

2SD1315

Silicon NPN Triple-Diffused Planar Darlington Type

Medium Speed Power

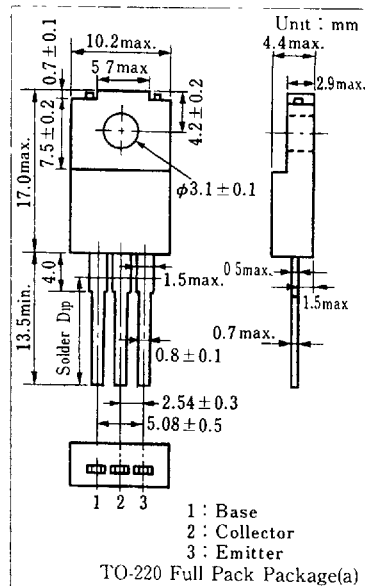
■ Features

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

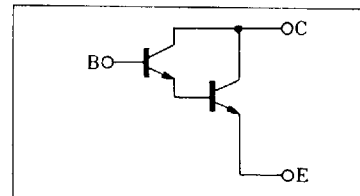
■ Absolute Maximum Ratings ($T_c=25^\circ\text{C}$)

Item	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	150	V
Collector-emitter voltage	V_{CE0}	80	V
Emitter-base voltage	V_{EB0}	20	V
Collector current	I_C	5	A
Collector power dissipation	$T_c=25^\circ\text{C}$	P_C 40	W
	$T_a=25^\circ\text{C}$	2	
Junction temperature	T_J	150	$^\circ\text{C}$
Storage temperature	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$

■ Package Dimensions



■ Inner Circuit

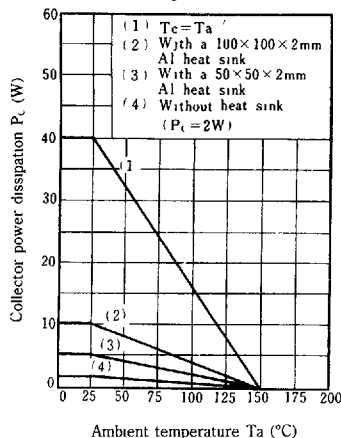
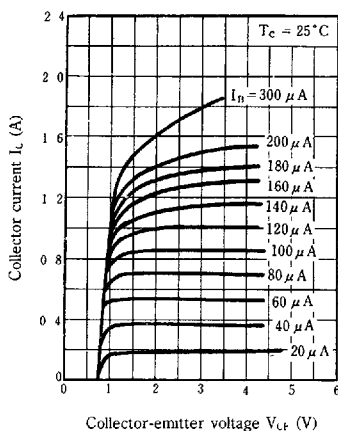
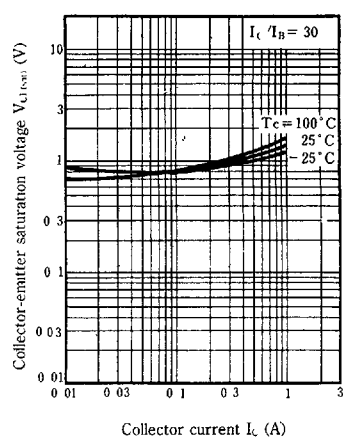
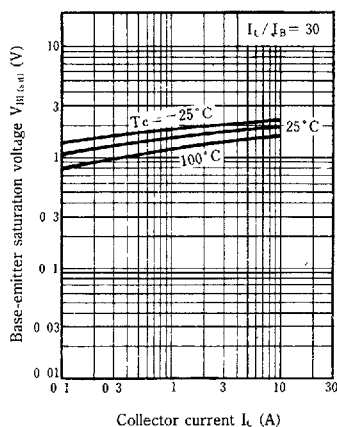
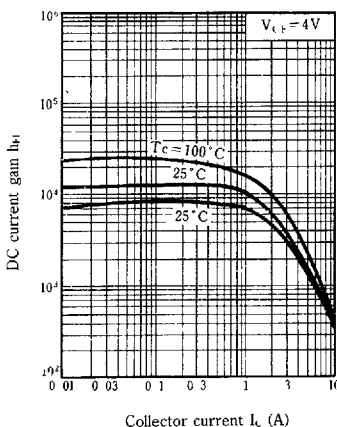
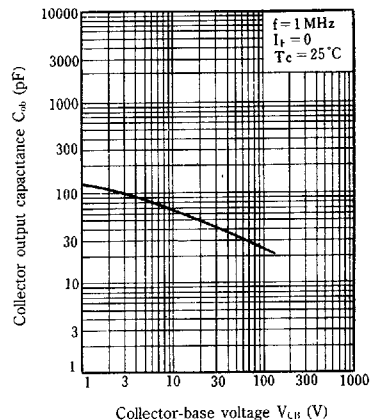


■ Electrical Characteristics ($T_c=25^\circ\text{C}$)

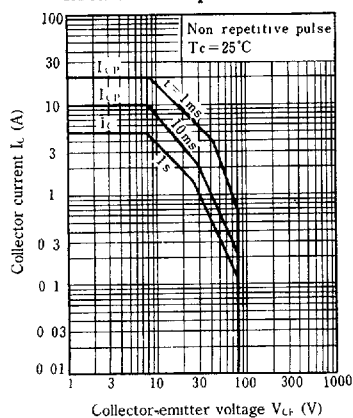
Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 150\text{ V}, I_E = 0$			1	mA
Emitter cutoff current	I_{EBO}	$V_{EB} = 20\text{ V}, I_C = 0$			1	mA
Collector-emitter voltage	V_{CE0}	$I_C = 10\text{ mA}, I_B = 0$	80			
DC current gain	h_{FI}^*	$V_{CE} = 4\text{ V}, I_C = 1\text{ A}$	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		μs
Storage time	t_{stg}			4		μs
Fall time	t_f			1		μs

* h_{FE} Classifications

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

$P_C - T_a$  $I_C - V_{CE}$  $V_{CE(sat)} - I_C$  $V_{BE(sat)} - I_C$  $h_{FE} - I_C$  $C_{ob} - V_{CB}$ 

Area of safe operation (ASO)

 $R_{th(t)} - t$ 