PU3114, PU4114, PU4414

Silicon NPN Epitaxial Planar Type

Power Amplifier, Switching
Complementary Pair with PU3214, PU4214, PU4514

■ Features

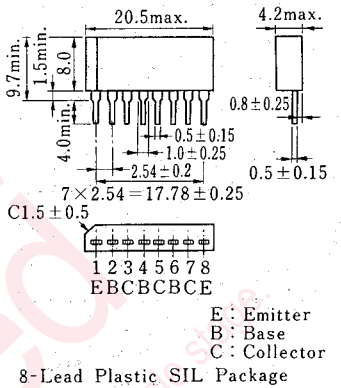
- Low collector-emitter saturation voltage ($V_{CE(sat)}$)
- High speed switching
- Good linearity of DC current gain (h_{FE})
- High collector current (I_C)
- PU3114: 3 NPN elements
- PU4114: 4 NPN elements
- PU4114: 2 NPN elements × 2 (4 elements in total)

■ Absolute Maximum Ratings (Tc=25°C)

Item	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	40	V
Collector-emitter voltage	V_{CEO}	20	V
Emitter-base voltage	V_{EBO}	5	V
Peak collector current	I_{CP}	12	A
Collector current	I_C	7	A
Power dissipation	P_D	15	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55~+150	°C

■ Package Dimensions

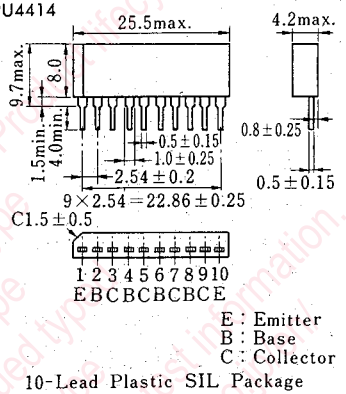
PU3114 Unit:mm



E : Emitter
B : Base
C : Collector

8-Lead Plastic SIL Package

PU4114
PU4414 Unit:mm



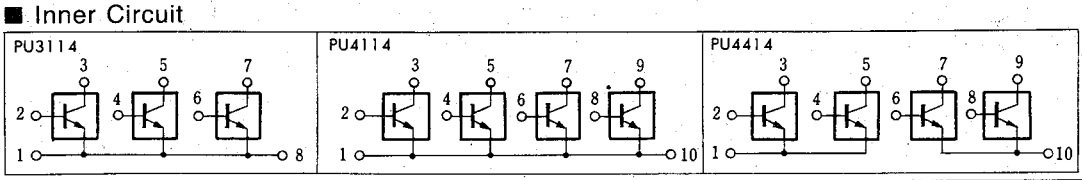
E : Emitter
B : Base
C : Collector

10-Lead Plastic SIL Package

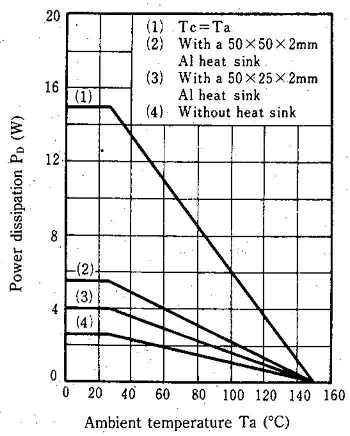
■ Electrical Characteristics (Tc=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Collector cutoff current	I_{CBO}	V_{CB}=40V, I_E=0			50	μA
Emitter cutoff current	I_{EBO}	V_{EB}=5V, I_C=0			50	μA
Collector-emitter voltage	V_{CEO}	I_C=10mA, I_B=0	20			V
DC current gain	h_{FE1}	V_{CE}=2V, I_C=0.1A	45			
	h_{FE2}	V_{CE}=2V, I_C=2A	60		260	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=5A, I_B=0.16A			0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=5A, I_B=0.16A			1.5	V
Transition frequency	f_T	V_{CE}=10V, I_C=0.5A, f=10MHz		150		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		110		pF
Turn-on time	t_{on}	I_C=2A, I_{B1}=66mA, I_{B2}=−66mA		0.3		μs
Storage time	t_{stg}			0.3		μs
Fall time	t_f			0.1		μs

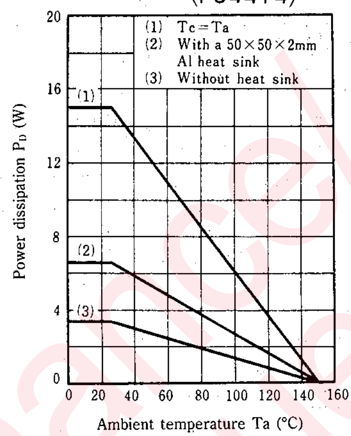
■ Inner Circuit



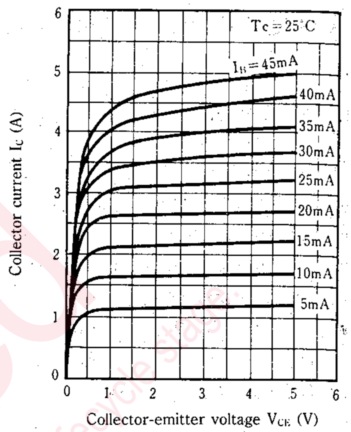
$P_D - T_a$ (PU3114)



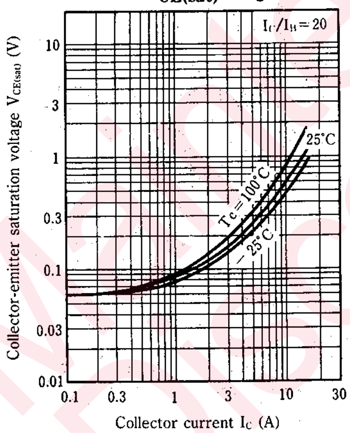
$P_D - T_a$ (PU4114, PU4414)



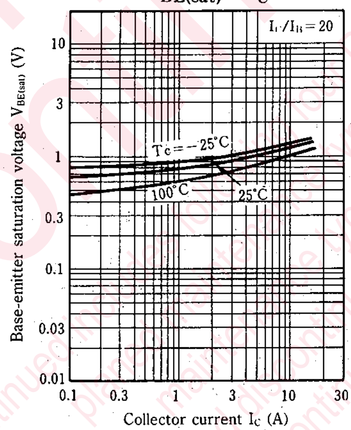
$I_C - V_{CE}$



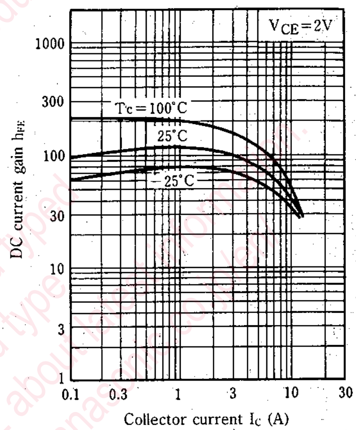
$V_{CE(sat)} - I_C$



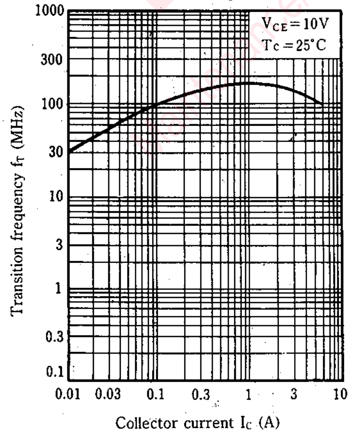
$V_{BE(sat)} - I_C$



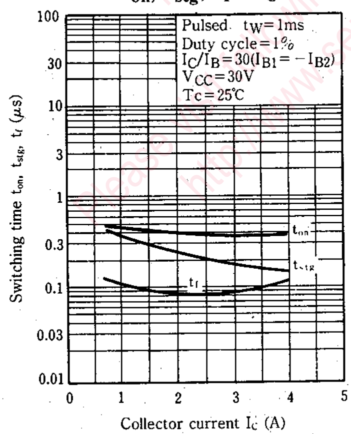
$h_{FE} - I_C$



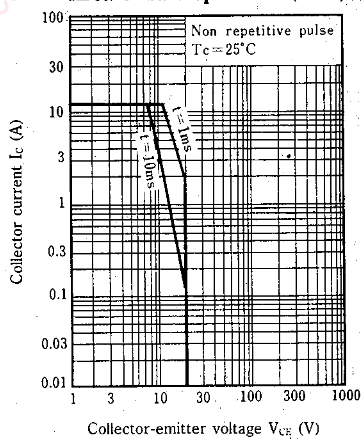
$f_T - I_C$



$t_{on}, t_{stg}, t_f - I_C$



Area of safe operation (ASO)



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