40V LOW $V_{CE(sat)}$ NPN SURFACE MOUNT TRANSISTOR

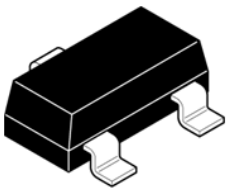
Features

- Ideal for Medium Power Amplification and Switching
- Ultra Low Collector-Emitter Saturation Voltage
- Complimentary NPN Type Available (DSS5240T)
- **"Lead-Free", RoHS Compliant (Note 1)**
- **Halogen and Antimony Free. "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

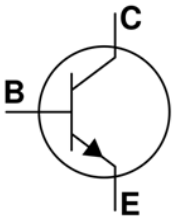
Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (approximate)

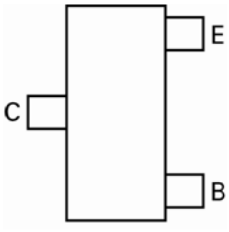
SOT23



Top view



Device symbol



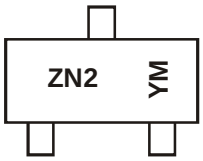
Top View
Pin Configuration

Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS4240T-7	ZN2	7	8	3,000

Notes: 1. No purposefully added lead.
2. Diodes Inc's "Green" Policy can be found on our website at https://www.diodes.com/
3. Devices with lot number starting from PID0155145 (March 2010) are "Green" products.

Marking Information



ZN2 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: X = 2010)
M = Month (ex: 9 = September)

Date Code Key

Year	2010	2011	2012	2013	2014	2015	2016	2017
Code	X	Y	Z	A	B	C	D	E

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°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Collector Current	I_{CM}	3	A
Continuous Collector Current	I_C	2	A
Peak Base Current	I_{BM}	0.3	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 4)	$R_{\theta JA}$	209	°C/W
Thermal Resistance, Junction to Lead (Note 5)	$R_{\theta JC}$	74.95	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	40	—	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 6)	BV_{CEO}	40	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	I_E = 100μA
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 30V, I_E = 0
		—	—	50	μA	V_{CB} = 30V, I_E = 0, T_A = 150°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 4V, I_C = 0
ON CHARACTERISTICS (Note 6)						
DC Current Gain	h_{FE}	350	—	—	—	V_{CE} = 2V, I_C = 0.1A
		300	—	—		V_{CE} = 2V, I_C = 0.5A
		300	—	—		V_{CE} = 2V, I_C = 1A
		150	—	—		V_{CE} = 2V, I_C = 2A
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	70	mV	I_C = 100mA, I_B = 1mA
		—	30	100		I_C = 500mA, I_B = 50mA
		—	—	180		I_C = 750mA, I_B = 15mA
		—	—	180		I_C = 1A, I_B = 50mA
		—	—	320		I_C = 2A, I_B = 200mA
Equivalent On-Resistance	$R_{CE(sat)}$	—	60	200	mΩ	I_C = 500mA, I_B = 50mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	1.1	V	I_C = 2A, I_B = 200mA
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	0.75	V	V_{CE} = 2V, I_C = 100mA
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	V_{CE} = 10V, I_C = 100mA, f = 100MHz
Output Capacitance	C_{ob}	—	—	20	pF	V_{CB} = 10V, f = 1MHz

Notes: 4. Device mounted on FR-4 PCB with minimum recommended pad layout.
5. Thermal resistance from junction to solder-point (at the end of the collector lead).
6. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.

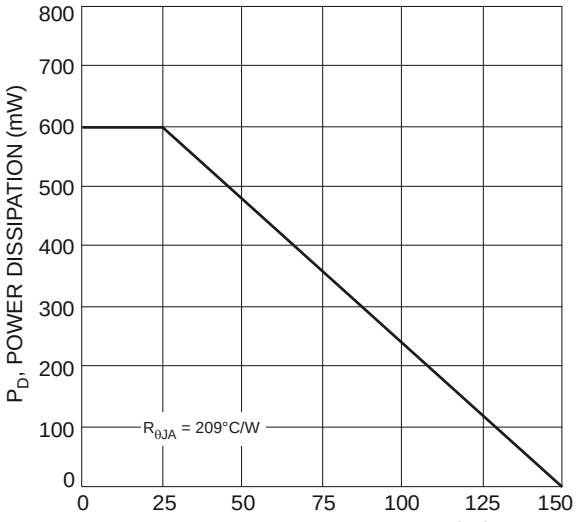


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 4)

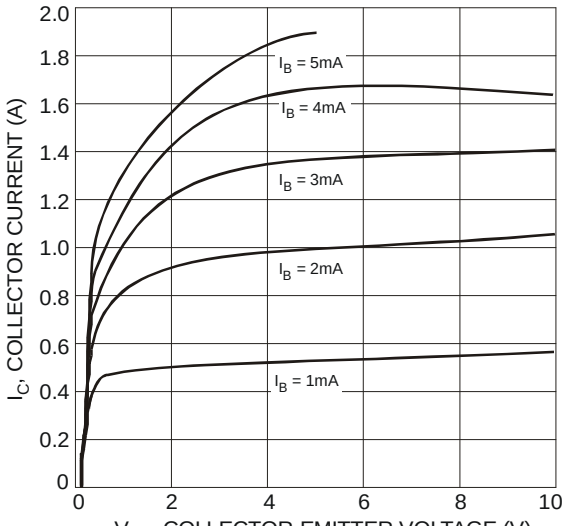


Fig. 2 Typical Collector Current
vs. Collector-Emitter Voltage

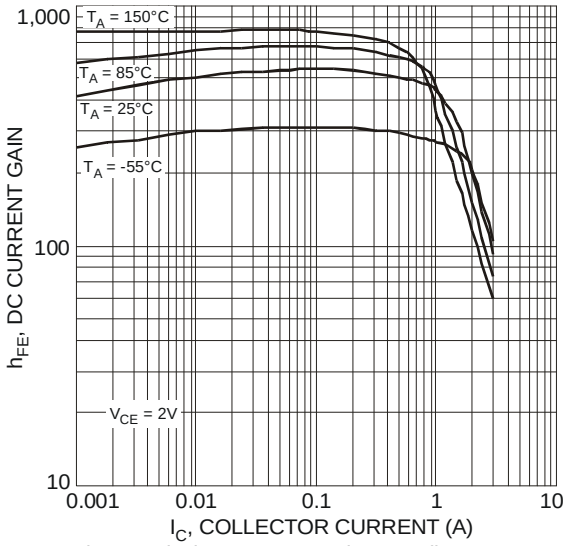


Fig. 3 Typical DC Current Gain vs. Collector Current

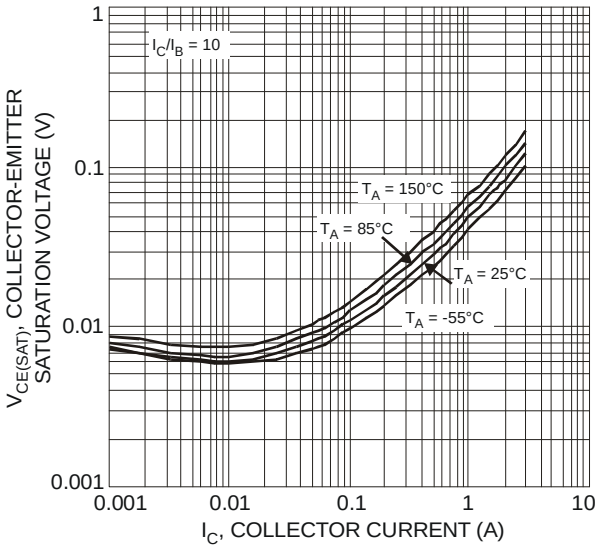


Fig. 4 Typical Collector-Emitter Saturation Voltage
vs. Collector Current

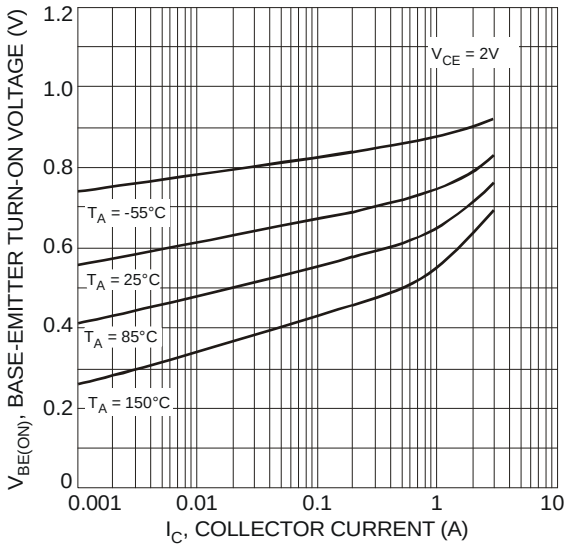


Fig. 5 Typical Base-Emitter Turn-On Voltage
vs. Collector Current

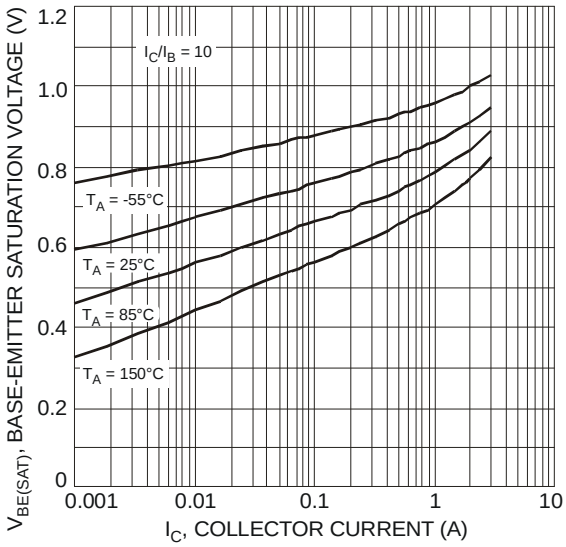


Fig. 6 Typical Base-Emitter Saturation Voltage
vs. Collector Current

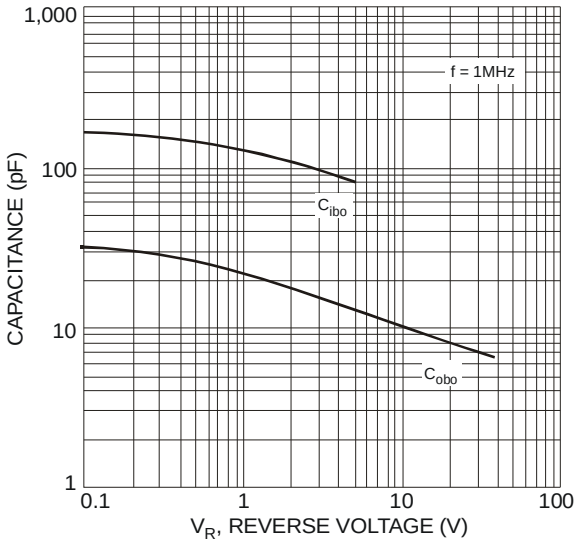


Fig. 7 Typical Capacitance Characteristics

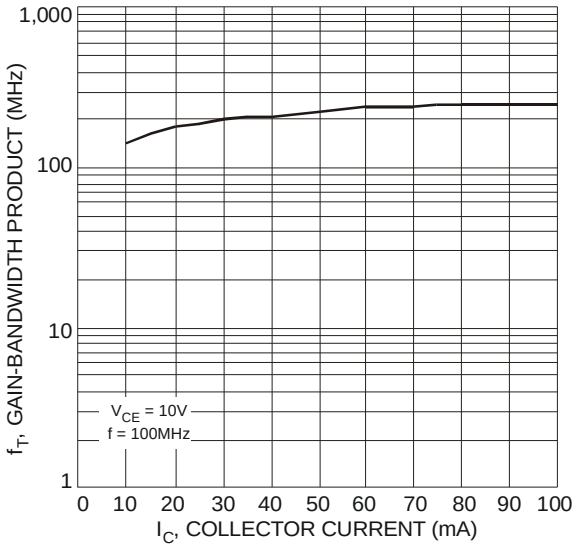
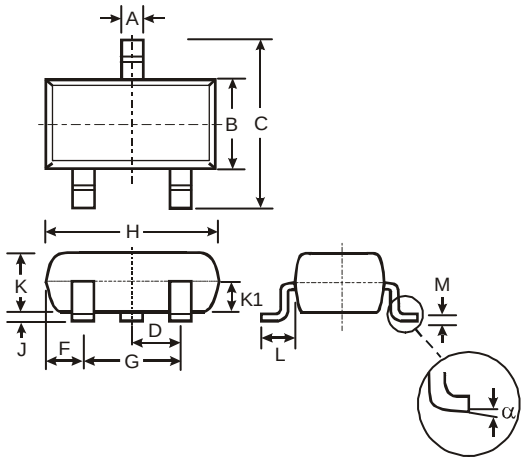


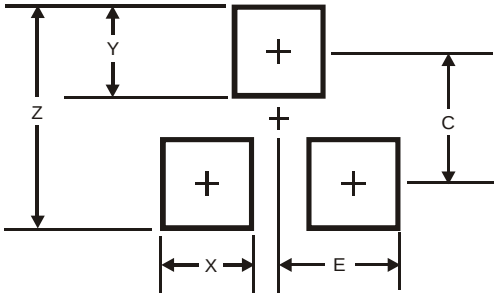
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

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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