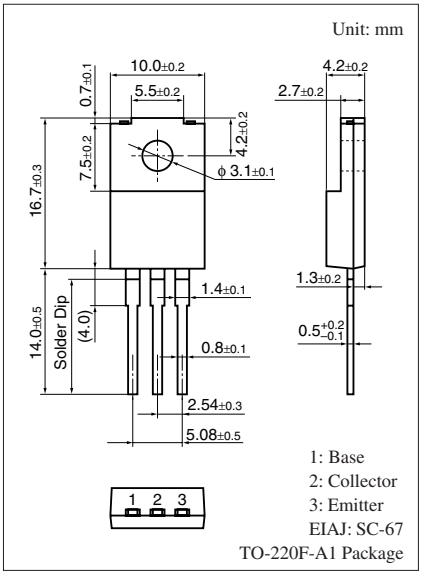
2SD1633

Silicon NPN triple diffusion planar type darlington

For voltage switching

■ Features

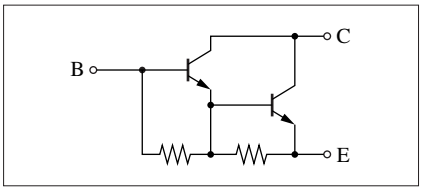
- High-speed switching
- Satisfactory linearity of forward current transfer ratio h_{FE}
- Full-pack package which can be installed to the heat sink with one screw



■ Absolute Maximum Ratings $T_C = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	100	V
Collector-emitter voltage (Base open)	V_{CEO}	100	V
Emitter-base voltage (Collector open)	V_{EBO}	7	V
Collector current	I_C	5	A
Peak collector current	I_{CP}	8	A
Base current	I_B	0.5	A
Collector power dissipation	P_C	30	W
$T_a = 25°C$		2.0	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

Internal Connection



■ Electrical Characteristics $T_C = 25°C \pm 3°C$

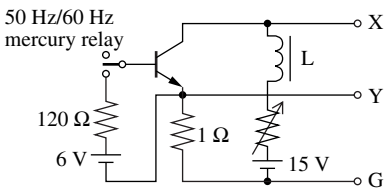
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter sustaining voltage *2	$V_{CEO(SUS)}$	I_C = 0.2 A, L = 25 mH	100			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 100 V, I_E = 0			100	μA
Collector-emitter cut-off current (Base open)	I_{CEO}	V_{CE} = 100 V, I_B = 0			100	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 7 V, I_C = 0			5	mA
Forward current transfer ratio *1	h_{FE}	V_{CE} = 3 V, I_C = 3 A	1 500		15 000	—
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 3 A, I_B = 3 mA			1.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 3 A, I_B = 3 mA			2.0	V
Transition frequency	f_T	V_{CE} = 10 V, I_C = 1 A, f = 1 MHz		15		MHz
Turn-on time	t_{on}	I_C = 3 A, I_{B1} = 3 mA, I_{B2} = −3 mA			3	μs
Storage time	t_{stg}	V_{CC} = 50 V			5	μs
Fall time	t_f				3	μs

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

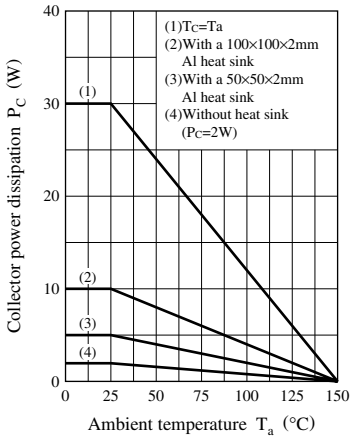
2. *1: Rank classification

Rank	Q	P
h_{FE}	1 500 to 6 000	5 000 to 15 000

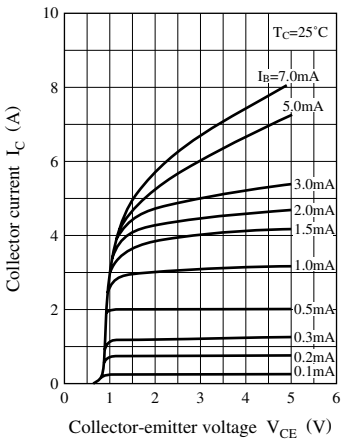
*2: $V_{CEO(SUS)}$ test circuit



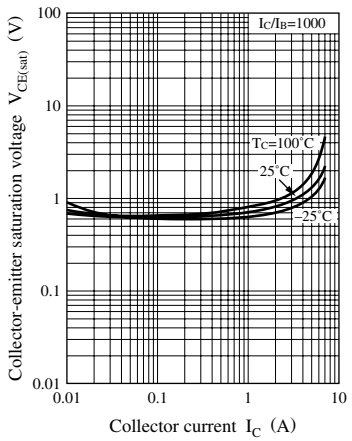
P_C — T_a



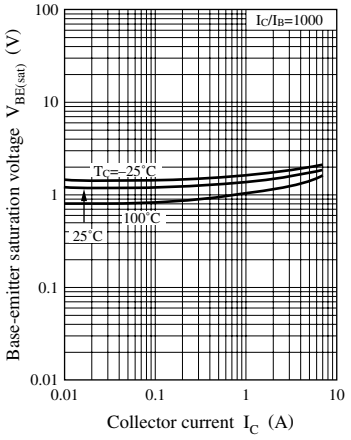
I_C — V_{CE}



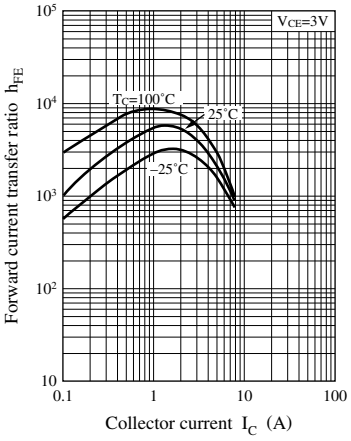
$V_{CE(sat)}$ — I_C



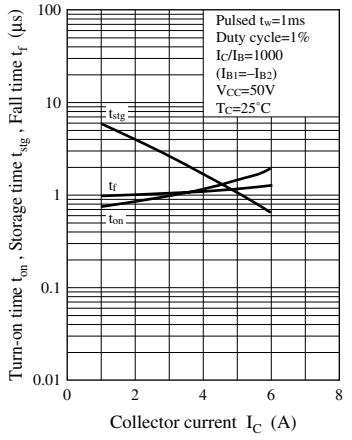
$V_{BE(sat)}$ — I_C



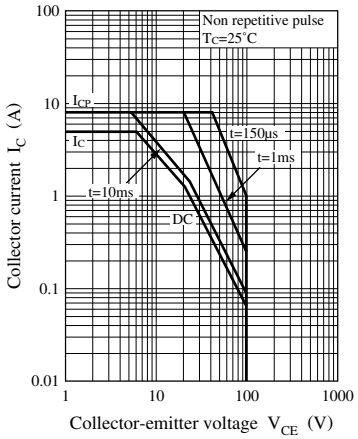
h_{FE} — I_C



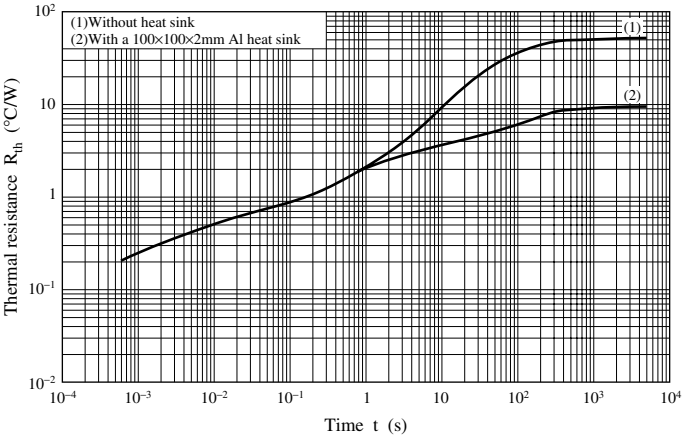
t_{on}, t_{stg}, t_f — I_C



Safe operation area



R_{th} — t



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