breakdown Voltage 2N3107, 2N3108 2N3109, 2N3110	BV <sub>CBO</sub>	100 80		V V	I <sub>C</sub> =0.1mA I <sub>E</sub> =0
Collector-Emitter Breakdown Voltage 2N3107, 2N3108 2N3109, 2N3110	LV <sub>CEO</sub> *	60 40		V V	I <sub>C</sub> =30mA I <sub>B</sub> =0
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	7		V	I <sub>E</sub> =0.1mA I <sub>C</sub> =0
Collector Cutoff Current	I <sub>CES</sub>		10	nA	V <sub>CE</sub> =60V V <sub>BE</sub> =0
Collector Cutoff Current (T <sub>A</sub> =150°C)	I <sub>CBO</sub>		10	μA	V <sub>CB</sub> =60V I <sub>E</sub> =0
Emitter Cutoff Current	I <sub>EBO</sub>		10	nA	V <sub>EB</sub> =5V I <sub>C</sub> =0
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub> *		0.25 1.0	V V	I <sub>C</sub> =150mA I <sub>B</sub> =15mA I <sub>C</sub> =1A I <sub>B</sub> =0.1A
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub> *		1.1 2.0	V V	I <sub>C</sub> =150mA I <sub>B</sub> =15mA I <sub>C</sub> =1A I <sub>B</sub> =0.1A
D.C. Current Gain 2N3107, 2N3109 only	h <sub>FE</sub> *		35 100 300 40		I <sub>C</sub> =0.1mA V <sub>CE</sub> =10V I <sub>C</sub> =150mA V <sub>CE</sub> =1V I <sub>C</sub> =500mA V <sub>CE</sub> =10V

**MICRO ELECTRONICS LTD.**

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PARAMETER	SYMBOL	MIN	MAX	UNIT	TEST CONDITIONS
2N3107, 2N3109 only	HFE *	30			$I_C=150\text{mA}$ $V_{CE}=10\text{V}$ $T_A=-55^\circ\text{C}$
D.C. Current Gain	HFE *	20	120		$I_C=0.1\text{mA}$ $V_{CE}=10\text{V}$ $I_C=150\text{mA}$ $V_{CE}=1\text{V}$ $I_C=500\text{mA}$ $V_{CE}=10\text{V}$ $I_C=150\text{mA}$ $V_{CE}=10\text{V}$ $T_A=-55^\circ\text{C}$
2N3108, 2N3110 only		25			
		15			
Current Gain-Bandwidth Product	$f_T$	70		MHz	$I_C=50\text{mA}$ $V_{CE}=10\text{V}$
2N3107, 2N3109		60		MHz	
2N3108, 2N3110					
Collector-Base Capacitance	Cob		20	pF	$V_{CB}=10\text{V}$ $I_E=0$ $f=1\text{MHz}$
2N3107, 2N3108			25	pF	
2N3109, 2N3110					
Emitter-Base Capacitance	Cib		80	pF	$V_{EB}=0.5\text{V}$ $I_C=0$ $f=1\text{MHz}$
Noise Figure (f=1kHz)	NF		7	dB	$I_C=30\mu\text{A}$ $V_{CE}=10\text{V}$ $R_G=1\text{K}\Omega$
Turn-On Time	$t_{on}$		200	nS	$I_C=150\text{mA}$ $I_{B1}=7.5\text{mA}$
Turn-Off Time	$t_{off}$		1000	nS	$I_C=150\text{mA}$ $I_{B1}=-I_{B2}=7.5\text{mA}$
2N3107, 2N3109			600	nS	
2N3108, 2N3110					

\* Pulse Test : Pulse Width=0.3mS, Duty Cycle=1%

