

# 2N2102 · 2N4036

COMPLEMENTARY SILICON AF MEDIUM POWER AMPLIFIERS & SWITCHES

CASE TO-39

THE 2N2102(NPN) AND 2N4036(PNP) ARE COMPLEMENTARY SILICON PLANAR EPITAXIAL TRANSISTORS FOR USE IN AF MEDIUM POWER DRIVERS AND OUTPUTS, AS WELL AS FOR SWITCHING APPLICATIONS.



**ABSOLUTE MAXIMUM RATINGS**

For p-n-p devices, voltage and current values are negative.

**2N2102(NPN)      2N4036(PNP)**

Collector-Base Voltage	VCBO	120V	90V
Collector-Emitter Voltage	VCEO	65V	65V
Emitter-Base Voltage	VEBO	7V	7V
Collector Current	IC	.1A	
Total Power Dissipation (T <sub>C</sub> ≤ 25°C)	P <sub>tot</sub>	7W	
(T <sub>A</sub> ≤ 25°C)		1W	
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	2N2102		2N4036		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Collector-Base Breakdown Voltage	BV <sub>CB0</sub>	120		90		V	I <sub>C</sub> =0.1mA I <sub>E</sub> =0
Collector-Emitter Breakdown Voltage	LV <sub>CE</sub> R *	80				V	I <sub>C</sub> =100mA R <sub>BE</sub> =10Ω
Collector-Emitter Breakdown Voltage	LV <sub>CE</sub> V *			85		V	I <sub>C</sub> =100mA V <sub>EB</sub> =1.5V
Collector-Emitter Breakdown Voltage	LV <sub>CE</sub> O *	65		65		V	I <sub>C</sub> =100mA I <sub>B</sub> =0
Emitter-Base Breakdown Voltage	BV <sub>EB0</sub>	7		7		V	I <sub>E</sub> =0.1mA I <sub>C</sub> =0
Collector Cutoff Current	I <sub>CB0</sub>		2			nA	V <sub>CB</sub> =60V I <sub>E</sub> =0
					100	nA	V <sub>CB</sub> =90V I <sub>E</sub> =0
Collector Cutoff Current	I <sub>CE</sub> V				100	μA	V <sub>CE</sub> =30V V <sub>EB</sub> =1.5V T <sub>A</sub> =150°C
Emitter Cutoff Current	I <sub>EB0</sub>		5		20	nA	V <sub>EB</sub> =5V I <sub>C</sub> =0
D.C. Current Gain	H <sub>FE</sub> *	10					I <sub>C</sub> =0.01mA V <sub>CE</sub> =10V
		20		20			I <sub>C</sub> =0.1mA V <sub>CE</sub> =10V
		40	120	40	140		I <sub>C</sub> =150mA V <sub>CE</sub> =10V
		25		20			I <sub>C</sub> =500mA V <sub>CE</sub> =10V
		10					I <sub>C</sub> =1A V <sub>CE</sub> =10V
		35					I <sub>C</sub> =10mA V <sub>CE</sub> =10V
				20	200		I <sub>C</sub> =150mA V <sub>CE</sub> =2V

**MICRO ELECTRONICS LTD.**

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PARAMETER	SYMBOL	2N2102		2N4036		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$ *		0.5	0.65		V	$I_C=150mA$ $I_B=15mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$ *		1.1	1.4		V	$I_C=150mA$ $I_B=15mA$
Current Gain-Bandwidth Product	$f_T$	60		60		MHz	$I_C=50mA$ $V_{CE}=10V$
Collector-Base Capacitance	$C_{ob}$		10	30		pF	$V_{CB}=10V$ $I_E=0$ $f=1MHz$
Emitter-Base Capacitance	$C_{ib}$		80	90		pF	$V_{EB}=0.5V$ $I_C=0$ $f=1MHz$
Noise Figure	NF		6			dB	$I_C=0.3mA$ $V_{CE}=10V$ $f=1kHz$ $R_G=510\Omega$
Turn-On Time	$t_{on}$			110		nS	$I_C=150mA$ $I_{B1}=15mA$ $V_{cc}=30V$
Turn-Off Time	$t_{off}$			700		nS	$I_C=150mA$ $I_{B1}=-I_{B2}=15mA$ $V_{cc}=30V$

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

