

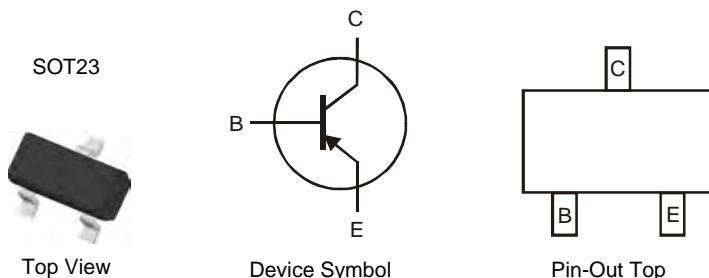
60V LOW $V_{CE(sat)}$ PNP SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free. "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOT23
- 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: 0.008 grams (approximate)

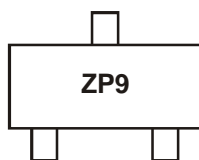


Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS5160T-7	ZP9	7	8mm	3,000

- Notes:
1. No purposefully added lead.
 2. Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>
 3. For packaging details, go to our website at <http://www.diodes.com>

Marking Information



ZP9 = Product Type Marking Code

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

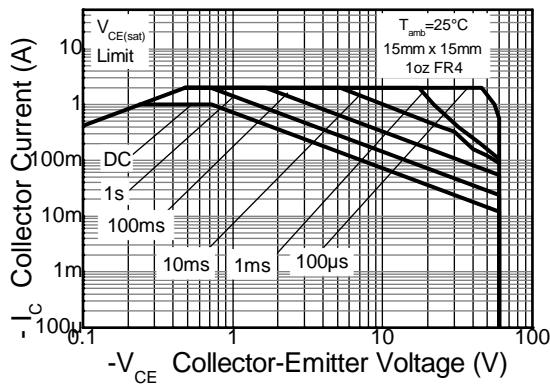
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	-80	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-1	A
Peak Pulse Collector Current	I_{CM}	-2	A
Base Current (DC)	I_B	-300	mA
Peak Base Current	I_{BM}	-1	A

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

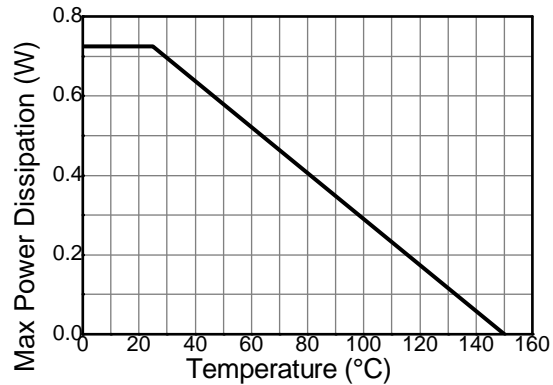
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	725	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	172	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient Air (Note 4)	$R_{\theta JA}$	79	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 4. Operated under pulsed conditions: pulse width $\leq 100\text{ms}$, duty cycle ≤ 0.25 .
 5. Device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

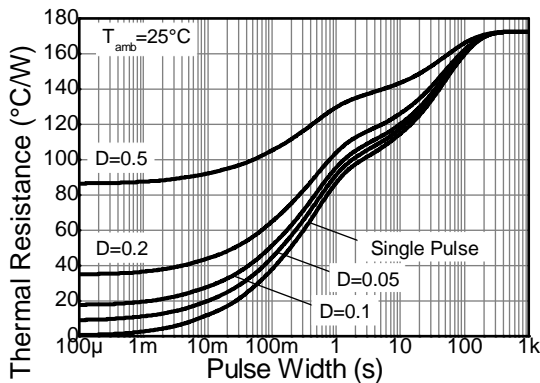
Thermal Characteristics



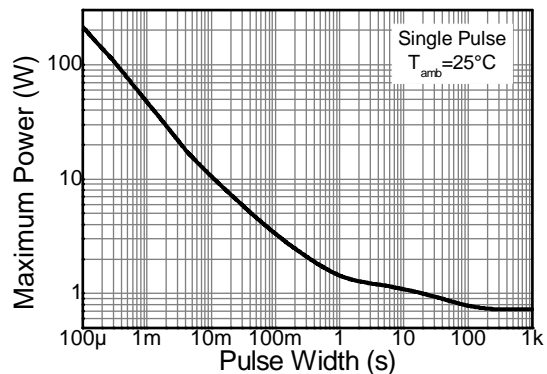
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BV_{CBO}	-80	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	-60	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = -100\mu\text{A}$
Collector-Base Cutoff Current	I_{CBO}	—	—	-100	nA	$V_{CB} = -20\text{V}, I_E = 0$
		—	—	-50	μA	$V_{CB} = -20\text{V}, I_E = 0, T_A = 150^\circ\text{C}$
Emitter-Base Cutoff Current	I_{EBO}	—	—	-100	nA	$V_{EB} = -5\text{V}, I_C = 0$
DC Current Gain (Note 6)	h_{FE}	200	—	—	—	$V_{CE} = -5\text{V}, I_C = -1\text{mA}$
		150	—	—	—	$V_{CE} = -5\text{V}, I_C = -500\text{mA}$
		100	—	—	—	$V_{CE} = -5\text{V}, I_C = -1\text{A}$
Collector-Emitter Saturation Voltage (Note 6)	$V_{CE(sat)}$	—	—	-175	mV	$I_C = -100\text{mA}, I_B = -1\text{mA}$
		—	—	-180		$I_C = -500\text{mA}, I_B = -50\text{mA}$
		—	—	-340		$I_C = -1\text{A}, I_B = -100\text{mA}$
Equivalent On-Resistance	$R_{CE(sat)}$	—	—	340	m Ω	$I_E = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.1	V	$I_C = -1\text{A}, I_B = -50\text{mA}$
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	-0.9	V	$V_{CE} = -5\text{V}, I_C = -1\text{A}$
Transition Frequency	f_T	150	—	—	MHz	$V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
Output Capacitance	C_{ob}	—	—	15	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Turn-On Time	t_{on}	—	75	—	ns	$V_{CC} = -10\text{V}, I_C = -0.5\text{A}, I_{B1} = I_{B2} = -25\text{mA}$
Delay Time	t_d	—	35	—	ns	
Rise Time	t_r	—	40	—	ns	
Turn-Off Time	t_{off}	—	265	—	ns	
Storage Time	t_s	—	230	—	ns	
Fall Time	t_f	—	35	—	ns	

Notes: 6. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

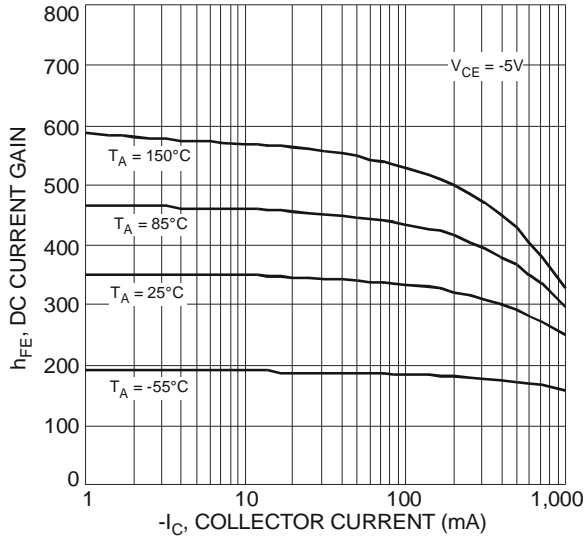


Fig. 5 Typical DC Current Gain vs. Collector Current

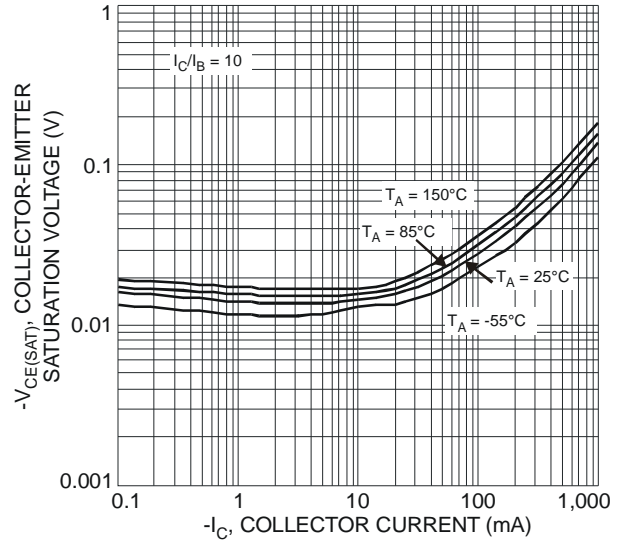


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

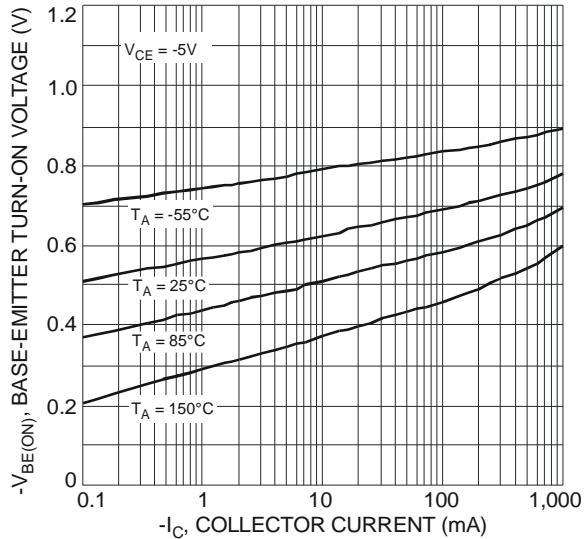


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

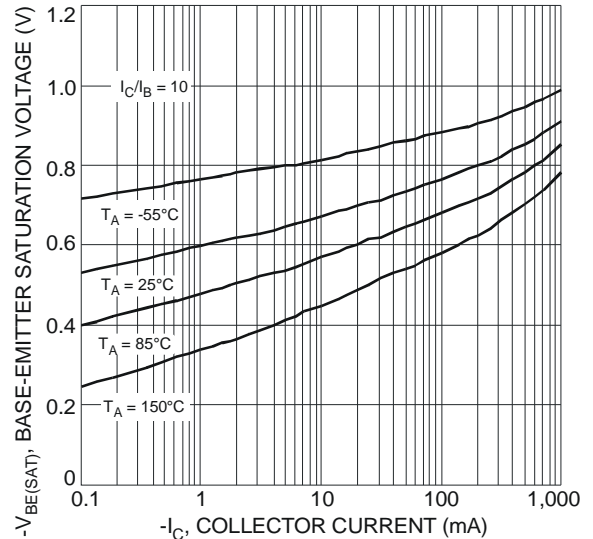


Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

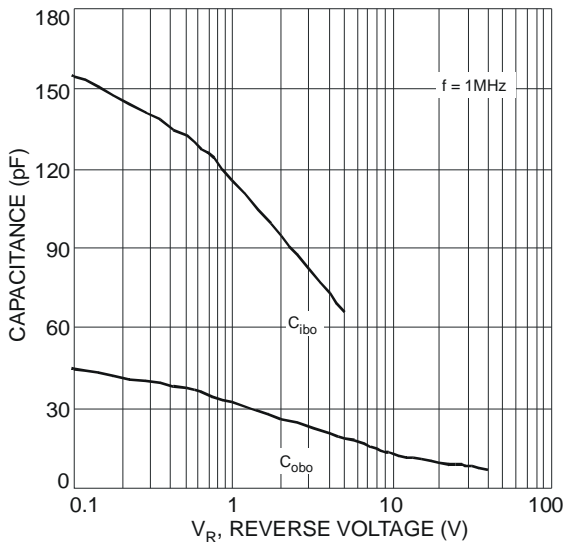
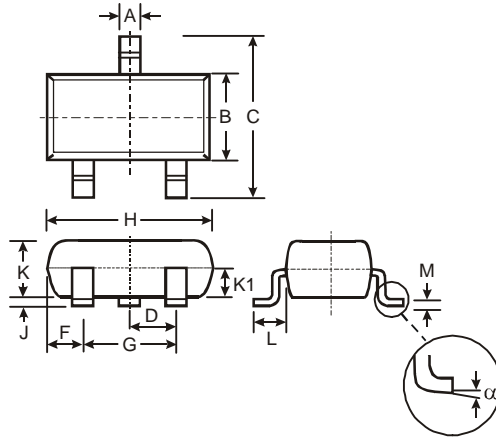


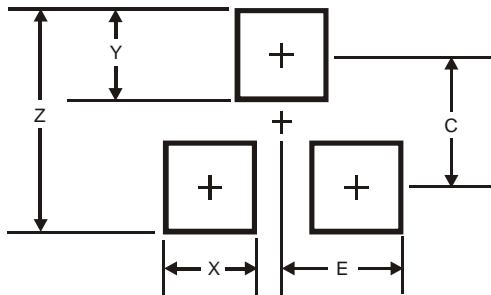
Fig. 9 Typical Capacitance Characteristics

Package Outline Dimensions



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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