PU3120, PU4120, PU4420

Silicon NPN Triple-Diffused Planar Darlington Type

Power Amplifier, Switching
Complementary Pair with PU3220, PU4220, PU4520

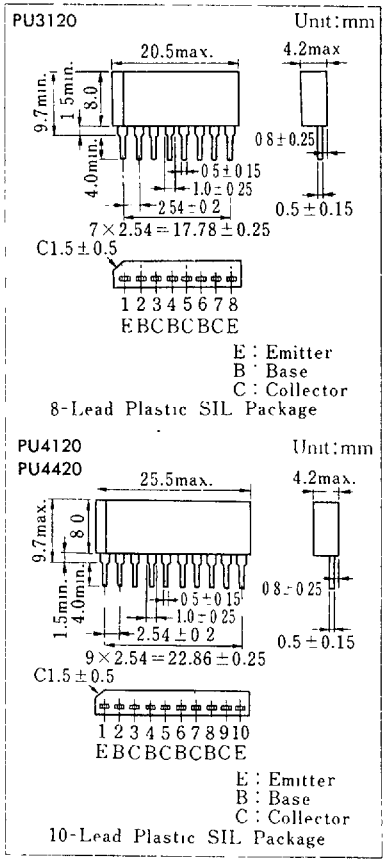
■ Features

- High DC current gain (h_{FE})
- High speed switching
- PU3120: 3 NPN elements
- PU4120: 4 NPN elements
- PU4120: 2 NPN elements × 2 (4 elements in total)

■ Absolute Maximum Ratings (Tc=25°C)

Item	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	60	V
Emitter-base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	8	A
Collector current	I_C	4	A
Power dissipation	P_D	15	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 ~ +150	°C

■ Package Dimensions



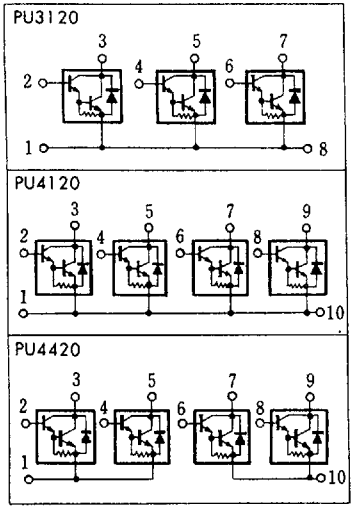
■ Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CBO}	V_{CB}=60V, I_E=0			200	μA
	I_{CEO}	V_{CE}=30V, I_B=0			500	μA
Emitter cutoff current	I_{EBO}	V_{EB}=5V, I_C=0			2	mA
Collector-emitter voltage	V_{CEO}	I_C=30mA, I_B=0	60			V
DC current gain	h_{FE1}	V_{CE}=3V, I_C=0.5A	1000			
	h_{FE2}*	V_{CE}=3V, I_C=3A	1000		10000	
Base-emitter voltage	V_{BE}	V_{CE}=3V, I_C=3A			2.5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=3A, I_B=12mA			2	V
Transition frequency	f_T	V_{CE}=10V, I_C=0.5A, f=1MHz		20		MHz
Turn-on time	t_{on}	I_C=3A, I_{B1}=12mA, I_{B2}=−12mA		0.5		μs
Storage time	t_{stg}			4		μs
Fall time	t_f			1		μs

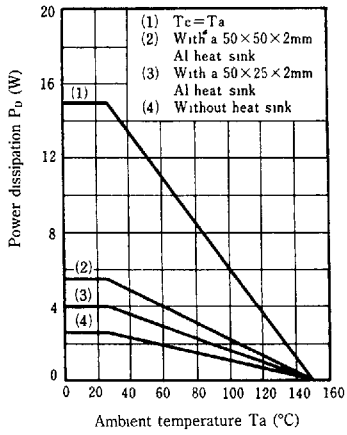
*h_{FE2} Classifications

Class	Free	Q	P
h_{FE2}	1000 ~ 10000	1000 ~ 5000	2000 ~ 10000

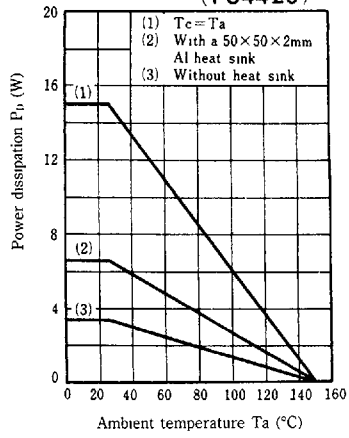
■ Inner Circuit



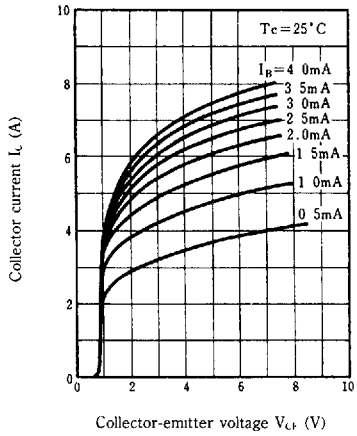
$P_D - Ta$ (PU3120)



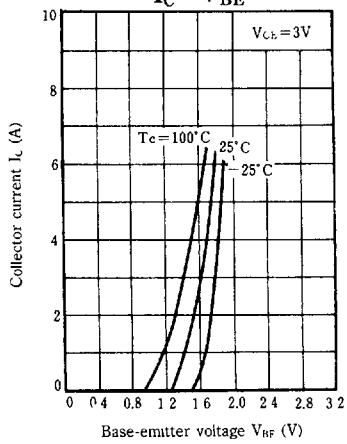
$P_D - Ta$ (PU4120 / PU4420)



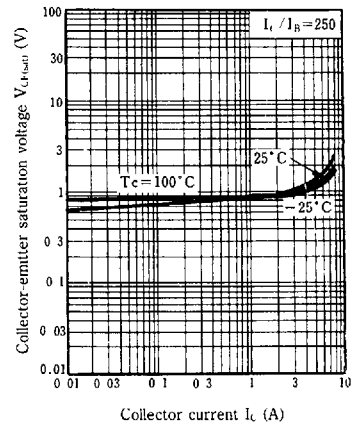
$I_C - V_{CE}$



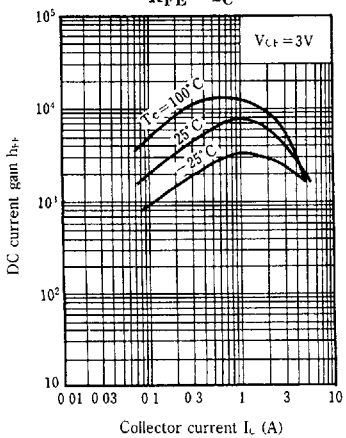
$I_C - V_{BE}$



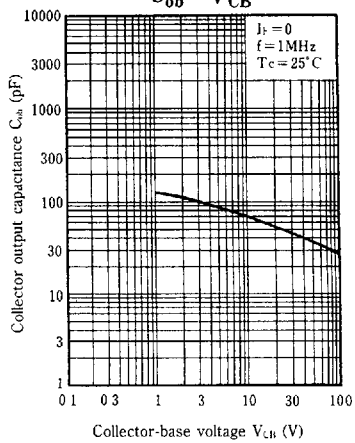
$V_{CE(sat)} - I_C$



$h_{FE} - I_C$



$C_{ob} - V_{CB}$



Area of safe operation (ASO)