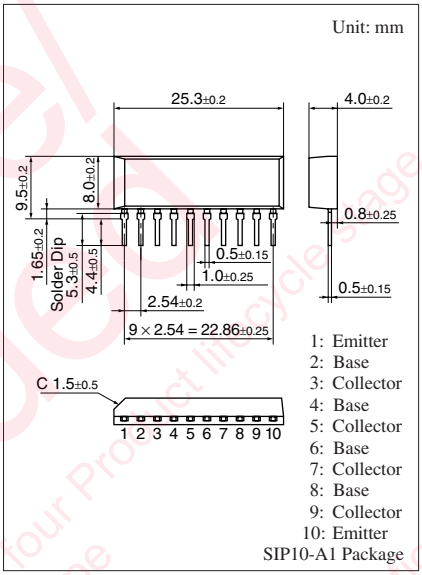
PUB4325 (PU4325)

Silicon NPN/PNP planar type darlington

For power amplification



■ Features

- NPN 2 elements + PNP 2 elements

NPN

- High forward current transfer ratio h_{FE}
- Darlington connection with a built-in zener diode

PNP

- High forward current transfer ratio h_{FE} which has satisfactory linearity
- Low collector-emitter saturation voltage $V_{CE(sat)}$

■ Absolute Maximum Ratings $T_C = 25°C$

	Parameter	Symbol	Rating	Unit
NPN	Collector-base voltage (Emitter open)	V_{CBO}	60±10	V
	Collector-emitter voltage (Base open)	V_{CEO}	60±10	V
	Emitter-base voltage (Collector open)	V_{EBO}	5	V
	Collector current	I_C	2	A
	Peak collector current	I_{CP}	4	A
PNP	Collector-base voltage (Emitter open)	V_{CBO}	−60	V
	Collector-emitter voltage (Base open)	V_{CEO}	−60	V
	Emitter-base voltage (Collector open)	V_{EBO}	−6	V
	Collector current	I_C	−3	A
	Peak collector current	I_{CP}	−5	A
Overall	Collector power dissipation	P_C	15	W
	$T_a = 25°C$		3.5	
	Junction temperature	T_j	150	°C
	Storage temperature	T_{stg}	−55 ~ +150	°C

Note) The part number in the parenthesis shows conventional part number.

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

• NPN

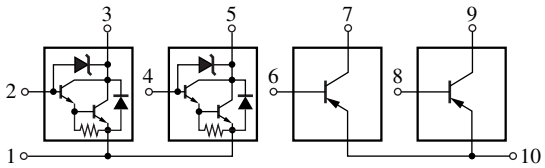
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	I_C = 5 mA, I_B = 0	50		70	V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 50 V, I_E = 0			100	µA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 5 V, I_C = 0			2	mA
Forward current transfer ratio	h_{FE1}	V_{CE} = 4 V, I_C = 1 A	1 000			—
	h_{FE2}	V_{CE} = 4 V, I_C = 2 A	1 000		10 000	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 2 A, I_B = 8 mA			2.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 2 A, I_B = 8 mA			2.5	V
Transition frequency	f_T	V_{CE} = 10 V, I_C = 0.5 A, f = 10 MHz		30		MHz
Energy handling capability	$E_{s/b}$	I_C = 0.71 A, L = 100 mH, R_{BE} = 100 Ω	25			mJ

• PNP

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	I_C = −30 mA, I_B = 0	−60			V
Base-emitter voltage	V_{BE}	V_{CE} = −4 V, I_C = −3 A			−1.8	V
Collector-emitter current (E-B short)	I_{CES}	V_{CE} = −60 V, V_{BE} = 0			−200	µA
Collector-emitter cutoff current (Base open)	I_{CEO}	V_{CE} = −30 V, I_B = 0			−300	µA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = −6 V, I_C = 0			−1	mA
Forward current transfer ratio	h_{FE1}	V_{CE} = −4 V, I_C = −1 A	70		250	—
	h_{FE2}	V_{CE} = −4 V, I_C = −3 A	10			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = −3 A, I_B = − 0.375 A			−1.2	V
Transition frequency	f_T	V_{CE} = −10 V, I_C = − 0.5 A, f = 10 MHz		30		MHz

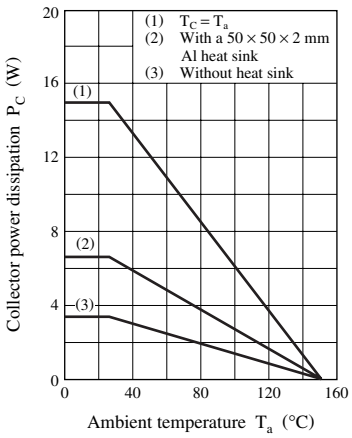
Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

■ Internal Connection



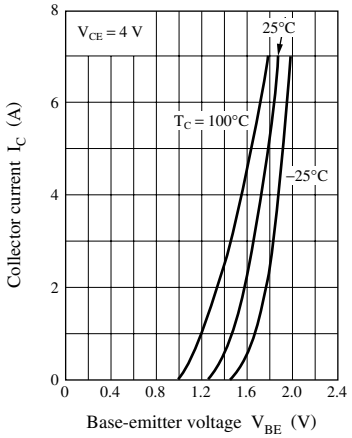
Common characteristics chart

P_C — T_a

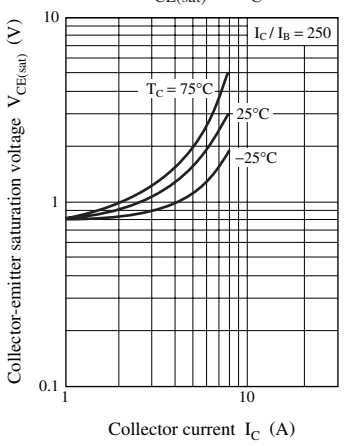


Characteristics charts of NPN

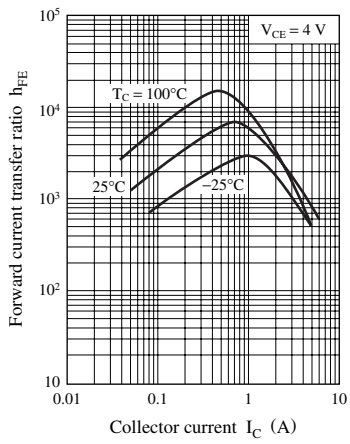
I_C — V_{BE}



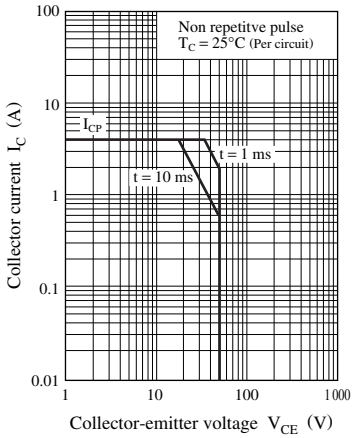
$V_{CE(sat)}$ — I_C



h_{FE} — I_C

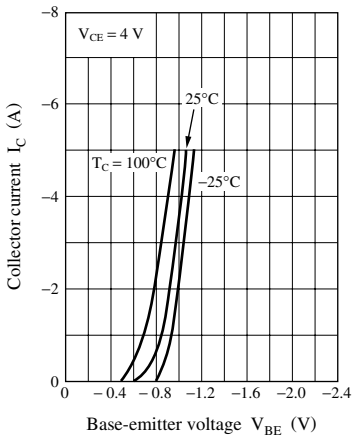


Safe operation area

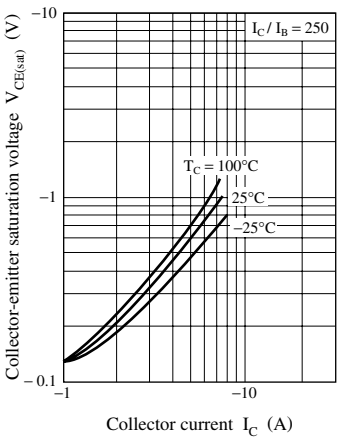


Characteristics charts of PNP

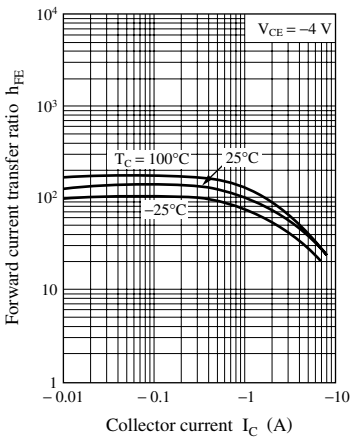
I_C — V_{BE}



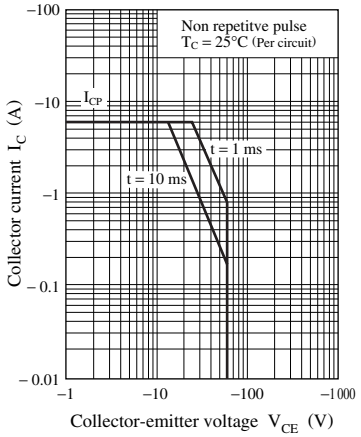
$V_{CE(sat)}$ — I_C



h_{FE} — I_C



Safe operation area



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