

# 2SD1894

## Silicon NPN triple diffusion planar type Darlington

For power amplification

Complementary to 2SB1254

### Features

- Optimum for 60W HiFi output
- High forward current transfer ratio  $h_{FE}$ : 5000 to 30000
- Low collector to emitter saturation voltage  $V_{CE(sat)}$ : <2.5V
- Full-pack package which can be installed to the heat sink with one screw

### Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ )

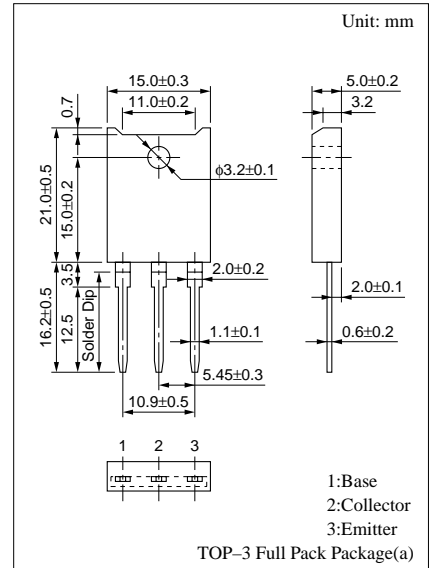
Parameter	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	160	V
Collector to emitter voltage	$V_{CEO}$	140	V
Emitter to base voltage	$V_{EBO}$	5	V
Peak collector current	$I_{CP}$	12	A
Collector current	$I_C$	7	A
Collector power dissipation	$P_C$	$T_C=25^\circ\text{C}$	70
		$T_a=25^\circ\text{C}$	3
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

### Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

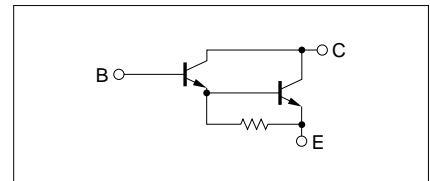
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 160V, I_E = 0$			100	$\mu\text{A}$
	$I_{CEO}$	$V_{CE} = 140V, I_B = 0$			100	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$			100	$\mu\text{A}$
Collector to emitter voltage	$V_{CEO}$	$I_C = 30\text{mA}, I_B = 0$	140			V
Forward current transfer ratio	$h_{FE1}$	$V_{CE} = 5V, I_C = 1A$	2000			
	$h_{FE2}^*$	$V_{CE} = 5V, I_C = 6A$	5000		30000	
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 6A, I_B = 6\text{mA}$			2.5	V
Base to emitter saturation voltage	$V_{BE(sat)}$	$I_C = 6A, I_B = 6\text{mA}$			3.0	V
Transition frequency	$f_T$	$V_{CE} = 10V, I_C = 0.5A, f = 1\text{MHz}$		20		MHz
Turn-on time	$t_{on}$	$I_C = 6A, I_{B1} = 6\text{mA}, I_{B2} = -6\text{mA}, V_{CC} = 50V$		2.5		$\mu\text{s}$
Storage time	$t_{stg}$			5.0		$\mu\text{s}$
Fall time	$t_f$			2.5		$\mu\text{s}$

\* $h_{FE2}$  Rank classification

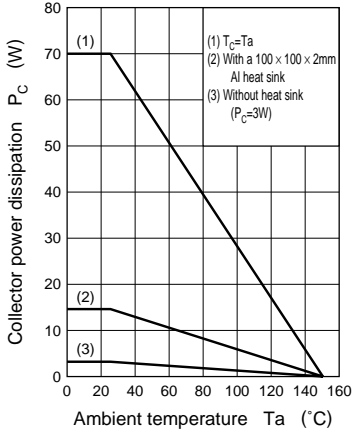
Rank	Q	P
$h_{FE2}$	5000 to 15000	8000 to 30000



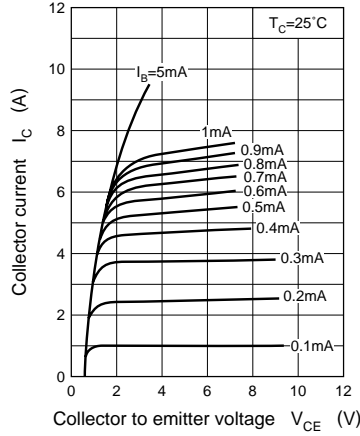
### Internal Connection



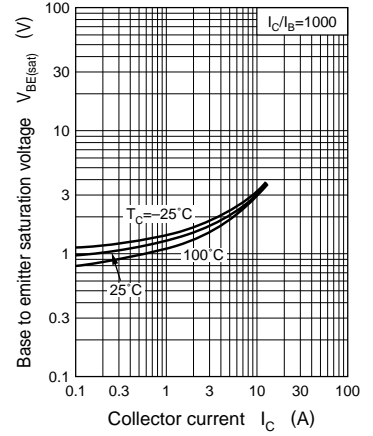
$P_C - T_a$



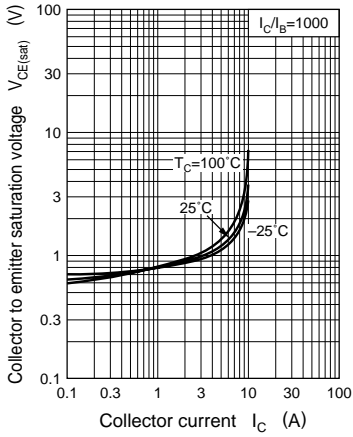
$I_C - V_{CE}$



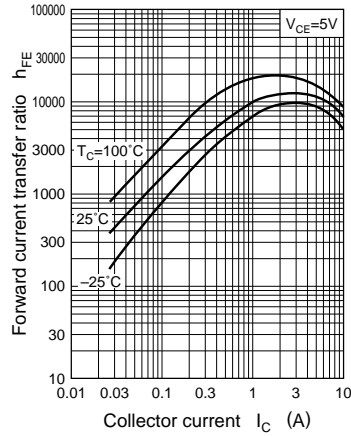
$V_{BE(sat)} - I_C$



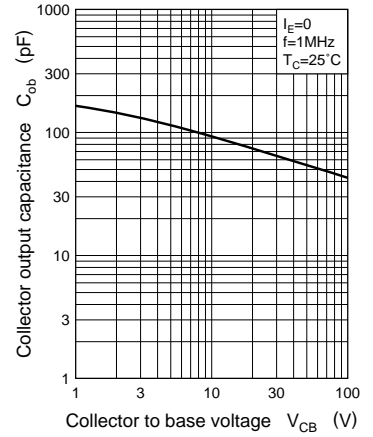
$V_{CE(sat)} - I_C$



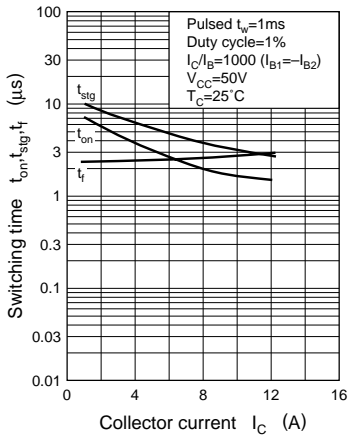
$h_{FE} - I_C$



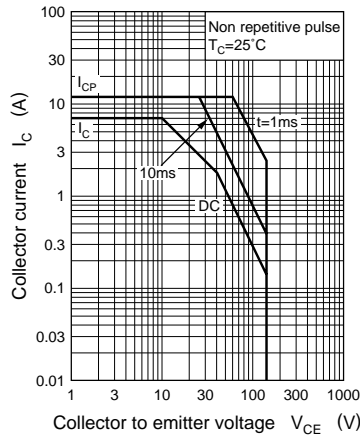
$C_{ob} - V_{CB}$



$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)



$$R_{th(t)} - t$$

