

2N3019

2N3020

NPN SILICON AF MEDIUM POWER AMPLIFIERS & SWITCHES

THE 2N3019, 2N3020 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 2N4033, 2N4031.

CASE TO-39



C E B

ABSOLUTE MAXIMUM RATINGS

Collector-Base Voltage

Collector-Emitter Voltage

Emitter-Base Voltage

Collector Current

Total Power Dissipation ($T_C \leq 25^\circ\text{C}$)

($T_A \leq 25^\circ\text{C}$)

Operating Junction & Storage Temperature

V_{CB0}

140V

V_{CE0}

80V

V_{EB0}

7V

I_C

1A

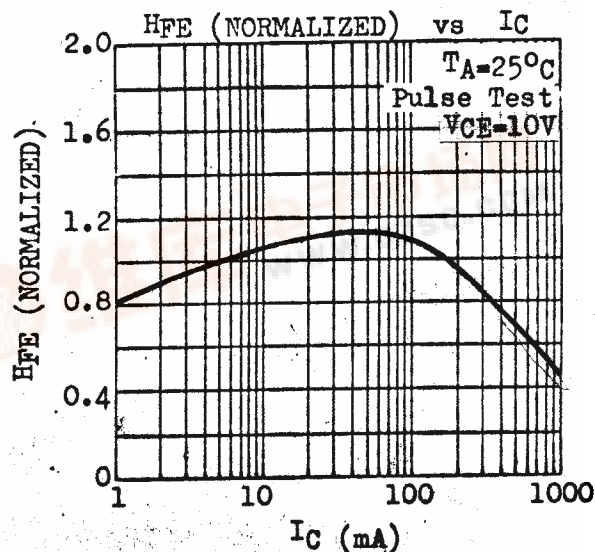
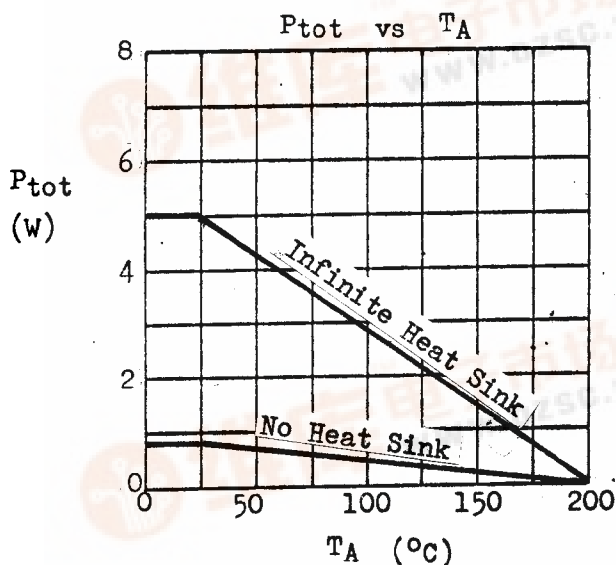
P_{tot}

5W

800mW

T_j, T_{stg}

-65 to 200°C



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

PARAMETER	SYMBOL	2N3019		2N3020		UNIT	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Collector-Base Breakdown Voltage	BV_{CBO}	140		140		V	$I_C=0.1\text{mA}$ $I_E=0$
Collector-Emitter Breakdown Voltage	$LV_{CEO} *$	80		80		V	$I_C=30\text{mA}$ $I_B=0$
Emitter-Base Breakdown Voltage	BV_{EBO}	7		7		V	$I_E=0.1\text{mA}$ $I_C=0$
Collector Cutoff Current	I_{CBO}		10		10	nA	$V_{CB}=90\text{V}$ $I_E=0$
			10		10	μA	$V_{CB}=90\text{V}$ $I_E=0$ $T_A=150^{\circ}\text{C}$
Emitter Cutoff Current	I_{EBO}		10		10	nA	$V_{EB}=5\text{V}$ $I_C=0$
Collector-Emitter Saturation Voltage	$V_{CE(sat)} *$		0.2		0.2	V	$I_C=150\text{mA}$ $I_B=15\text{mA}$
			0.5		0.5	V	$I_C=500\text{mA}$ $I_B=50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)} *$		1.1		1.1	V	$I_C=150\text{mA}$ $I_B=15\text{mA}$
D.C. Current Gain	$H_{FE} *$	50		30	100		$I_C=0.1\text{mA}$ $V_{CE}=10\text{V}$
		90		40	120		$I_C=10\text{mA}$ $V_{CE}=10\text{V}$
		100	300	40	120		$I_C=150\text{mA}$ $V_{CE}=10\text{V}$
		50		30	100		$I_C=500\text{mA}$ $V_{CE}=10\text{V}$
		15		15			$I_C=1\text{A}$ $V_{CE}=10\text{V}$
		40					$I_C=150\text{mA}$ $V_{CE}=10\text{V}$ $T_A=-55^{\circ}\text{C}$
Current Gain-Bandwidth Product	f_T	100		80		MHz	$I_C=50\text{mA}$ $V_{CE}=10\text{V}$
Collector-Base Capacitance	C_{ob}		12		12	pF	$V_{CB}=10\text{V}$ $I_E=0$
Emitter-Base Capacitance	C_{ib}		60		60	pF	$V_{EB}=0.5\text{V}$ $I_C=0$ $f=1\text{MHz}$
Collector-Base Time Constant	$C_{crbb'}$		400		400	pS	$I_C=10\text{mA}$ $V_{CE}=10\text{V}$ $f=4\text{MHz}$
Noise Figure	NF		4			dB	$I_C=0.1\text{mA}$ $V_{CE}=10\text{V}$ $R_G=1\text{k}\Omega$ $f=1\text{kHz}$
Small Signal Current Gain ($f=1\text{kHz}$)	h_{fe}	80	400	30	200		$I_C=1\text{mA}$ $V_{CE}=5\text{V}$

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

