2SD1316

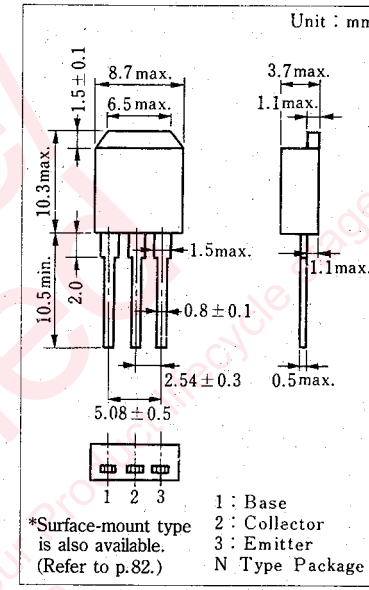
Silicon NPN Triple-Diffused Planar Darlington Type

Medium Speed Power Switching

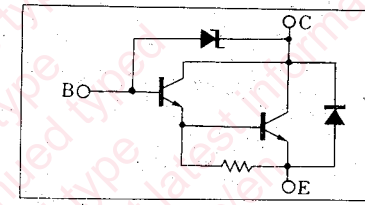
■ Features

- 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

■ Package Dimensions



■ Inner Circuit



■ 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}	5	V
Peak collector current		I_{CP}	4	A
Collector current		I_C	2	A
Collector power dissipation	Tc=25°C	P_C	35	W
	Ta=25°C		1.3	
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	−55~+150	°C

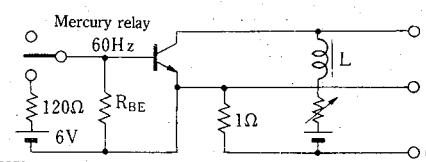
■ Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CBO}	V_{CB}=25V, I_E=0			100	μA
Emitter cutoff current	I_{EBO}	V_{EB}=5V, I_C=0			2	mA
Collector-emitter voltage	I_{CEO}	I_C=5mA, I_B=0	25		35	V
DC current gain	h_{FE1}	V_{CE}=4V, I_C=1A	1000			
	h_{FE2}*1	V_{CE}=4V, I_C=2A	1000		10000	
Collector-emitter saturation voltage	$I_{CE(sat)}$	I_C=2A, I_B=8mA			2.5	V
Base-emitter saturation voltage	$I_{BE(sat)}$	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 V_{CC}=20V		0.4		μs
Storage time	t_{stg}			3		μs
Fall time	t_f			1		μs
Energy handling capability	$E_{s/b}$*2	I_C=1.45A, L=100mH, R_{BE}=100Ω	100			mJ

*1 h_{FE2} Classifications

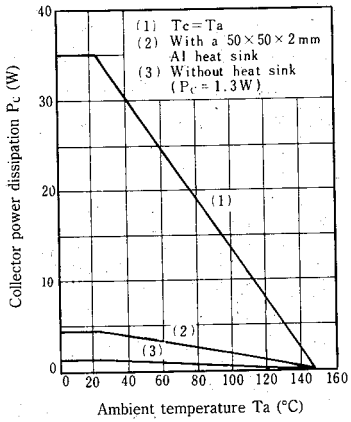
Class	R	Q	P
h_{FE2}	1000~2500	2000~5000	4000~10000

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

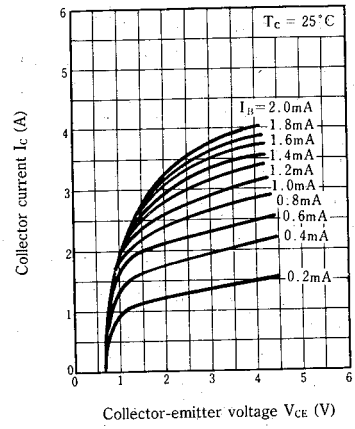


Panasonic

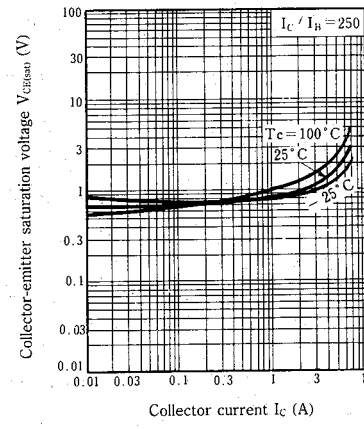
$P_C - Ta$



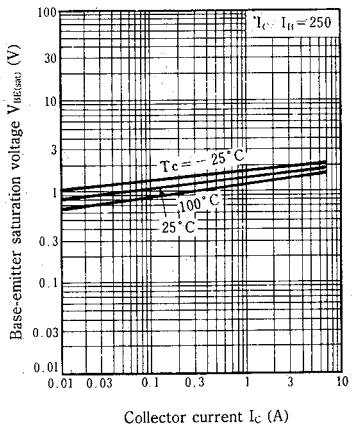
$I_C - V_{CE}$



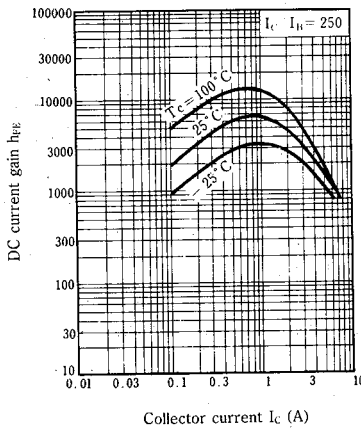
$V_{CE(sat)} - I_C$



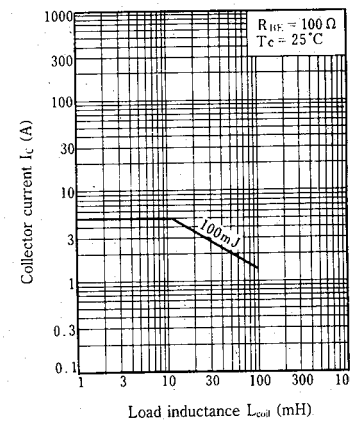
$V_{BE(sat)} - I_C$



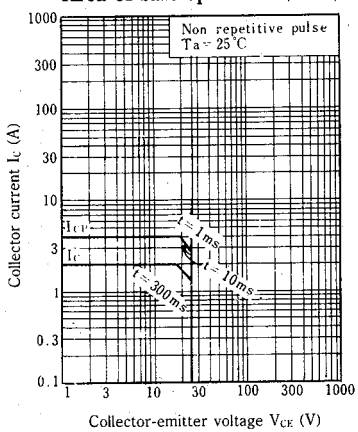
$h_{FE} - I_C$



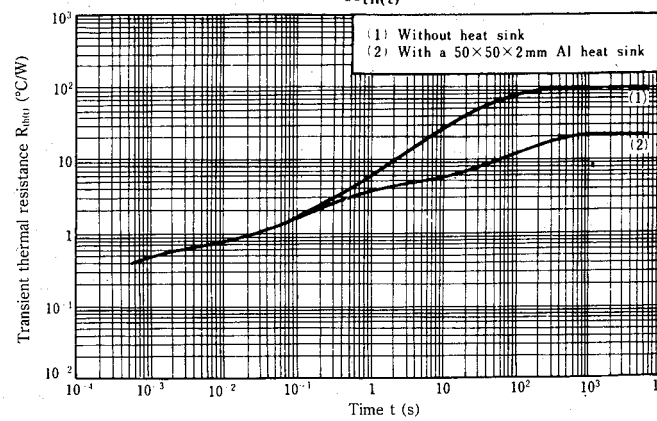
$I_C - L_{coil}$



Area of safe operation (ASO)



$R_{th(t)} - t$



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