

BDT65-A-B-C

SILICON DARLINGTON POWER TRANSISTORS

NPN epitaxial-base transistors in a monolithic Darlington circuit and housed in a TO-220 envelope. They are intended for output stages in audio equipment, general amplifiers, and analogue switching application.

PNP complements are BDT64-A-B-C

Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
V_{CBO}	Collector-Base Voltage	BDT65	60	V
		BDT65A	80	
		BDT65B	100	
		BDT65C	120	
V_{CEO}	Collector-Emitter Voltage	BDT65	60	V
		BDT65A	80	
		BDT65B	100	
		BDT65C	120	
V_{EBO}	Emitter-Base Voltage	BDT65	5	V
		BDT65A		
		BDT65B		
		BDT65C		
I_C	Collector Current	BDT65	12	A
		BDT65A		
		BDT65B		
		BDT65C		
I_{CM}	Collector Peak Current	BDT65	20	A
		BDT65A		
		BDT65B		
		BDT65C		

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ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings			Value	Unit
I _B	Base Current		BDT65	500	mA
			BDT65A		
			BDT65B		
			BDT65C		
P _T	Power Dissipation	@ T _{mb} < 25°	BDT65	125	Watts
			BDT65A		
			BDT65B		
			BDT65C		
T _J	Junction Temperature		BDT65	150	°C
			BDT65A		
			BDT65B		
			BDT65C		
T _s	Storage Temperature range		BDT65	-65 to +150	
			BDT65A		
			BDT65B		
			BDT65C		

Limiting values in accordance with the Absolute Maximum System (IEC 134)

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thj-c}	Thermal Resistance, Junction to Case	1	$^\circ\text{C}/\text{W}$

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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	$I_E = 0$ $V_{CB} = V_{CBOmax}$	BDT65	-	-	0.4	mA
			BDT65A				
			BDT65B				
			BDT65C				
		$I_E = 0$ $V_{CB} = 1/2 V_{CBOmax}$ $T_J = 150\text{ }^{\circ}\text{C}$	BDT65	-	-	2	mA
			BDT65A				
			BDT65B				
			BDT65C				
I_{CEO}	Collector Cutoff Current	$I_E = 0$ $V_{CE} = 1/2 V_{CEOmax}$	BDT65	-	-	0.2	mA
			BDT65A				
			BDT65B				
			BDT65C				
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 5\text{ V}$ $I_C = 0$	BDT65	-	-	5	mA
			BDT65A				
			BDT65B				
			BDT65C				
V_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 30\text{ mA}$ $I_B = 0$	BDT65	60	-	-	V
			BDT65A	80	-	-	
			BDT65B	100	-	-	
			BDT65C	120	-	-	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C = 5\text{ A}$ $I_B = 20\text{ mA}$	BDT65	-	-	2	V
			BDT65A				
			BDT65B				
			BDT65C				
		$I_C = 10\text{ A}$ $I_B = 100\text{ mA}$	BDT65	-	-	3	
			BDT65A				
			BDT65B				
			BDT65C				

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings			Min	Typ	Max	Unit
$V_{BE(on)}$	Base-Emitter Voltage (*)	$I_C = 5\text{ A}$, $V_{CE} = 4\text{ V}$	BDT65	-	-	2.5	V
			BDT65A				
			BDT65B				
			BDT65C				
V_{ECF}	C-E Diode Forward Voltage	$I_F = 5\text{ A}$	BDT65		-	2	V
			BDT65A				
			BDT65B				
			BDT65C				
		$I_F = 12\text{ A}$	BDT65	-	2	-	
			BDT65A				
			BDT65B				
			BDT65C				
h_{FE}	DC Current Gain (*)	$V_{CE} = 4\text{ V}$, $I_C = 1\text{ A}$	BDT65	-	1500	-	-
			BDT65A				
			BDT65B				
			BDT65C				
		$V_{CE} = 4\text{ V}$, $I_C = 5\text{ A}$	BDT65	1000	-	-	
			BDT65A				
			BDT65B				
			BDT65C				
		$V_{CE} = 4\text{ V}$, $I_C = 12\text{ A}$	BDT65	-	1000	-	
			BDT65A				
			BDT65B				
			BDT65C				
C_{OB}	Output Capacitance	$I_E = 0$, $V_{CB} = 10\text{ V}$ $f_{test} = 1\text{ MHz}$	BDT65	-	200	-	pF
			BDT65A				
			BDT65B				
			BDT65C				

SWITCHING TIMES

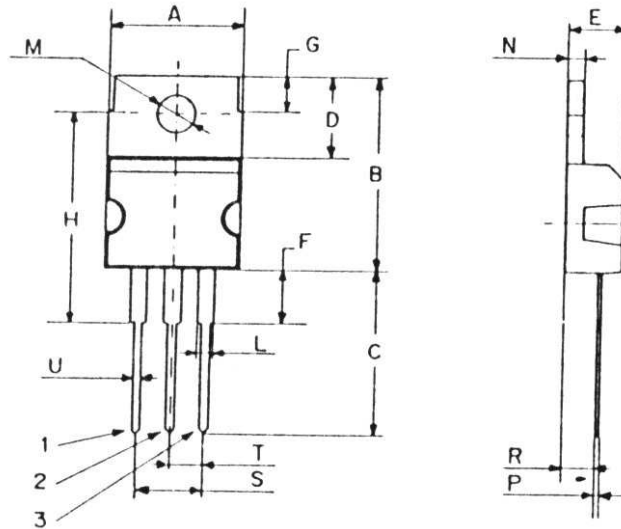
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
t_{on}	turn-on time	$I_C = 5\text{ A}$, $V_{CC} = 30\text{ V}$ $I_{B1} = -I_{B2} = 20\text{ mA}$	-	1	2.5	μs
t_{off}	turn-off time		-	6	10	

(*) Pulse Width $\approx 300\text{ }\mu\text{s}$, Duty Cycle $\angle 2.0\%$

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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
Package	Collector

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