

SILICON TRANSISTOR

2SC3827

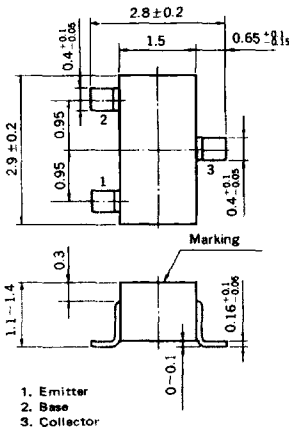
UHF OSILLATOR

NPN SILICON EPITAXIAL TRANSISTOR

“MINI MOLD”

PACKAGE DIMENSIONS

in millimeters



DESCRIPTION

The 2SC3827 is an NPN silicon epitaxial transistor intended for use as UHF oscillator in a tuner of a TV receiver.

The device features stable oscillation and small frequency drift against any change of the supply voltage and the ambient temperature.

FEATURES

- High gain bandwidth product; $f_T = 1.3$ GHz TYP.
- Low collector to base time constant; $C_c \cdot t_{b'b} = 8$ ps TYP.
- Low output capacitance; $C_{ob} = 1.0$ pF MAX.

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

Maximum Voltages and Current

Collector to Base Voltage	V_{CBO}	30	V
Collector to Emitter Voltage	V_{CEO}	15	V
Emitter to Base Voltage	V_{EBO}	4.0	V
Collector Current	I_C	20	mA

Maximum Power Dissipation

Total Power Dissipation	P_T	200	mW
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Maximum Temperatures

Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +125	$^\circ\text{C}$

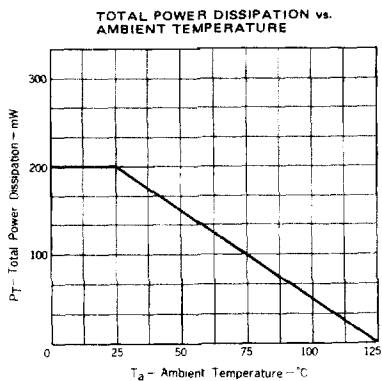
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			0.1	μA	$V_{CB} = 15\text{ V}, I_E = 0$
DC Current Gain	h_{FE}	60	100	250		$V_{CE} = 10\text{ V}, I_C = 5.0\text{ mA}$
Collector Saturation Voltage	$V_{CE(sat)}$		0.1	0.5	V	$I_C = 10\text{ mA}, I_B = 1.0\text{ mA}$
Gain Bandwidth Product	f_T	1.0	1.3		GHz	$V_{CE} = 10\text{ V}, I_E = -5.0\text{ mA}$
Output Capacitance	C_{ob}		0.8	1.0	pF	$V_{CB} = 10\text{ V}, I_E = 0$ $f = 1.0\text{ MHz}$
Reverse Transfer Capacitance	C_{rb}		0.35	0.45	pF	$V_{CE} = 10\text{ V}, \text{Common Base}$ $f = 1.0\text{ MHz}$
Collector to Base Time Constant	$C_c \cdot t_{b'b}$		8	15	ps	$V_{CE} = 10\text{ V}, I_E = -5.0\text{ mA}$ $f = 31.9\text{ MHz}$

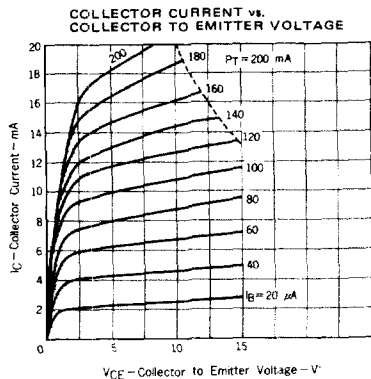
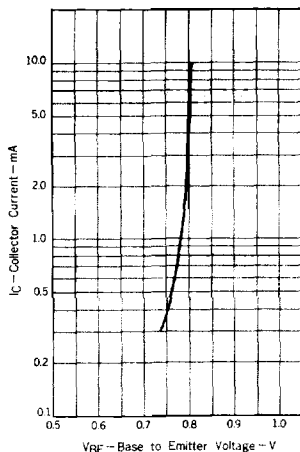
h_{FE} Classification

Marking	T52	T53	T54
h_{FE}	60 to 120	100 to 200	140 to 250

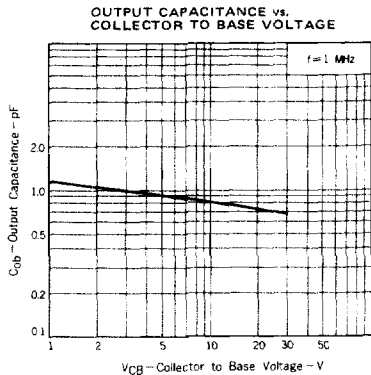
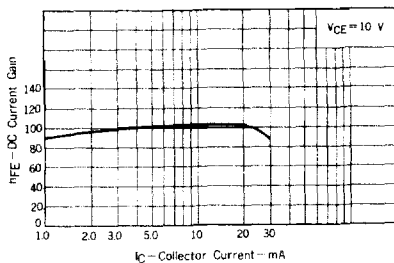
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



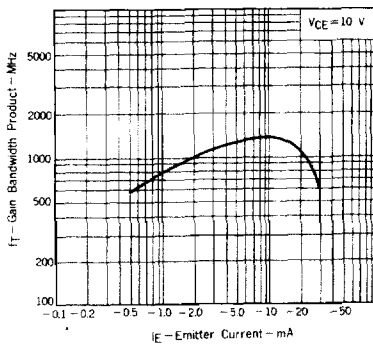
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



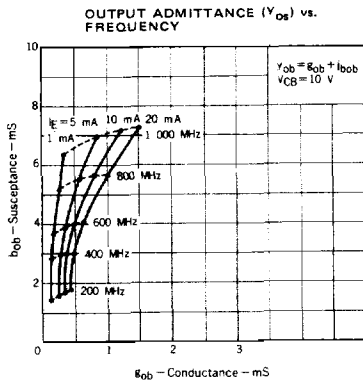
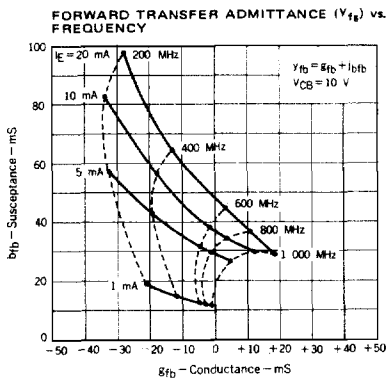
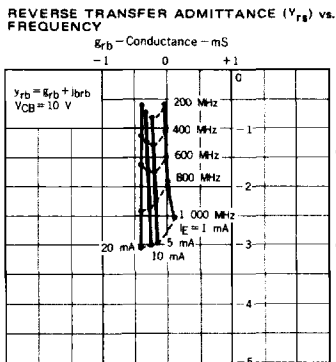
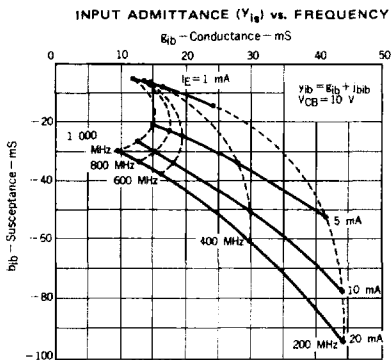
DC CURRENT GAIN vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



TYPICAL SMALL SIGNAL "Y" PARAMETERS (Common Base)



$S_{11}-f, S_{22}-f$

