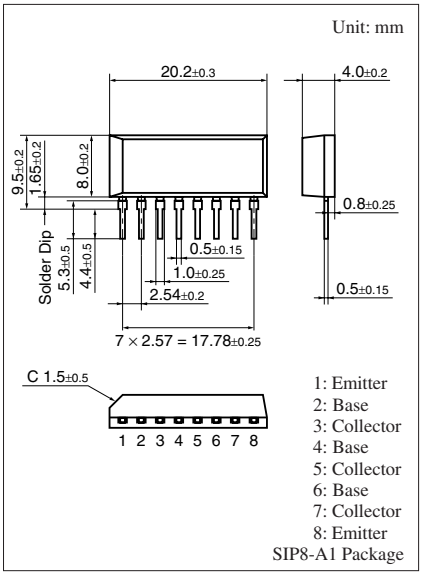
PUA3123 (PU3123)

Silicon NPN triple diffusion planar type darlington

For power amplification



■ Features

- Built-in zener diode (60 V) between collector and base
- Small variation in withstand pressure
- Large energy handling capability
- High-speed switching
- NPN 3 elements

■ Absolute Maximum Ratings $T_C = 25°C$

Parameter	Symbol	Rating	Unit
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
Collector power dissipation	P_C	15	W
$T_a = 25°C$		2.4	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

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

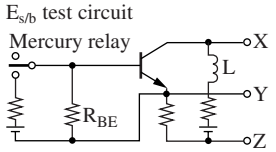
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	I_C = 5 mA, I_B = 0	50		70	V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 50 V, I_E = 0			100	µA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 5 V, I_C = 0			2	mA
Forward current transfer ratio	h_{FE1}	V_{CE} = 4 V, I_C = 1 A	1 000			—
	h_{FE2} *1	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 = 1 MHz		20		MHz
Turn-on time	t_{on}	I_C = 2 A		0.4		µs
Storage time	t_{stg}	I_{B1} = 8 mA, I_{B2} = −8 mA		3.0		µs
Fall time	t_f	V_{CC} = 50 V		1.0		µs
Energy handling capability *2	$E_{s/b}$	I_C = 0.71 A, L = 100 mH, R_{BE} = 100 Ω	25			mJ

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

2. ∗1: Rank classification

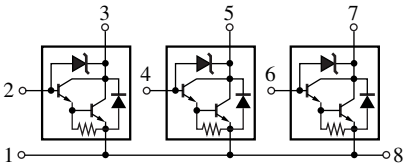
Rank	Free	P	Q
h_{FE}	1 000 to 10 000	2 000 to 10 000	1 000 to 5 000

∗2: $E_{s/b}$ test circuit

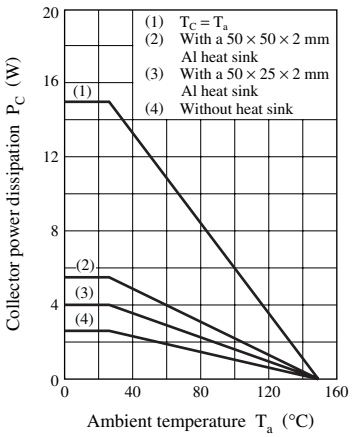


Note) The part number in the parenthesis shows conventional part number.

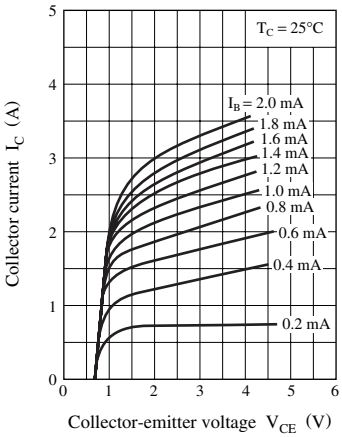
■ Internal Connection



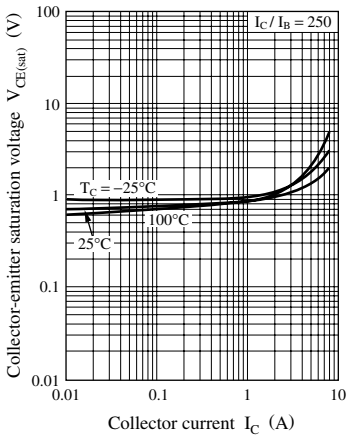
P_C — T_a



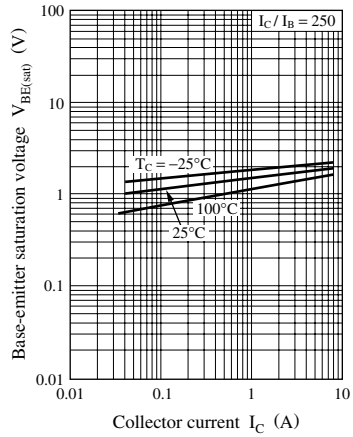
I_C — V_{CE}



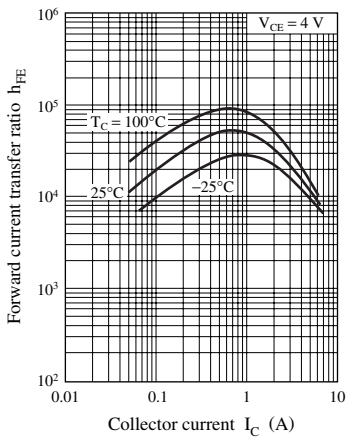
$V_{CE(sat)}$ — I_C



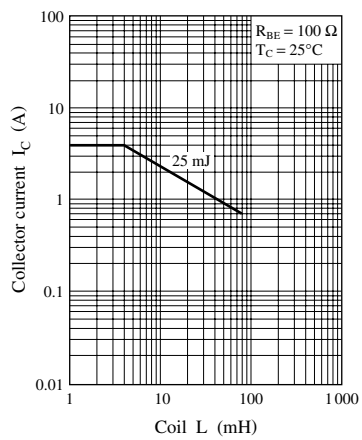
$V_{BE(sat)}$ — I_C



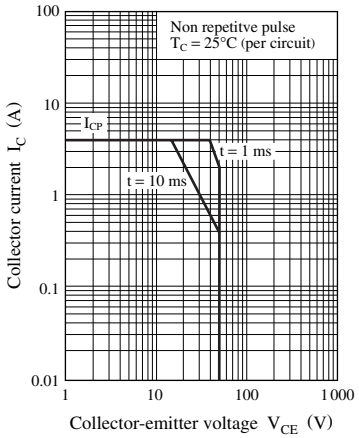
h_{FE} — I_C



Guidance load characteristic



Safe operation area



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