

**DESCRIPTION**

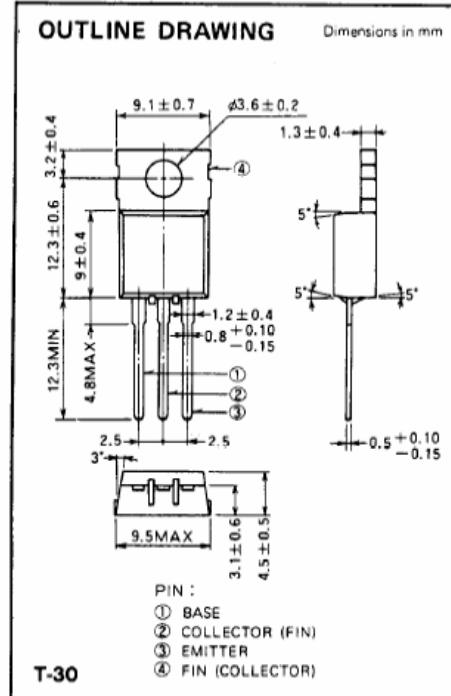
2SC2166 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers in HF band mobile radio applications.

**FEATURES**

- High power gain:  $G_{pe} \geq 13.8\text{dB}$   
@  $V_{CC} = 12\text{V}$ ,  $P_o = 6\text{W}$ ,  $f = 27\text{MHz}$
- Emitter ballasted construction for high reliability and good performances.
- TO-220 similar package is combinient for mounting.

**APPLICATION**

3 to 4 watts output power amplifiers in HF band mobile radio applications.



**ABSOLUTE MAXIMUM RATINGS** ( $T_C = 25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{CBO}$	Collector to base voltage		75	V
$V_{EBO}$	Emitter to base voltage		5	V
$V_{CER}$	Collector to emitter voltage	$R_{BE} = 10 \Omega$	75	V
$I_C$	Collector current		4	A
$P_C$	Collector dissipation	$T_A = 25^\circ\text{C}$	1.5	W
		$T_C = 25^\circ\text{C}$	12.5	W
$T_J$	Junction temperature		150	$^\circ\text{C}$
$T_{stg}$	Storage temperature		-55 to 150	$^\circ\text{C}$
$R_{th-a}$	Thermal resistance	Junction to ambient	83	$^\circ\text{C/W}$
$R_{th-c}$		Junction to case	10	$^\circ\text{C/W}$

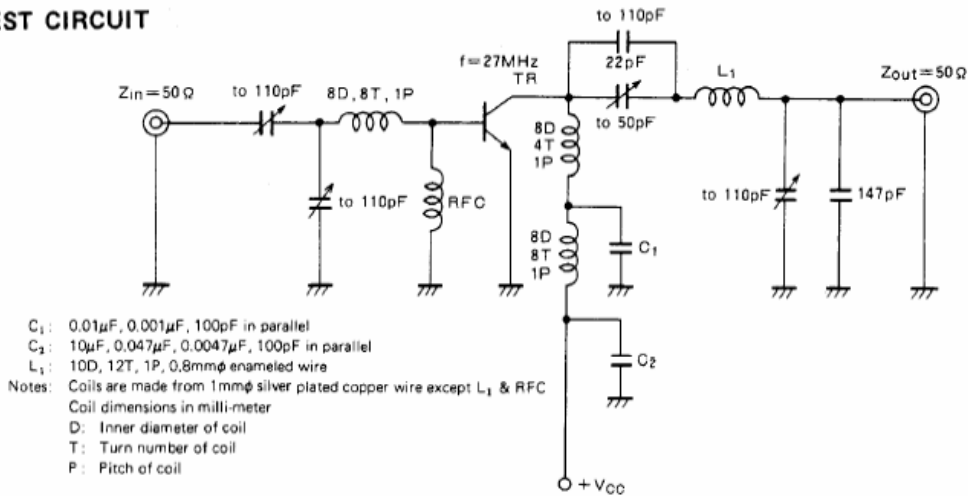
Note. Above parameters are guaranteed independently.

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 1\text{mA}$ , $I_C = 0$	5			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 1\text{mA}$ , $I_E = 0$	75			V
$V_{(BR)CER}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}$ , $R_{BE} = 10 \Omega$	75			V
$I_{CBO}$	Collector cutoff current	$V_{CB} = 30\text{V}$ , $I_E = 0$			100	$\mu\text{A}$
$I_{EBO}$	Emitter cutoff current	$V_{EB} = 3\text{V}$ , $I_C = 0$			100	$\mu\text{A}$
$h_{FE}$	DC forward current gain *	$V_{CE} = 10\text{V}$ , $I_C = 0.1\text{A}$	35	70	180	—
$P_O$	Output power	$V_{CC} = 12\text{V}$ , $P_{in} = 0.25\text{W}$ , $f = 27\text{MHz}$	6	7.5		W
$\eta_C$	Collector efficiency		55	60		%

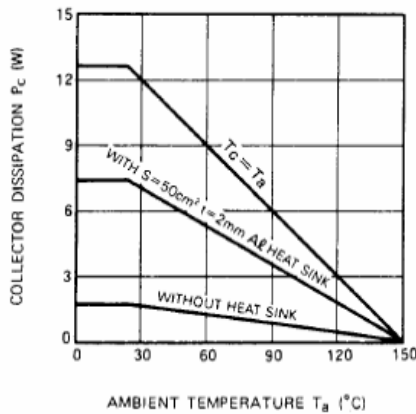
Note. \* Pulse test,  $P_W = 150\mu\text{s}$ , duty = 5%.  
Above parameters, ratings, limits and conditions are subject to change.

TEST CIRCUIT

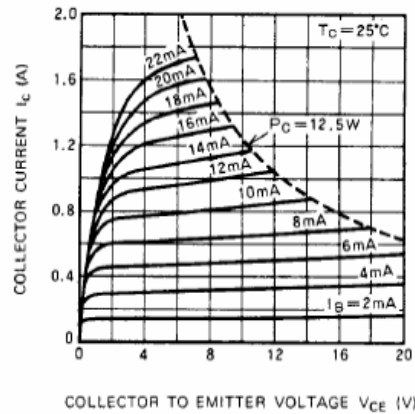


TYPICAL PERFORMANCE DATA

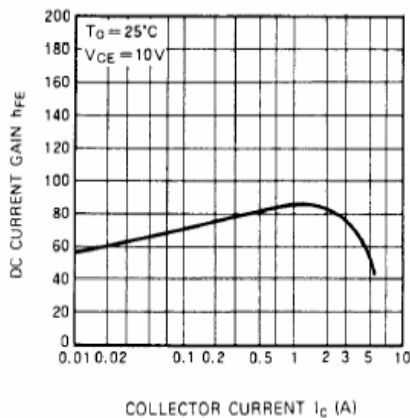
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



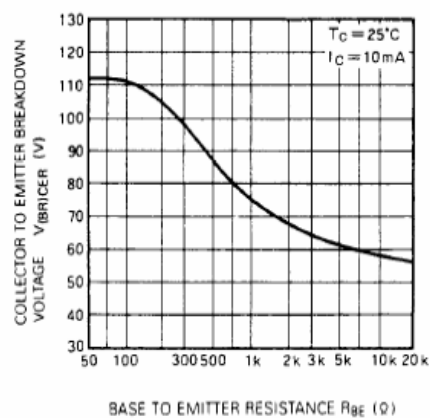
COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE



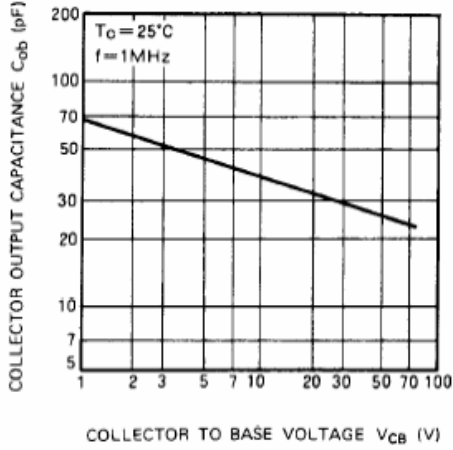
DC CURRENT GAIN VS. COLLECTOR CURRENT



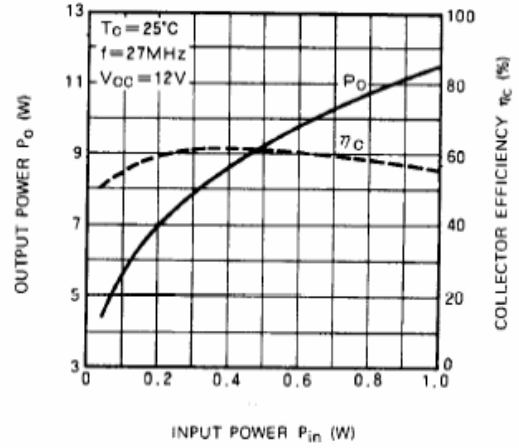
COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE



**COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE**



**OUTPUT POWER, COLLECTOR EFFICIENCY VS. INPUT POWER**



**OUTPUT POWER VS. COLLECTOR SUPPLY VOLTAGE**

