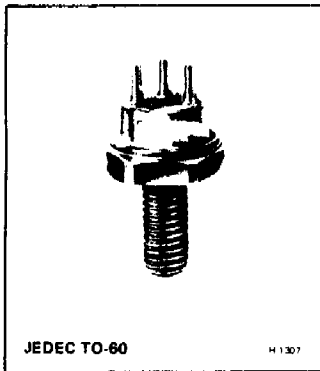


RF Power Transistors

2N5090



High-Power Silicon N-P-N Overlay Transistor

High-Gain Type for Class A, B, or C Operation in VHF/UHF Circuits

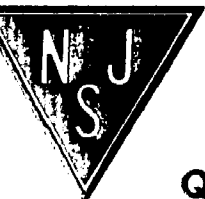
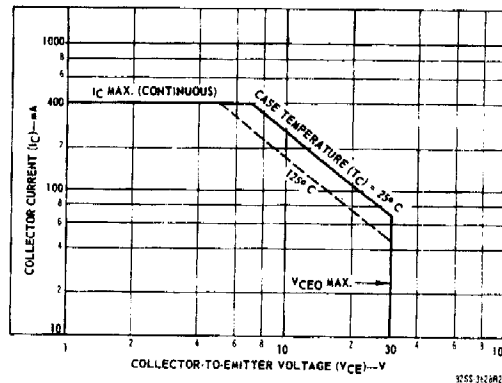
Features:

- Maximum safe-area-of-operation curve
- 1.2 W (min.) output at 400 MHz (7.8 dB gain)
- 1.6 W (typ.) output at 175 MHz (12 dB gain)
- Hermetic stud-type package
- All electrodes isolated from stud

MAXIMUM RATINGS, Absolute-Maximum Values:

*COLLECTOR-TO-BASE VOLTAGE . . . V _{CBO}	55	V
COLLECTOR-TO-EMITTER VOLTAGE:		
With external base-to-emitter resistance, R _{BE} = 10Ω V _{CER}	55	V
* With base open V _{CEO}	30	V
*EMITTER-TO-BASE VOLTAGE V _{EB0}	3.5	V
*CONTINUOUS COLLECTOR CURRENT I _C	0.4	A
*CONTINUOUS BASE CURRENT I _B	0.4	A
*TRANSISTOR DISSIPATION P _T		
At case temperatures up to 100°C	4	W
At case temperatures above 100°C . . . Derate linearly at 0.04 W/°C		
*TEMPERATURE RANGE:		
Storage & Operating (Junction)	-65 to +200	°C
*LEAD TEMPERATURE (During soldering):		
At distances ≥ 1/16 in. (1.58 mm) from insulating wafer for 10 s max.	230	°C

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



NJ Semi-Conductors reserves the right to change test conditions, parameters limits and package dimensions without notice information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

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

STATIC

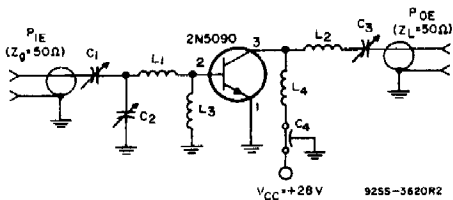
CHARACTERISTIC	SYMBOL	TEST CONDITIONS					LIMITS		UNITS
		DC Collector Voltage-V	DC Base Voltage-V	DC Current mA			MIN.	MAX.	
		V _{CE}	V _{BE}	I _E	I _B	I _C			
* Collector-Cutoff Current: With base open	I _{CEO}	28			0		-	0.02	mA
With base-emitter junction reverse-biased	I _{CEV}	55	-1.5				-	0.1	
With base-emitter junction reverse-biased & T _C = 200°C		30	-1.5				-	5	
* Emitter-Cutoff Current	I _{EBO}		3.5				-	0.1	mA
Collector-to-Base Breakdown Voltage	V _{(BR)CBO}			0		0.1	55	-	V
* Collector-to-Emitter Sustaining Voltage: With base open	V _{CEO(sus)}				0	5	30	-	V
With external base-to-emitter resistance (R _{BE}) = 10Ω	V _{CER(sus)}					5	55 ^a	-	
Emitter-to-Base Breakdown Voltage	V _{(BR)EBO}			0.1		0	3.5	-	V
* Collector-to-Emitter Saturation Voltage	V _{CE(sat)}				20	100	-	1.0	V
* DC Forward-Current Transfer Ratio	h _{FE}	5				360	5	-	
		5				50	10	200	
Thermal Resistance (Junction-to-Case)	R _{θJC}						-	25	°C/W

^aPulsed through a 25-mH inductor; duty factor = 0.05%.

DYNAMIC

CHARACTERISTIC	SYMBOL	TEST CONDITIONS					LIMITS		UNITS
		DC Collector Voltage V	Output Power (P _{OE}) W	Input Power (P _I) W	Collector Current (I _C) mA	Frequency (f) MHz	MIN.	MAX.	
		V _{CE}							
Power Output (Class C amplifier, unneutralized) (See Fig. 2)	P _{OE}	V _{CC} = 28		0.2		400	1.2	-	W
Gain-Bandwidth Product	f _T	V _{CE} = 15			50		500	-	MHz
* Magnitude of Common Emitter, Small-Signal, Short-Circuit Forward-Current Transfer Ratio	h _{fe}	V _{CE} = 15			50		2.5	-	
* Available Amplifier Signal Input Power	P _I		1.2			400	-	0.2	W
* Collector Efficiency	η _C		1.2				45	-	%
* Collector-to-Base Capacitance	C _{obo}	V _{CB} = 30				1	-	3.5	pF

^aIn accordance with JEDEC registration data format JS-6 RDF-3.



- C₁: 0.9-7 pF, ARCO 400, or equivalent
- C₂, C₃: 1.5-20 pF, ARCO 402, or equivalent
- C₄: 1,000 pF, feedthrough type
- L₁: 2 turns No.18 wire, ¼ in. (6.35 mm) ID, 1/8 in. (3.17 mm) long
- L₂: 3 turns No.16 wire, ¼ in. (6.35 mm) ID, 3/8 in. (9.52 mm) long
- L₃: 0.1 μH, RFC
- L₄: 2 turns No.18 wire, 1/8 in. (3.17 mm) ID, 1/8 in. (3.17 mm) long