

# 2SD1324

Silicon NPN Triple-Diffused Planar Darlington Type

Medium Speed Power Switching

### Features

- 30V Zener diode built-in between C and B
- Very small fluctuation in breakdown voltages
- Large energy handling capability
- High speed switching
- "Full Pack" package for simplified mounting on a heat sink with one screw

### Absolute Maximum Ratings (Tc=25°C)

Item	Symbol	Value	Unit	
Collector-base voltage	$V_{CB0}$	$30 \pm 5$	V	
Collector-emitter voltage	$V_{CE0}$	$30 \pm 5$	V	
Emitter-base voltage	$V_{EB0}$	7	V	
Peak collector current	$I_{CP}$	12	A	
Collector current	$I_C$	8	A	
Collector power dissipation	$P_C$	$T_C = 25^\circ\text{C}$	45	W
		$T_a = 25^\circ\text{C}$	2	
Junction temperature	$T_J$	150	°C	
Storage temperature	$T_{stg}$	-55 ~ +150	°C	

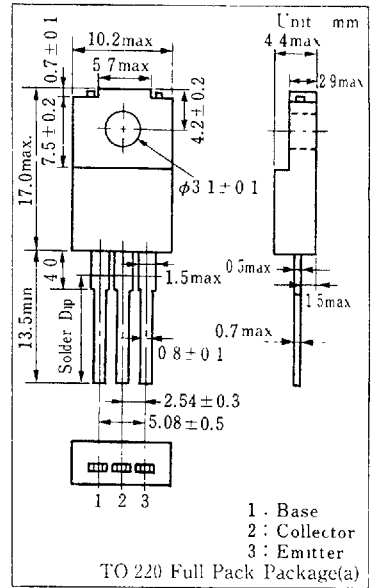
### Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min	typ	max.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 25\text{V}, I_B = 0$			100	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 7\text{V}, I_C = 0$			2	mA
Collector-emitter voltage	$V_{CE0}$	$I_C = 5\text{mA}, I_B = 0$	25		35	V
DC current gain	$h_{FE1}^{-1}$	$V_{CE} = 3\text{V}, I_C = 4\text{A}$	1000		10000	
		$V_{CE} = 3\text{V}, I_C = 8\text{A}$	500			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 4\text{A}, I_B = 8\text{mA}$			1.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 4\text{A}, I_B = 8\text{mA}$			2	V
Transition frequency	$f_T$	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$		20		MHz
Turn-on time	$t_{on}$	$I_C = 4\text{A}, I_{B1} = 8\text{mA}, I_{B2} = -8\text{mA}$ $V_{CC} = 20\text{V}$		0.5		$\mu\text{s}$
Storage time	$t_{sk}$			4		$\mu\text{s}$
Fall time	$t_f$			1		$\mu\text{s}$
Energy handling capability	$E_{cb}^{*2}$	$I_C = 2\text{A}, L = 100\text{mH}, R_{th} = 100\Omega$	200			mJ

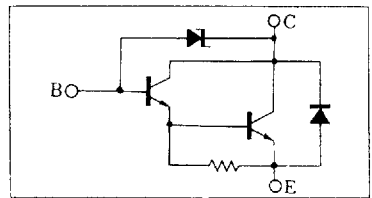
### $h_{FE1}$ Classifications

Class	R	Q	P
$h_{FE1}$	1000 ~ 2500	2000 ~ 5000	4000 ~ 10000

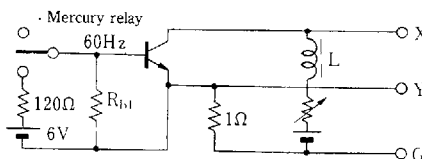
### Package Dimensions



### Inner Circuit

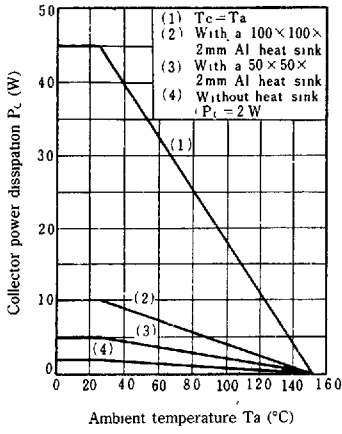


\*<sup>2</sup>E<sub>cb</sub> Test method

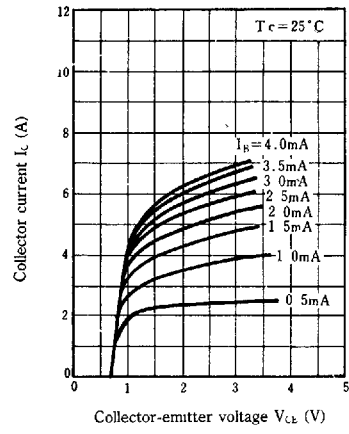


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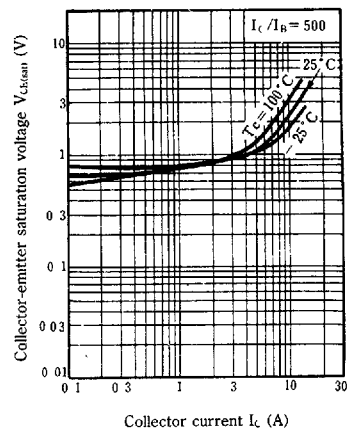
$P_C - T_a$



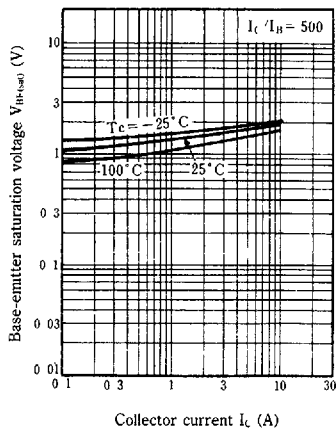
$I_C - V_{CE}$



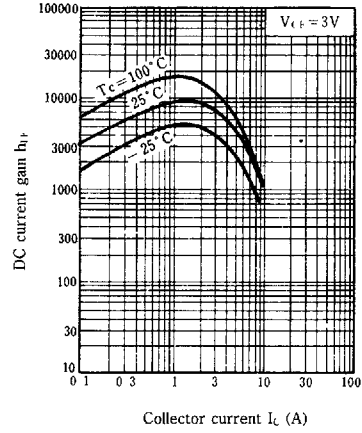
$V_{CE(sat)} - I_C$



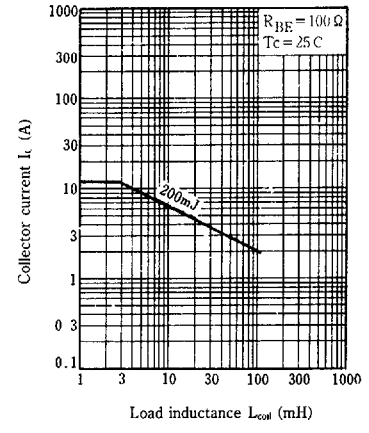
$V_{BE(sat)} - I_C$



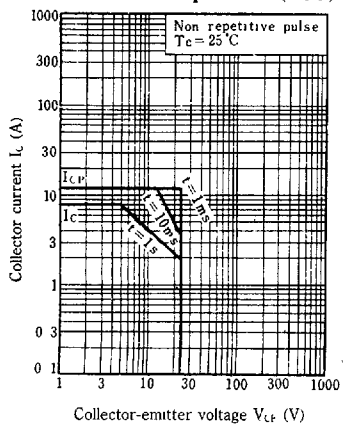
$h_{FE} - I_C$



$I_C - L_{coil}$



Area of safe operation (ASO)



$R_{th(t)} - t$

