NPN TIP120-121-122

SILICON DARLINGTON POWER TRANSISTORS

NPN epitaxial-base transistors in a monolithic Dalrington circuit and housed in a TO-220 enveloppe. They are intended for use in power linear and switching applications.
PNP complements are TIP125-126-127
Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings			Value	Unit
V_{CBO}	Collector-Base Voltage		TIP120	60	V
			TIP121	80	
			TIP122	100	
V_{CEO}	Collector-Emitter Voltage		TIP120	60	V
			TIP121	80	
			TIP122	100	
V_{EBO}	Emitter-Base Voltage		TIP120	5	V
			TIP121		
			TIP122		
I_C	Collector Current		TIP120	5	A
			TIP121		
			TIP122		
I_{CM}	Collector Peak Current		TIP120	8	A
			TIP121		
			TIP122		
I_B	Base Current		TIP120	120	mA
			TIP121		
			TIP122		
P_T	Power Dissipation	@ T_c < 25°	TIP120	65	Watts
			TIP121		
			TIP122		
		@ T_a < 25°	TIP120	2	
			TIP121		
			TIP122		
T_J	Junction Temperature		TIP120	150	℃
			TIP121		
			TIP122		
T_S	Storage Temperature range		TIP120	-65 to +150	
			TIP121		
			TIP122		

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THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
$R_{thJ\text{-}case}$	From junction-case	1.92	℃/W
$R_{thJ\text{-}amb}$	From junction-ambient	62.5	℃/W

ELECTRICAL CHARACTERISTICS

TC=25℃ unless otherwise noted

Symbol	Ratings	Test Condition(s)		Min	Typ	Max	Unit
I_{CBO}	Collector Cutoff Current	I_E= 0,V_{CB} = V_{CBO}max	TIP120	-	-	0.2	mA
			TIP121				
			TIP122				
I_{CEO}	Collector Cutoff Current	I_E= 0 V_{CE} = 1/2 V_{CEO}max	TIP120	-	-	0.5	mA
			TIP121				
			TIP122				
I_{EBO}	Emitter Cutoff Current	V_{EB}= 5 V, I_C= 0	TIP120	-	-	2	mA
			TIP121				
			TIP122				
V_{CEO}	Collector-Emitter Breakdown Voltage (*)	I_C= 30 mA, I_B= 0	TIP120	60	-	-	V
			TIP121	80	-	-	
			TIP122	100	-	-	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	I_C= 3 A, I_B= 12 mA	TIP120	-	-	2	V
			TIP121				
			TIP122				
		I_C= 5 A, I_B= 20 mA	TIP120	-	-	4	
			TIP121				
			TIP122				
$V_{BE(on)}$	Base-Emitter Voltage (*)	I_C= 3 A, V_{CE}= 3 V	TIP120	-	-	2.5	V
			TIP121				
			TIP122				
h_{FE}	DC Current Gain (*)	V_{CE}= 3.0 V, I_C= 0.5 A	TIP120	1000	-	-	-
			TIP121				
			TIP122				
		V_{CE}= 3.0 V, I_C= 3 A	TIP120	1000	-	-	
			TIP121				
			TIP122				
C_{OB}	Output Capacitance	I_E= 0, V_{CB} = 10 V, f_{test}= 1MHz	TIP120	-	-	200	pF
			TIP121				
			TIP122				

(*) Pulse Width ≈ 300 μs, Duty Cycle ∠ 2.0%

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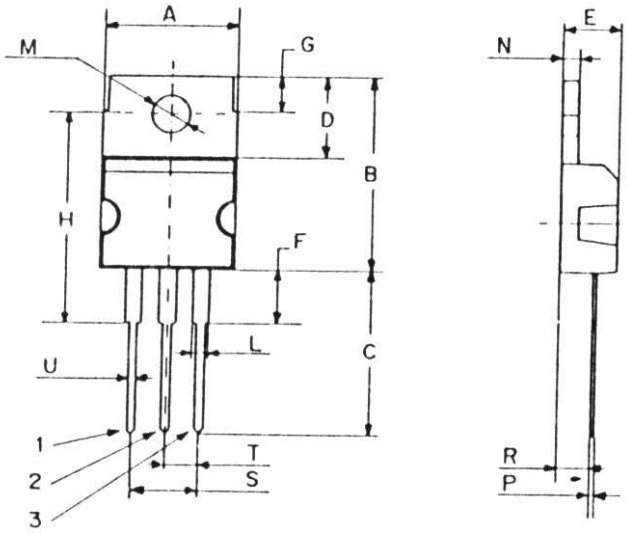
MECHANICAL DATA CASE TO-220

DIMENSIONS (mm)		
	Min.	Max.
A	9,90	10,30
B	15,65	15,90
C	13,20	13,40
D	6,45	6,65
E	4,30	4,50
F	2,70	3,15
G	2,60	3,00
H	15,75	17.15
L	1,15	1,40
M	3,50	3,70
N	-	1,37
P	0,46	0,55
R	2,50	2,70
S	4,98	5,08
T	2.49	2.54
U	0,70	0,90



Pin 1 :	Base
Pin 2 :	Collector
Pin 3 :	Emitter
Case :	Collector

Revised August 2012