

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

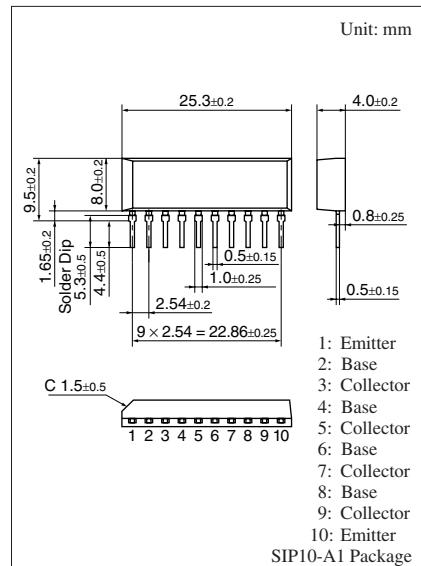
PNP

- High forward current transfer ratio h_{FE} which has satisfactory linearity

- Low collector-emitter saturation voltage $V_{CE(sat)}$

■ Absolute Maximum Ratings $T_C = 25^\circ\text{C}$

	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 $T_a = 25^\circ\text{C}$	P_C	15	W
			3.5	
	Junction temperature	T_j	150	$^\circ\text{C}$
	Storage temperature	T_{stg}	-55 ~ +150	$^\circ\text{C}$



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

■ Electrical Characteristics $T_C = 25^\circ\text{C} \pm 3^\circ\text{C}$

• NPN

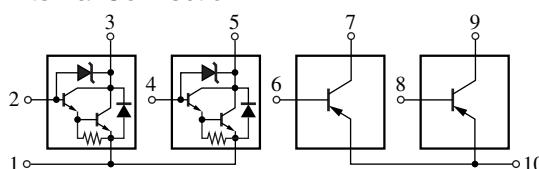
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = 5 \text{ mA}, I_B = 0$	50		70	V
Collector-base cutoff current (Emitter open)	I_{CBO}	$V_{CB} = 50 \text{ V}, I_E = 0$			100	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	$V_{EB} = 5 \text{ V}, I_C = 0$			2	mA
Forward current transfer ratio	h_{FE1}	$V_{CE} = 4 \text{ V}, I_C = 1 \text{ A}$	1000			—
	h_{FE2}	$V_{CE} = 4 \text{ V}, I_C = 2 \text{ A}$	1000		10000	
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$	$I_C = 2 \text{ A}, I_B = 8 \text{ mA}$			2.5	V
Base-emitter saturation voltage	$V_{BE(\text{sat})}$	$I_C = 2 \text{ A}, I_B = 8 \text{ mA}$			2.5	V
Transition frequency	f_T	$V_{CE} = 10 \text{ V}, I_C = 0.5 \text{ A}, f = 10 \text{ MHz}$		30		MHz
Energy handling capability	$E_{s/b}$	$I_C = 0.71 \text{ A}, L = 100 \text{ mH}, R_{BE} = 100 \Omega$	25			mJ

• PNP

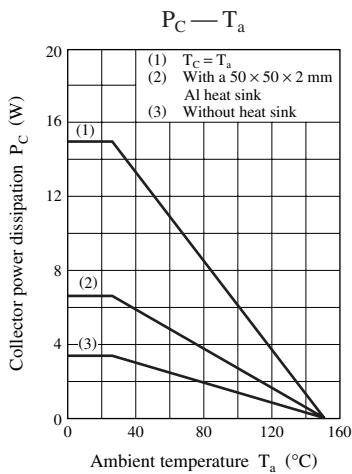
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	$I_C = -30 \text{ mA}, I_B = 0$	-60			V
Base-emitter voltage	V_{BE}	$V_{CE} = -4 \text{ V}, I_C = -3 \text{ A}$			-1.8	V
Collector-emitter current (E-B short)	I_{CES}	$V_{CE} = -60 \text{ V}, V_{BE} = 0$			-200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

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

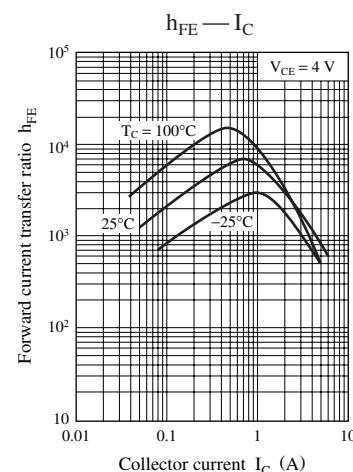
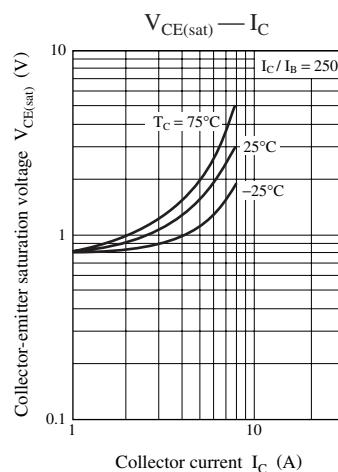
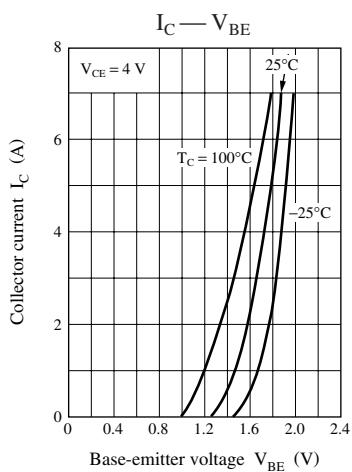
■ Internal Connection



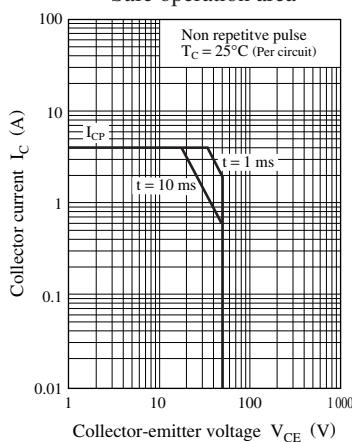
Common characteristics chart



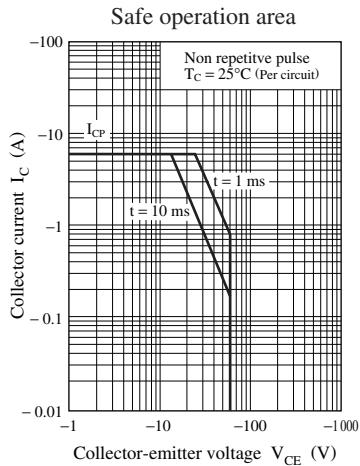
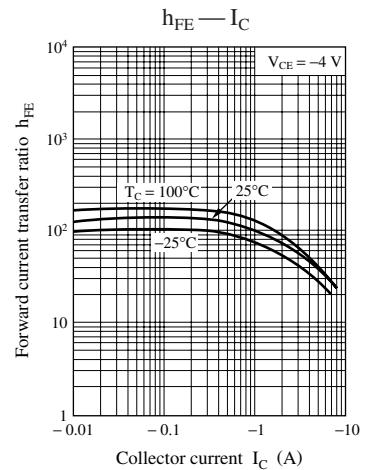
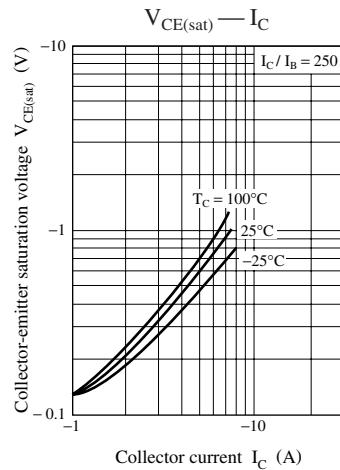
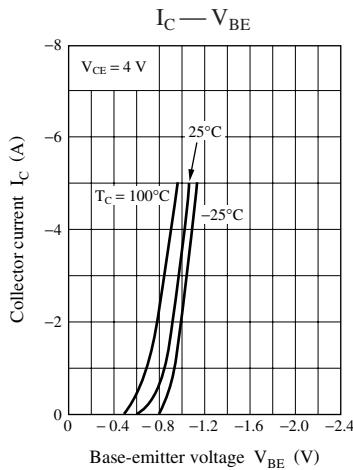
Characteristics charts of NPN



Safe operation area



Characteristics charts of PNP



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