



PNP BD684 TO3 (Temporary part number)

SILICON DARLINGTON POWER TRANSISTORS

PNP epitaxial-base transistors in monolithic Darlington circuit for audio and video applications.

They are mounted in Jedec TO-3 metal package.

Compliance to RoHS

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value	Unit
V_{CEO}	Collector-Emitter Voltage	-140	V
V_{CBO}	Collector-Base Voltage	-140	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	I_C	-4
		I_{CM}	-6
I_{BM}	Base current (peak value)	-0.1	A
P_T	Total power Dissipation	@ $T_{mb} = 25^\circ\text{C}$	65
T_J	<i>Junction Temperature</i>	150	$^\circ\text{C}$
T_{Stg}	Storage Temperature	-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-mb}	Thermal Resistance, Junction to mounting base	3.12	K/W
R_{thJ-a}	Thermal Resistance, Junction to ambient in free air	100	K/W



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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

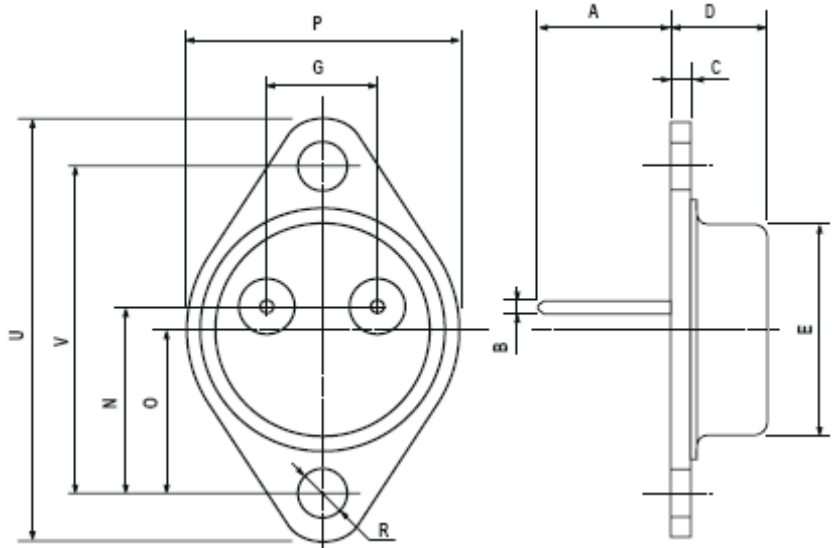
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit
I_{CBO}	Collector cut-off current	$I_E=0, V_{CB} = -140\text{ V}$	-	-	-0,2	mA
		$I_E=0, V_{CB} = -1/2V_{CBOMAX}$ $T_j = 150^\circ\text{C}$	-	-	-1	
I_{CEO}	Collector cut-off current	$I_B=0, V_{CE} = -1/2V_{CEOMAX}$	-	-	-0,2	mA
I_{EBO}	Emitter cut-offcurrent	$I_C=0, V_{EB} = -5\text{ V}$	-	-	-5	mA
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*)	$I_C = -1.5\text{ A}, I_B = -6\text{ Ma}$	-	-	-2	V
h_{FE}	DC Current Gain (*)	$V_{CE} = -3\text{ V}, I_C = -500\text{ mA}$	-	2000	-	
		$V_{CE} = -3\text{ V}, I_C = -1,5\text{ A}$	750	-	-	
		$V_{CE} = -3\text{ V}, I_C = -4\text{ A}$	-	750	-	
V_{BE}	Base-Emitter Voltage (*)	$V_{CE} = -3\text{ V}, I_C = -1,5\text{ A}$	-	-	-2,5	V
h_{fe}	Small signal current gain	$V_{CE} = -3\text{ V}, I_C = -1,5\text{ A}, f = 1\text{ MHz}$	10	-	-	
f_{hfe}	Ut-off frequency	$V_{CE} = -3\text{ V}, I_C = -1,5\text{ A}$	-	60	-	kHz
V_F	Diode forward voltage	$I_F = -1,5\text{ A}$	-	-1,5	-	V
$I_{(SB)}$	Second-breakdown collector current	$V_{CE} = -50\text{ V}, t_p = 20\text{ms}, \text{non rep. without heatsink}$	-0,8	-	-	A
t_{on}	Turn-on time	$-I_{con} = -1,5\text{A}, I_{bon} = -I_{boff} = -6\text{mA}$	-	0,8	2	μs
t_{off}	Turn-off time	$V_{CC} = 30\text{V}$	-	4,5	8	

(*) Measured under pulse conditions : $t_p < 300\mu\text{s}, \delta < 2\%$.

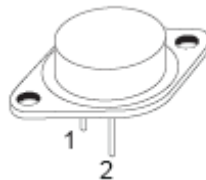
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MECHANICAL DATA CASE TO-3

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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