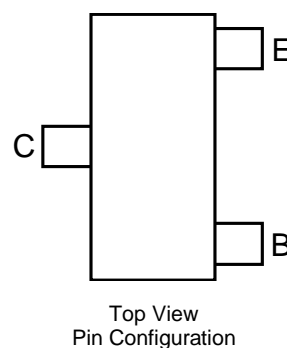
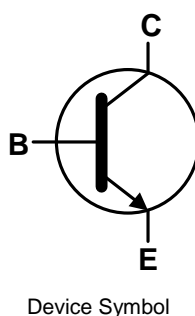


## Features

- $BV_{CEO} > 40V$
- $I_C = 2A$  high Continuous Collector Current
- $I_{CM} = 3A$  Peak Pulse Current
- Low Saturation Voltage 180mV Max @  $I_C = 1A$
- $R_{CE(SAT)} = 60m\Omega$  at 0.5A for a Low Equivalent On-Resistance
- 730mW Power Dissipation
- Complimentary PNP Type: DSS5240T
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **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 Plated Leads, Solderable per MIL-STD-202, Method 208 Ⓜ3
- Weight: 0.008 grams (Approximate)

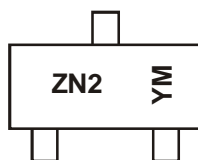


## Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS4240T-7	ZN2	7	8	3,000
DSS4240T-13	ZN2	13	8	10,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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 <http://www.diodes.com/products/packages.html>.

## Marking Information



ZN2 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Code	A	B	C	D	E	F	G	H	I	J	K

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

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	40	V
Collector-Emitter Voltage	V <sub>CEO</sub>	40	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Peak Pulse Collector Current	I <sub>CM</sub>	3	A
Continuous Collector Current	I <sub>C</sub>	2	A
Peak Base Current	I <sub>BM</sub>	0.3	A

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

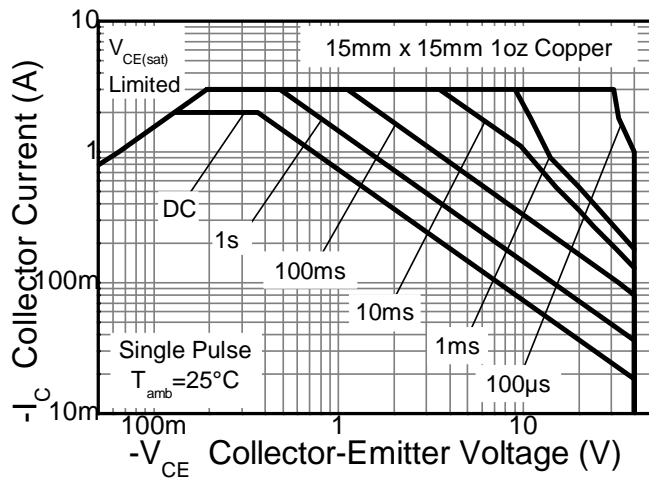
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	730	mW
Power Dissipation (Note 6)	P <sub>D</sub>	600	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R <sub>θJA</sub>	171	°C/W
Thermal Resistance, Junction to Ambient Air (Note 6)	R <sub>θJA</sub>	209	°C/W
Thermal Resistance, Junction to Lead (Note 7)	R <sub>θJL</sub>	75	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 8)

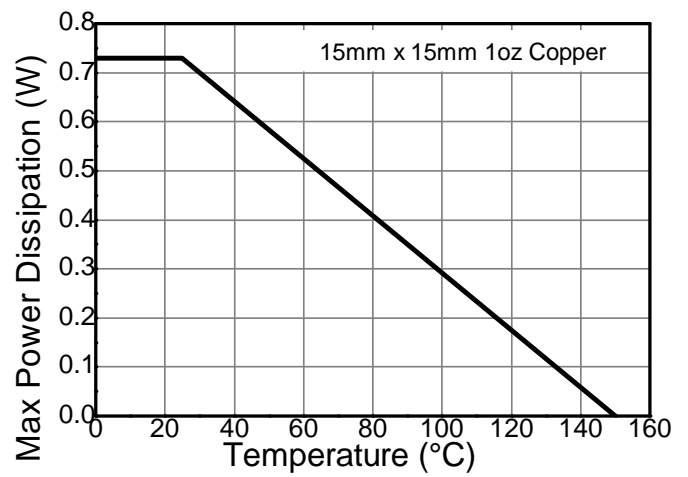
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
  6. Same as note (5), except the device is mounted on minimum recommended pad layout.
  7. Thermal resistance from junction to solder-point (at the end of the collector lead).
  8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

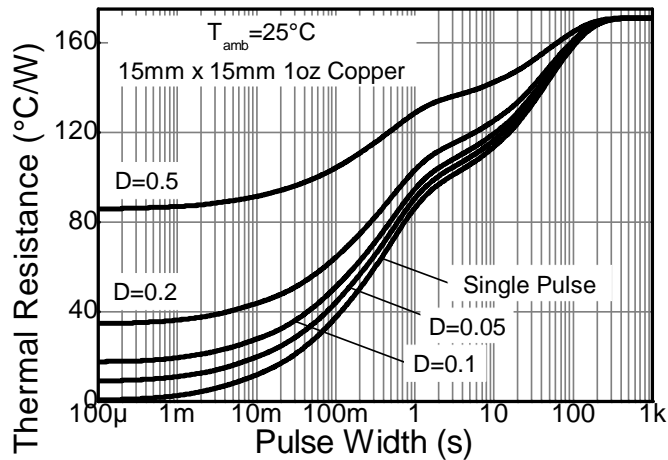
**Thermal Characteristics and Derating Information**



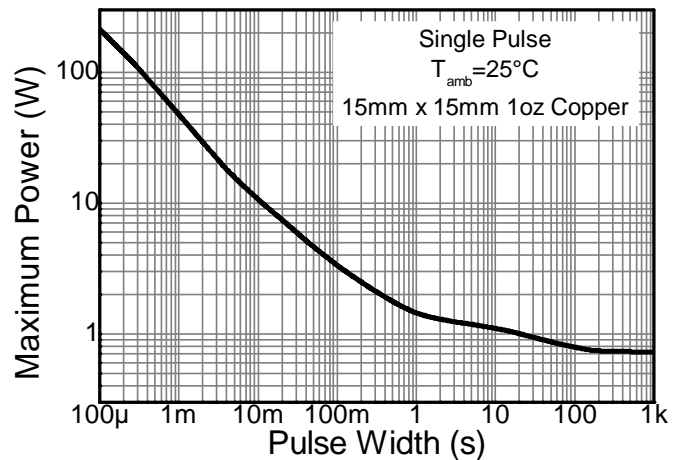
**Safe Operating Area**



**Derating Curve**



**Transient Thermal Impedance**



**Pulse Power Dissipation**

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	40	—	—	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	40	—	—	V	I <sub>C</sub> = 10mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	5	—	—	V	I <sub>E</sub> = 100μA
Collector-Base Cutoff Current	I <sub>CBO</sub>	—	—	100	nA	V <sub>CB</sub> = 30V, I <sub>E</sub> = 0
Emitter-Base Cutoff Current	I <sub>EBO</sub>	—	—	50	μA	V <sub>CB</sub> = 30V, I <sub>E</sub> = 0, T <sub>A</sub> = +150°C
		—	—	100	nA	V <sub>EB</sub> = 4V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 9)</b>						
DC Current Gain	h <sub>FE</sub>	350	—	—	—	V <sub>CE</sub> = 2V, I <sub>C</sub> = 0.1A
		300	—	—		V <sub>CE</sub> = 2V, I <sub>C</sub> = 0.5A
		300	—	—		V <sub>CE</sub> = 2V, I <sub>C</sub> = 1A
		150	—	—		V <sub>CE</sub> = 2V, I <sub>C</sub> = 2A
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	—	70	mV	I <sub>C</sub> = 100mA, I <sub>B</sub> = 1mA
		—	30	100		I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA
		—	—	180		I <sub>C</sub> = 750mA, I <sub>B</sub> = 15mA
		—	—	180		I <sub>C</sub> = 1A, I <sub>B</sub> = 50mA
		—	—	320		I <sub>C</sub> = 2A, I <sub>B</sub> = 200mA
Equivalent On-Resistance	R <sub>CE(sat)</sub>	—	60	200	mΩ	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	—	—	1.1	V	I <sub>C</sub> = 2A, I <sub>B</sub> = 200mA
Base-Emitter Turn-on Voltage	V <sub>BE(on)</sub>	—	—	0.75	V	V <sub>CE</sub> = 2V, I <sub>C</sub> = 100mA
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Transition Frequency	f <sub>T</sub>	100	—	—	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 100mA, f = 100MHz
Output Capacitance	C <sub>ob</sub>	—	—	20	pF	V <sub>CB</sub> = 10V, f = 1MHz

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

**Typical Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

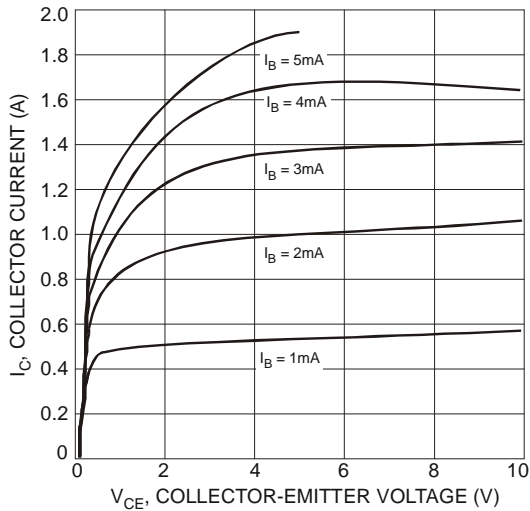


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

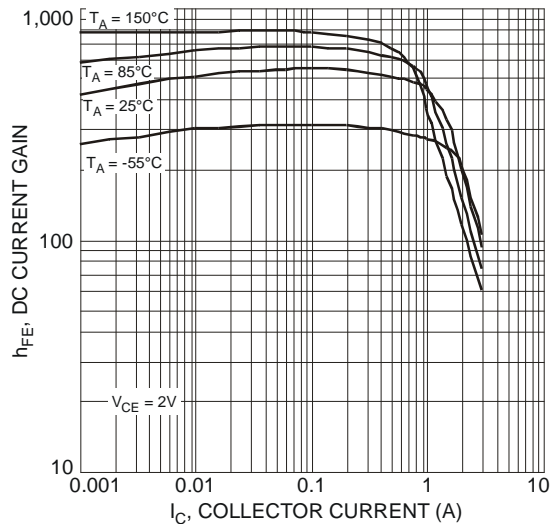


Fig. 3 Typical DC Current Gain vs. Collector Current

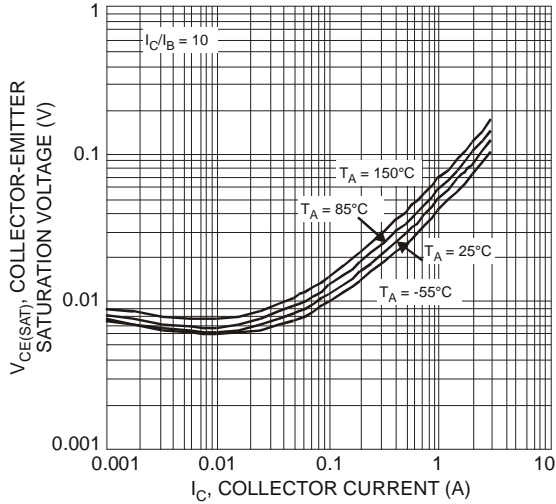


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

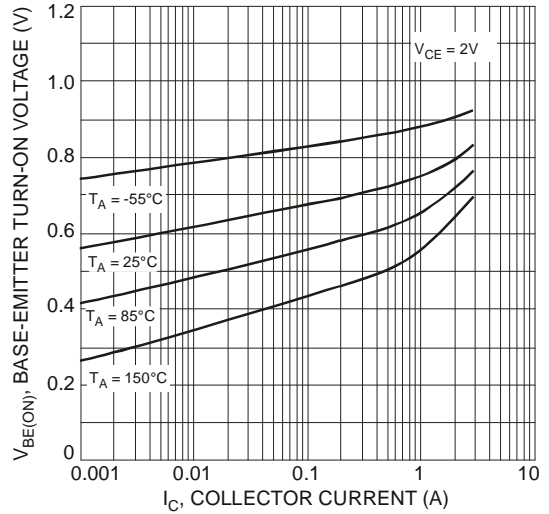


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

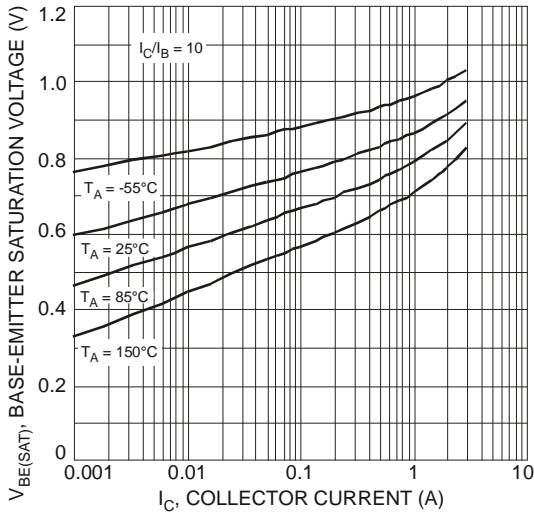


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

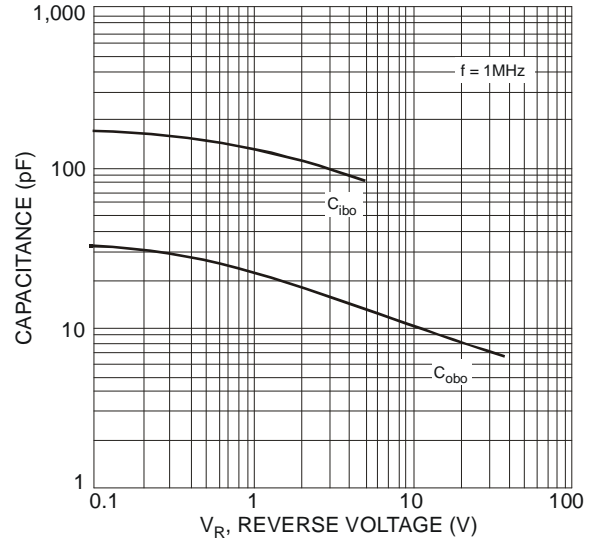


Fig. 7 Typical Capacitance Characteristics

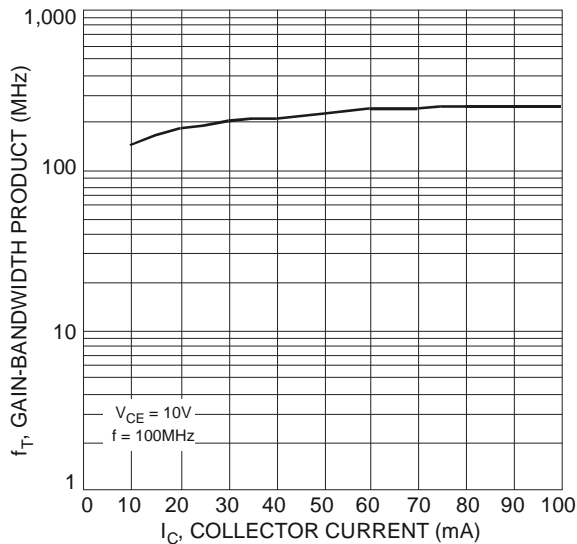
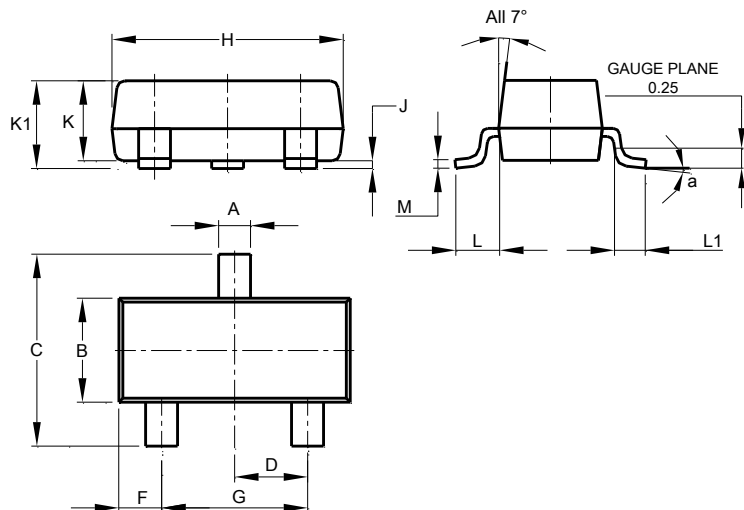


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Package Outline Dimensions

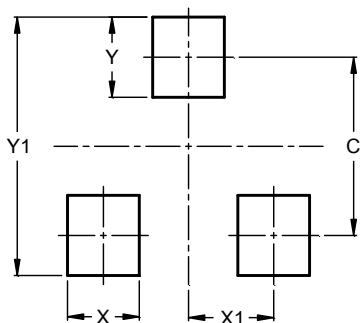
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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