

NPN SILICON EPITAXIAL TRANSISTOR

FEATURES

- **OUTPUT POWER AT 1dB COMPRESSION POINT:**
27.5 dBm TYP @F = 1.9 GHz, $V_{CE} = 3.6$ V, Class AB,
Duty 1/8
- **4 PIN MINI MOLD PACKAGE:** NE69039

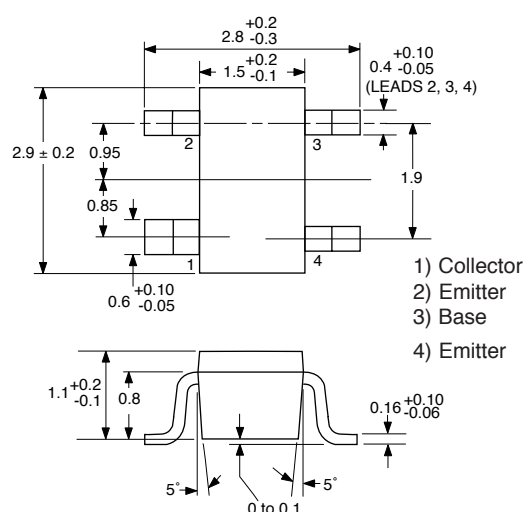
DESCRIPTION

The NE69039 is a low voltage, NPN Silicon Bipolar Transistor for pulsed power applications. The device is designed to operate from a 3.6 V supply, and deliver over 1/2 watt of power output at frequencies up to 2.0 GHz with a 1:8 duty cycle. These characteristics make it an ideal device for TX output stage in a 1.9 GHz digital cordless telephone (DECT or PHS). The part is supplied in a SOT-143 (SC-61) 4-pin Mini-mold package and is available on tape and reel.

The NE69039 transistors are manufactured to stringent quality assurance standards to ensure highest reliability and consistent superior performance.

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE 39



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

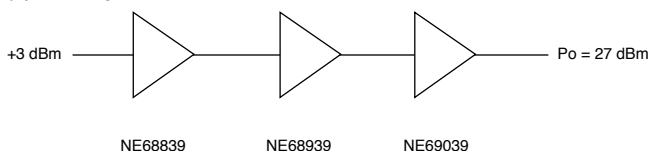
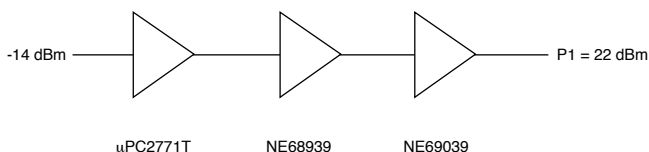
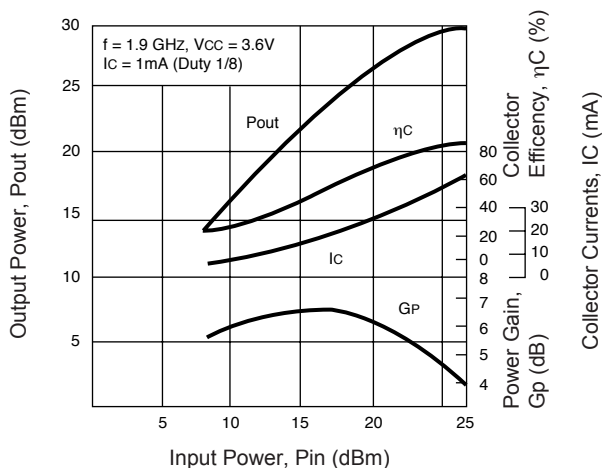
PART NUMBER PACKAGE CODE			NE69039 39		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX
ICBO	Collector Cutoff Current, $V_{CB} = 5$ V, $I_E = 0$	μA			2.5
IEBO	Emitter Cutoff Current, $V_{EB} = 1$ V, $I_C = 0$	μA			2.5
hFE	DC Current Gain, $V_{CE} = 3.6$ V, $I_C = 100$ mA		30		
P-1	Output Power	dBm		27.5	
GP	Power Gain	dB	5.0	6.0	
η_C	Collector Efficiency	%	50	72	
TON	Maximum Device On Time	Ms			10.0

ABSOLUTE MAXIMUM RATINGS¹ ($T_A = 25^\circ\text{C}$)

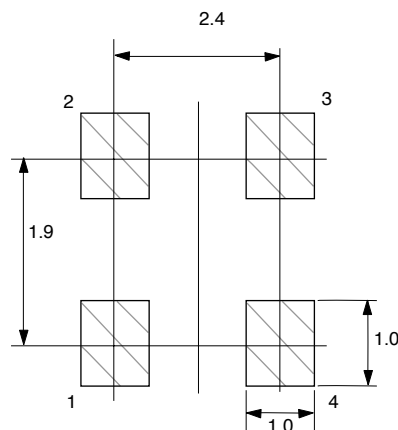
SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CBO}	Collector to Base Voltage	V	9.0
V_{CEO}	Collector to Emitter Voltage	V	6.0
V_{EBO}	Emitter to Base Voltage	V	2.0
I_C	Collector Current	mA	300
P_T	Total Power Dissipation	mW	200 (CW)
T_j	Junction Temperature	$^\circ\text{C}$	150
T_{STG}	Storage Temperature	$^\circ\text{C}$	-65 to +150

Note:

1. Operation in excess of any one of these parameters may result in permanent damage.

APPLICATION**(1) TX Amplifier for DECT****(2) TX Amplifier for PHS****OUTPUT POWER, COLLECTOR EFFICIENCY, COLLECTOR CURRENT AND POWER GAIN VS. INPUT POWER****TYPICAL DATA** $f = 1.9\text{ GHz}$, $V_{CC} = 3.6\text{ V}$, $I_{CQ} = 1\text{ mA}$, DUTY = 1/8

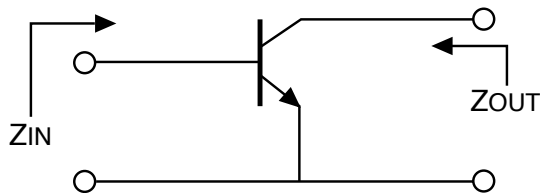
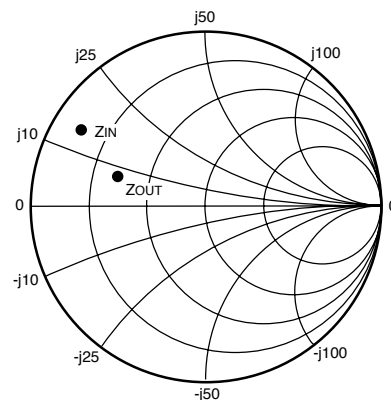
P_{1dB}	27.5	dBm
η_C	72	%
I_C	27	mA
G_L	6.7	db

**OUTLINE 39
RECOMMENDED P.C.B. LAYOUT****ORDERING INFORMATION**

PART NUMBER	QTY
NE69039-T1-A	3K/REEL

Note:

1. Lead material: Cu
 Lead plating: PbSn

 Z_{IN} (Ω), Z_{OUT} (Ω) DATA**IMPEDANCE LOOKING INTO DEVICE** $V_{CC} = 3.6\text{ V}$, $I_{CQ} = 1\text{ mA}$, CLASS AB

FREQUENCY (GHz)	Z_{IN} (Ω)	Z_{OUT} (Ω)
1.9	$7.42 + j14.2$	$15.8 - j2.64$
0.9	$4.0 + j8.8$	$4.4 - j4.6$

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