



NPN BDT81 – BDT83 – BDT85 – BDT87

SILICON POWER TRANSISTORS

The BDT81 – BDT83 – BDT85 – BDT87 are epitaxial base transistors in a TO-220 plastic envelope.

They are intended for use in audio output stages and general amplifier and switching applications.

PNP complements are BDT82 – BDT84 – BDT86 – BDT88.

Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit	
V_{CEO}	Collector-Emitter Voltage	$I_B = 0$	BDT81	60	V
			BDT83	80	
			BDT85	100	
			BDT87	120	
V_{CBO}	Collector-Base Voltage	$I_E = 0$	BDT81	60	V
			BDT83	80	
			BDT85	100	
			BDT87	120	
V_{EBO}	Emitter-Base Voltage	$I_C = 0$	7	V	
I_C	Collector Current		15	A	
I_{CM}	Collector Peak Current		20	A	
I_B	Base Current		4	A	
P_t	Total Power Dissipation	@ TC = 25°	125	W	
T_J	Junction Temperature		150	°C	
T_{Stg}	Storage Temperature		-65 to +150	°C	

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJa}	Thermal Resistance, Junction to Ambient	70	K/W
R_{thJmb}	Thermal Resistance, Junction to Mounting Base	1	K/W



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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)		Min	Typ	Max	Unit
I_{CBO}	Collector Cutoff Current	$I_E=0A, V_{CB} = 60 V$	BDT81	-	-	0.2	mA
		$I_E=0A, V_{CB} = 80 V$	BDT83				
		$I_E=0A, V_{CB} = 100 V$	BDT85				
		$I_E=0A, V_{CB} = 120 V$	BDT87				
I_{CES}	Collector Cutoff Current	$V_{BE}=0, V_{CE} = 60V$	BDT81	-	-	1	mA
		$V_{BE}=0, V_{CE} = 80V$	BDT83				
		$V_{BE}=0, V_{CE} = 100V$	BDT85				
		$V_{BE}=0, V_{CE} = 120V$	BDT87				
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 7 V$ $I_C=0$	BDT81	-	-	0.1	mA
			BDT83				
			BDT85				
			BDT87				
h_{FE}	DC Current Gain (*)	$I_C = 50mA$ $V_{CE} = 10V$	BDT81	40	-	-	-
			BDT83				
			BDT85				
			BDT87				
		$I_C = 5A$ $V_{CE} = 4V$	BDT81	40	-	-	
			BDT83				
			BDT85				
			BDT87				
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage (*)	$I_C = 5A$ $I_B = 0.5A$	BDT81	-	-	1	V
			BDT83				
			BDT85				
			BDT87				
		$I_C = 7A$ $I_B = 0.7A$	BDT81	-	-	1.6	
			BDT83				
			BDT85				
			BDT87				
V_{BE}	Base-Emitter Voltage (*)	$I_C = 4A$ $V_{CE} = 4 V$	BDT81	-	-	1.5	V
			BDT83				
			BDT85				
			BDT87				



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ELECTRICAL CHARACTERISTICS

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Symbol	Ratings	Test Condition(s)Sec	Min	Typ	Max	Unit
$I_{S/B}$	Second breakdown collector current	$V_{CE} = 50 \text{ V}$, $t_p = 100 \text{ ms}$	2.5	-	-	A
f_T	Transition frequency	$V_{CE} = 10 \text{ V}$, $I_C = 0.5 \text{ A}$, $f = 1 \text{ MHz}$	-	20	-	MHz
t_{on}	Turn-on time	$I_C = -7 \text{ A}$ $I_{B1} = -I_{B2} = 0.7 \text{ A}$	-	-	1	μs
T_{off}	Turn-off time		-	-	2	

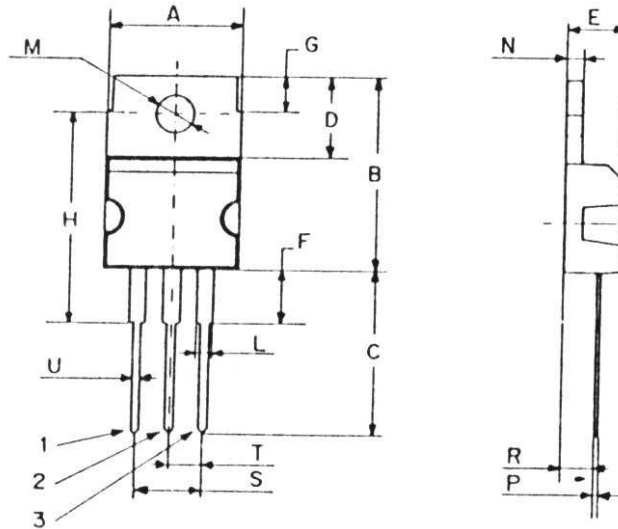
(*) Pulse Duration = 300 μs , $\delta \leq 2\%$



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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
Package	Collector

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