

Silicon NPN Transistor

2SC2539 / C2539

RF amplifier and VHF mobile radio

35V / 3,5A

DATASHEET

OEM –Mitsubishi

Source: Mitsubishi Databook 1995

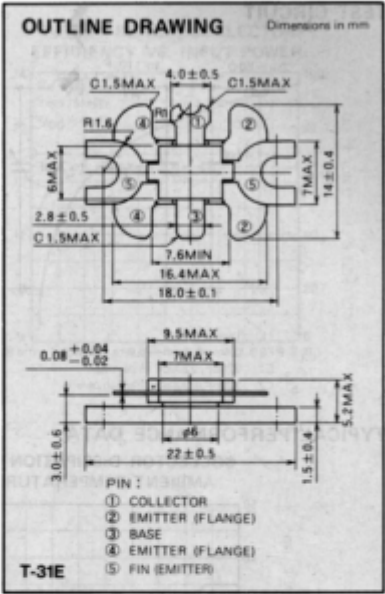
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MITSUBISHI RF POWER TRANSISTOR
2SC2539
NPN EPITAXIAL PLANAR TYPE

DESCRIPTION
 2SC2539 is a silicon NPN epitaxial planar type transistor designed for RF power amplifiers in VHF band mobile radio applications.

- FEATURES**
- High power gain: $G_{pe} \geq 14.5\text{dB}$
 $@V_{CC} = 13.5\text{V}, P_O = 14\text{W}, f = 175\text{MHz}$
 - Emitter ballasted construction and gold metallization for high reliability and good performances.
 - Low thermal resistance ceramic package with flange.
 - Ability of withstanding more than 20:1 load VSWR when operated at $V_{CC} = 15.2\text{V}, P_O = 18\text{W}, f = 175\text{MHz}, T_C = 25^\circ\text{C}$.

APPLICATION
 10 to 14 watts output power amplifiers in VHF band mobile radio applications.



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

Symbol	Parameter	Conditions	Rating	Unit
V_{CBO}	Collector to base voltage		35	V
V_{EBO}	Emitter to base voltage		4	V
V_{CEO}	Collector to emitter voltage	$R_{\theta E} = \infty$	17	V
I_C	Collector current		3.5	A
P_C	Collector dissipation	$T_A = 25^\circ\text{C}$	2.5	W
		$T_C = 25^\circ\text{C}$	35	W
T_J	Junction temperature		175	$^\circ\text{C}$
T_{stg}	Storage temperature		-55 to 175	$^\circ\text{C}$
$R_{\theta JA}$	Thermal resistance	Junction to ambient	60	$^\circ\text{C/W}$
$R_{\theta JC}$		Junction to case	4.3	$^\circ\text{C/W}$

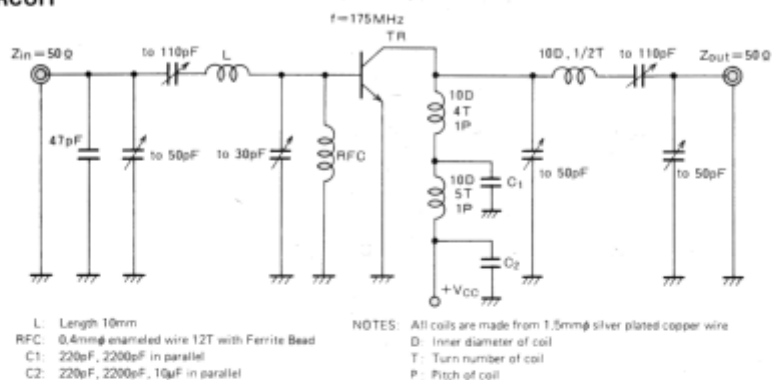
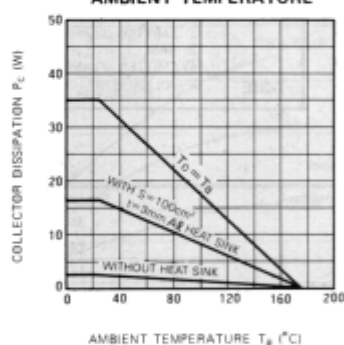
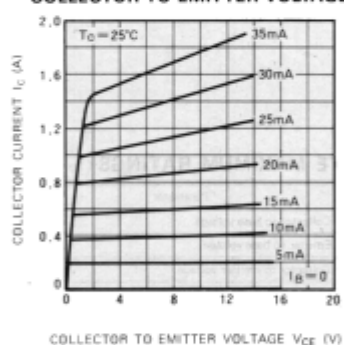
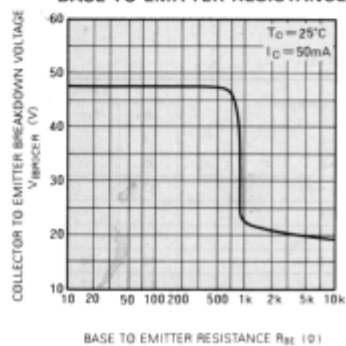
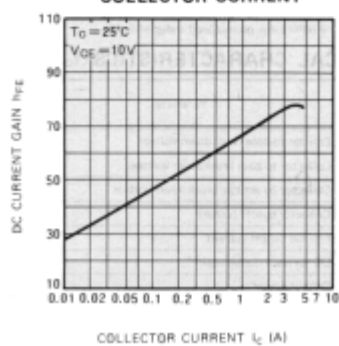
Note. Above parameters are guaranteed independently.

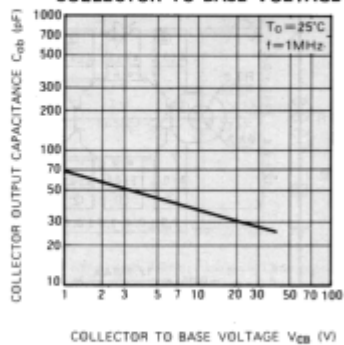
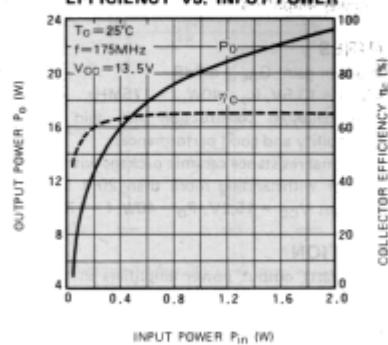
ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 10\text{mA}, I_C = 0$	4			V
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 10\text{mA}, I_E = 0$	35			V
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 50\text{mA}, R_{\theta E} = \infty$	17			V
I_{CBO}	Collector cutoff current	$V_{CB} = 25\text{V}, I_E = 0$			1000	μA
I_{EBO}	Emitter cutoff current	$V_{EB} = 3\text{V}, I_C = 0$			1000	μA
h_{FE}	DC forward current gain*	$V_{CE} = 10\text{V}, I_C = 0.1\text{A}$	10	50	180	—
P_O	Output power	$V_{CC} = 13.5\text{V}, P_{in} = 0.5\text{W}, f = 175\text{MHz}$	14	17		W
η_D	Collector efficiency		60	65		%

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

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2SC2539**NPN EPITAXIAL PLANAR TYPE****TEST CIRCUIT****TYPICAL PERFORMANCE DATA****COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE****COLLECTOR CURRENT VS. COLLECTOR TO EMITTER VOLTAGE****COLLECTOR TO EMITTER BREAKDOWN VOLTAGE VS. BASE TO EMITTER RESISTANCE****DC CURRENT GAIN VS. COLLECTOR CURRENT**

MITSUBISHI RF POWER TRANSISTOR
2SC2539**NPN EPITAXIAL PLANAR TYPE****COLLECTOR OUTPUT CAPACITANCE VS.
COLLECTOR TO BASE VOLTAGE****OUTPUT POWER, COLLECTOR
EFFICIENCY VS. INPUT POWER****OUTPUT POWER VS. COLLECTOR
SUPPLY VOLTAGE**