

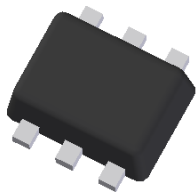
Features

- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Complementary NPN Type Available (DST847BDJ)
- Ultra Small Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

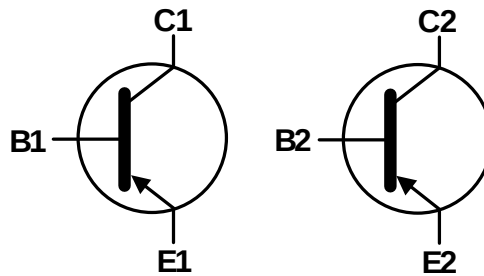
Mechanical Data

- Case: SOT963
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 
- Weight: 0.0027 grams (Approximate)

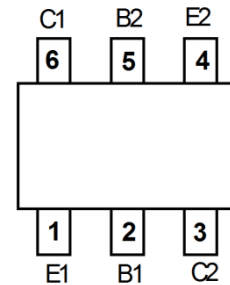
SOT963



Top View



Device Symbol



Top View
Pin-Out

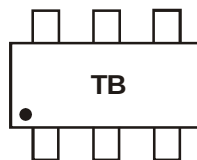
Ordering Information

Part Number	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DST857BDJ-7	Standard	TB	7	8	10,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

SOT963



TB = Product Type Marking Code

Absolute Maximum Rating (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-50	V
Collector-Emitter Voltage	V _{CEO}	-45	V
Emitter-Base Voltage	V _{EBO}	-6.0	V
Collector Current - Continuous (Note 5)	I _C	-100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	417	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

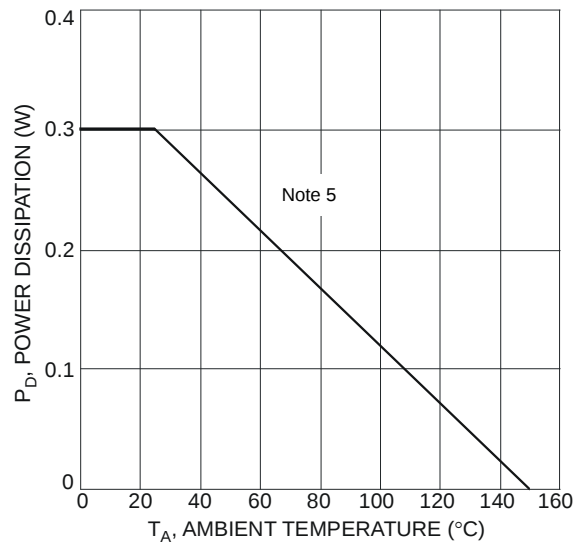
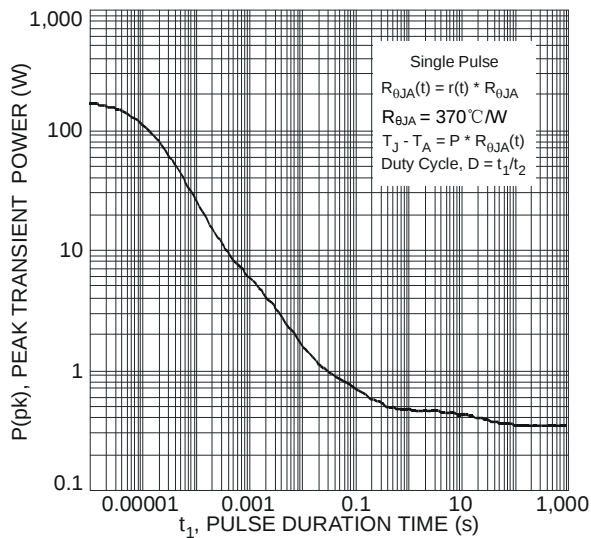
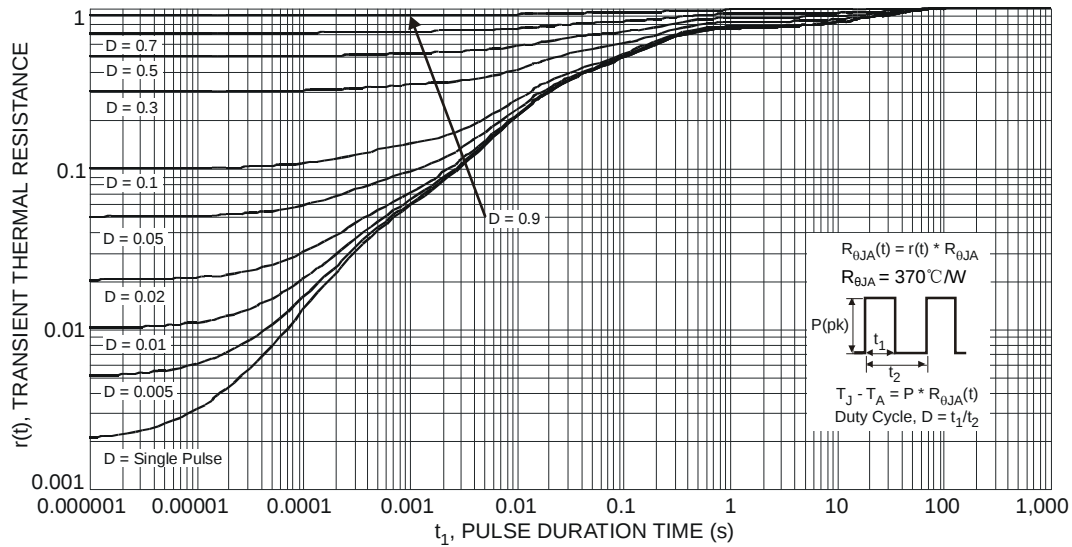
Note: 5. Device mounted on FR-4 PCB with minimum recommended pad layout.

ESD Rating (Note 6)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	200	V	B

Note: 6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information



Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic (Note 7)	Symbol	Min	Typical	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-50	-100	-	V	$I_C = -10\mu\text{A}$, $I_B = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	-50	-90	-	V	$I_C = -10\mu\text{A}$, $I_B = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-45	-65	-	V	$I_C = -1\text{mA}$, $I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8.5	-	V	$I_E = -1\mu\text{A}$, $I_C = 0$
Collector Cut-Off Current	I_{CBO}	-	-	-15	nA	$V_{CB} = -30\text{V}$
DC Current Gain	h_{FE}	-	340 330	-	-	$I_C = -10\mu\text{A}$, $V_{CE} = -5\text{V}$ $I_C = -2.0\text{mA}$, $V_{CE} = -5\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	-	-70 -300	-175 -500	mV	$I_C = -10\text{mA}$, $I_B = -0.5\text{mA}$ $I_C = -100\text{mA}$, $I_B = -5.0\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	-	-760 -885	-1000 -1100	mV	$I_C = -10\text{mA}$, $I_B = -0.5\text{mA}$ $I_C = -100\text{mA}$, $I_B = -5.0\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$	-600	-670 -715	-780 -850	mV	$I_C = -2.0\text{mA}$, $V_{CE} = -5\text{V}$ $I_C = -10\text{mA}$, $V_{CE} = -5\text{V}$
Current Gain-Bandwidth Product	f_T	100	340	-	MHz	$V_{CE} = -5\text{V}$, $I_C = -10\text{mA}$, $f = 100\text{MHz}$
Output Capacitance	C_{obo}	-	2.0	-	pF	$V_{CB} = -10\text{V}$, $f = 1.0\text{MHz}$

Note: 7. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

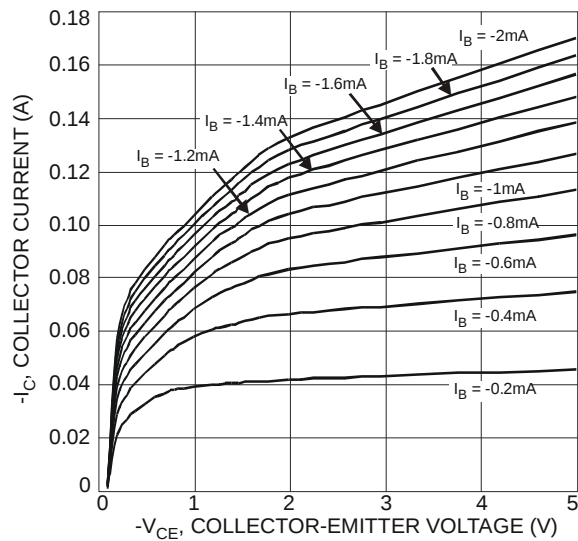


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

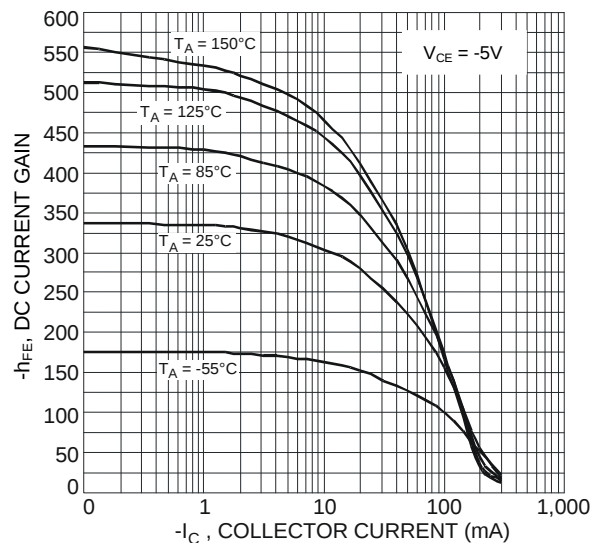


Fig. 5 Typical DC Current Gain vs. Collector Current

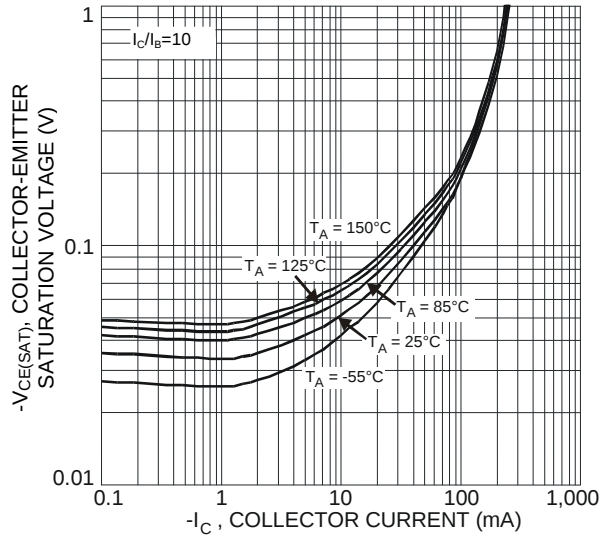


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

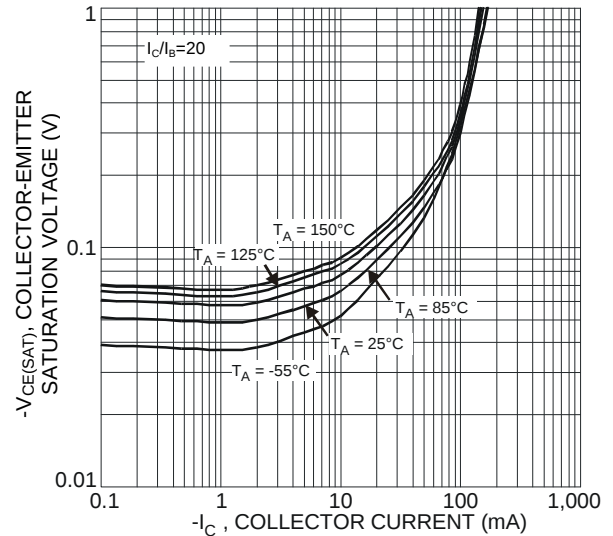


Fig. 7 Typical Collector-Emitter Saturation Voltage vs. Collector Current

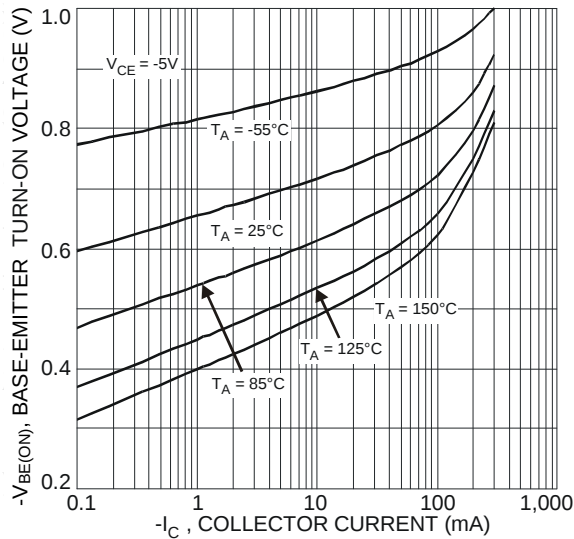


Fig. 8 Typical Base-Emitter Turn-On Voltage vs. Collector Current

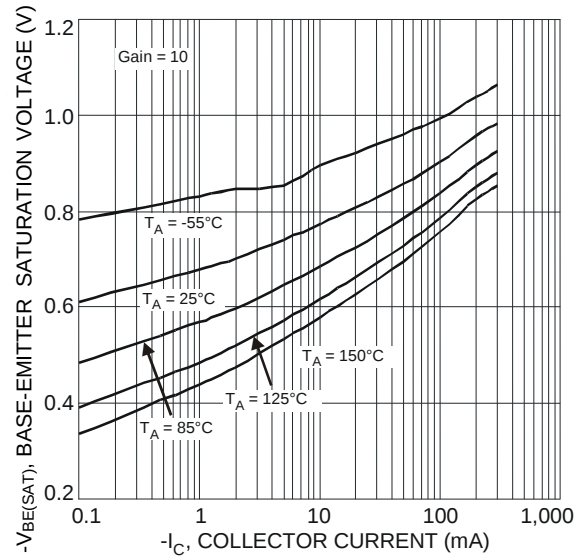
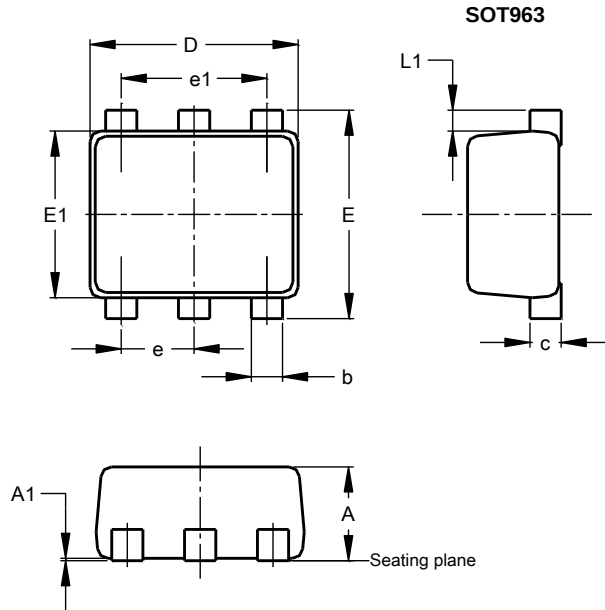


Fig. 9 Typical Base-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions

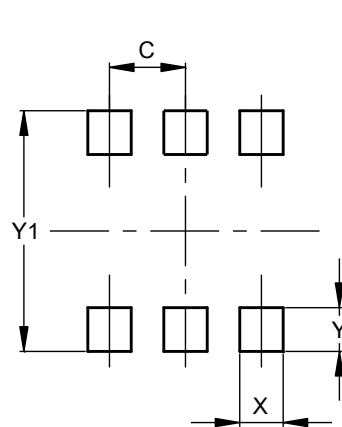
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



SOT963			
Dim	Min	Max	Typ
A	0.40	0.50	0.45
A1	0.00	0.05	--
b	0.10	0.20	0.15
c	0.120	0.180	0.150
D	0.95	1.05	1.00
E	0.95	1.05	1.00
E1	0.75	0.85	0.80
e	--	--	0.35
e1	--	--	0.70
L1	0.05	0.15	0.10
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



Dimensions	Value (in mm)
C	0.350
X	0.200
Y	0.200
Y1	1.100

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