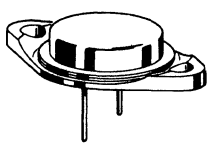
2N3297 (SILICON)



CASE 1
(TO-3)
Collector connected to case

NPN silicon annular transistor for linear amplifier applications for 2 to 100 MHz.

MAXIMUM RATINGS *

Rating	Symbol	Value	Unit
Collector-Base Voltage	V_{CB}	60	Vdc
Collector-Emitter Voltage	V_{CES}	60	Vdc
Emitter-Base Voltage	V_{EB}	3.0	Vdc
Collector Current (Continuous)	I_C	1.5	Adc
Base-Current (Continuous)	I_B	500	mAdc
Power Input (PEP)	P_{in}	5.0	Watts (PEP)
Power Output (PEP)	P_{out}	20.0	Watts (PEP)
Total Device Dissipation @ 25°C Case Temperature Derating Factor above 25°C	P_D	 25.0 167	 Watts mW/°C
Junction Temperature	T_J	175	°C
Storage Temperature Range	T_{stg}	-65 to +175	°C

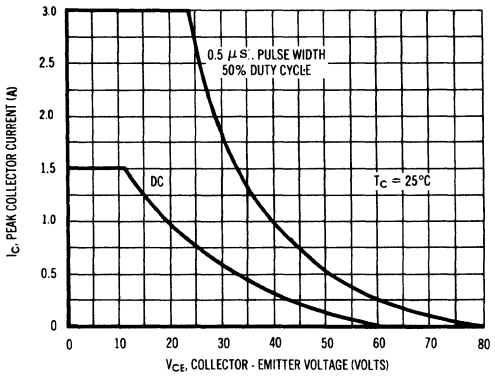
* The maximum ratings as given for dc conditions can be exceeded on a pulse basis. See electrical characteristics

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

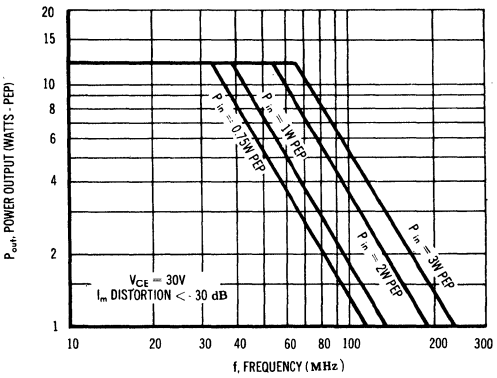
Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Collector-Emitter Sustain Voltage	$V_{CES(sus)}$ [1]	I_C = 0.250A, R_{BE} = 0	80	100	--	Volts
Collector Emitter-Open Base Sustain Voltage	$V_{CEO(sus)}$ [1]	I_C = 0.250A, I_B = 0	40	--	--	Volts
Collector-Emitter Current	I_{CES}	V_{CE} = 60Vdc, V_{BE} = 0	--	--	0.5	mAdc
		V_{CE} = 50Vdc, V_{BE} = 0, T_C = +175°C	--	--	1.0	
Collector-Cutoff Current	I_{CBO}	V_{CB} = 50Vdc, I_E = 0	--	--	1.0	μAdc
Emitter-Cutoff Current	I_{EBO}	V_{EB} = 3Vdc, I_C = 0	--	--	100	μAdc
DC Current Gain	h_{FE}	I_C = 400mAdc, V_{CE} = 2Vdc	6.0	--	60	--
		I_C = 1Adc, V_{CE} = 2Vdc	2.5	--	--	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 1Adc, I_B = 500mAdc	--	--	0.5	Vdc
Emitter-Base Saturation Voltage	$V_{BE(sat)}$	I_C = 1Adc, I_B = 500mAdc	--	--	2.0	Vdc
AC Current Gain	$\lvert h_{fe} \rvert$	V_{CE} = 2Vdc, I_C = 400mAdc, f = 50MHz	2.0	--	--	--
Collector Output Capacitance	C_{ob}	V_{CB} = 25Vdc, I_E = 0, f = 100kHz	--	--	60	pF
Power Input (PEP) Note 2	P_{in}	P_{out} = 12 Watts PEP (6.0W rms) V_{CE} = 30 Volts, f = 30MHz $I_{C(max)}$ = 0.50 Amp	--	--	1.2	Watts PEP
Power Gain	G_e		10	13	--	dB
Intermodulation Distortion Ratio	I_m		30	33	--	dB
Efficiency	η		40	45	--	%

[1] Pulse Test: Pulse Width = 100μs, Duty Cycle = 2 %
Note 2. PEP. Peak Envelope Power

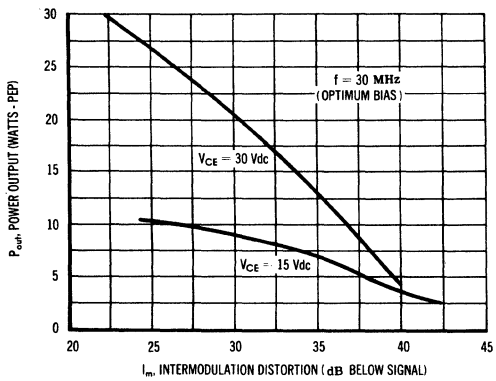
SAFE OPERATING AREA



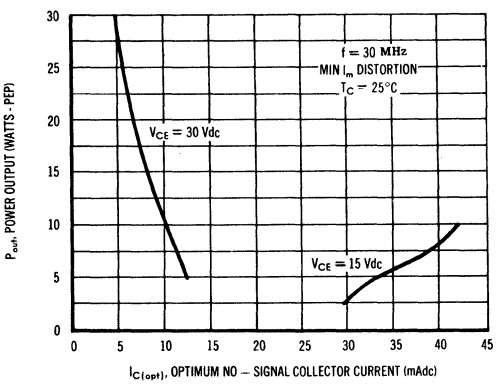
POWER OUTPUT versus FREQUENCY



MAXIMUM POWER OUTPUT FOR GIVEN I_m DISTORTION LEVEL

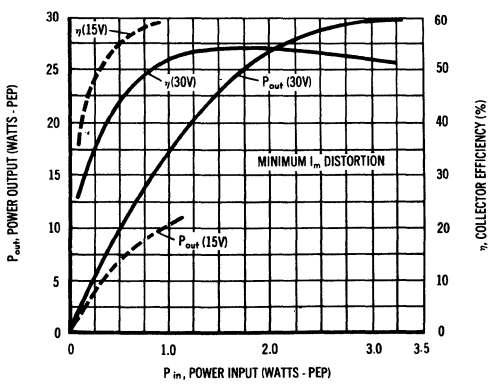


POWER OUTPUT versus OPTIMUM BIAS



OUTPUT CHARACTERISTICS versus POWER INPUT

30 MHz



4 MHz