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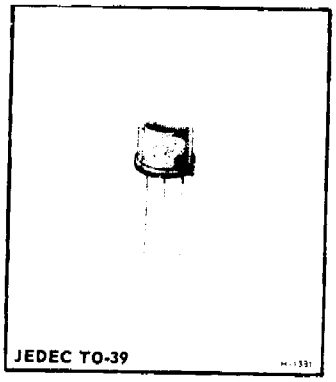
RF Power Transistors

2N5913



Silicon N-P-N Overlay Transistor

12.5-Volt, High-Gain Type for Class-C Amplifiers in VHF/UHF Communications Equipment

Features:

- **High Power Gain, High Power Output . . .**
  At 12.5 V:
  2-W (typ.) output at 470 MHz (7-dB gain)
  2-W (typ.) output at 250 MHz (9-dB gain)
  2-W (typ.) output at 175 MHz (13-dB gain)
  At 8 V:
  1.5-W (typ.) output at 470 MHz (4.8-dB gain)
  1.5-W (typ.) output at 250 MHz (7.0-dB gain)
  1.5-W (typ.) output at 175 MHz (10-dB gain)

MAXIMUM RATINGS, ***Absolute-Maximum Values:***

*COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	36	V
COLLECTOR-TO-EMITTER BREAKDOWN VOLTAGE:			
With base shorted to emitter	$V_{(BR)CES}$	36	V
*With base open	$V_{(BR)CEO}$	14	V
*EMITTER-TO-BASE VOLTAGE	V_{EBO}	3.5	V
*CONTINUOUS COLLECTOR CURRENT	I_C	0.33	A
*TRANSISTOR DISSIPATION:	P_T		
At case temperatures up to 75°C		3.5	W
At case temperatures above 75°C		Derate at 0.0028	W/°C
*TEMPERATURE RANGE:			
Storage & Operating (Junction)		-65 to +200	°C
*LEAD TEMPERATURE:			
At distances ≥ 1/32 in. (0.8 mm) from seating plane for 10 s max.		230	°C

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

STATIC

	CHARACTERISTIC	SYMBOL	TEST CONDITIONS					LIMITS		UNITS
			DC Voltage (V)		DC Current (mA)					
			V_{CE}	V_{EB}	I_E	I_B	I_C	Min.	Max.	
*	Collector-Cutoff Current									
	Base Connected to Emitter	I_{CES}	12.5			0			1.0[b]	mA
	Base Open	I_{CEO}	10			0			0.3	mA
*	Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$			0		0.5	36	–	V
*	Collector-to-Emitter Breakdown Voltage: With base open	$V_{(BR)CEO}$				0	25[a]	14	–	V
	With base connected to emitter	$V_{(BR)CES}$		0			25[a]	36	–	
*	Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$			0.5		0	3.5	–	V
	Thermal Resistance: (Junction-to-Case)	θ_{J-C}						–	35.7	°C/W

[a] Pulsed through a 25-mH inductor; duty factor = 50%.

[b] T_C = 100°C.

DYNAMIC

	TEST & CONDITIONS	SYMBOL	FREQUENCY MHz	LIMITS		UNITS
				MINIMUM	TYPICAL	
	Power Output (V_{CC} = 12.5 V): P_{IE} = 0.1 W	P_{OE}	175	1.75		W
*	Large-Signal Common-Emitter Power Gain (V_{CC} = 12.5 V): P_{IE} 0.1 W	G_{PE}	175	12.4		dB
*	Collector Efficiency (V_{CC} = 12.5 V): P_{IE} = 0.1 W	η_C	175	50		%
*	Common-Base Output Capicatance V_{CB} = 12 V	C_{obo}	1	15 (max.)		pF
	Gain-Bandwidth Product V_{CE} = 12 V, I_C = 200 mA	f_T	–	–	900	MHz

* In accordance with JEDEC registration data format JS-6 RDF-3/JS-9 RDF-7.