

2N4440

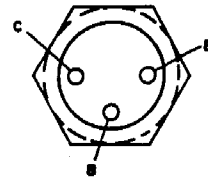
Silicon N-P-N Overlay Transistor

For Class A, B, or C VHF/UHF
Military and Industrial Communications Equipment

Features:

- 5 W output min. at 400 MHz
- 6.5 W output typ. at 225 MHz

TERMINAL DESIGNATIONS



TO-60

MAXIMUM RATINGS, Absolute-Maximum Values:

*COLLECTOR-TO-BASE VOLTAGE	V _{CB0}	65	V
*COLLECTOR-TO-EMITTER VOLTAGE:			
With base-emitter junction reverse-biased (V _{BE}) = -1.5 V	V _{CEV}	65	V
With base open	V _{CEO}	40	V
*EMITTER-TO-BASE VOLTAGE	V _{EBO}	4	V
*CONTINUOUS COLLECTOR CURRENT	I _C	1.5	A
*CONTINUOUS BASE CURRENT	I _B	0.2	A
*TRANSISTOR DISSIPATION ^a :	P _T	11.6	W
At case temperatures up to 25°C		See Fig. 2	
At case temperatures above 25°C			
*TEMPERATURE RANGE:		-65 to 200	°C
Storage and operating (junction)			
LEAD TEMPERATURE (During soldering):		230	°C
At distances > 1/32 in. (0.8 mm) from insulating wafer for 10 s max			

ELECTRICAL CHARACTERISTICS, At Case Temperature (T_C) = 25°C unless otherwise specified

CHARACTERISTIC	SYMBOL	TEST CONDITIONS						LIMITS		UNITS
		VOLTAGE V _{dc}			CURRENT mA _{dc}			MIN.	MAX.	
		V _{CB}	V _{CE}	V _{BE}	I _E	I _B	I _C			
Collector Cutoff Current: With base open	I _{CEO}	30			0			-	0.1	mA
With base-emitter junction reverse-biased	I _{CEV}	65	-1.5					-	1	
At T _C = 200°C	I _{CEV}	30	-1.5					-	5	
Emitter Cutoff Current	I _{EBO}			-4				-	0.1	mA
Collector-to-Base Breakdown Voltage	V _{(BR)CB0}				0	0.1	65	-		V
Collector-to-Emitter Breakdown Voltage: With base-emitter junction reverse-biased	V _{(BR)CEV}			-1.5		0 to 200 ^b	65 ^a	-		V
Emitter-to-Base Breakdown Voltage	V _{(BR)EBO}				0.1	0	4	-		V
Collector-to-Emitter Sustaining Voltage: With base open	V _{CEO(sus)}				0	200 ^b	40	-		V
With external base-to-emitter resistance (R _{BE} = 100Ω)	V _{CER(sus)}					200 ^b	40	-		
DC Forward Current Transfer Ratio	h _{FE}		5				1350	3	-	
			5				125	10	200	
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}				50	250	-	1		V
Magnitude of Common-Emitter, Small-Signal, Short-Circuit Forward Current Transfer Ratio (f = 100 MHz)	h _{fe}		28				125	4 ^a	-	5 (typ.)
Collector-to-Base Capacitance (f = 1 MHz)	C _{cb}	28					125	-	12	pF
Available Amplifier Signal Input Power (P ₀ = 5 W, Z _G = 50Ω, f = 400 MHz)	P _i							-	1.7	W
Collector Circuit Efficiency (P ₀ = 5 W, Z _G = 50Ω, f = 400 MHz)	η _C							45	-	%
Base Spreading Resistance Measured at 200 MHz	r _{bb'}		28				250	10 (typ.)		Ω
Collector-to-Case Capacitance	C _s							-	5	pF
Thermal Resistance (Junction-to-Case)	R _{θJC}							-	15	°C/W

^a Pulsed through an inductor (25 mH); duty factor = 50%

^b Secondary breakdown considerations limit maximum dc operating

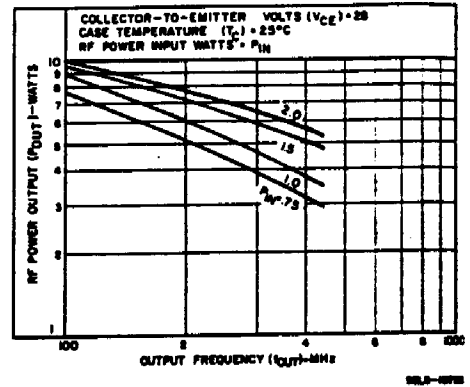


Fig. 1 - Typical power output as a function of frequency.

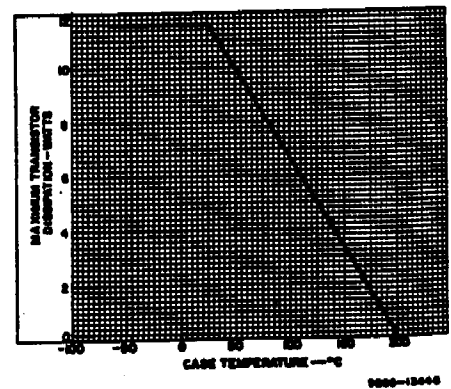


Fig. 2 - Dissipation derating chart.

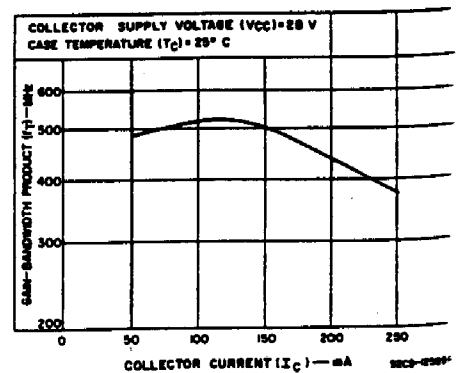


Fig. 3 - Typical gain-bandwidth product