

# 2SD1316

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
- "N Type" package configuration with a cooling fin for direct soldering on PC board of a small-size electronic equipment

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

Item	Symbol	Value	Unit
Collector-base voltage	$V_{CB0}$	30 ± 5	V
Collector-emitter voltage	$V_{CE0}$	30 ± 5	V
Emitter-base voltage	$V_{EB0}$	5	V
Peak collector current	$I_{CP}$	4	A
Collector current	$I_C$	2	A
Collector power dissipation	$P_C$	Tc = 25 °C	35
		Ta = 25 °C	1.3
Junction temperature	T	150	°C
Storage temperature	T <sub>stg</sub>	-55 ~ +150	°C

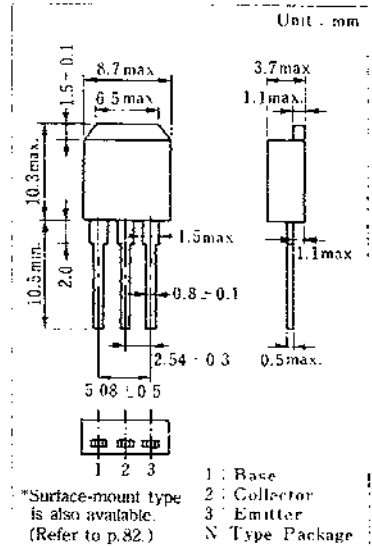
### Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CE} = 25V, I_B = 0$			100	μA
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 5V, I_C = 0$			2	mA
Collector-emitter voltage	$V_{CE0}$	$I_C = 5mA, I_B = 0$	25		35	V
DC current gain	$h_{FE}$	$V_{CE} = 4V, I_C = 1A$	1000			
	$h_{FE}^{*1}$	$V_{CE} = 4V, I_C = 2A$	1000		10000	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 2A, I_B = 8mA$			2.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 2A, I_B = 8mA$			2.5	V
Transition frequency	$f_T$	$V_{CE} = 10V, I_C = 0.5A, f = 1MHz$		20		MHz
Turn-on time	$t_{on}$	$I_C = 2A, I_{B1} = 8mA, I_{B2} = -8mA$		0.4		μs
Storage time	$t_{sk}$	$V_{CE} = 20V$		3		μs
Fall time	$t_f$			1		μs
Energy handling capability	$E_{on(b)}^{*2}$	$I_C = 1.45A, I_L = 100mI, R_{th} = 100 \Omega$	100			mJ

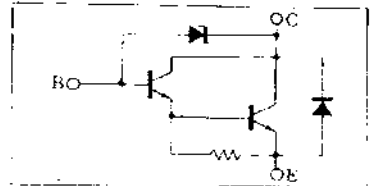
### h<sub>FE</sub> Classifications

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

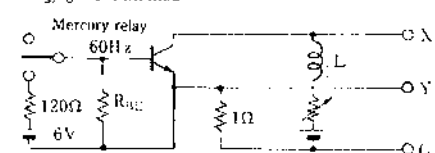
### Package Dimensions



### Inner Circuit



### \*2E<sub>on(b)</sub> Test method



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