

PNP SILICON POWER TRANSISTOR 2SA1394

DESCRIPTION The 2SA1394 is PNP silicon epitaxial transistor designed for switching regulator, DC-DC converter and high frequency power amplifier application.

FEATURES

- Easy mount by eliminating Insulation Sheet and Bushing.
- Low Collector Saturation Voltage.
- High Switching Speed.
- Complementary to 2SC3566.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature -55 to $+150$ °C

Junction Temperature 150 °C Maximum

Maximum Power Dissipation ($T_a = 25$ °C)

Total Power Dissipation 25 W

Maximum Voltages and Currents ($T_a = 25$ °C)

V_{CBO} Collector to Base Voltage -80 V

V_{CEO} Collector to Emitter Voltage -60 V

V_{EBO} Emitter to Base Voltage -12 V

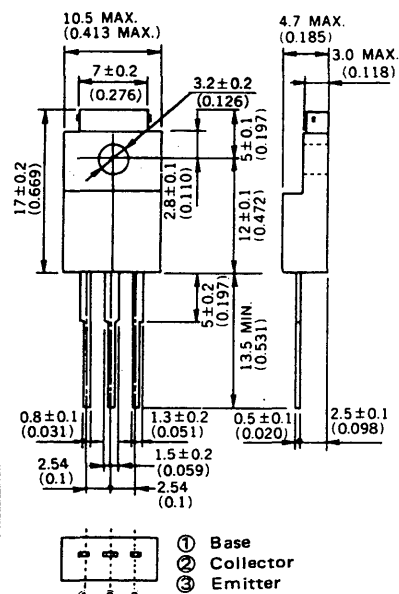
$I_{C(DC)}$ Collector Current (DC) -5 A

$I_{C(pulse)}$ Collector Current (pulse)* -10 A

$I_{B(DC)}$ Base Current (DC) -2.5 A

* $PW \leq 300 \mu s$, Duty Cycle ≤ 10 %

PACKAGE DIMENSIONS in millimeters (inches)



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

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
t_{on}	Turn-on Time			0.5	μs	$I_C = -3.0\text{ A}, I_{B1} = -I_{B2} = -0.3\text{ A}$ $R_L = 17\ \Omega, V_{CC} \approx -50\text{ V}$
t_{stg}	Storage Time			2.5	μs	
t_f	Fall Time			0.5	μs	
h_{FE1}	DC Current Gain*	40			—	$V_{CE} = -5.0\text{ V}, I_C = -0.3\text{ A}$
h_{FE2}	DC Current Gain*	40		200	—	$V_{CE} = -5.0\text{ V}, I_C = -3.0\text{ A}$
$V_{CE(sat)}$	Collector Saturation Voltage*			-0.6	V	$I_C = -3.0\text{ A}, I_B = -0.3\text{ A}$
$V_{BE(sat)}$	Base Saturation Voltage*			-1.5	V	$I_C = -3.0\text{ A}, I_B = -0.3\text{ A}$
$V_{CEO(SUS)}$	Collector to Emitter Sustaining Voltage	-60			V	$I_C = -3.0\text{ A}, I_B = -0.3\text{ A}, L = 1\text{ mH}$
$V_{CEX(SUS)1}$	Collector to Emitter Sustaining Voltage	-60			V	$I_C = -3.0\text{ A}, I_{B1} = -I_{B2} = -0.3\text{ A}, L = 180\ \mu\text{H}, \text{Clamped}$
$V_{CEX(SUS)2}$	Collector to Emitter Sustaining Voltage	-60			V	$I_C = -6.0\text{ A}, I_{B1} = -0.6\text{ A}, -I_{B2} = 0.3\text{ A}, L = 180\ \mu\text{H}, \text{Clamped}$
I_{CBO}	Collector Cutoff Current			-10	μA	$V_{CB} = -60\text{ V}, I_E = 0$
I_{CER}	Collector Cutoff Current			-1.0	mA	$V_{CE} = -60\text{ V}, R_{BE} = 51\ \Omega, T_a = 125^\circ\text{C}$
I_{CEX1}	Collector Cutoff Current			-10	μA	$V_{CE} = -60\text{ V}, V_{BE(OFF)} = 1.5\text{ V}$
I_{CEX2}	Collector Cutoff Current			-1.0	mA	$V_{CE} = -60\text{ V}, V_{BE(OFF)} = 1.5\text{ V}, T_a = 125^\circ\text{C}$
I_{EBO}	Emitter Cutoff Current			-10	μA	$V_{EB} = -10\text{ V}, I_C = 0$

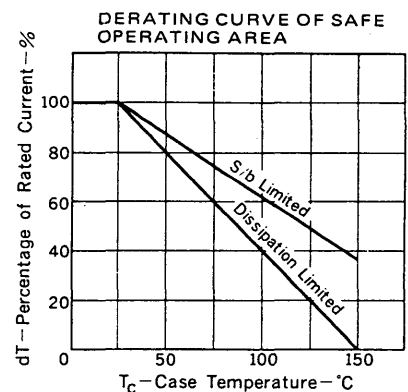
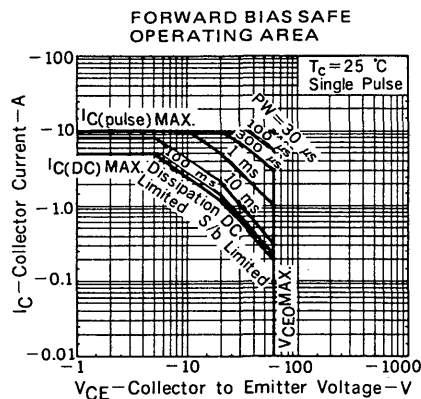
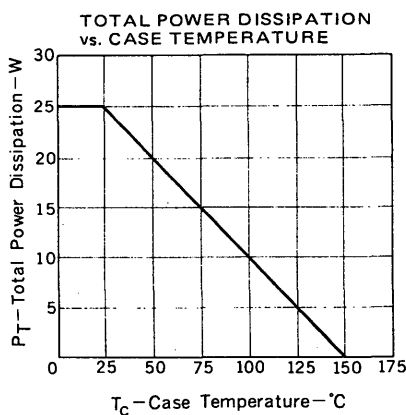
* $PW \leq 350\ \mu\text{s}$, Duty Cycle $\leq 2\%$

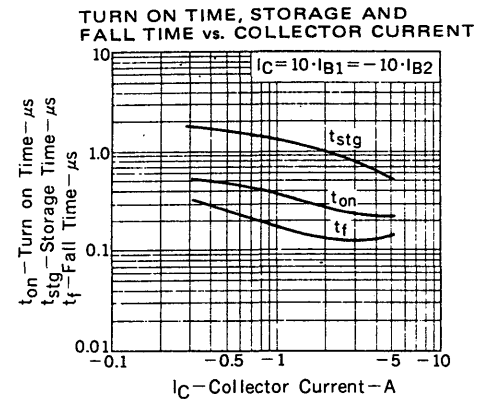
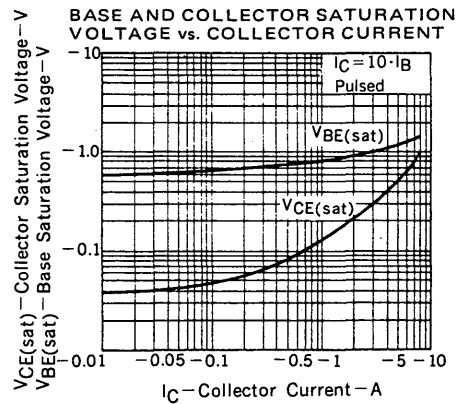
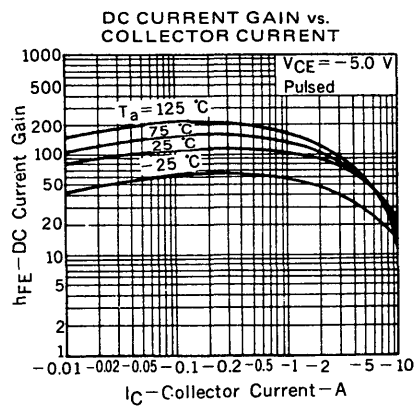
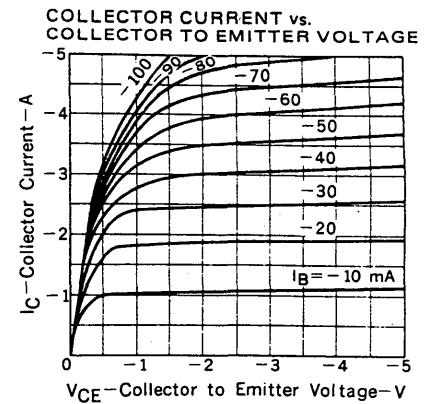
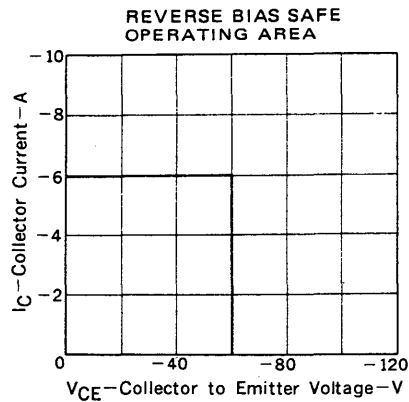
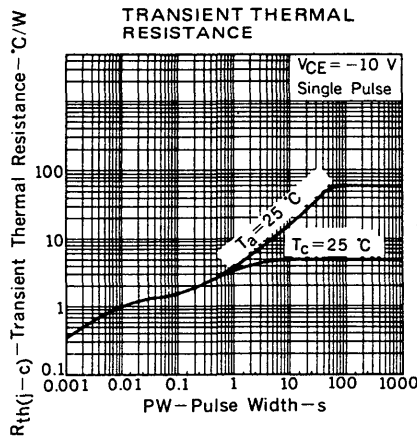
Classification of h_{FE2}

Rank	M	L	K
Range	40 to 80	60 to 120	100 to 200

Test Conditions: $V_{CE} = -5.0\text{ V}, I_C = -3.0\text{ A}$

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





SWITCHING TIME (t_{on} , t_{stg} , t_f) TEST CIRCUIT

