

2SD2000

Silicon NPN triple diffusion planar type

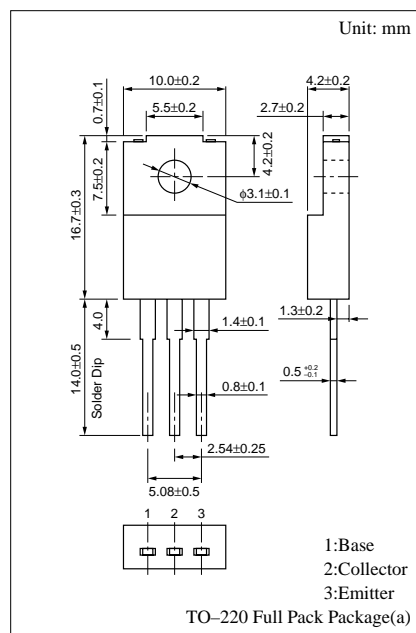
For power switching

Features

- High-speed switching
- Satisfactory linearity of forward current transfer ratio h_{FE}
- Large collector power dissipation P_C
- 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	Ratings	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
Peak collector current	I_{CP}	8	A
Collector current	I_C	4	A
Base current	I_B	1	A
Collector power dissipation	P_C	$T_C=25^\circ\text{C}$	35
		$T_a=25^\circ\text{C}$	2
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$



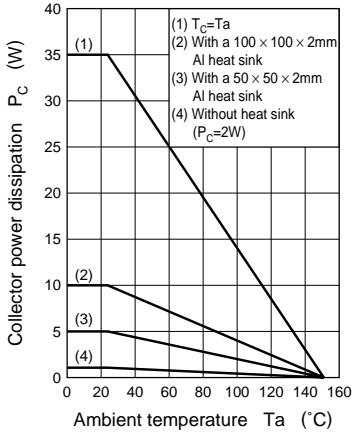
Electrical Characteristics ($T_C=25^\circ\text{C}$)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 80\text{V}, I_E = 0$			100	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 6\text{V}, I_C = 0$			100	μA
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 saturation voltage	$V_{BE(sat)}$	$V_{CE} = 4\text{V}, I_C = 4\text{A}$			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		μs
Storage time	t_{stg}			1.0		μs
Fall time	t_f			0.2		μs

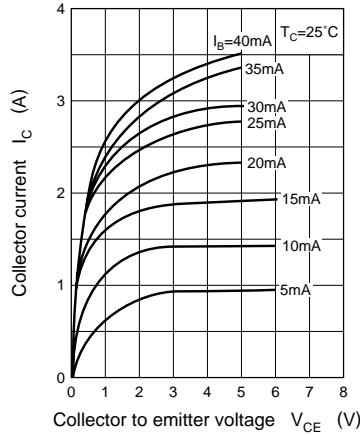
* h_{FE1} Rank classification

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

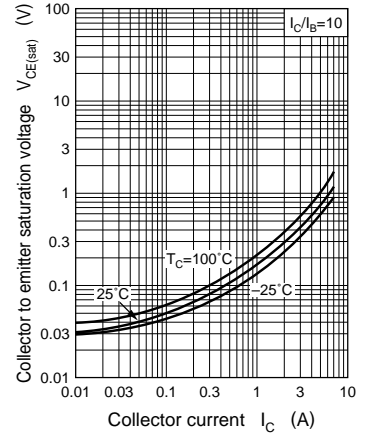
$P_C - T_a$



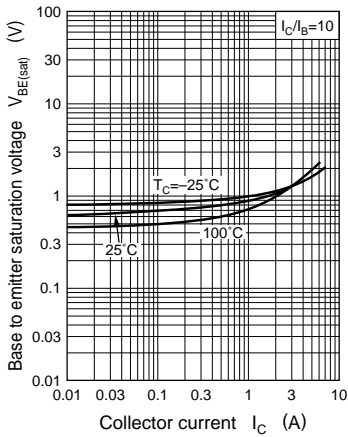
$I_C - V_{CE}$



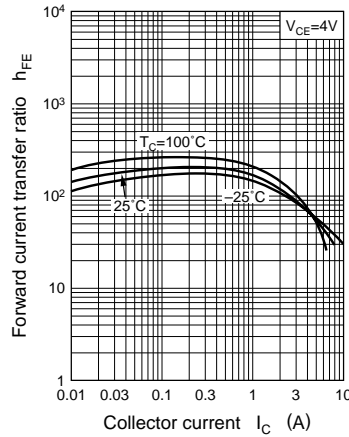
$V_{CE(sat)} - I_C$



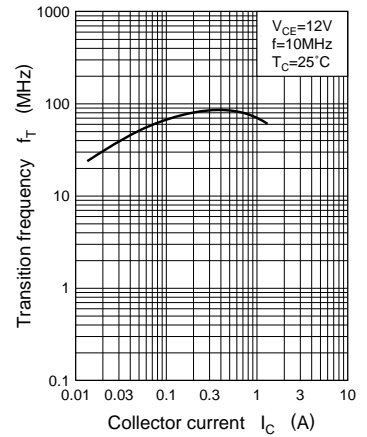
$V_{BE(sat)} - I_C$



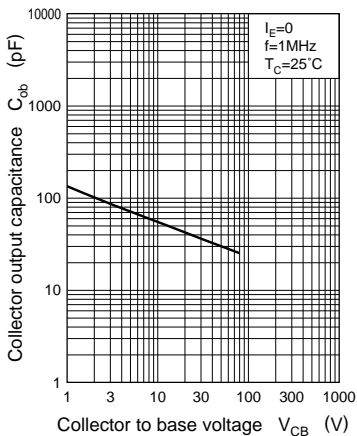
$h_{FE} - I_C$



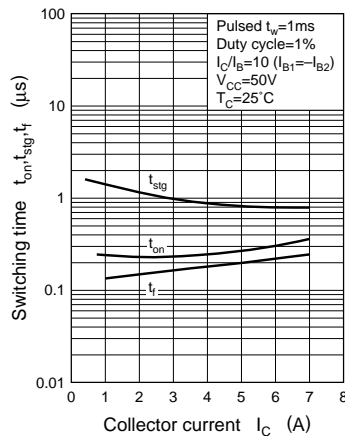
$f_T - I_C$



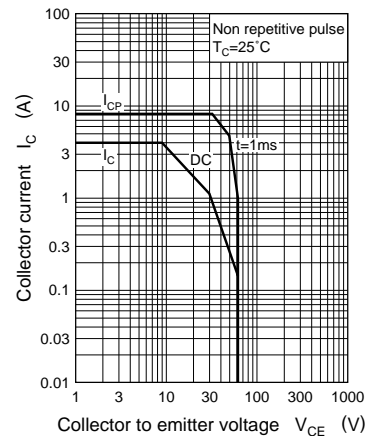
$C_{ob} - V_{CB}$



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



Area of safe operation (ASO)



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

