PU3124, PU4124, PU4424

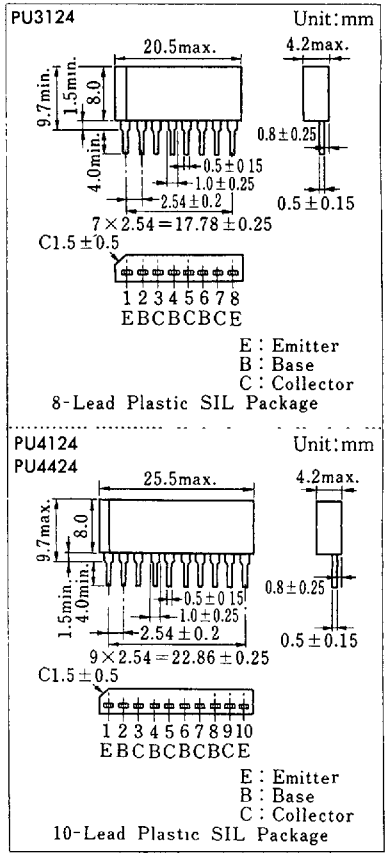
Silicon NPN Triple-Diffused Planar Darlington Type

Power Amplifier, Switching

■ Features

- Built-in 60V Zener diode between C and B
- Very small fluctuation in breakdown voltage
- Large energy handling capability
- High speed switching
- PU3124: 3 NPN elements
- PU4124: 4 NPN elements
- PU4124: 2 NPN elements

■ Package Dimensions



■ Absolute Maximum Ratings (Tc=25°C)

Item	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	60±10	V
Collector-emitter voltage	V_{CEO}	60±10	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	℃
Storage temperature	T_{stg}	−55～+150	℃

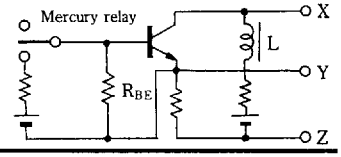
■ Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CBO}	V_{CB}=50V, I_E=0			100	μA
Emitter cutoff current	I_{EBO}	V_{EB}=5V, I_C=0			2	mA
Collector-emitter voltage	V_{CEO}	I_C=5mA, I_B=0	50		70	V
DC current gain	h_{FE1}	V_{CE}=3V, I_C=0.5A	1000			
	h_{FE2}*1	V_{CE}=3V, I_C=3A	1000		10000	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=3A, I_B=12mA			2.5	V
		I_C=5A, I_B=20mA			4	
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=3A, I_B=12mA			2.5	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		0.3		μs
Storage time	t_{stg}			3		μs
Fall time	t_f			1		μs
Energy handling capability	$E_{s/b}$*2	I_C=1A, L=100mH, R_{BE}=100Ω	50			mJ

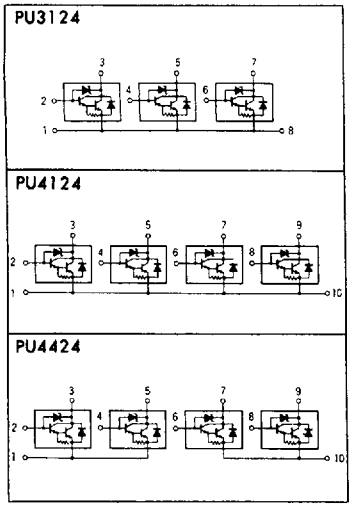
*1 h_{FE2} Classifications

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

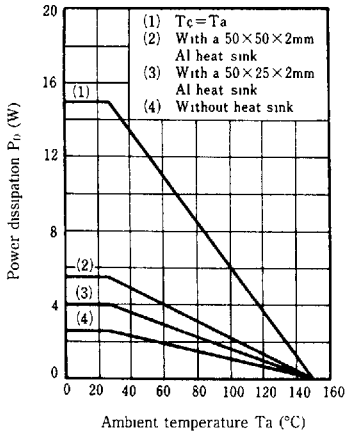
*2 $E_{S/b}$ Test circuit (1 circuit)



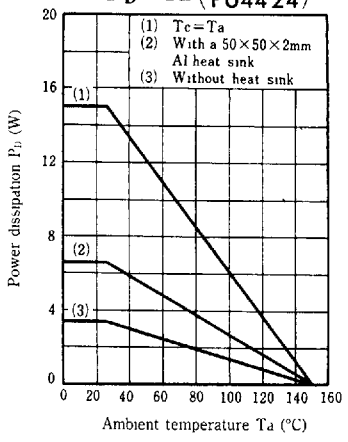
■ Inner Circuit



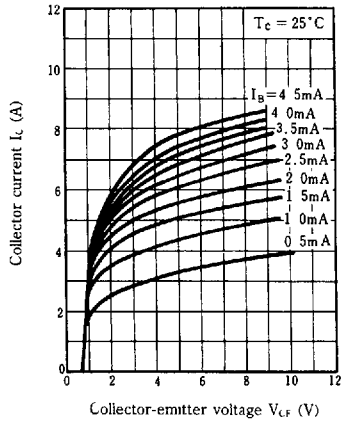
$P_D - Ta$ (PU3124)



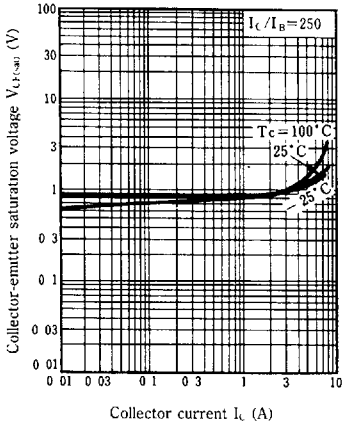
$P_D - Ta$ (PU4124, PU4424)



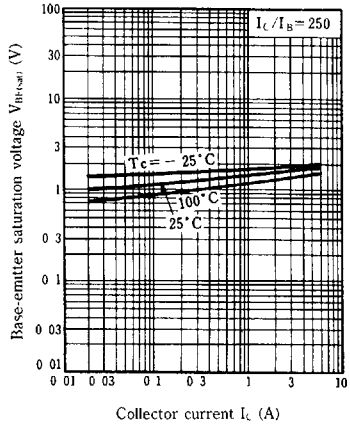
$I_C - V_{CE}$



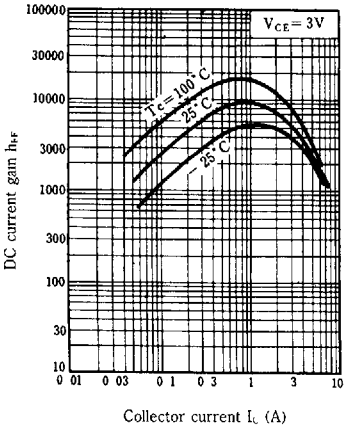
$V_{CE(sat)} - I_C$



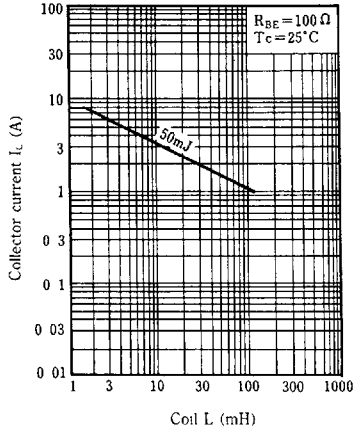
$V_{BE(sat)} - I_C$



$h_{FE} - I_C$



Induced load



Area of safe operation (ASO)

