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RF POWER TRANSISTORS

2N4440

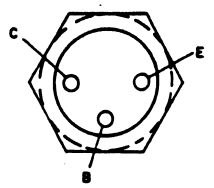
Silicon N-P-N Overlay Transistor

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



92CS-27481

JEDEC TO-60

MAXIMUM RATINGS, *Absolute-Maximum Values:*

*COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	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[▲]:	P_T		
At case temperatures up to 25°C		11.6	W
At case temperatures above 25°C		See Fig. 2	
*TEMPERATURE RANGE:			
Storage and operating (junction)		-65 to 200	°C
LEAD TEMPERATURE (During soldering):			
At distances ≥ 1/32 in. (0.8 mm) from insulating wafer for 10 s max		230	°C

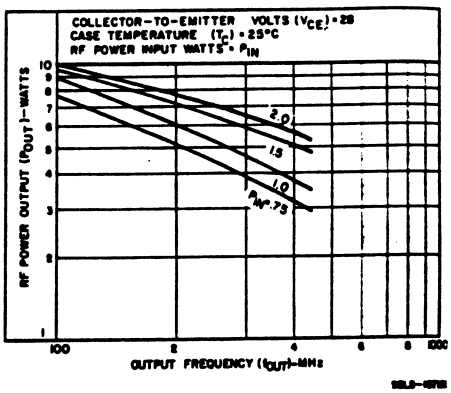


Fig. 1 - Typical power output as a function of frequency.

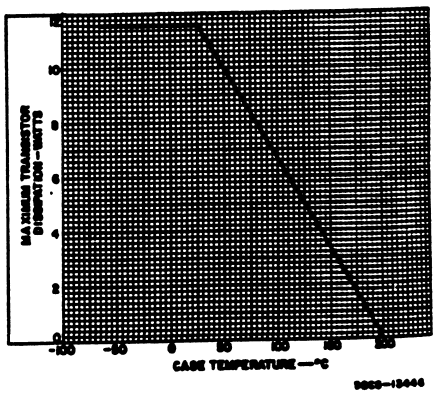


Fig. 2 - Dissipation derating chart.

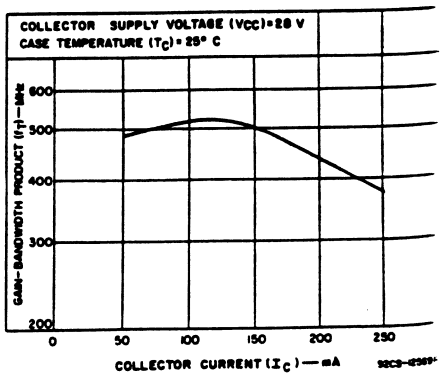


Fig. 3 - Typical gain-bandwidth product

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS: VOLTAGE V dc			TEST CONDITIONS: CURRENT mA dc			LIMITS		UNITS
		V_{CB}	V_{CE}	V_{BE}	I_E	I_B	I_C	MIN.	MAX.	
* 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	mA
At T_C = 200°C			30	-1.5				-	5	mA
* Emitter Cutoff Current	I_{EBO}			-4				-	0.1	mA
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$				0		0.1	65	-	V
Collector-to-Emitter Breakdown Voltage: With base-emitter junction reverse-biased	$V_{(BR)CEV}$			-1.5			0 to 200[●]	65[●●]	-	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[●]	40	-	V
With external base-to-emitter resistance (R_{BE}) = 100Ω	$V_{CER(sus)}$						200[●]	40	-	V
* DC Forward Current Transfer Ratio	h_{FE}		5 5				1350 125	3 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)	$\lvert h_{fe} \rvert$		28				125	4* 5 (typ.)	-	
* Collector-to-Base Capacitance (f = 1 MHz)	C_{ob}	28					125	-	12	pF
* Available Amplifier Signal Input Power (P_o = 5 W, Z_G = 50Ω, f = 400 MHz)	P_i							-	1.7	W
* Collector Circuit Efficiency (P_o = 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							-	6	pF
Thermal Resistance (Junction-to-Case)	$R_{\theta JC}$							-	15	°C/W

*Pulse through an inductor (25 mH); duty factor 50%

●Applies only when breakdown considerations limit maximum dc operating