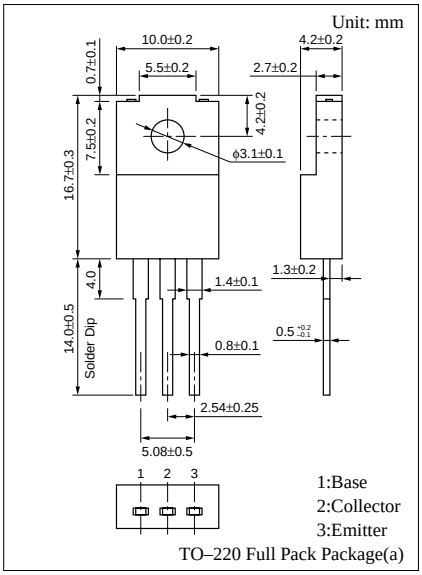
2SD1327

Silicon NPN triple diffusion planar type Darlington

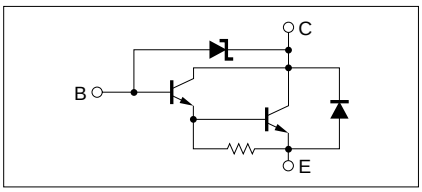
For midium speed power switching

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



Internal Connection



Absolute Maximum Ratings (T_C=25˚C)

Parameter		Symbol	Ratings	Unit
Collector to base voltage		V_{CBO}	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	T_C=25°C	P_C	45	W
	Ta=25°C		2	
Junction temperature		T_j	150	˚C
Storage temperature		T_{stg}	–55 to +150	˚C

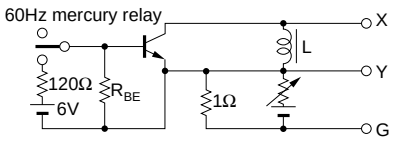
Electrical Characteristics (T_C=25˚C)

Parameter	Symbol	Conditions	min	typ	max	Unit
Collector cutoff current	I_{CBO}	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

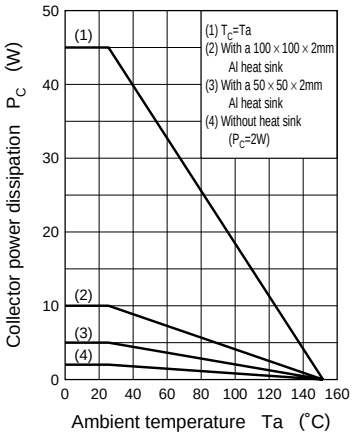
*1 h_{FE1} Rank classification

Rank	Q	P
h_{FE1}	2000 to 5000	4000 to 10000

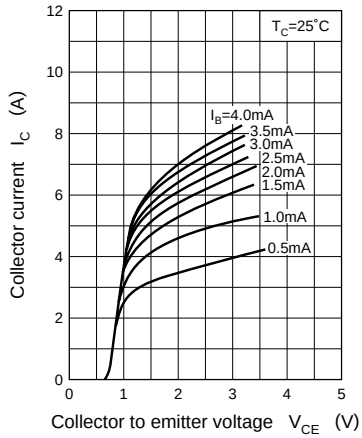
*2 $E_{s/b}$ Test circuit



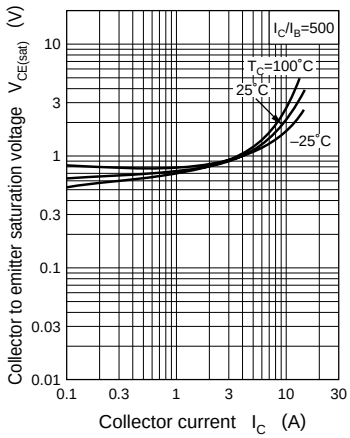
P_C — Ta



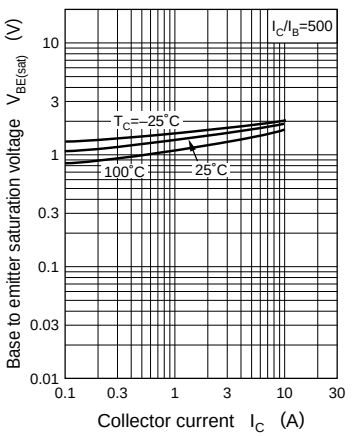
I_C — V_{CE}



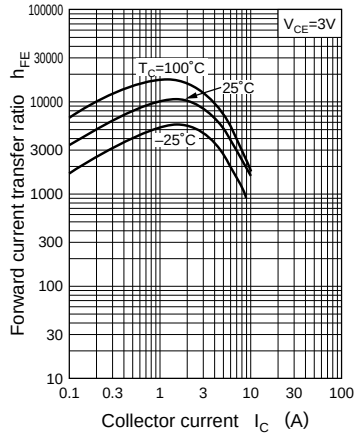
$V_{CE(sat)}$ — I_C



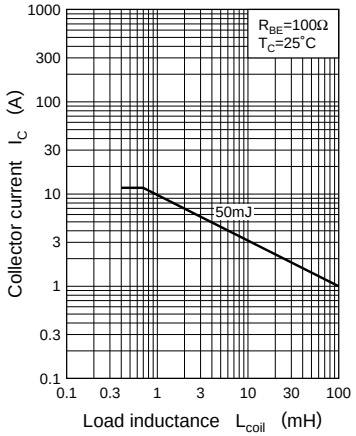
$V_{BE(sat)}$ — I_C



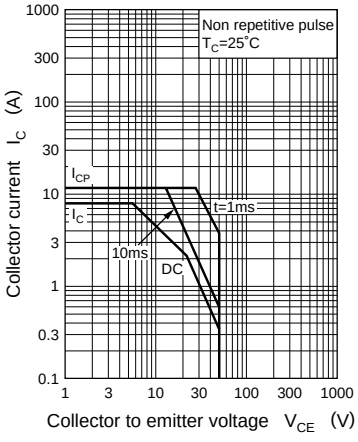
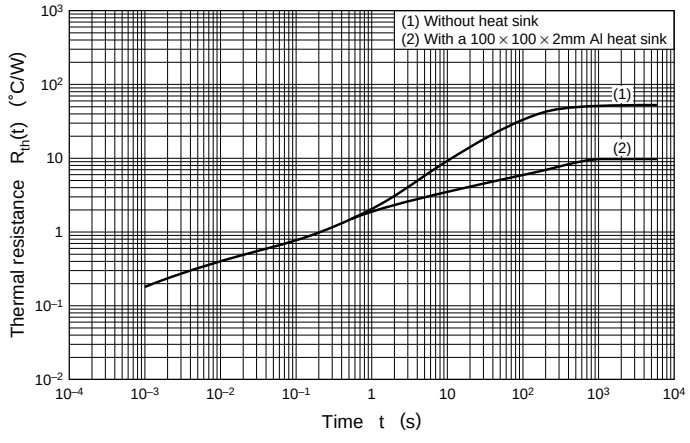
h_{FE} — I_C



I_C — L_{coil}



Area of safe operation (ASO)



$R_{th(t)}$ — t