



DSS20200L

Features

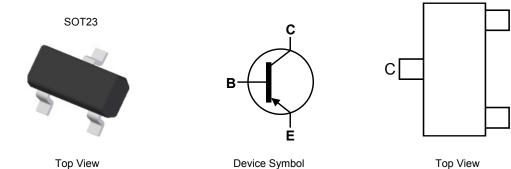
- BV_{CEO} > -20V
- I_C = -2A Continuous Collector Current
- I_{CM} = -4A Peak Pulse Current
- Low Saturation Voltage V_{CE(sat)} < -120mV @ -1A
- $R_{CE(SAT)}$ = 40m Ω for a low equivalent on-resistance
- Complimentary NPN Type : DSS20201L
- Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)
- Halogen 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

20V PNP LOW SATURATION TRANSISTOR IN SOT23

- 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)



Top View Pin-Out

Ε

В

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS20200L-7	ZP1	7	8	3,000
DSS20200L-13	ZP1	13	8	10,000

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. Notes:

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 + CI) and <1000ppm antimony compounds.

4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information

ZP1	ΥM	ZP1 = Product Ty YM = Date Code I Y = Year (ex: A = M = Month (ex: 9

pe Marking Code Marking 2013) = September)

Date Code Key

Date Code Key												
Year	2008		2009	2010		2011	2012		2013	2014		2015
Code	V		W	Х		Y	Z		А	В		С
- 												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-20	V
Collector-Emitter Voltage	V _{CEO}	-20	V
Emitter-Base Voltage	V _{EBO}	-7	V
Peak Pulse Collector Current	ICM	-4	A
Continuous Collector Current	lc	-2	A

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

Characteristic	Symbol	Value	Unit		
Dower Dissinction	(Note 5)		600	mW	
Power Dissipation	(Note 6)	PD	1.2	111VV	
Thermal Desistance Junction to Ambient Air	(Note 5)		209		
Thermal Resistance, Junction to Ambient Air	(Note 6)	R _{0JA}	104	°C/W	
Thermal Resistance, Junction to Leads (Note 7)		R _{θJL}	75		
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C		

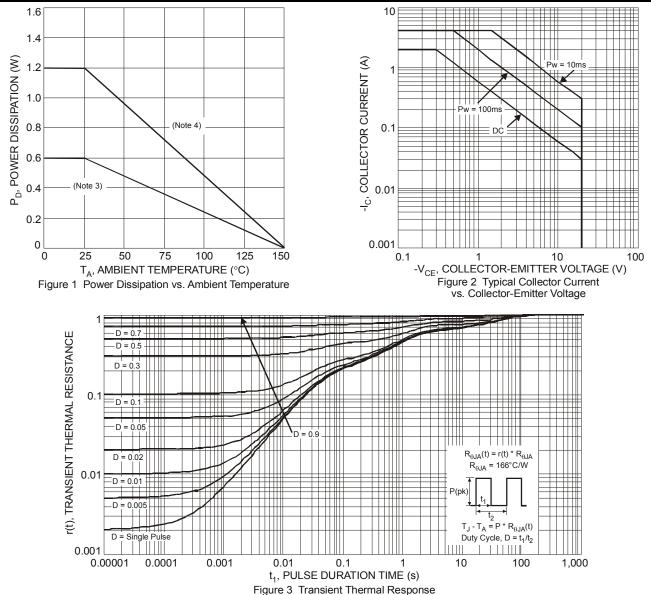
ESD Ratings (Note 8)

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	С

5. For a device mounted on minimum recommended pad layout with 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still Notes: air conditions whilst operating in a steady-state.
Same as note (5), except mounted on 25mm x 25mm 1oz copper.
Thermal resistance from junction to solder-point (at the end of collector lead).
Refer to JEDEC specification JESD22-A114 and JESD22-A115.



Thermal Characteristics and Derating information



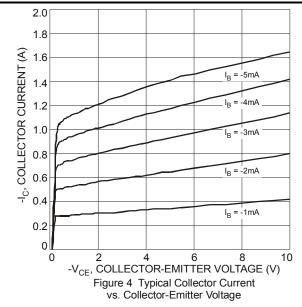


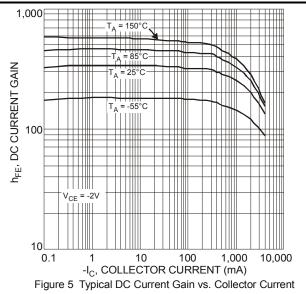
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CBO}	-20	—	_	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	-20	_		V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	_		V	I _E = -100μA
Collector-Base Cutoff Current	I _{CBO}		_	-100	nA	$V_{CB} = -20V, I_E = 0$
Emitter-Base Cutoff Current	I _{EBO}	_	_	-100	nA	$V_{EB} = -7V, I_{C} = 0$
ON CHARACTERISTICS (Note 9)						
		250	—			V_{CE} = -2V, I_{C} = -10mA
DC Current Gain	h	250	_	_		V_{CE} = -2V, I_{C} = -500mA
	h _{FE}	180	—	_		$V_{CE} = -2V, I_C = -1A$
		150	_			$V_{CE} = -2V, I_C = -2A$
			_	-13	mV	I _C = -0.1A, I _B = -10mA
Collector-Emitter Saturation Voltage	V		-50	-90		I _C = -1A, I _B = -100mA
	V _{CE(SAT)}	_	-100	-120		I _C = -1A, I _B = -10mA
		_	-80	-180		I _C = -2A, I _B = -200mA
Equivalent On-Resistance	R _{CE(SAT)}	_	40	90	mΩ	I _C = -2A, I _B = -200mA
Base-Emitter Saturation Voltage	V _{BE(SAT)}	_		-0.9	V	I _C = -1A, I _B = -10mA
Base-Emitter Turn-on Voltage	V _{BE(ON)}	_	_	-0.9	V	$V_{CE} = -2V, I_{C} = -1A$
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f _T	100	_	—	MHz	V _{CE} = -5V, I _C = -100mA, f = 100MHz
Output Capacitance	C _{obo}	_		100	pF	V _{CB} = -3V, f = 1MHz
Input Capacitance	C _{ibo}			330	pF	V _{EB} = -0.5V, f = 1MHz
SWITCHING CHARACTERISTICS						÷
Turn-On Time	ton	_	—	180	ns	(- 45)(- 750m)
Delay Time	t _d		_	60	ns	−V _{CC} = -15V, I _C = -750mA, −I _{B1} = -15mA
Rise Time	tr	_	_	120	ns	
Turn-Off Time	t _{off}			430	ns	
Storage Time	ts	_		300	ns	−V _{CC} = -15V, I _C = -750mA, −I _{B1} = I _{B2} = -15mA
Fall Time	t _f		—	130	ns	-181 - 1821011A

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

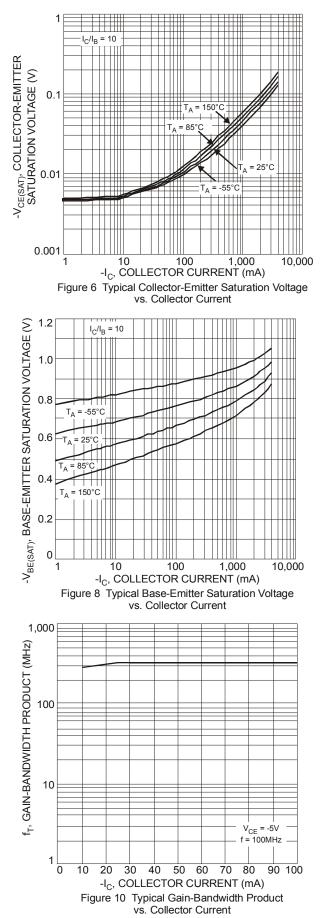
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

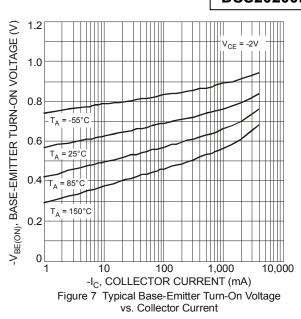


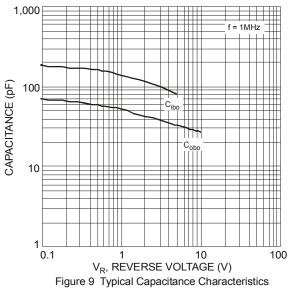








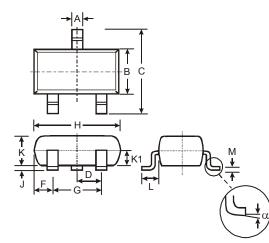






Package Outline Dimensions

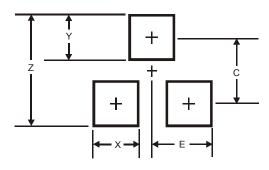
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT23							
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	1.20	1.40	1.30				
С	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				
Н	2.80	3.00	2.90				
J	0.013	0.10	0.05				
Κ	0.903	1.10	1.00				
K1	-	-	0.400				
L	0.45	0.61	0.55				
М	0.085	0.18	0.11				
α	0°	8°	-				
All	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
Х	0.8
Y	0.9
С	2.0
E	1.35



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