

**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 ( $T_a = 25\text{ °C}$ )

Total Power Dissipation . . . . . 25 W

Maximum Voltages and Currents ( $T_a = 25\text{ °C}$ )

$V_{CBO}$  Collector to Base Voltage . . . . . -80 V

$V_{CEO}$  Collector to Emitter Voltage . . . . . -60 V

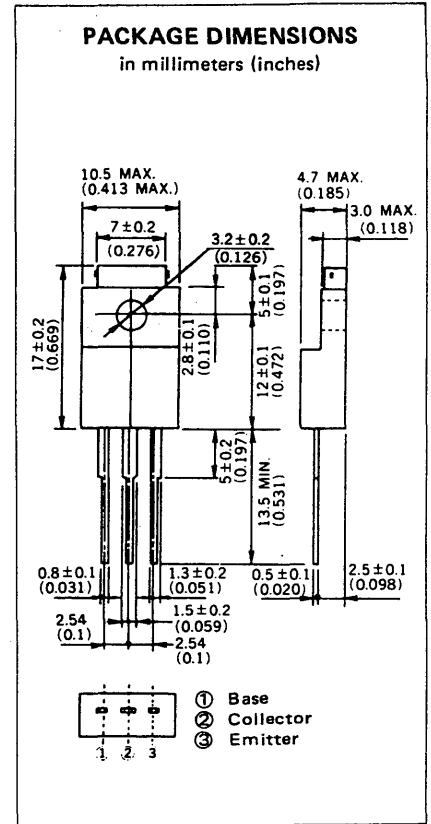
$V_{EBO}$  Emitter to Base Voltage . . . . . -12 V

$I_{C(DC)}$  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  $\leq 10\%$



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

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$t_{on}$	Turn-on Time			0.5	$\mu\text{s}$	$I_C = -3.0\text{ A}, I_{B1} = -I_{B2} = -0.3\text{ A}$ $R_L = 17\ \Omega, V_{CC} \approx -50\text{ V}$
$t_{stg}$	Storage Time			2.5	$\mu\text{s}$	
$t_f$	Fall Time			0.5	$\mu\text{s}$	
$h_{FE1}$	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	$\mu\text{A}$	$V_{CB} = -60\text{ V}, I_E = 0$
$I_{CER}$	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	$\mu\text{A}$	$V_{CE} = -60\text{ V}, V_{BE(OFF)} = 1.5\text{ V}$
$I_{CEX2}$	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	$\mu\text{A}$	$V_{EB} = -10\text{ V}, I_C = 0$

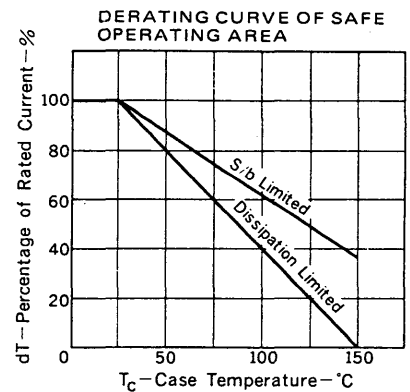
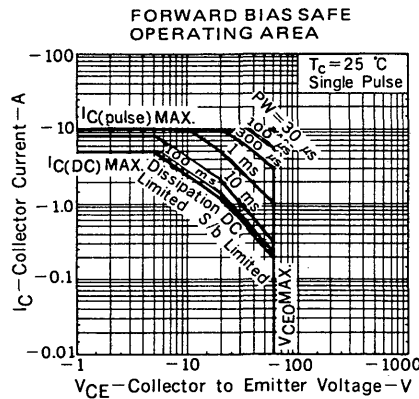
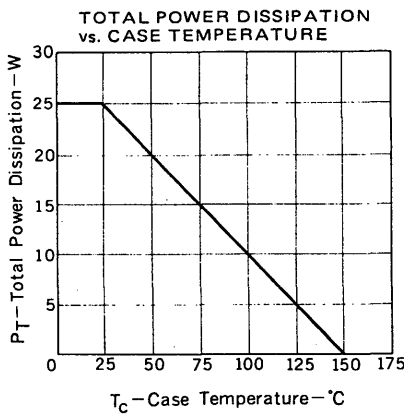
\*  $PW \leq 350\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$

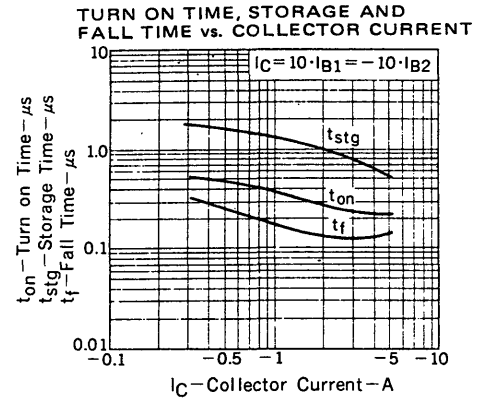
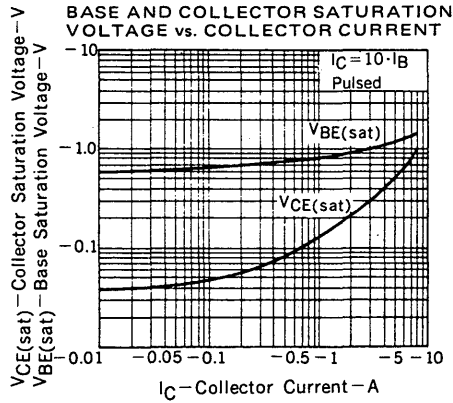
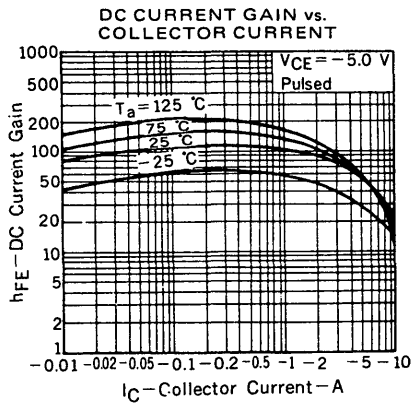
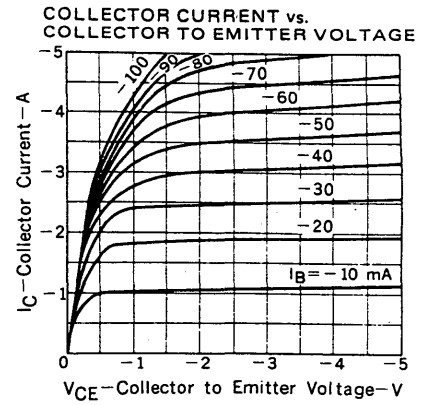
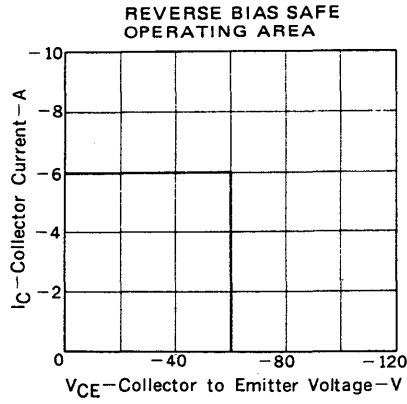
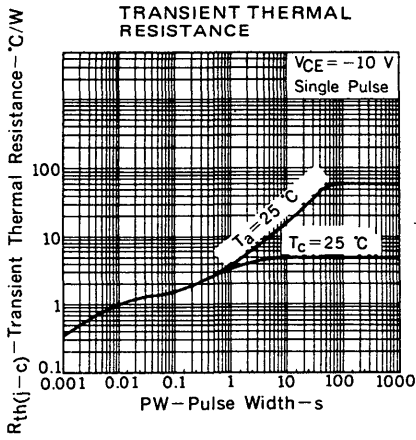
Classification of  $h_{FE2}$

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**

