

# 2SD1990

## Silicon NPN triple diffusion planar type

For power switching

### Features

- High-speed switching
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Large collector power dissipation  $P_C$

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

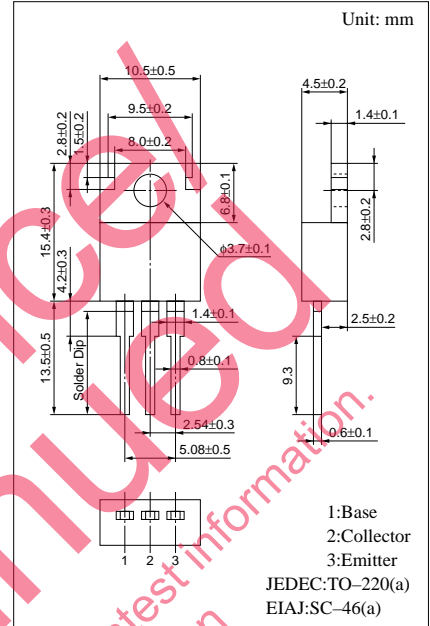
Parameter	Symbol	Rated	Unit
Collector to base voltage	$V_{CBO}$	80	V
Collector to emitter voltage	$V_{CEO}$	60	V
Emitter to base voltage	$V_{EBO}$	6	V
Base to emitter voltage	$I_B$	1	A
Peak collector current	$I_{CP}$	8	A
Collector current	$I_C$	4	A
Collector power dissipation	$P_C$	$T_C=25^\circ\text{C}$	35
		$T_a=25^\circ\text{C}$	1.4
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

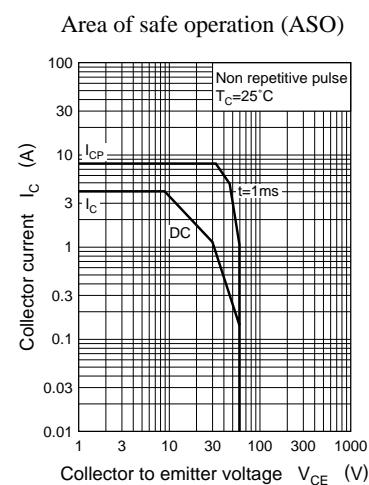
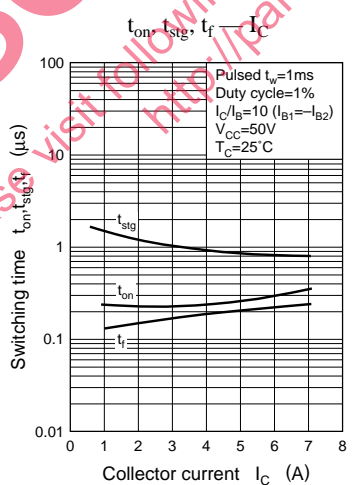
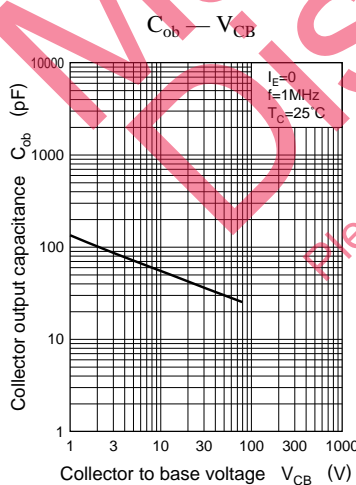
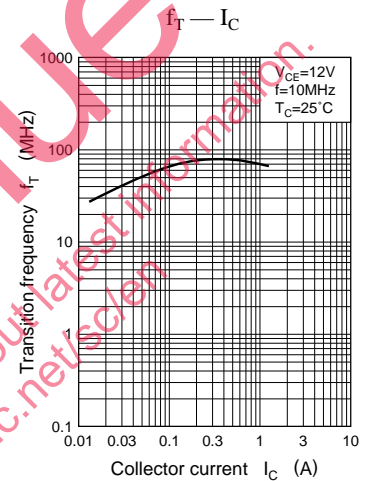
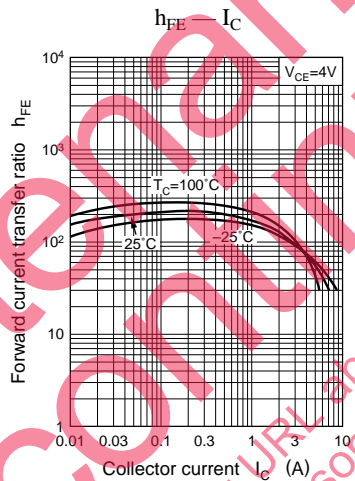
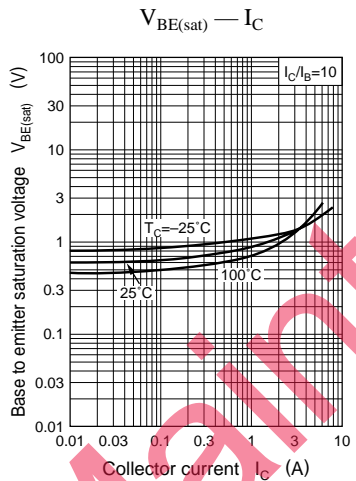
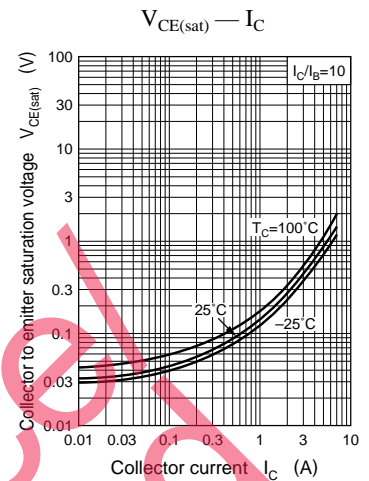
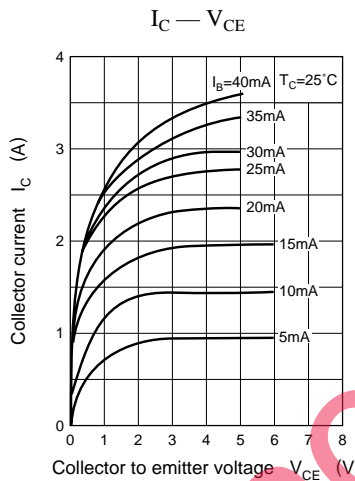
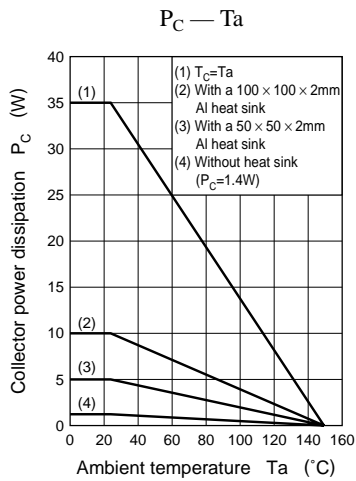
### Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

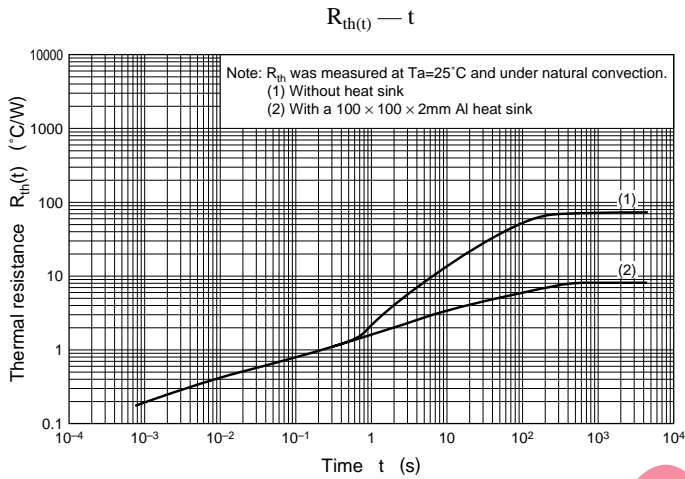
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 80\text{V}, I_E = 0$			100	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 6\text{V}, I_C = 0$			100	$\mu\text{A}$
Collector to emitter voltage	$V_{CEO}$	$I_C = 25\text{mA}, I_B = 0$	60			V
Forward current transfer ratio	$h_{FE1}^*$	$V_{CE} = 4\text{V}, I_C = 1\text{A}$	70		250	
	$h_{FE2}$	$V_{CE} = 4\text{V}, I_C = 4\text{A}$	20			
Base to emitter voltage	$V_{BE}$	$V_{CE} = 4\text{V}, I_C = 4\text{A}$			2.0	V
Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_C = 4\text{A}, I_B = 0.4\text{A}$			1.5	V
Transition frequency	$f_T$	$V_{CE} = 12\text{V}, I_C = 0.2\text{A}, f = 10\text{MHz}$		80		MHz
Turn-on time	$t_{on}$	$I_C = 4\text{A}, I_{B1} = 0.4\text{A}, I_{B2} = -0.4\text{A}, V_{CC} = 50\text{V}$		0.3		$\mu\text{s}$
Storage time	$t_{stg}$			1.0		$\mu\text{s}$
Fall time	$t_f$			0.2		$\mu\text{s}$

\* $h_{FE1}$  Rank classification

Rank	Q	P
$h_{FE1}$	70 to 150	120 to 250







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