



## BDX63 – A – B – C

### NPN SILICON DARLINGTON POWER TRANSISTOR

The BDX63, BDX63A, BDX63B and BDX63C are mounted in TO-3 metal package. High current power darlington transistors designed for power amplification and switching applications. The complementary PNP are BDX62, BDX62A, BDX62B, BDX62C. Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit	
$V_{CEO}$	Collector-Emitter Voltage		BDX63	60	V
			BDX63A	80	
			BDX63B	100	
			BDX63C	120	
$V_{CEV}$	Collector-Emitter Voltage	$V_{BE} = -1.5\text{ V}$	BDX63	80	V
			BDX63A	100	
			BDX63B	120	
			BDX63C	140	
$V_{EBO}$	Emitter-Base Voltage		5.0	V	
$I_C$	Collector Current		$I_{C(RMS)}$	8	A
			$I_{CM}$	12	
$I_B$	Base Current		0.15	A	
$P_T$	Power Dissipation	@ $T_C = 25^\circ$	90	W	
$T_J$	Junction Temperature		-55 to +200	°C	
$T_S$	Storage Temperature				

#### THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
$R_{thJ-C}$	Thermal Resistance, Junction to Case	1.94	°C/W

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### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)		Min	Typ	Max	Unit	
$V_{CE(SUS)}$	Collector-Emitter Breakdown Voltage (*)	$I_C=0.1\text{ A}$ $I_B=0$ $L=25\text{mH}$	BDX63	60	-	-	V	
			BDX63A	80	-	-		
			BDX63B	100	-	-		
			BDX63C	120	-	-		
$I_{CEO}$	Collector Cutoff Current		$V_{CE}=30\text{ V}$	BDX63	-	-	0.5	mA
			$V_{CE}=40\text{ V}$	BDX63A	-	-		
			$V_{CE}=50\text{ V}$	BDX63B	-	-		
			$V_{CE}=60\text{ V}$	BDX63C	-	-		
$I_{EBO}$	Emitter Cutoff Current	$V_{BE}=5\text{ V}$	BDX63	-	-	5.0	mA	
			BDX63A					
			BDX63B					
			BDX63C					
$I_{CBO}$	Collector-Base Cutoff Current		$V_{CBO}=60\text{ V}$	BDX63	-	-	0.2	
			$V_{CBO}=400\text{ V}$ $T_{CASE}=200^\circ\text{C}$				2	
			$V_{CBO}=80\text{ V}$				0.2	
			$V_{CBO}=50\text{ V}$ $T_{CASE}=200^\circ\text{C}$				2	
			$V_{CBO}=100\text{ V}$				0.2	
			$V_{CBO}=60\text{ V}$ $T_{CASE}=200^\circ\text{C}$				2	
			$V_{CBO}=120\text{ V}$				0.2	
			$V_{CBO}=70\text{ V}$ $T_{CASE}=200^\circ$				2	
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C=3.0\text{ A}$ $I_B=12\text{ mA}$	BDX63	-	-	2	V	
			BDX63A					
			BDX63B					
			BDX63C					
$V_F$	Forward Voltage (pulse method)	$I_F=3\text{ A}$	BDX63	-	1.2	-	V	
			BDX63A					
			BDX63B					
			BDX63C					
$V_{BE}$	Base-Emitter Voltage (*)	$I_C=3.0\text{ A}$ $V_{CE}=3\text{ V}$	BDX63	-	-	2.5	V	
			BDX63A					
			BDX63B					
			BDX63C					

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### ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

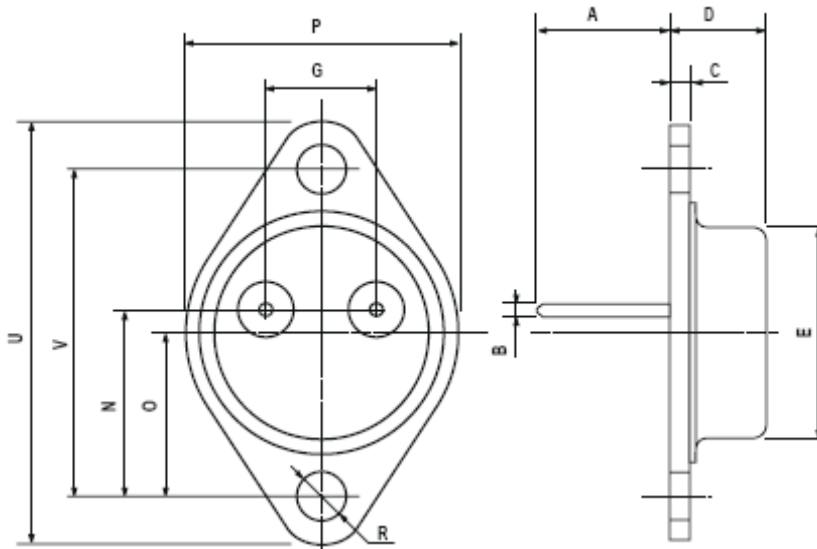
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit		
$F_{hfe}$	Cut-off frequency	$V_{CE}=3\text{ V}$ $I_C=3\text{ A}$	BDX63	-	100	-	kHz	
			BDX63A					
			BDX63B					
			BDX63C					
$f_T$	Transition Frequency	$V_{CE}=3\text{ V}$ , $I_C=3\text{ A}$ $f=1\text{ MHz}$	BDX63	-	7	-	MHz	
			BDX63A					
			BDX63B					
			BDX63C					
$h_{FE}$	D.C. current gain (*)	$V_{CE}=3\text{ V}$ $I_C=0.5\text{ A}$	BDX63	-	2500	-	-	
			BDX63A					
			BDX63B					
			BDX63C					
		$V_{CE}=3\text{ V}$ $I_C=3\text{ A}$	BDX63	1000	-	-		-
			BDX63A					
			BDX63B					
			BDX63C					
		$V_{CE}=3\text{ V}$ $I_C=8\text{ A}$	BDX63	-	2600	-		-
			BDX63A					
			BDX63B					
			BDX63C					

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

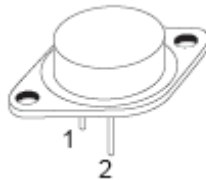
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### MECHANICAL DATA CASE TO-3

DIMENSIONS (mm)		
	min	max
A	11	13.10
B	0.97	1.15
C	1.5	1.65
D	8.32	8.92
F	19	20
G	10.70	11.1
N	16.50	17.20
P	25	26
R	4	4.09
U	38.50	39.30
V	30	30.30



Pin 1 :	Base
Pin 2 :	Emitter
Case :	Collector



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