

40V PNP LOW SATURATION TRANSISTOR IN SOT23
Features

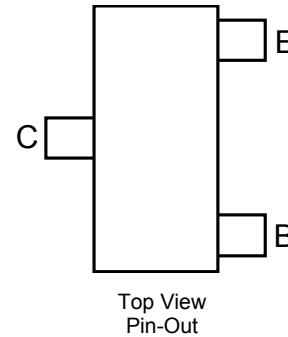
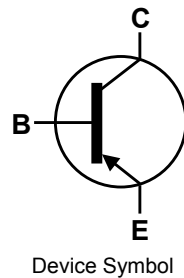
- $BV_{CEO} > -40V$
- $I_C = -2A$ high Continuous Collector Current
- $I_{CM} = -3A$ Peak Pulse Current
- Low Saturation Voltage $-225mV$ Max @ $I_C = -1A$.
- $R_{CE(SAT)} = 90m\Omega$ at 0.5A for a Low Equivalent On-Resistance
- 730mW Power Dissipation
- Complimentary NPN Type: DSS4240T
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP capable (Note 4)**

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)

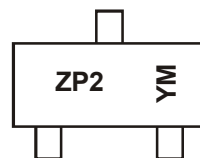
Application

- Gate Driving MOSFETs and IGBTs
- Load Switch
- DC-DC Converters
- Battery Charging


Ordering Information (Note 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS5240T-7	AEC-Q101	ZP2	7	8	3,000
DSS5240TQ-7	Automotive	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/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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

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	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_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
Base Current	I _B	-300	mA

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

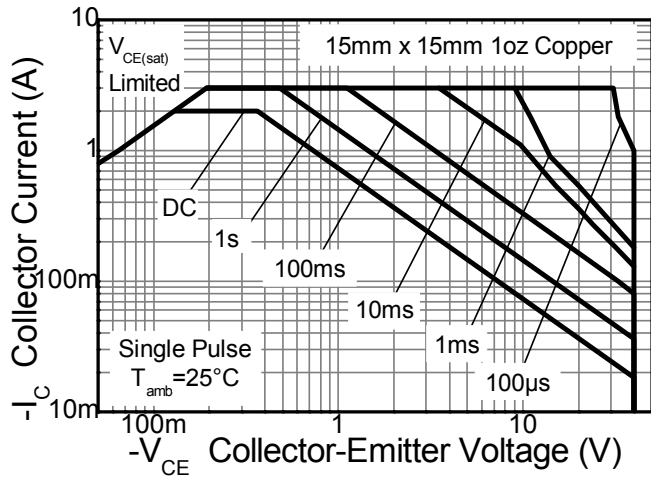
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P _D	730	mW
Power Dissipation (Note 7)	P _D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{θJA}	171	°C/W
Thermal Resistance, Junction to Ambient Air (Note 7)	R _{θJA}	209	°C/W
Thermal Resistance, Junction to Lead (Note 8)	R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

ESD Ratings (Note 9)

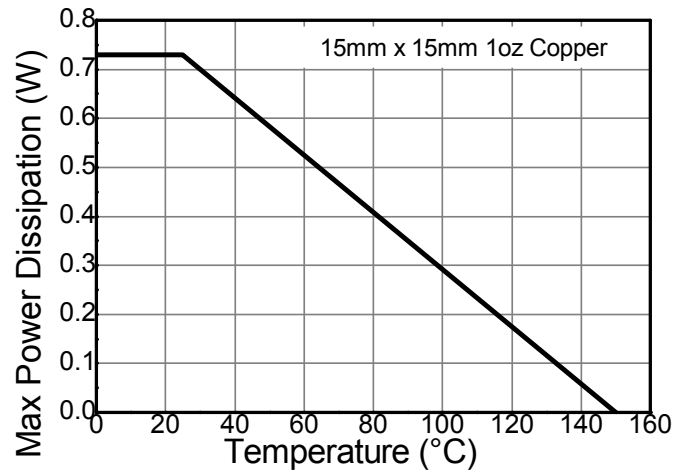
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
6. 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.
 7. Same as note (6), except the device is mounted on minimum recommended pad layout.
 8. Thermal resistance from junction to solder-point (at the end of the collector lead).
 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

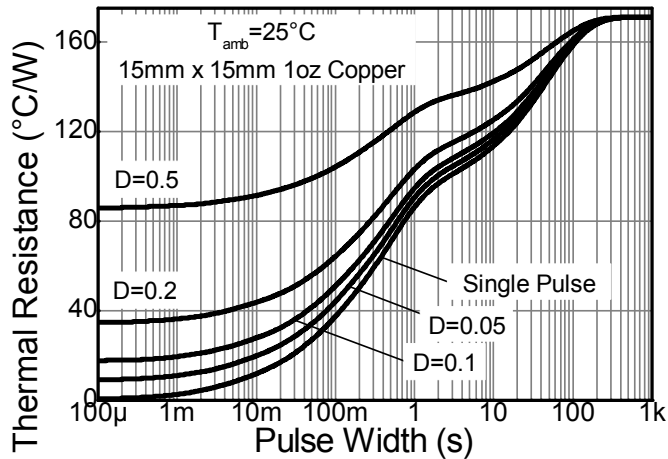
Thermal Characteristics and Derating information



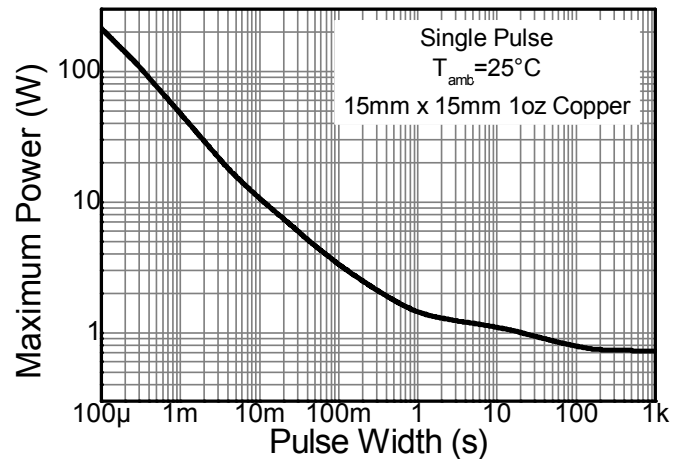
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-40	—	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-40	—	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	$I_E = -100\mu\text{A}$
Collector-Base Cutoff Current	I_{CBO}	—	—	-100	nA	$V_{CB} = -30\text{V}, I_E = 0$
		—	—	-50	μA	$V_{CB} = -30\text{V}, I_E = 0, T_A = +150^\circ\text{C}$
Emitter-Base Cutoff Current	I_{EBO}	—	—	-100	nA	$V_{EB} = -4\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 9)						
DC Current Gain	h_{FE}	300	—	—	—	$V_{CE} = -2\text{V}, I_C = -0.1\text{A}$
		260	—	—	—	$V_{CE} = -2\text{V}, I_C = -0.5\text{A}$
		210	—	—	—	$V_{CE} = -2\text{V}, I_C = -1\text{A}$
		100	—	—	—	$V_{CE} = -2\text{V}, I_C = -2\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	-100	mV	$I_C = -100\text{mA}, I_B = -1\text{mA}$
		—	45	-110	mV	$I_C = -500\text{mA}, I_B = -50\text{mA}$
		—	—	-225	mV	$I_C = -750\text{mA}, I_B = -15\text{mA}$
		—	—	-225	mV	$I_C = -1\text{A}, I_B = -50\text{mA}$
		—	—	-350	mV	$I_C = -2\text{A}, I_B = -200\text{mA}$
Equivalent On-Resistance	$R_{CE(SAT)}$	—	90	220	m Ω	$I_C = -500\text{mA}, I_B = -50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	-1.1	V	$I_C = -2\text{A}, I_B = -200\text{mA}$
Base-Emitter Turn-on Voltage	$V_{BE(ON)}$	—	—	-0.75	V	$V_{CE} = -2\text{V}, I_C = -100\text{mA}$
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	$V_{CE} = -10\text{V}, I_C = -100\text{mA}, f = 100\text{MHz}$
Output Capacitance	C_{ob}	—	—	28	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$

Note: 9. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

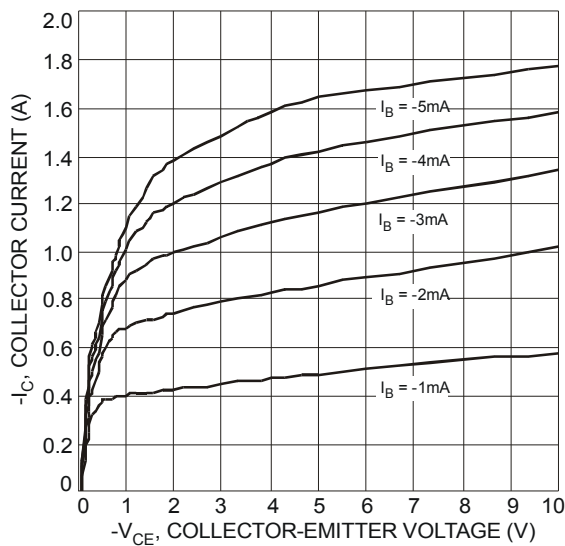


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

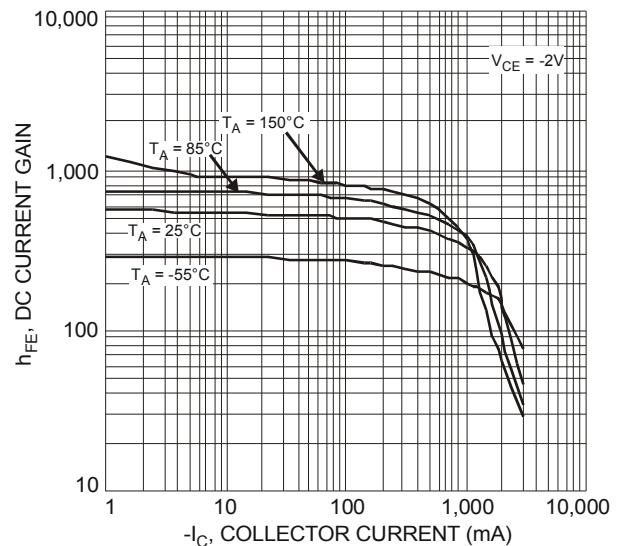


Figure 2 Typical DC Current Gain vs. Collector Current

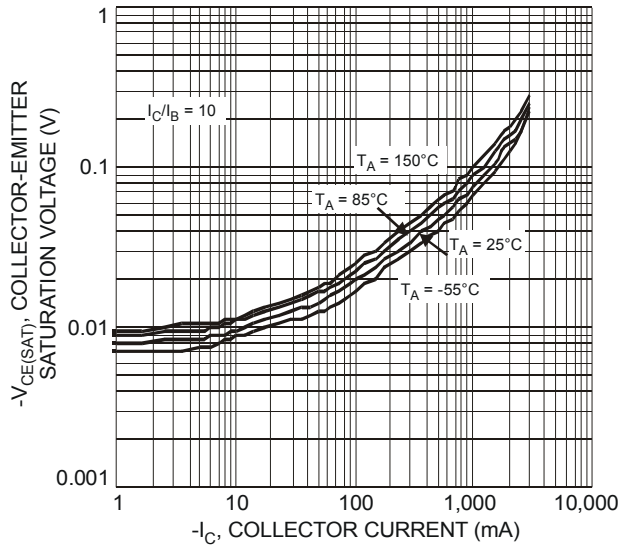


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

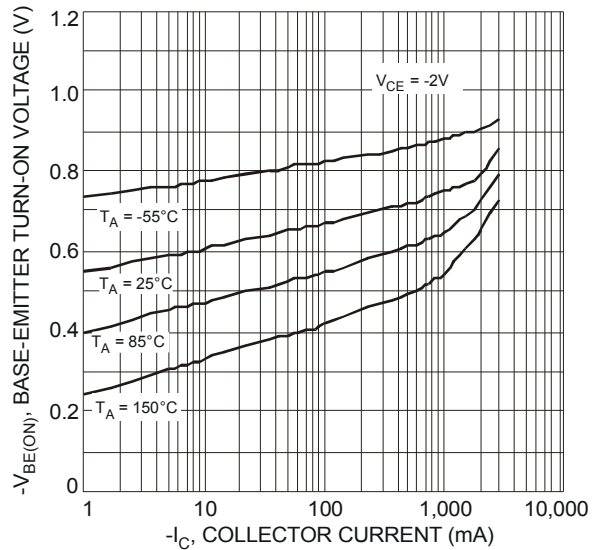


Figure 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

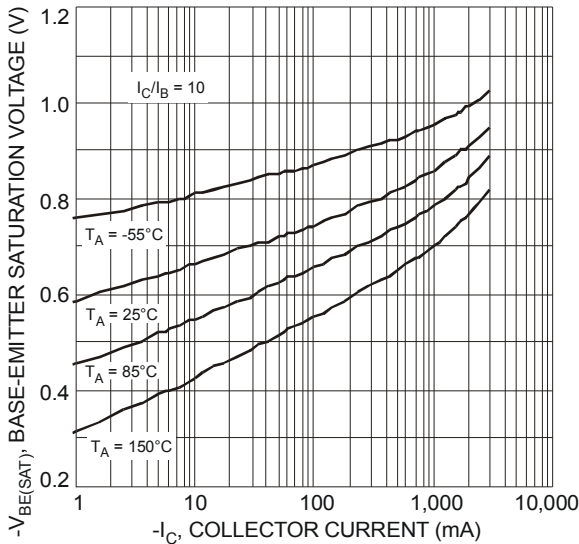


Figure 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

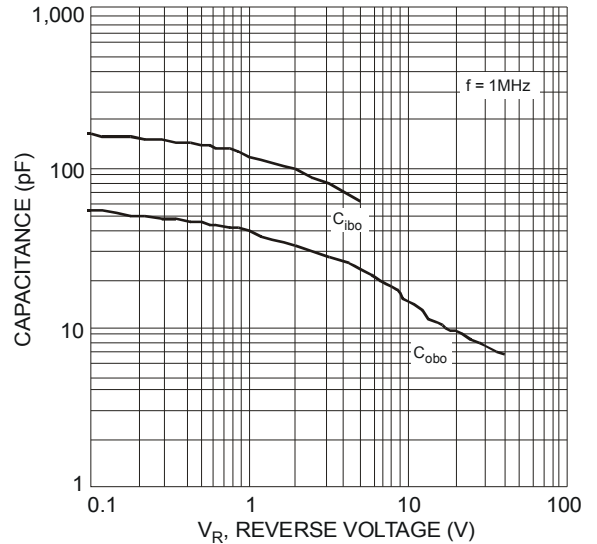


Figure 6 Typical Capacitance Characteristics

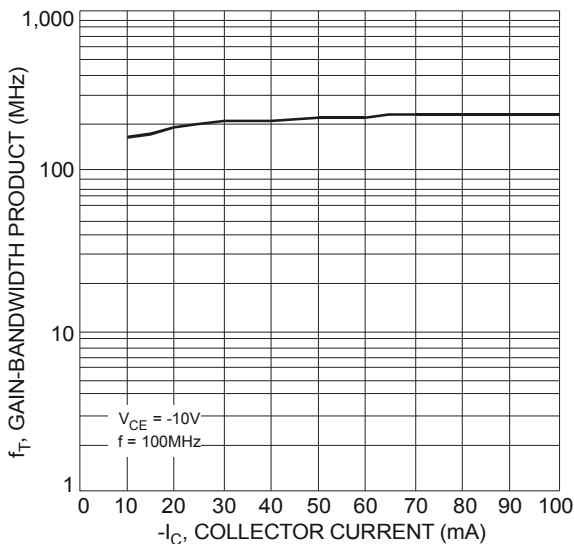
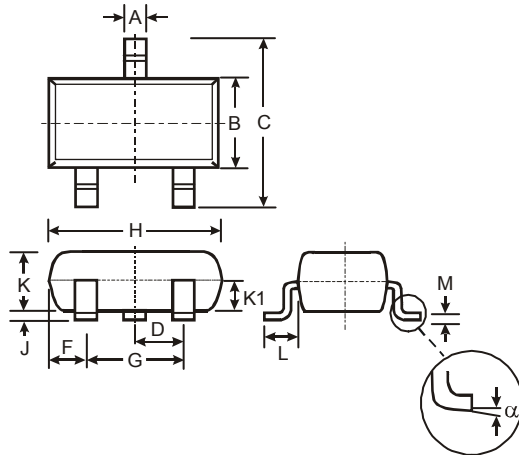


Figure 7 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

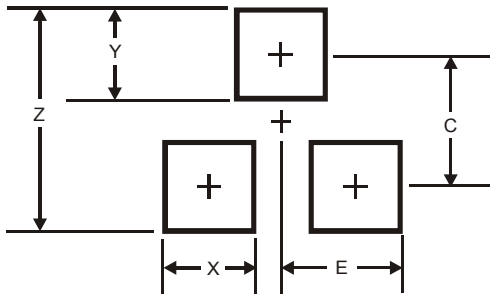
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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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