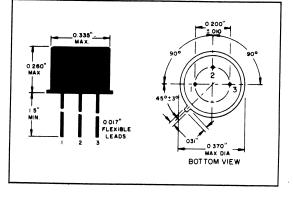
New Jersey Semi-Conductor Products, Inc.

20 STERN AVE. SPRINGFIELD, NEW JERSEY 07081 U.S.A. TELEPHONE: (973) 376-2922 (212) 227-6005 FAX: (973) 376-8960

## NPN SILICON PLANAR TRANSISTOR

2N497 2N498 2N656 2N657

This family of Raytheon types are silicon planar NPN transistors designed for medium power, fast switching applications and are recommended for servo amplifier, medium power amplifiers and magnetic core drivers.



## **MECHANICAL DATA**

CASE: JEDEC TO-5 TERMINAL CONNECTIONS: Lead 1 Emitter Lead 2 Base Lead 3 Collector (Electrically connected to case)

## ELECTRICAL DATA

ABSOLUTE MAXIMUM RATINGS:

	2N497	2N498	2N656	5 2N657	UNITS
Collector to Base Breakdown Voltage BV <sub>CBO</sub>	60	100	60	100	volts
Collector to Emitter Breakdown Voltage BV <sub>CEO</sub>	60	100	60	100	volts
Emitter to Base Breakdown Voltage $BV_{_{EBO}}$	<b>8</b> .0	8.0	8.0	8.0	volts
Collector Dissipation at 25 $^{\circ}$ C (Case Temperature)	4.0	4.0	4.0	4.0 ·	watts
Collector Dissipation at 25° C (Ambient)	0.8	0.8	0.8	0 <b>.8</b> <sup>′</sup>	watts
Junction Temperature (Operating)				—65°C to	+200° C
Storage Temperature					

ELECTRICAL CHARACTERISTICS: @25°C (unless otherwise noted)

		2N497, 2N498			2N656, 2N657			
SYM. CONDITIONS	CONDITIONS	MIN.	TYP.	MAX.	MIN.	TYP.	MAX. U	UNITS
$I_{CBO}$	Maximum rated voltage		0.1	10		0.1	10	μ <b>A</b>
I <sub>EBO</sub>	Maximum rated voltage		.05	250		.05		μA
	V <sub>CB</sub> =30 V	• • • •	.002	10			4	μ <b>Λ</b>
h <sub>FC</sub>	$I_{c}=200 \text{ mA}, V_{c}=10 \text{ V}$	12	20	36	30			•
h <sub>iE</sub>	·		50		1	4		••••
V <sub>CE</sub>			2.0					
C <sub>ob</sub>								
h <sub>fe</sub>						3.0	· · · · ·	μμf 
	$I_{CBO}$ $I_{EBO}$ $I_{CBO}$ $h_{FE}$ $h_{iE}$ $V_{CE}$ $C_{ob}$	$\begin{split} I_{CBO} & \text{Maximum rated voltage} \\ I_{EBO} & \text{Maximum rated voltage} \\ I_{CBO} & V_{CB}{=}30 \text{ V} \\ h_{FE} & I_{C}{=}200 \text{ mA}, \text{ V}_{C}{=}10 \text{ V} \text{ A} \\ h_{iE} & I_{B}{=}8.0 \text{ mA}, \text{ V}_{C}{=}10 \text{ V} \text{ A} \\ V_{CE} & I_{C}{=}200 \text{ mA}, \text{ I}_{B}{=}40 \text{ mA} \text{ A} \\ C_{ob} & V_{C}{=}10 \text{ V}, \text{ I}_{C}{=}0 \\ h_{fe} & V_{C}{=}10 \text{ V}, \text{ I}_{C}{=}50 \text{ mA}, \end{split}$	SYM.         CONDITIONS         MIN. $I_{CBO}$ Maximum rated voltage $I_{EBO}$ Maximum rated voltage $I_{CBO}$ $V_{CB}$ =30 V $I_{CBO}$ $V_{CB}$ =30 V $h_{FE}$ $I_{C}$ =200 mA, $V_{C}$ =10 V $\blacktriangle$ 12 $h_{rE}$ $I_{B}$ =8.0 mA, $V_{C}$ =10 V $\blacktriangle$ $V_{CE}$ $I_{C}$ =200 mA, $I_{B}$ =40 mA $\bigstar$ $V_{CB}$ $V_{C}$ =10 V, $I_{C}$ =0 $h_{re}$ $V_{C}$ =10 V, $I_{C}$ =50 mA,	SYM.         CONDITIONS         MIN.         TYP. $I_{CBO}$ Maximum rated voltage         0.1 $I_{EBO}$ Maximum rated voltage $I_{EBO}$ Maximum rated voltage $I_{CBO}$ $V_{CB}$ =30 V $h_{CBO}$ $V_{CB}$ =30 V $h_{FE}$ $I_{C}$ =200 mA, $V_{C}$ =10 V $\blacktriangle$ 12         20 $h_{1E}$ $I_{B}$ =8.0 mA, $V_{C}$ =10 V $\bigstar$ 50 $V_{CE}$ $I_{C}$ =200 mA, $I_{B}$ =40 mA $\bigstar$ 2.0 $C_{ob}$ $V_{C}$ =10 V, $I_{C}$ =0         14 $h_{fe}$ $V_{C}$ =10 V, $I_{C}$ =50 mA,         2.5	SYM.       CONDITIONS       MIN.       TYP.       MAX. $I_{CBO}$ Maximum rated voltage       0.1       10 $I_{EBO}$ Maximum rated voltage       .05       250 $I_{CBO}$ $V_{CB}$ =30 V       .002       10 $h_{FE}$ $I_{C}$ =200 mA, $V_{C}$ =10 V $\blacktriangle$ 12       20       .36 $h_{FE}$ $I_{B}$ =8.0 mA, $V_{C}$ =10 V $\bigstar$ 50       500       500 $V_{CE}$ $I_{C}$ =200 mA, $I_{B}$ =40 mA $\bigstar$ 2.0       5.0 $C_{ob}$ $V_{C}$ =10 V, $I_{C}$ =0       14 $h_{fe}$ $V_{C}$ =10 V, $I_{C}$ =50 mA,       2.5	SYM.       CONDITIONS       MIN.       TYP.       MAX.       MIN. $I_{CBO}$ Maximum rated voltage       0.1       10 $I_{EBO}$ Maximum rated voltage       .05       250 $I_{CBO}$ V <sub>CB</sub> =30 V       .002       10 $I_{CBO}$ $V_{CB}$ =30 V       .002       10 $h_{FE}$ $I_{C}$ =200 mA, $V_{C}$ =10 V $\blacktriangle$ 12       20       .36       30 $h_{FE}$ $I_{B}$ =8.0 mA, $V_{C}$ =10 V $\bigstar$ 50       500 $V_{CE}$ $I_{C}$ =200 mA, $I_{B}$ =40 mA $\bigstar$ 2.0       5.0 $C_{ob}$ $V_{C}$ =10 V, $I_{C}$ =0       14 $h_{fe}$ $V_{C}$ =10 V, $I_{C}$ =50 mA,       2.5	SYM.       CONDITIONS       MIN.       TYP.       MAX.       MIN.       TYP. $I_{CBO}$ Maximum rated voltage       0.1       10       0.1 $I_{EBO}$ Maximum rated voltage       .05       250       .05 $I_{CBO}$ V <sub>CB</sub> =30 V       .002       10       .002 $h_{FE}$ $I_C=200$ mA, $V_C=10$ V $\blacktriangle$ 12       20       .36       30       60 $h_{1E}$ $I_B=8.0$ mA, $V_C=10$ V $\bigstar$ 50       500        50 $V_{CE}$ $I_C=200$ mA, $I_B=40$ mA $\bigstar$ 2.0       5.0        2.0 $C_{ob}$ $V_C=10$ V, $I_C=0$ 14        14 $h_{fe}$ $V_C=10$ V, $I_C=50$ mA,       2.5        3.0	SYM.       CONDITIONS       MIN.       TYP.       MAX.       MIN.       TYP.       MAX. $I_{CBO}$ Maximum rated voltage       0.1       10       0.1       10 $I_{EBO}$ Maximum rated voltage       .05       250       .05       250 $I_{CBO}$ V <sub>CB</sub> =30 V       .002       10       .002       10 $h_{FE}$ $I_{C}=200$ mA, $V_{C}=10$ V $\blacktriangle$ 12       20       .36       30       60       90 $h_{1E}$ $I_{B}=8.0$ mA, $V_{C}=10$ V $\bigstar$ 12       20       .36       30       60       90 $h_{1E}$ $I_{B}=8.0$ mA, $V_{C}=10$ V $\bigstar$ 50       500        500       500 $V_{CE}$ $I_{C}=200$ mA, $I_{B}=40$ mA $\bigstar$ 2.0       5.0       2.0       5.0 $C_{ob}$ $V_{C}=10$ V, $I_{C}=0$ 14        14 $h_{fe}$ $V_{C}=10$ V, $I_{C}=50$ mA,       2.5       3.0