

Features

- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Complementary NPN Type Available (DST847BDJ)
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 1)**
- **“Green” Device (Note 2)**
- **Ultra Small Package**

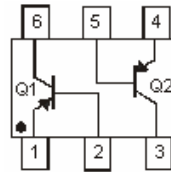
Mechanical Data

- Case: SOT-963
- 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 annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.0027 grams (approximate)

SOT-963



Top View



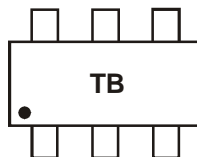
Device Schematic

Ordering Information

Device	Packaging	Shipping
DST857BDJ-7	SOT-963	10,000/Tape & Reel

- Notes:
1. No purposefully added lead. Halogen and Antimony Free.
 2. Diodes Inc's “Green” Policy can be found on our website at <http://www.diodes.com>

Marking Information



TB = Product Type Marking Code

Maximum Ratings @ $T_A = 25^\circ\text{C}$ 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}	-5.0	V
Collector Current - Continuous (Note 3)	I_C	-100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 3)	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 3. Device mounted on FR-4 PCB with minimum recommended pad layout.

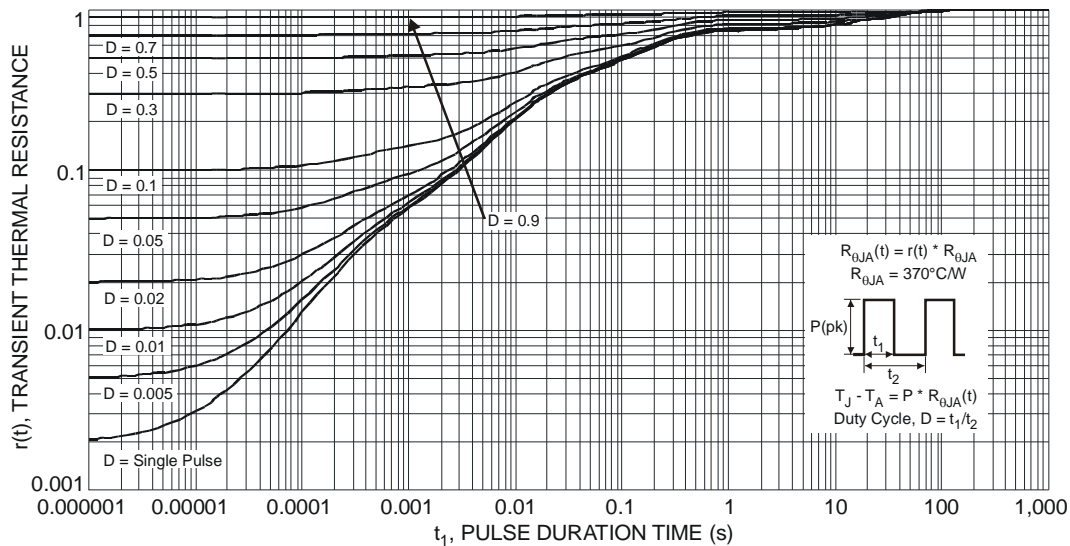


Fig. 1 Transient Thermal Response

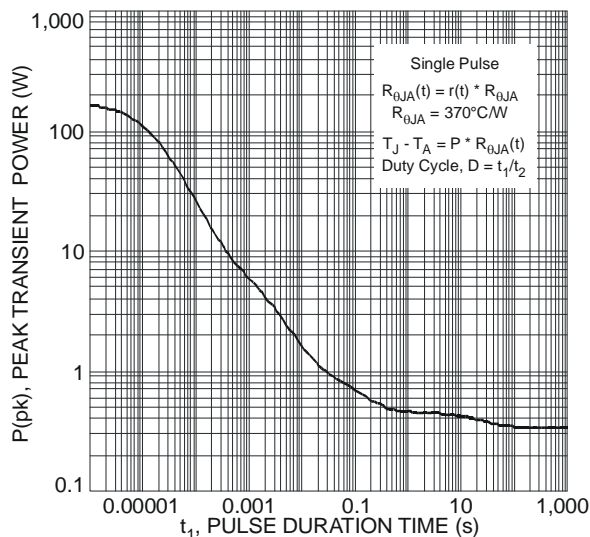


Fig. 2 Single Pulse Maximum Power Dissipation

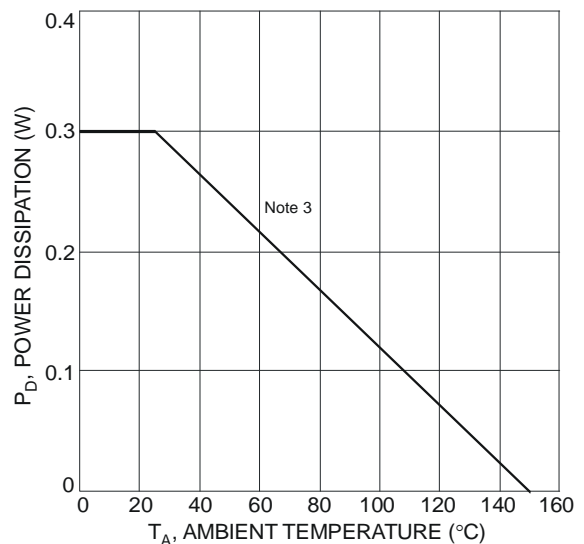


Fig. 3 Power Dissipation vs. Ambient Temperature

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic (Note 4)	Symbol	Min	Typical	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-50	-100	-	V	I _C = -10μA, I _B = 0
Collector-Emitter Breakdown Voltage	V _{(BR)CES}	-50	-90	-	V	I _C = -10μA, I _B = 0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-45	-65	-	V	I _C = -1mA, I _B = 0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-6	-8.5	-	V	I _E = -1μA, I _C = 0
Collector Cutoff Current	I _{CBO}	-	-	-15	nA	V _{CB} = -30V
DC Current Gain	h _{FE}	100	340	-	-	I _C = -10μA, V _{CE} = -5V I _C = -2.0mA, V _{CE} = -5V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	-	-70	-175	mV	I _C = -10mA, I _B = -0.5mA I _C = -100mA, I _B = -5.0mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	-	-760	-1000	mV	I _C = -10mA, I _B = -0.5mA I _C = -100mA, I _B = -5.0mA
Base-Emitter Voltage	V _{BE(on)}	-600	-670	-780	mV	I _C = -2.0mA, V _{CE} = -5V I _C = -10mA, V _{CE} = -5V
Current Gain-Bandwidth Product	f _T	100	340	-	MHz	V _{CE} = -5V, I _C = -10mA, f = 100MHz
Output Capacitance	C _{obo}	-	2.0	-	pF	V _{CB} = -10V, f = 1.0MHz

Notes: 4. Short duration pulse test used to minimize self-heating effect.

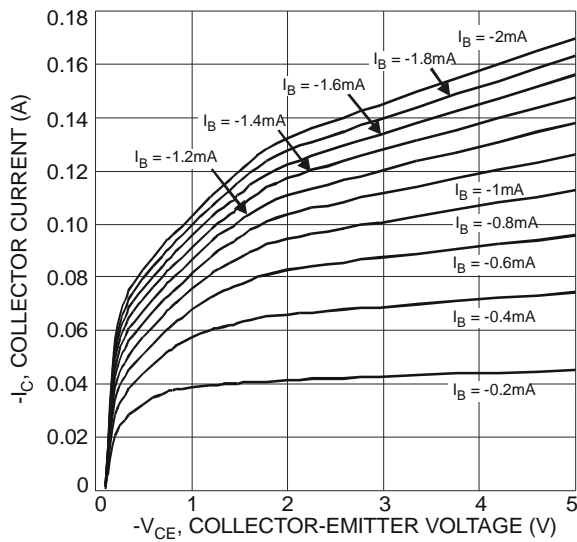


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

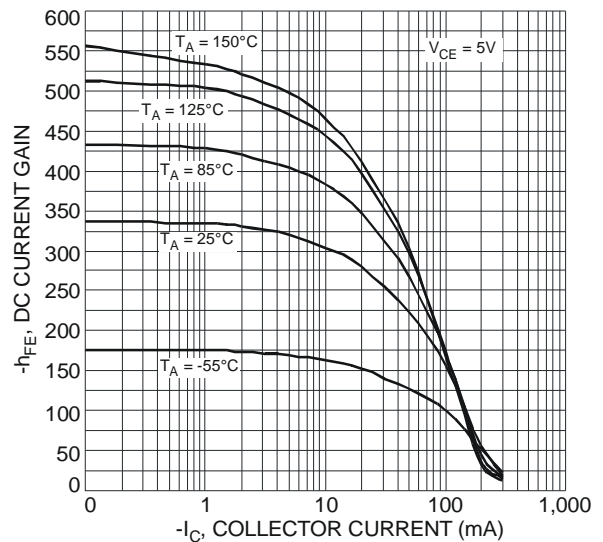


Fig. 5 Typical DC Current Gain vs. Collector Current

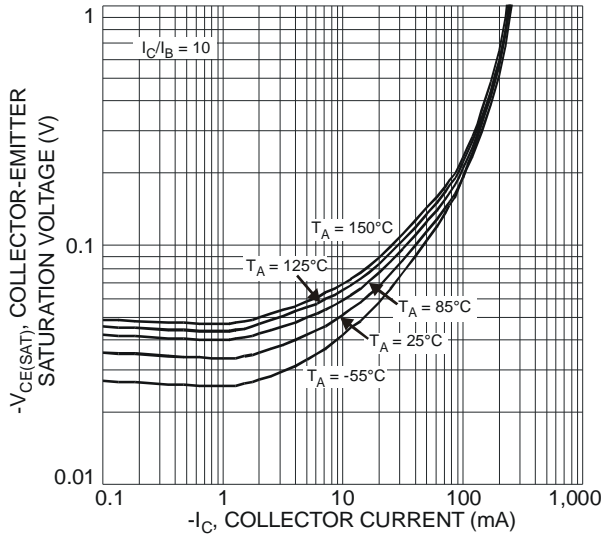


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

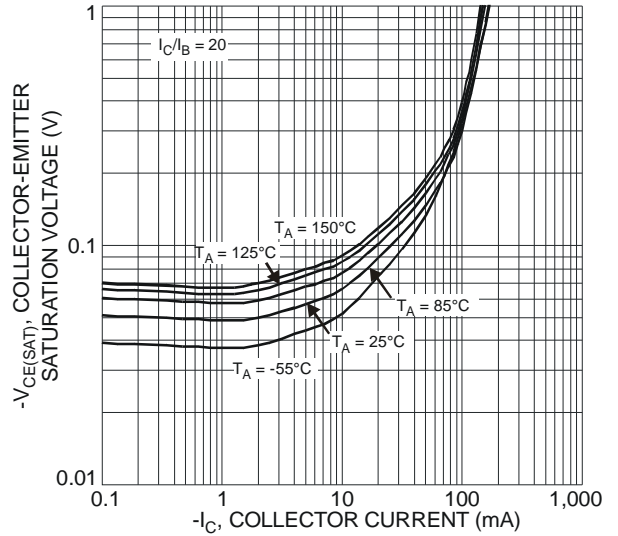


Fig. 7 Typical Collector-Emitter Saturation Voltage vs. Collector Current

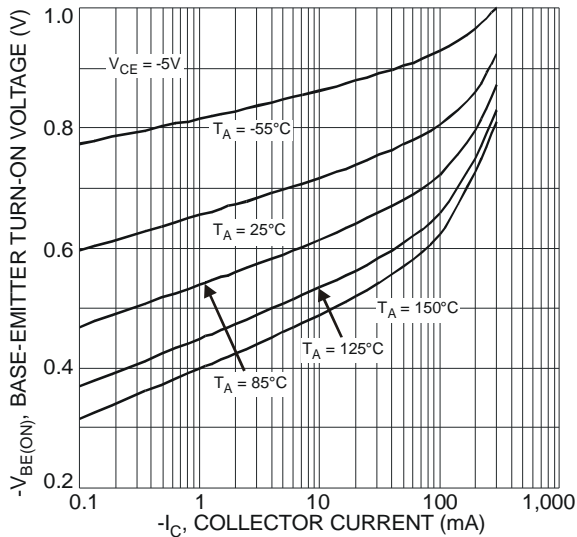


Fig. 8 Typical Base-Emitter Turn-On Voltage vs. Collector Current

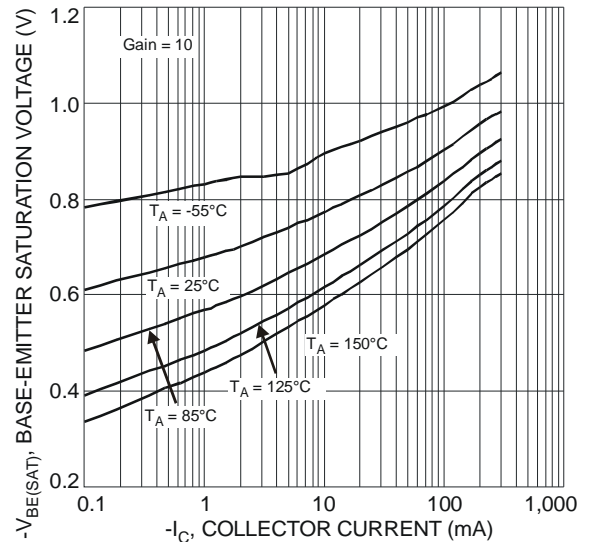
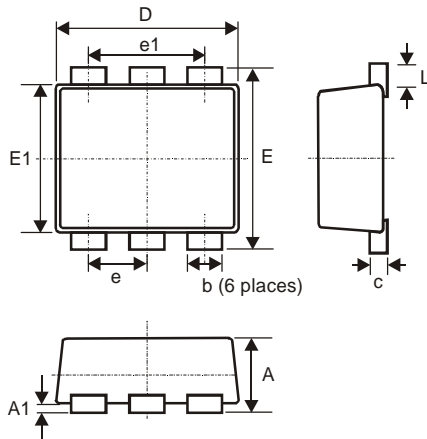


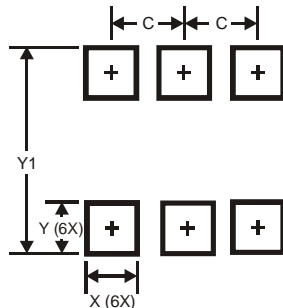
Fig. 9 Typical Base-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions



SOT-963			
Dim	Min	Max	Typ
A	0.40	0.50	0.45
A1	0	0.05	-
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
L	0.05	0.15	0.10
b	0.10	0.20	0.15
e	0.35 Typ		
e1	0.70 Typ		
All Dimensions in mm			

Suggest Pad Layout



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

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