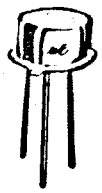
2N3019 2N3020

NPN SILICON AF MEDIUM POWER AMPLIFIERS & SWITCHES

MICROELECTRONICS

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.

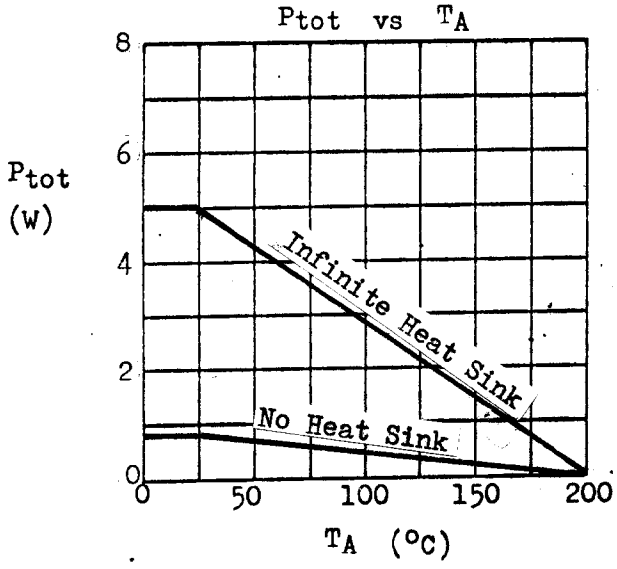
CASE TO-39

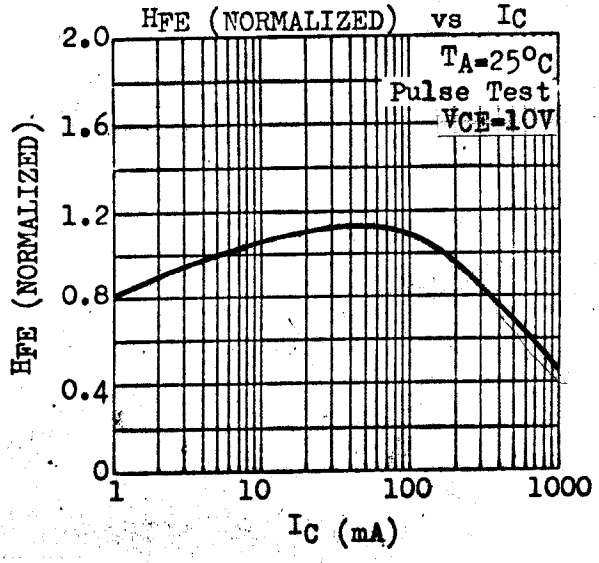


C E B

ABSOLUTE MAXIMUM RATINGS

Collector-Base Voltage	V_{CBO}	140V
Collector-Emitter Voltage	V_{CEO}	80V
Emitter-Base Voltage	V_{EBO}	7V
Collector Current	I_C	1A
Total Power Dissipation ($T_C \leq 25^oC$)	P_{tot}	5W
($T_A \leq 25^oC$)		800mW
Operating Junction & Storage Temperature	T_j, Tstg	-65 to 200°C





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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

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

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