

**40V PNP LOW SATURATION TRANSISTOR IN SOT23**
**Features**

- $BV_{CEO} > -40V$
- $I_C = -2A$  high Continuous Collector Current
- $I_{CM} = -3A$  Peak Pulse Current
- Low Saturation Voltage -225mV Max @  $I_C = -1A$ .
- $R_{CE(sat)} = 90m\Omega$  at 0.5A for a low equivalent on-resistance
- 730mW power dissipation
- Complimentary NPN Type: DSS4240T
- **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**

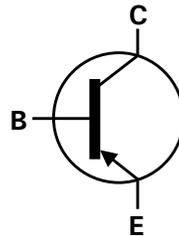
- Case: SOT23
- Case Material: molded plastic, "Green" molding compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 @3
- Weight 0.008 grams (approximate)

**Application**

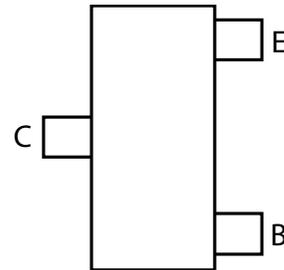
- Gate Driving MOSFETs and IGBTs
- Load switch
- DC-DC converters
- Battery charging



Top View



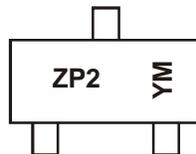
Device Symbol


 Top View  
Pin-Out

**Ordering Information** (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS5240T-7	ZP2	7	8	3,000

- 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> 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>

**Marking Information**


ZP2 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: V = 2008)  
 M = Month (ex: 9 = September)

## Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Code	V	W	X	Y	Z	A	B	C	D	E	F

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

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**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	-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
Base Current	$I_B$	-300	mA

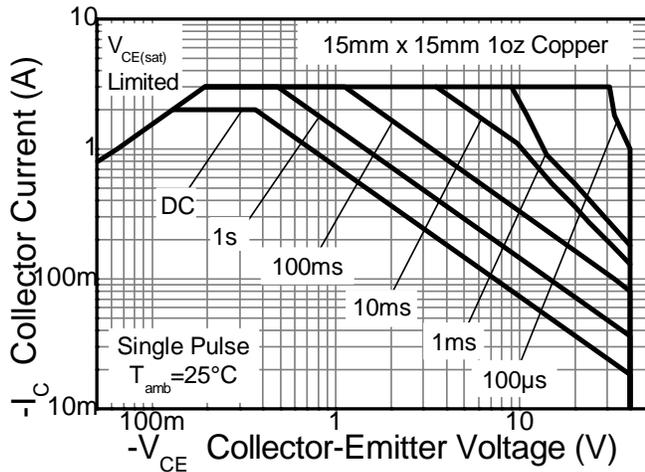
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**Thermal Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

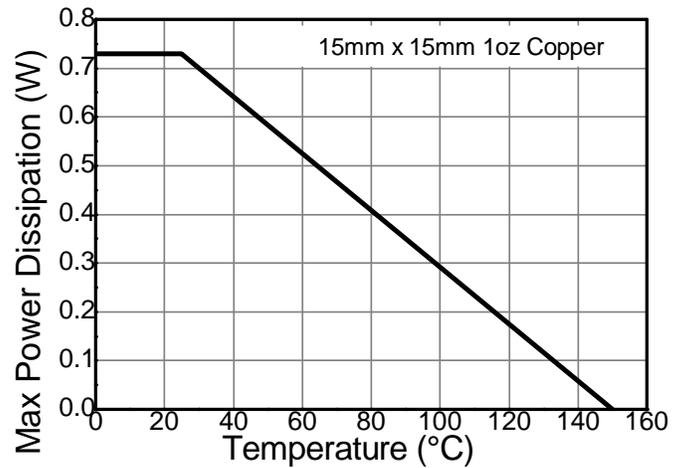
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	730	mW
Power Dissipation (Note 6)	$P_D$	600	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	171	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	209	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Lead (Note 7)	$R_{\theta JL}$	75	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
5. For a device surface mounted on 15mm X 15mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
  6. Same as note (5), except the device surface mounted on FR4 PCB with minimum recommended pad layout.
  7. Thermal resistance from junction to solder-point (at the end of the collector lead).

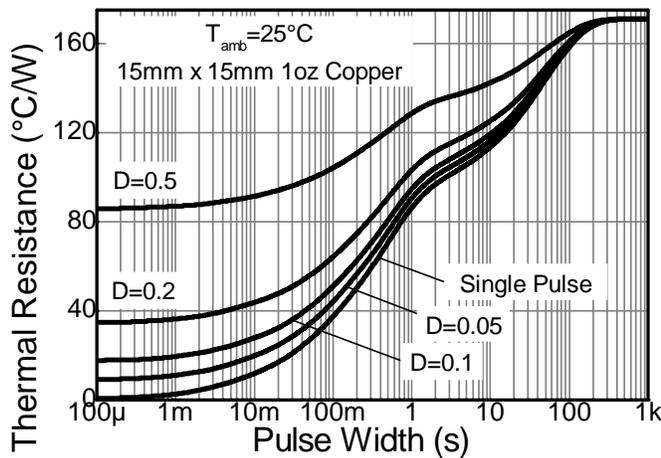
**Thermal Characteristics and Derating information**



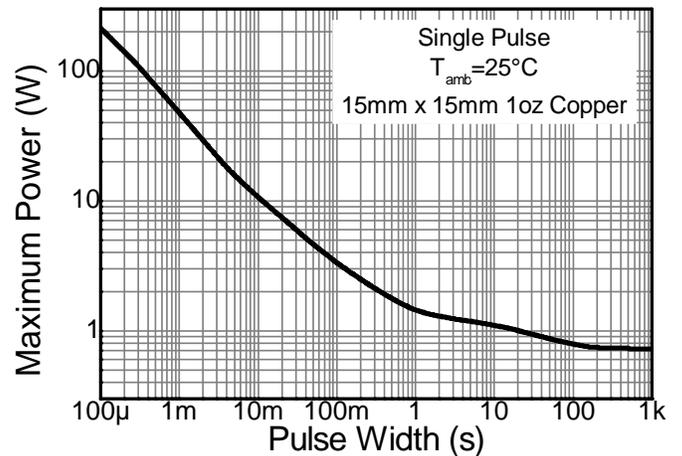
**Safe Operating Area**



**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 8)	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
		—	—	-50	μA	V <sub>CB</sub> = -30V, I <sub>E</sub> = 0, T <sub>A</sub> = +150°C
Emitter-Base Cutoff Current	I <sub>EBO</sub>	—	—	-100	nA	V <sub>EB</sub> = -4V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 8)</b>						
DC Current Gain	h <sub>FE</sub>	300	—	—	—	V <sub>CE</sub> = -2V, I <sub>C</sub> = -0.1A
		260	—	—	—	V <sub>CE</sub> = -2V, I <sub>C</sub> = -0.5A
		210	—	—	—	V <sub>CE</sub> = -2V, I <sub>C</sub> = -1A
		100	—	—	—	V <sub>CE</sub> = -2V, I <sub>C</sub> = -2A
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	—	-100	mV	I <sub>C</sub> = -100mA, I <sub>B</sub> = -1mA
		—	45	-110	mV	I <sub>C</sub> = -500mA, I <sub>B</sub> = -50mA
		—	—	-225	mV	I <sub>C</sub> = -750mA, I <sub>B</sub> = -15mA
		—	—	-225	mV	I <sub>C</sub> = -1A, I <sub>B</sub> = -50mA
		—	—	-350	mV	I <sub>C</sub> = -2A, I <sub>B</sub> = -200mA
Equivalent On-Resistance	R <sub>CE(SAT)</sub>	—	90	220	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>	—	—	28	pF	V <sub>CB</sub> = -10V, f = 1MHz

Notes: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

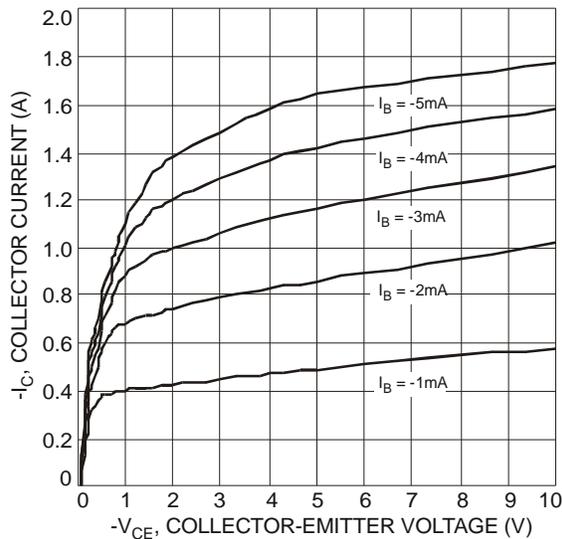


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

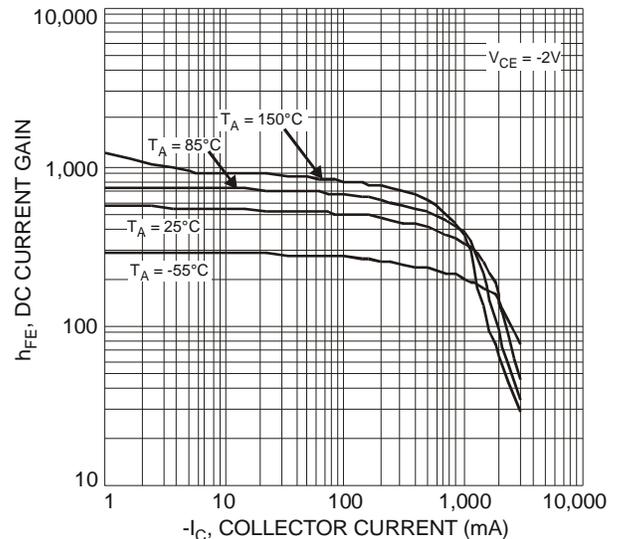


Figure 2 Typical DC Current Gain vs. Collector Current

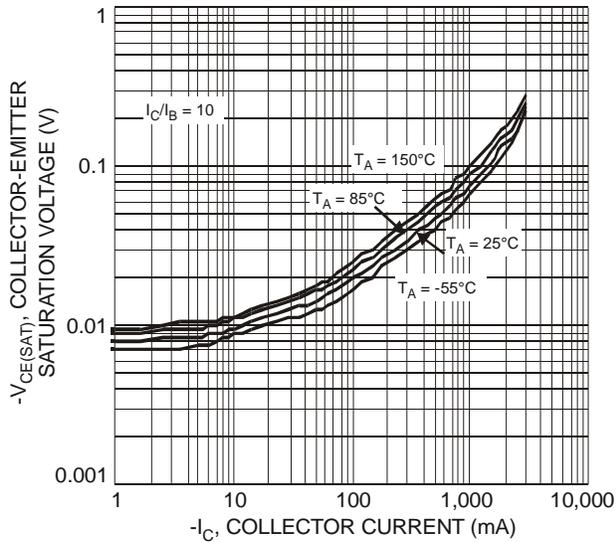


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

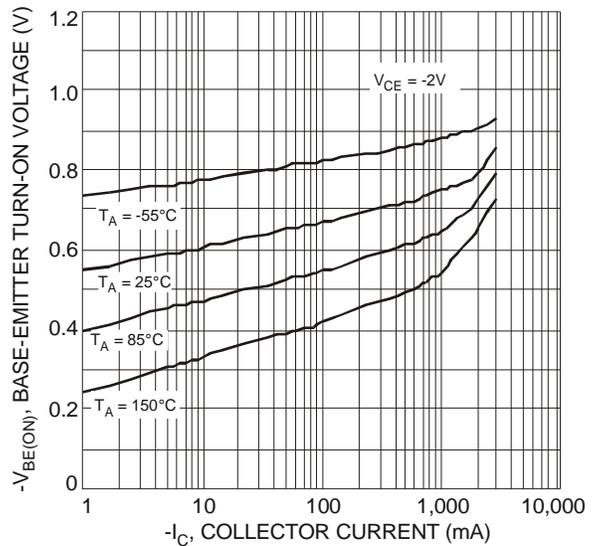


Figure 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

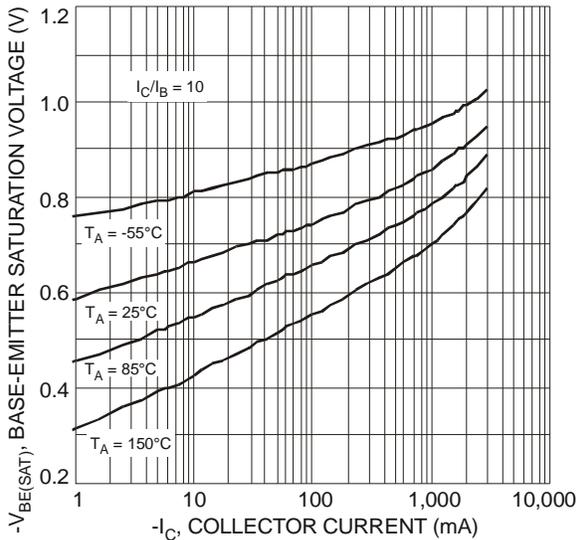


Figure 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

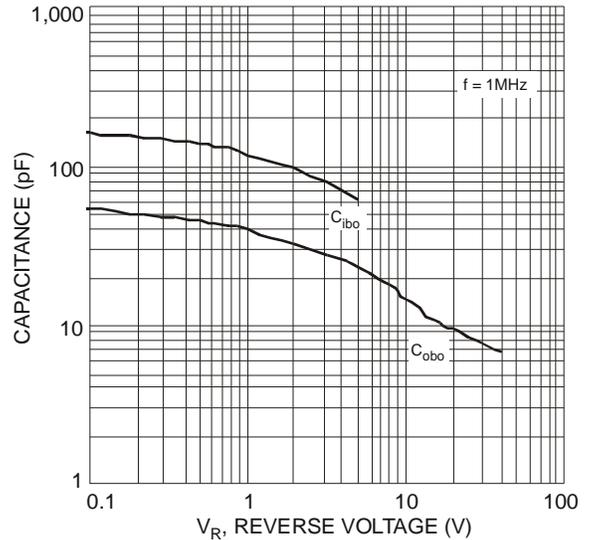


Figure 6 Typical Capacitance Characteristics

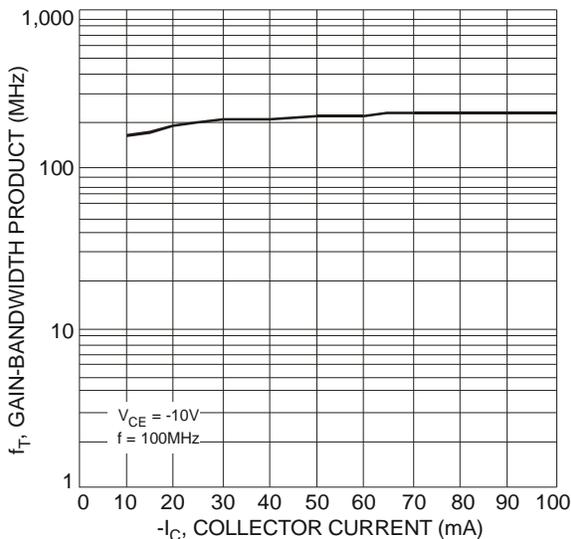
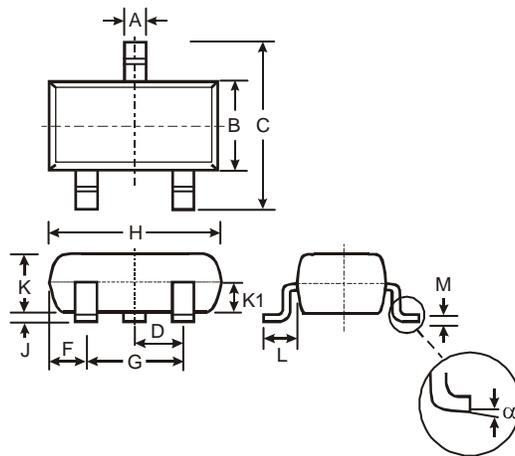


Figure 7 Typical Gain-Bandwidth Product vs. Collector Current

## Package Outline Dimensions

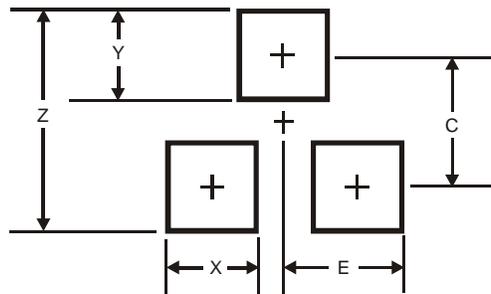
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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	0.903	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

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



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

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