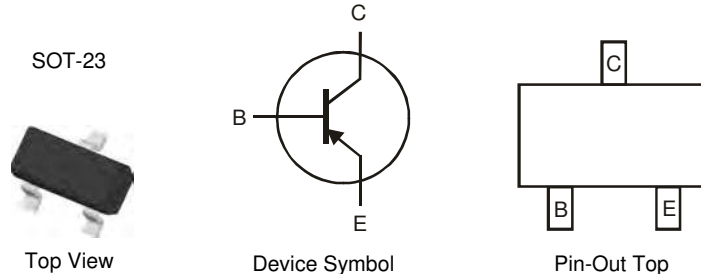


Features

- 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: SOT-23
- 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)

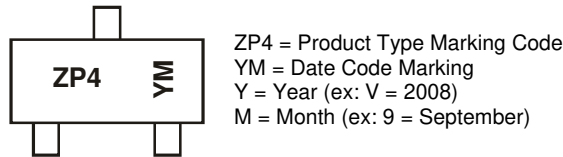


Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS5320T-7	ZP4	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



Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015	2016
Code	W	X	Y	Z	A	B	C	D

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	-20	V
Collector-Emitter Voltage	V_{CEO}	-20	V
Emitter-Base Voltage	V_{EBO}	-5	V
Peak Pulse Current	I_{CM}	-5	A
Repetitive Peak Pulse Current (Note 4)	I_{CRP}	-3	A
Continuous Collector Current	I_C	-2	A
Base Current	I_B	-0.5	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) @ $T_A = 25^\circ\text{C}$	P_D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 4) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	209	$^\circ\text{C/W}$
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.

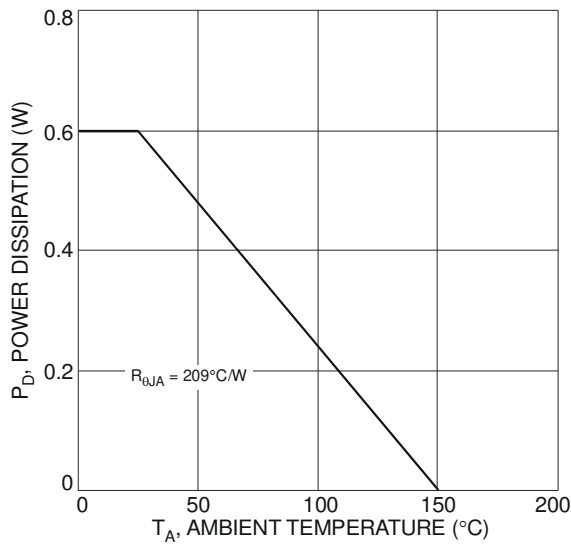


Fig. 1 Power Dissipation vs. Ambient Temperature

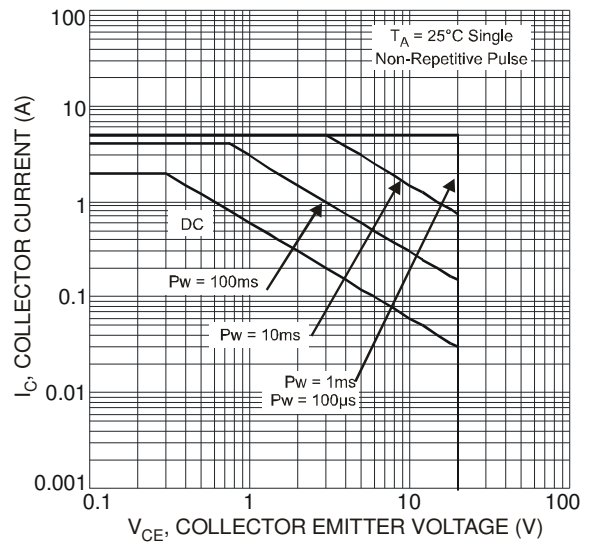


Fig. 2 Safe Operating Area

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
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	$V_{EB} = -5\text{V}, I_C = 0$
Collector-Base Breakdown Voltage	BV_{CBO}	-20	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	-20	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = -100\mu\text{A}$
DC Current Gain (Note 5)	h_{FE}	220	—	—	—	$V_{CE} = -2\text{V}, I_C = -0.1\text{A}$
		220	—	—	—	$V_{CE} = -2\text{V}, I_C = -0.5\text{A}$
		200	—	—	—	$V_{CE} = -2\text{V}, I_C = -1\text{A}$
		150	—	—	—	$V_{CE} = -2\text{V}, I_C = -2\text{A}$
		100	—	—	—	$V_{CE} = -2\text{V}, I_C = -3\text{A}$
Collector-Emitter Saturation Voltage (Note 6)	$V_{CE(sat)}$	—	—	-70	—	$I_C = -0.5\text{A}, I_B = -50\text{mA}$
		—	—	-130	mV	$I_C = -1\text{A}, I_B = -50\text{mA}$
		—	—	-230	—	$I_C = -2\text{A}, I_B = -100\text{mA}$
		—	—	-210	—	$I_C = -2\text{A}, I_B = -200\text{mA}$
		—	—	-300	—	$I_C = -3\text{A}, I_B = -300\text{mA}$
Equivalent On-Resistance	$R_{CE(sat)}$	—	—	105	m Ω	$I_E = -2\text{A}, I_B = -200\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.1	V	$I_C = -2\text{A}, I_B = -100\text{mA}$
		—	—	-1.2	V	$I_C = -3\text{A}, I_B = -300\text{mA}$
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	-1.2	V	$V_{CE} = -2\text{V}, I_C = -1\text{A}$
Transition Frequency	f_T	100	180	—	MHz	$V_{CE} = -5\text{V}, I_C = -100\text{mA}, f = 100\text{MHz}$
Output Capacitance	C_{ob}	—	25	50	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Turn-On Time	t_{on}	—	67	—	ns	$V_{CC} = -10\text{V}, I_C = -1\text{A}, I_{B1} = -I_{B2} = -50\text{mA}$
Delay Time	t_d	—	23	—	ns	
Rise Time	t_r	—	44	—	ns	
Turn-Off Time	t_{off}	—	224	—	ns	
Storage Time	t_s	—	184	—	ns	
Fall Time	t_f	—	40	—	ns	

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

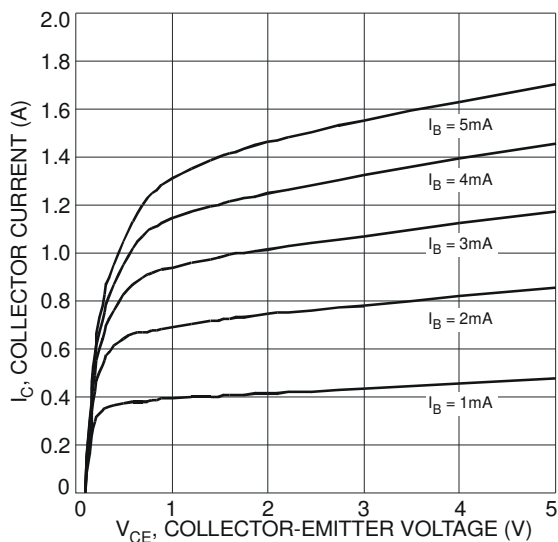


Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

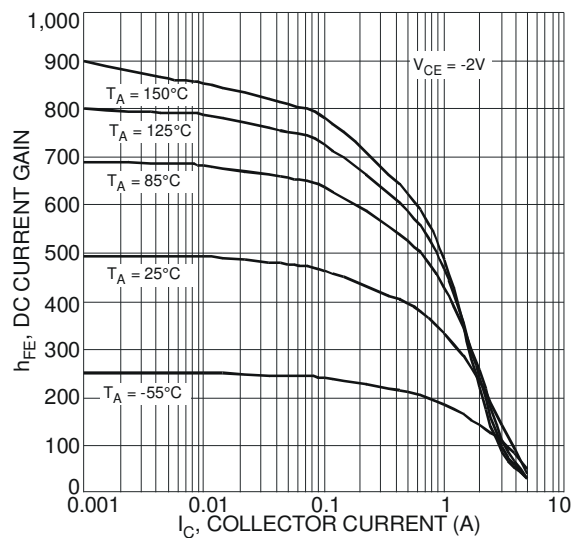


Fig. 4 Typical DC Current Gain vs. Collector Current

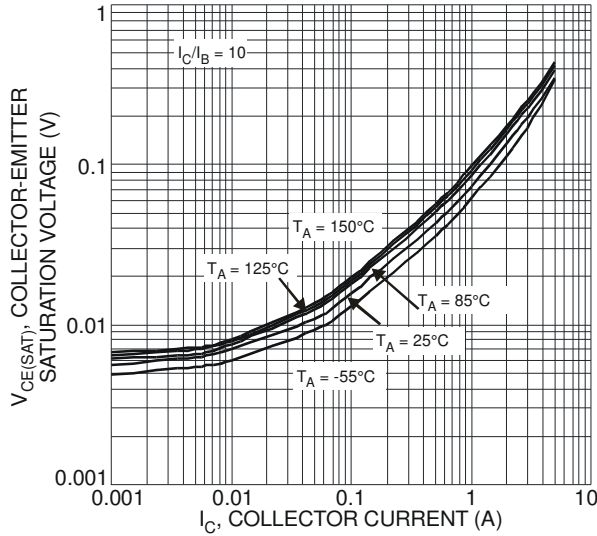


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

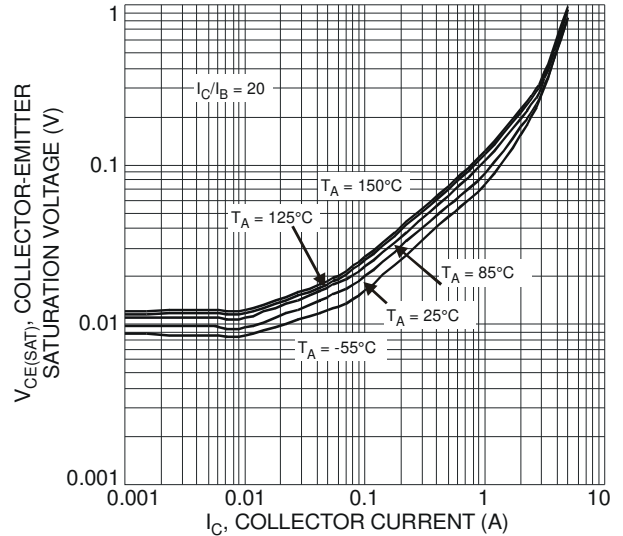


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

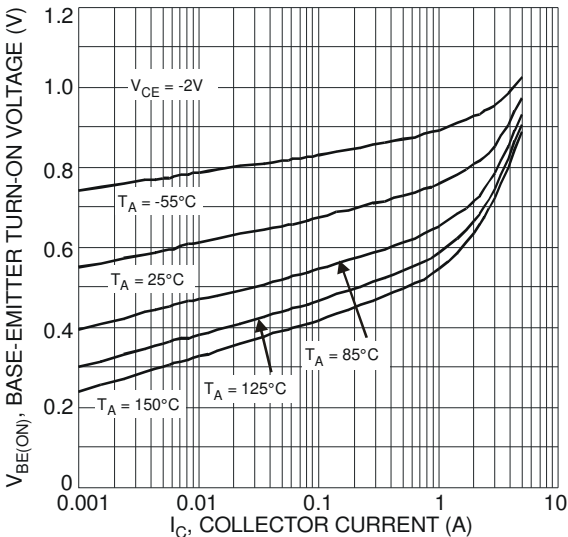


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

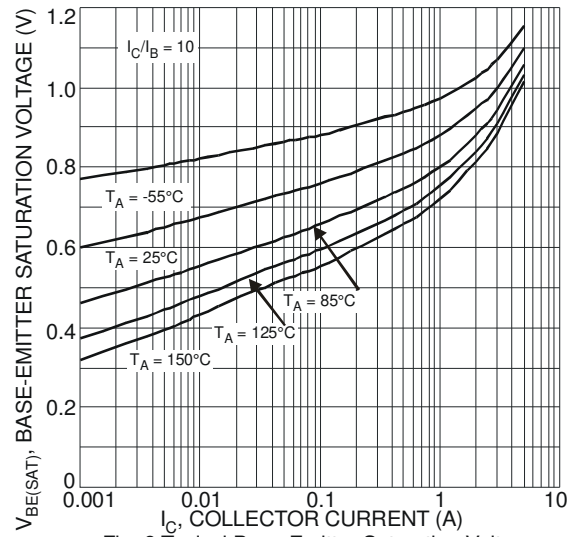
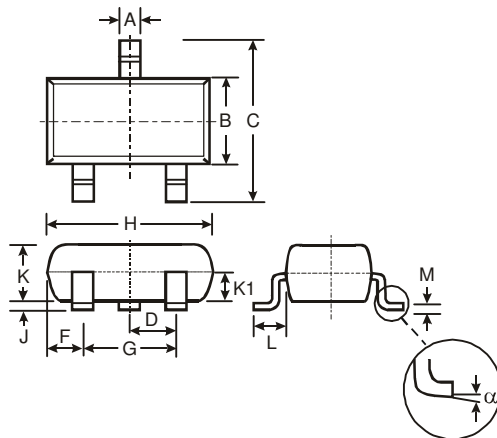


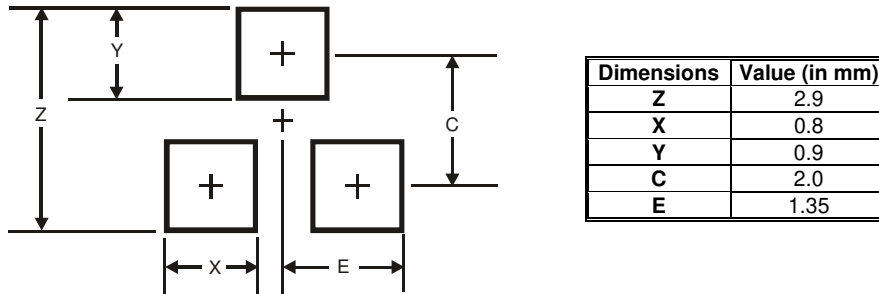
Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions



SOT-23			
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



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