2SD1318

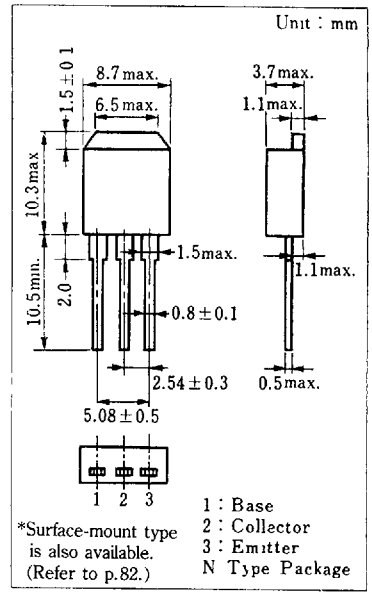
Silicon NPN Triple-Diffused Planar Darlington Type

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

■ Package Dimensions

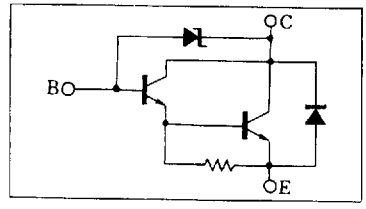


*Surface-mount type is also available. (Refer to p.82.)

■ Absolute Maximum Ratings (Tc=25°C)

Item		Symbol	Value	Unit
Collector-base voltage		V_{CBO}	30±5	V
Collector-emitter voltage		V_{CEO}	30±5	V
Emitter-base voltage		V_{EBO}	7	V
Peak collector current		I_{CP}	12	A
Collector current		I_C	8	A
Collector power dissipation	Tc=25 °C	P_C	45	W
	Ta=25 °C		1.3	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55~+150	°C

■ Inner Circuit



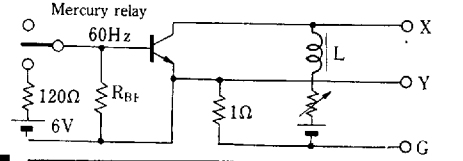
■ Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CBO}	V_{CB}=25 V, I_C=0			100	μA
Emitter cutoff current	I_{EBO}	V_{EB}=25 V, I_F=0			2	mA
Collector-emitter voltage	V_{CEO}	I_C=5 mA, I_B=0	25		35	V
DC current gain	h_{FE1}*1	V_{CE}=3 V, I_C=4 A	1000		10000	
	h_{FE2}	V_{CE}=3 V, I_C=8 A	500			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=4 A, I_B=8 mA			1.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=4 A, I_B=8 mA			2	V
Transition frequency	f_t	V_{CE}=10V, I_C=0.5A, f=1MHz		20		MHz
Turn-on time	t_{on}	I_C=4A, I_{B1}=8mA, I_{B2}=−8mA, V_{CC}=20V		0.5		μs
Storage time	t_{stg}			4		μs
Fall time	t_f			1		μs
Energy handling capability	$E_{s/b}$*2	I_C=2 A, L=100 mH, R_{BF}=100 Ω	200			mJ

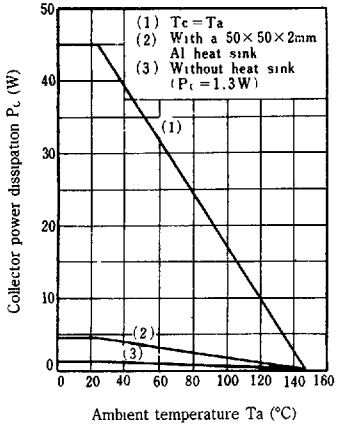
*1 h_{FE1} Classifications

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

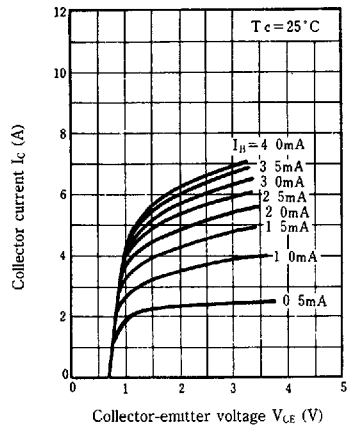
*2 $E_{s/b}$ Test method



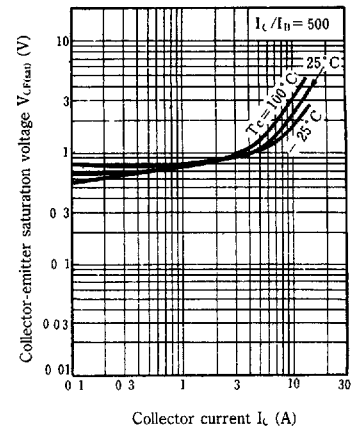
$P_C - Ta$



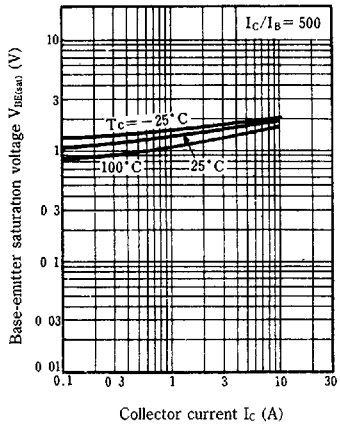
$I_C - V_{CE}$



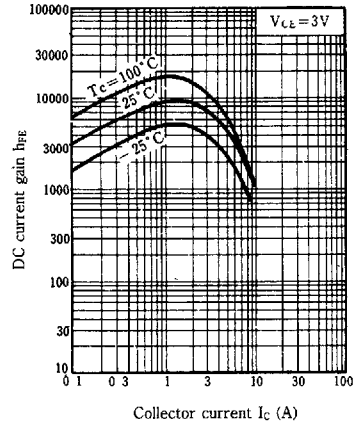
$V_{CE(sat)} - I_C$



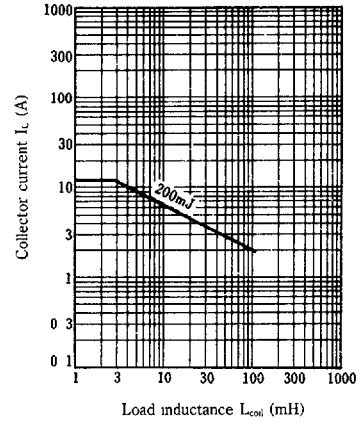
$V_{BE(sat)} - I_C$



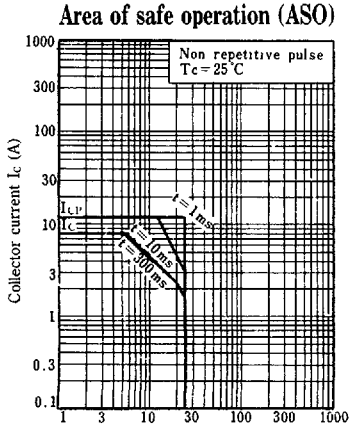
$h_{FE} - I_C$



$I_C - L_{coil}$



Area of safe operation (ASO)



$R_{th(t)} - t$