

2SD1327

Silicon NPN triple diffusion planar type Darlington

For medium speed power switching

Features

- Incorporating a zener diode of 60V zener voltage between collector and base
- Minimized variation in the breakdown voltage
- Large energy handling capability
- High-speed switching
- Full-pack package which can be installed to the heat sink with one screw

Absolute Maximum Ratings (T_C=25°C)

Parameter	Symbol	Ratings	Unit	
Collector to base voltage	V _{CB0}	60±10	V	
Collector to emitter voltage	V _{CEO}	60±10	V	
Emitter to base voltage	V _{EBO}	7	V	
Peak collector current	I _{CP}	12	A	
Collector current	I _C	8	A	
Collector power dissipation	P _C	T _C =25°C	45	W
		T _a =25°C	2	
Junction temperature	T _j	150	°C	
Storage temperature	T _{stg}	-55 to +150	°C	

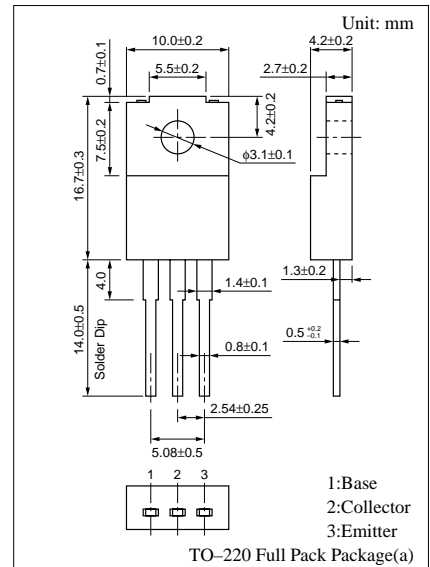
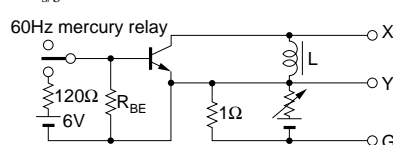
Electrical Characteristics (T_C=25°C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I _{CB0}	V _{CB} = 50V, I _E = 0			100	μA
Emitter cutoff current	I _{EBO}	V _{EB} = 7V, I _C = 0			2	mA
Collector to emitter voltage	V _{CEO}	I _C = 5mA, I _B = 0	50		70	V
Forward current transfer ratio	h _{FE1} ^{*1}	V _{CE} = 3V, I _C = 4A	2000		10000	
	h _{FE2}	V _{CE} = 3V, I _C = 8A	500			
Collector to emitter saturation voltage	V _{CE(sat)}	I _C = 4A, I _B = 8mA			1.5	V
Base to emitter saturation voltage	V _{BE(sat)}	I _C = 4A, I _B = 8mA			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} = 50V		0.5		μs
Storage time	t _{stg}			4		μs
Fall time	t _f			1		μs
Energy handling capability	E _{s/b} ^{*2}	I _C = 1A, L = 100mH, R _{BE} = 100Ω	50			mJ

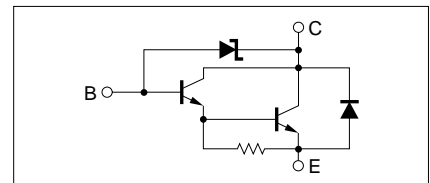
^{*1}h_{FE1} Rank classification

Rank	Q	P
h _{FE1}	2000 to 5000	4000 to 10000

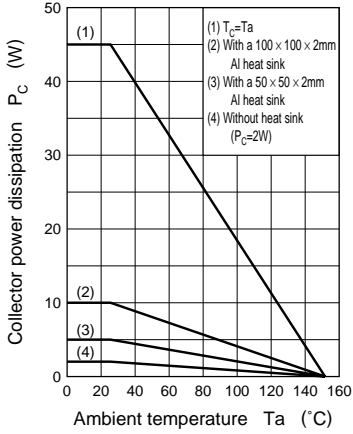
^{*2}E_{s/b} Test circuit



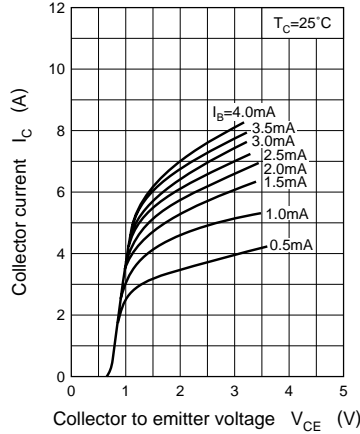
Internal Connection



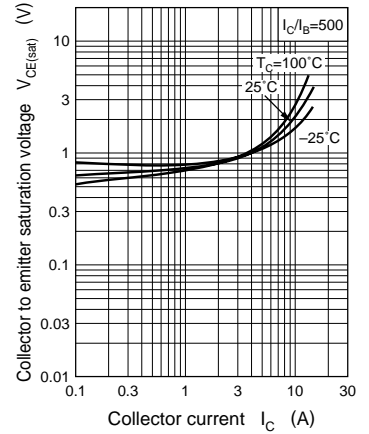
$P_C - T_a$



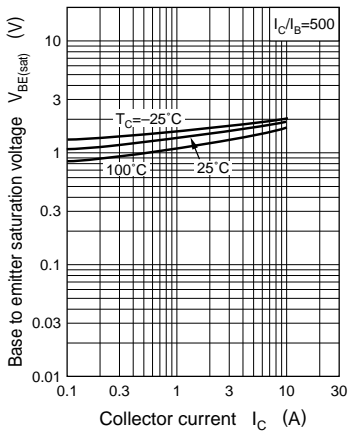
$I_C - V_{CE}$



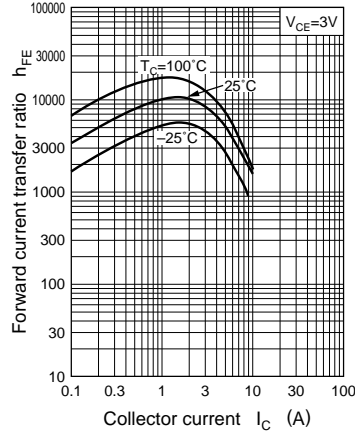
$V_{CE(sat)} - I_C$



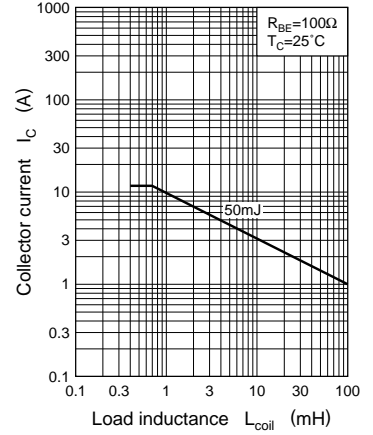
$V_{BE(sat)} - I_C$



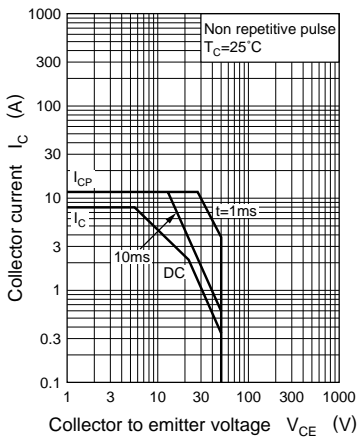
$h_{FE} - I_C$



$I_C - L_{coil}$



Area of safe operation (ASO)



$R_{th(t)} - t$

