

# 2SD1315

Silicon NPN Triple-Diffused Planar Darlington Type

Medium Speed Power

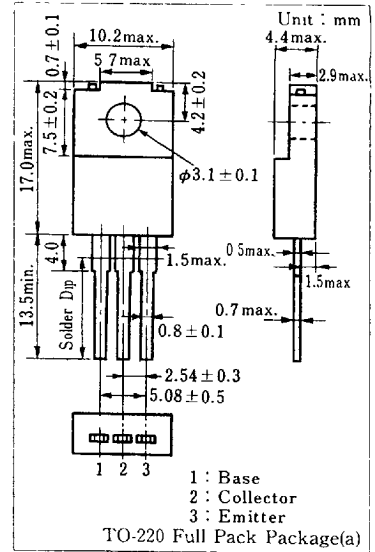
### ■ Features

- High DC current gain ( $h_{FE}$ )
- High collector-base voltage ( $V_{CBO}$ )
- High speed switching
- "Full Pack" package for simplified mounting on a heat sink with one screw

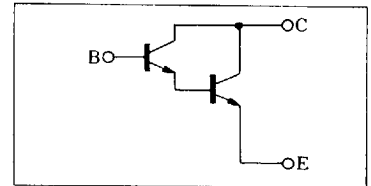
### ■ Absolute Maximum Ratings ( $T_c=25^\circ\text{C}$ )

Item	Symbol	Value	Unit	
Collector-base voltage	$V_{CBO}$	150	V	
Collector-emitter voltage	$V_{CEO}$	80	V	
Emitter-base voltage	$V_{EB0}$	20	V	
Collector current	$I_C$	5	A	
Collector power dissipation	$P_C$	$T_c = 25^\circ\text{C}$	40	W
		$T_a = 25^\circ\text{C}$	2	
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$	

### ■ Package Dimensions



### ■ Inner Circuit



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

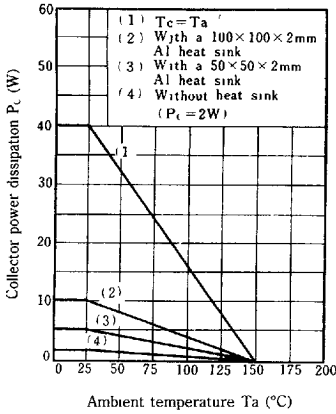
Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 150\text{V}, I_B = 0$			1	mA
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 20\text{V}, I_C = 0$			1	mA
Collector-emitter voltage	$V_{CE0}$	$I_C = 10\text{mA}, I_B = 0$	80			
DC current gain	$h_{FE}^*$	$V_{CE} = 4\text{V}, I_C = 1\text{A}$	5000		20000	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1.5\text{A}, I_B = 50\text{mA}$			1	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1.5\text{A}, I_B = 50\text{mA}$			2	V
Transition frequency	$f_T$	$V_{CE} = 5\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$		20		MHz
Turn-on time	$t_{on}$	$I_C = 3\text{A}, I_{B1} = 12\text{mA}, I_{B2} = -12\text{mA}$ $V_{CE} = 50\text{V}$		0.5		$\mu\text{s}$
Storage time	$t_{stg}$		4		$\mu\text{s}$	
Fall time	$t_f$		1		$\mu\text{s}$	

### \* $h_{FE}$ Classifications

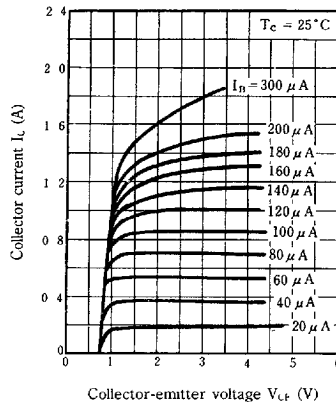
Class	Q	P
$h_{FE}$	5000 ~ 10000	8000 ~ 20000

6932852 0016686 444

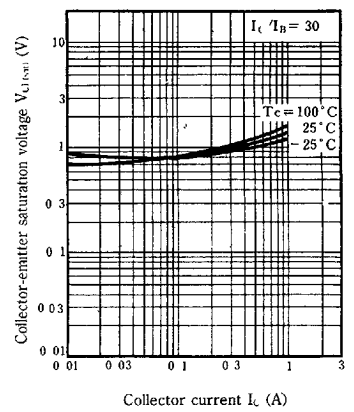
**$P_C - T_a$**



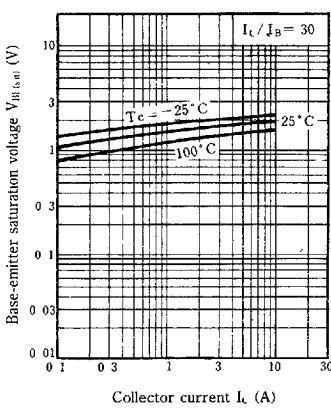
**$I_C - V_{CE}$**



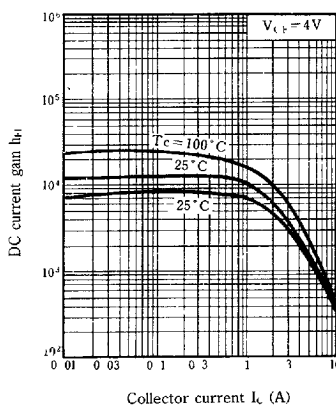
**$V_{CE(sat)} - I_C$**



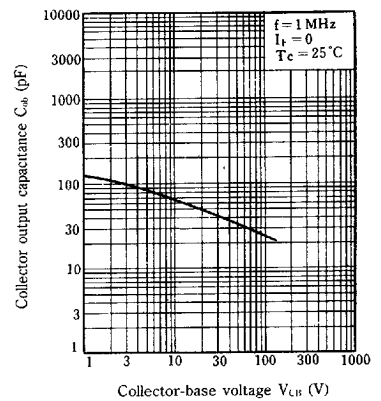
**$V_{BE(sat)} - I_C$**



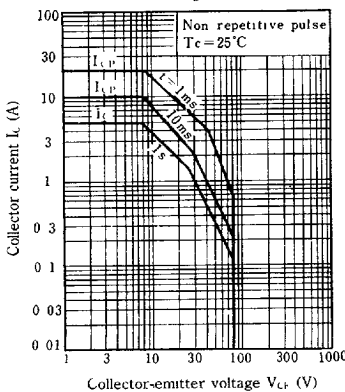
**$h_{FE} - I_C$**



**$C_{ob} - V_{CB}$**



**Area of safe operation (ASO)**



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

