

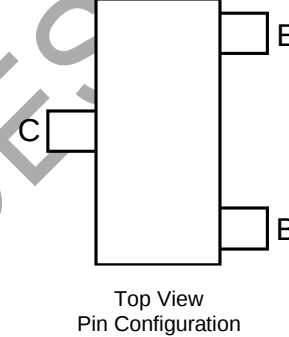
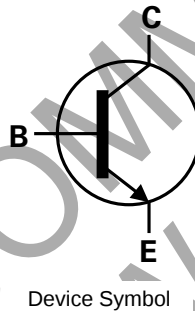
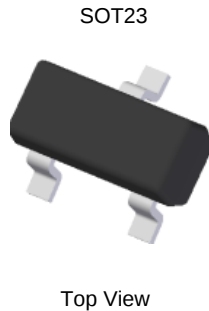


Features

- $BV_{CEO} > 40V$
- $I_C = 2A$ 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)**
- For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/>
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: SOT23
- Package 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 (E3)
- Weight: 0.008 grams (Approximate)

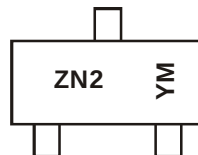


Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DSS4240T-7	SOT23	ZN2	7	8	3000	Reel
DSS4240T-13	SOT23	ZN2	13	8	10,000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



ZN2 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: M = 2025)
M = Month (ex: 9 = September)

Date Code Key

Year	2008	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	V	-	M	N	P	R	S	T	U	V	W	X
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_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 _{EB0}	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.)

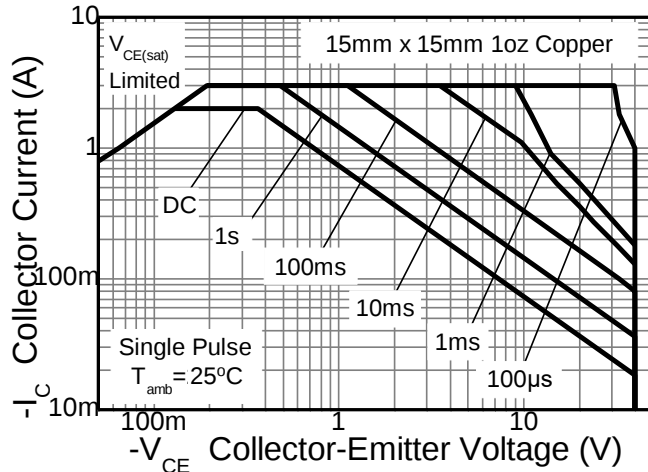
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	730	mW
Power Dissipation (Note 6)	P _D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	171	°C/W
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{θJA}	209	°C/W
Thermal Resistance, Junction to Lead (Note 7)	R _{θJL}	75	°C/W
Thermal Resistance, Junction to Case (Note 8)	R _{θJC}	51	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 9)

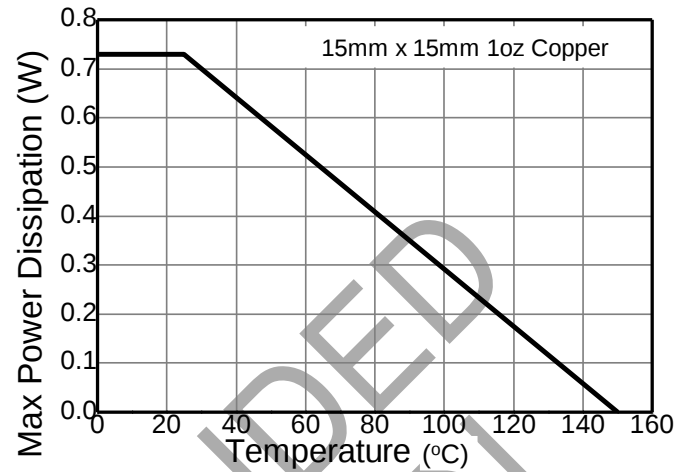
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge — Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge — Machine Model	ESD MM	400	V	C
Electrostatic Discharge — Charged Device Model	ESD CDM	1,000	V	IV

- Notes:
5. For a device mounted with the collector lead on 15mm × 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. Thermal resistance from junction to the top of the case.
 9. Refer to JEDEC specification JESD22-A114, JESD22-A115 and JESD22-C101.

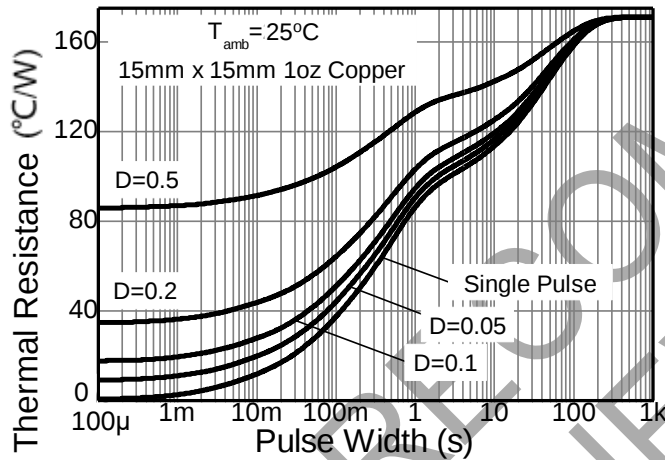
Thermal Characteristics and Derating Information



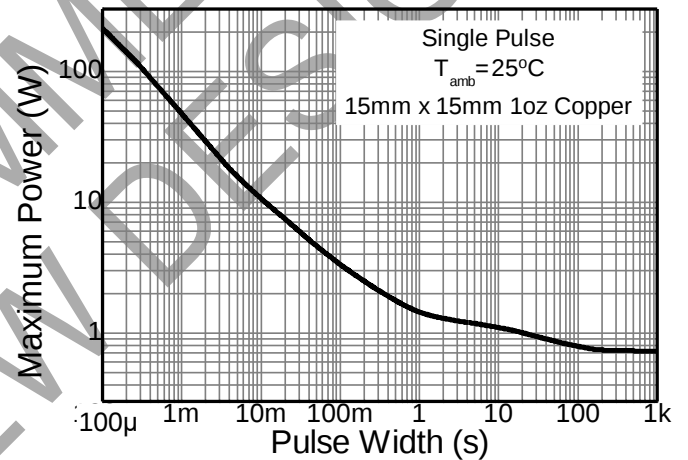
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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 10)	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 7)						
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

Note:

7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Thermal resistance from junction to the top of the case.
9. Refer to JEDEC specification JESD22-A114, JESD22-A115 and JESD22-C101.
10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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

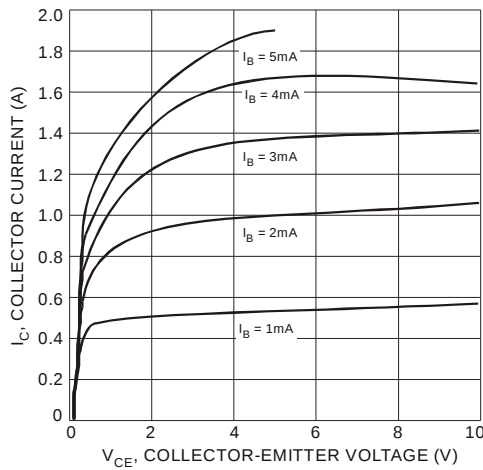


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

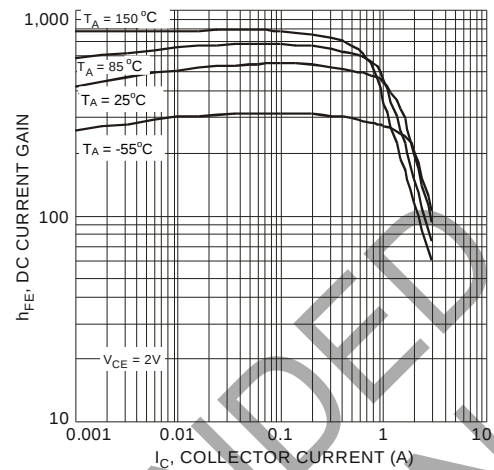


Fig. 3 Typical DC Current Gain vs. Collector Current

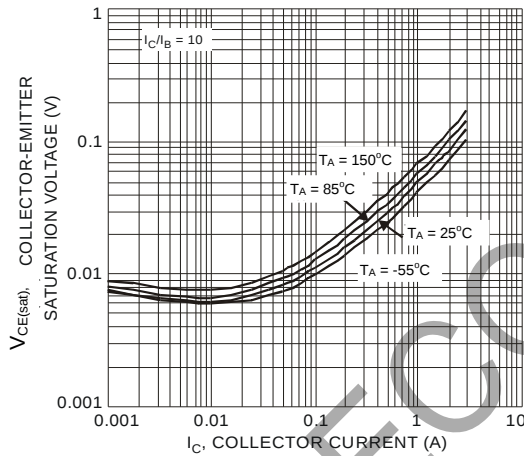


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

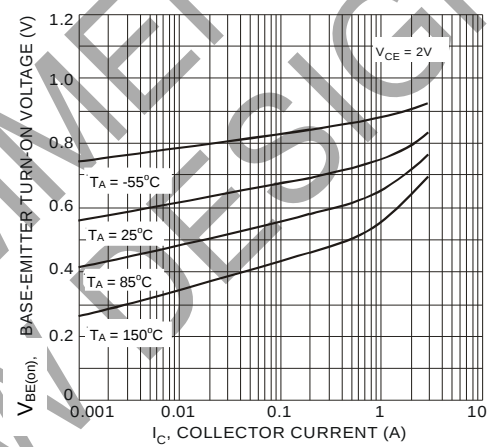


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

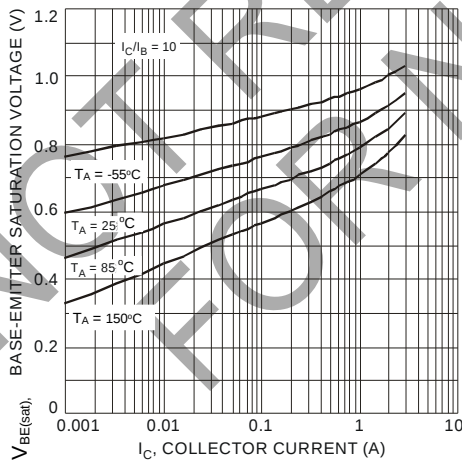


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

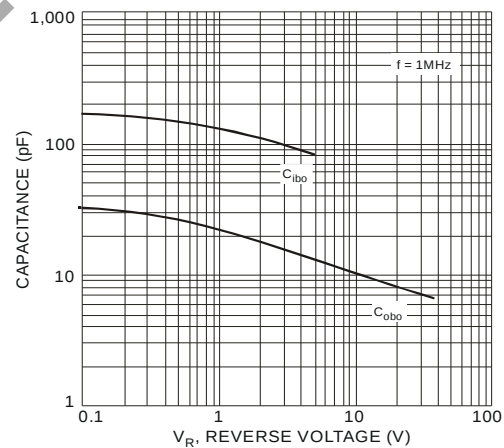


Fig. 7 Typical Capacitance Characteristics

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

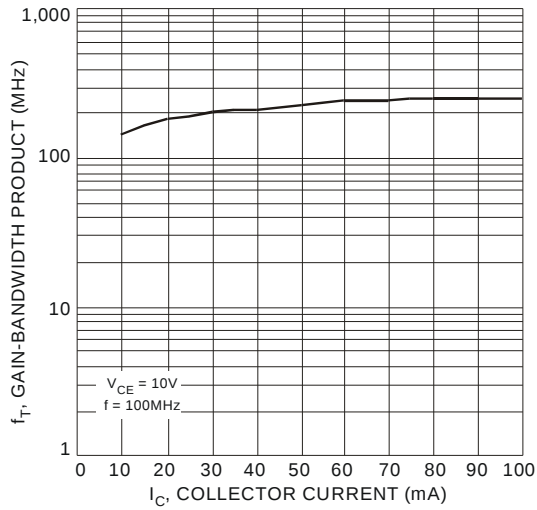


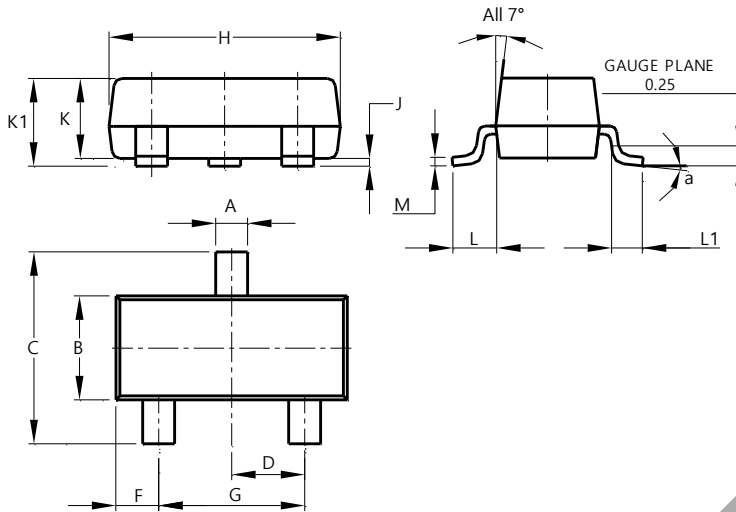
Fig. 8 Typical Gain-Bandwidth Product
vs. Collector Current

NOT RECOMMENDED
FOR NEW DESIGN

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

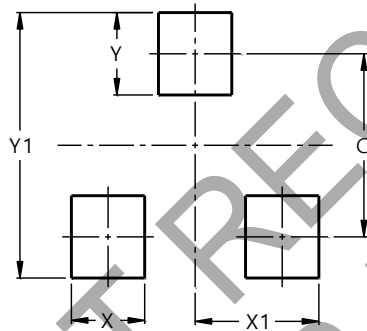


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



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

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