

# PU3111, PU4111, PU4411

Silicon NPN Triple-Diffused Planar Type

Power Amplifier, Switching

Complementary Pair with PU3211, PU4211, PU4511

## ■ Features

- High DC current gain ( $h_{FE}$ ) and good linearity
- Low collector-emitter saturation voltage ( $V_{CE(sat)}$ )
- PU3111: 3 NPN elements
- PU4111: 4 NPN elements
- PU4411: 2 NPN elements

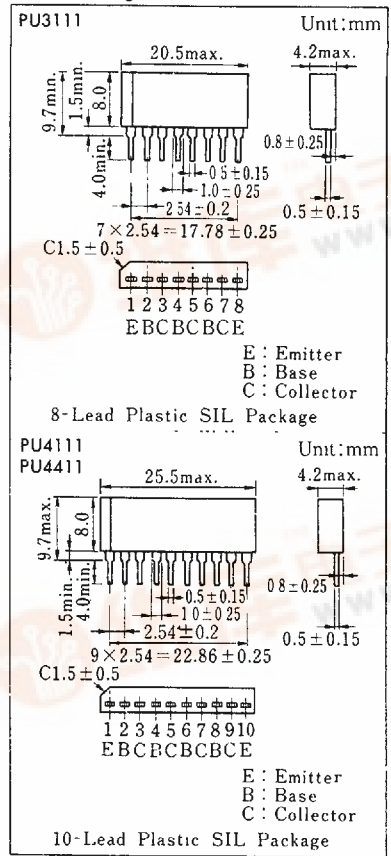
## ■ Absolute Maximum Ratings ( $T_c=25^\circ C$ )

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	$^\circ C$
Storage temperature	$T_{str}$	-55 ~ +150	$^\circ C$

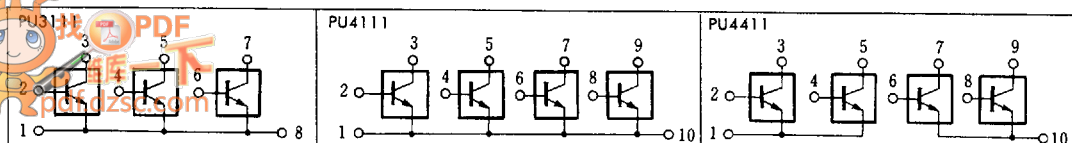
## ■ Electrical Characteristics ( $T_c=25^\circ C$ )

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	$I_{CES}$	$V_{CE}=60V, V_{BE}=0$			400	$\mu A$
	$I_{CEO}$	$V_{CE}=30V, I_B=0$			700	$\mu A$
Emitter cutoff current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			1	mA
Collector-emitter voltage	$V_{CEO}$	$I_C=30mA, I_B=0$	60			V
DC current gain	$h_{FE1}$	$V_{CE}=4V, I_C=1A$	70		250	
	$h_{FE2}$	$V_{CE}=4V, I_C=3A$	15			
Base-emitter voltage	$V_{BE}$	$V_{CE}=4V, I_C=3A$			2	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=4A, I_B=0.4A$			1.5	V
Transition frequency	$f_T$	$V_{CE}=10V, I_C=0.1A, f=1MHz$		20		MHz
Turn-on time	$t_{on}$	$I_C=4A, I_{B1}=0.4A, I_{B2}=-0.4A$		0.3		$\mu s$
Storage time	$t_{str}$			1.2		$\mu s$
Fall time	$t_f$			0.4		$\mu s$

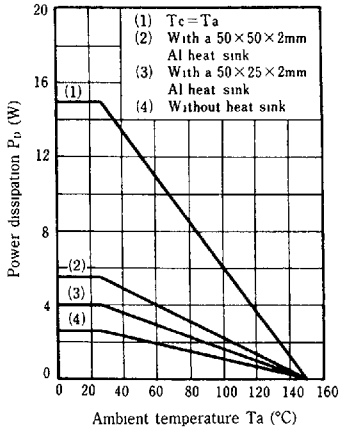
## ■ Package Dimensions



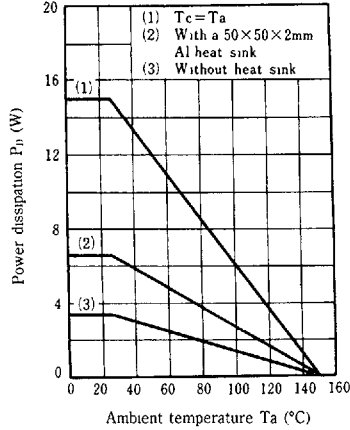
## ■ Inner Circuit



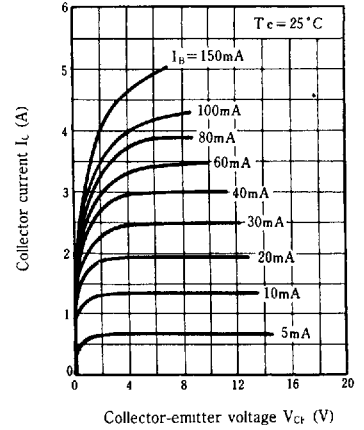
**$P_D - T_a$  (PU3111)**



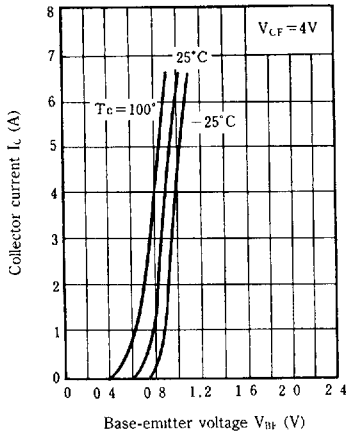
**$P_D - T_a$  (PU4111)  
(PU4411)**



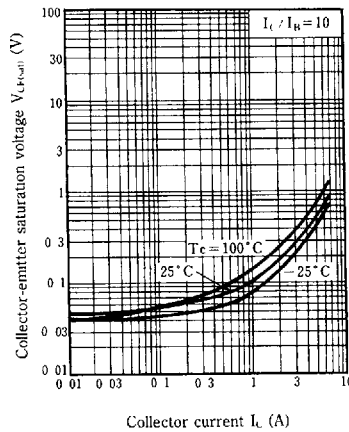
**$I_C - V_{CE}$**



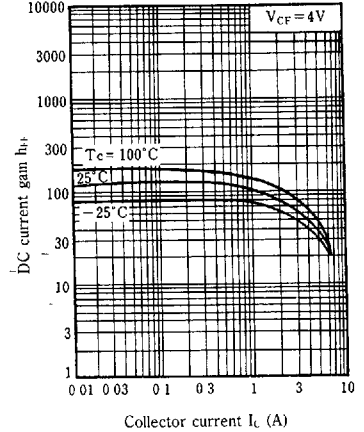
**$I_C - V_{BE}$**



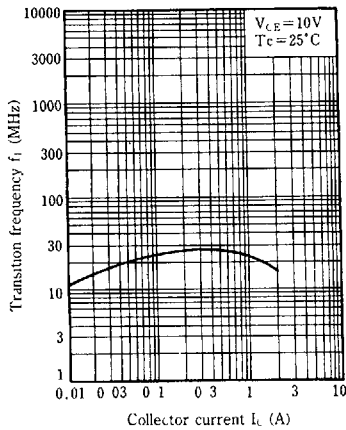
**$V_{CE(sat)} - I_C$**



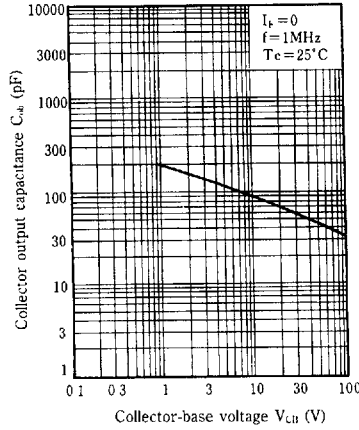
**$h_{FE} - I_C$**



**$f_T - I_C$**



**$C_{ob} - V_{CB}$**



**Area of safe operation (ASO)**

