100V NPN LOW SATURATION TRANSISTOR IN SOT363

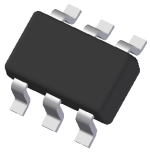
Features

- BV_{CEO} > 100V
- I_C = 1A high Continuous Collector Current
- I_{CM} = 3A Peak Pulse Current
- $R_{CE(sat)}$ = 200mΩ for a Low Equivalent On-Resistance
- Low Saturation Voltage $V_{CE(sat)}$ < 200mV @ 1A
- Complementary PNP Type Available (DSS9110Y)
- **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**

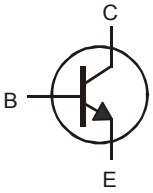
Mechanical Data

- Case: SOT363
- 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 e3
- Weight: 0.006 grams (approximate)

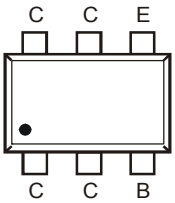
SOT-363



Top View



Device Symbol



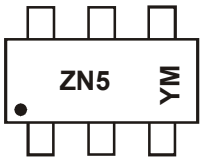
Pin-Out Top

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS8110Y-7	ZN5	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. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



ZN5 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: X = 2010)
M = Month (ex: 9 = September)

Date Code Key

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Code	X	Y	Z	A	B	C	D	E	F	G	H	I

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current - Continuous	I_C	1	A
Peak Pulse Collector Current	I_{CM}	3	A
Base Current – Continuous	I_B	0.3	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	625	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction to Lead (Note 6)	$R_{\theta JL}$	81	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 7)

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 on minimum recommended pad layout that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Thermal resistance from junction to solder-point (at the end of collector lead).
7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

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Thermal Characteristics and Derating Information

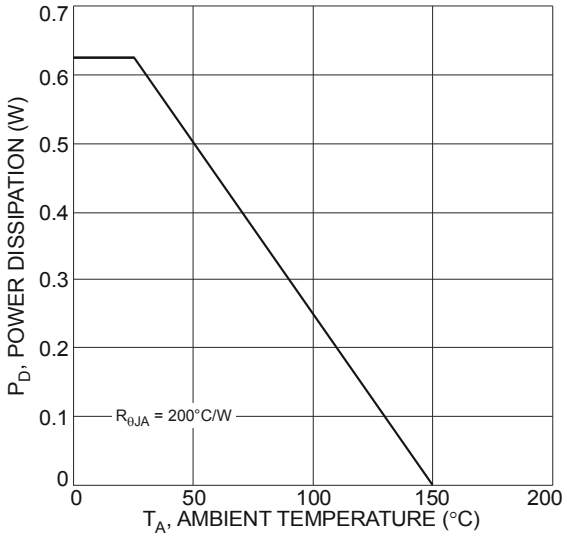

Fig. 1 Power Dissipation vs. Ambient Temperature

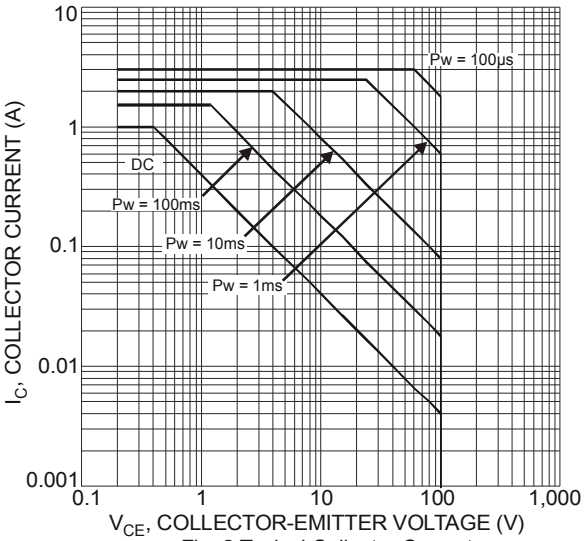

Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

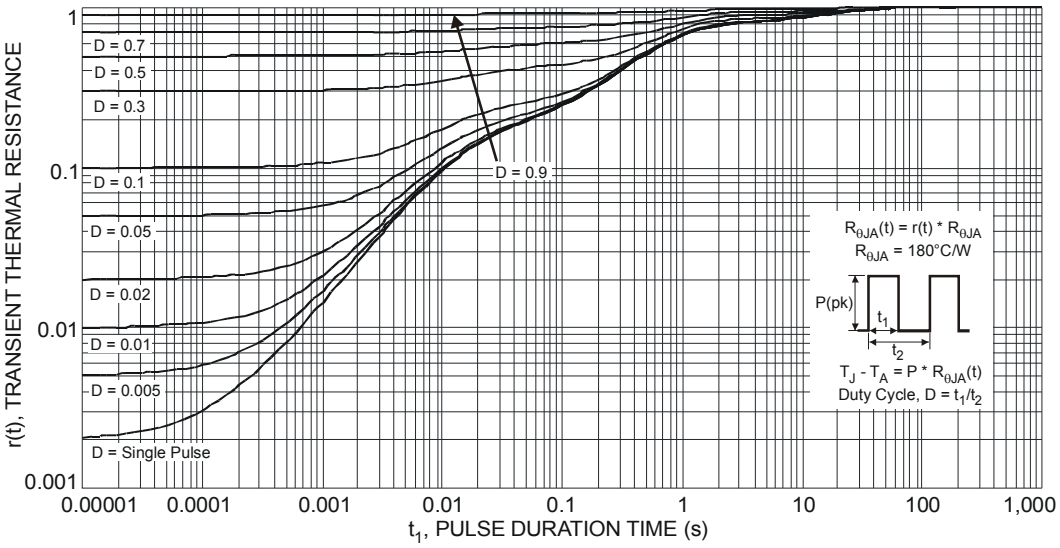

Fig. 3 Transient Thermal Response

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Collector-Base Breakdown Voltage	BV_{CBO}	120	—	—	V	I_C = 100μA, I_E = 0
Collector-Emitter Breakdown Voltage	BV_{CEO}	100	—	—	V	I_C = 10mA, I_B = 0
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	I_E = 100μA, I_C = 0
Collector Cutoff Current	I_{CBO}	— —	— —	100 50	nA μA	V_{CB} = 80V, I_E = 0 V_{CB} = 80V, I_E = 0, T_A = 150°C
Collector Cutoff Current	I_{CES}	—	—	100	nA	V_{CE} = 80V, V_{BE} = 0
Emitter Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 4V, I_C = 0
ON CHARACTERISTICS (Note 8)						
DC Current Gain	h_{FE}	150 150 100 80	— — — —	— 500 — —	V	V_{CE} = 10V, I_C = 1mA V_{CE} = 10V, I_C = 250mA V_{CE} = 10V, I_C = 500mA V_{CE} = 10V, I_C = 1A
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	— — —	— — —	40 120 200	mV	I_C = 100mA, I_B = 10mA I_C = 500mA, I_B = 50mA I_C = 1A, I_B = 100mA
Collector-Emitter Saturation Resistance	$R_{CE(sat)}$	—	—	200	mΩ	I_C = 1A, I_B = 100mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	1.05	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn On Voltage	$V_{BE(on)}$	—	—	0.9	V	V_{CE} = 10V, I_C = 1A
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	—	7.5	pF	V_{CB} = 10V, f = 1.0MHz
Current Gain-Bandwidth Product	f_T	100	—	—	MHz	V_{CE} = 10V, I_C = 50mA, f = 100MHz

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

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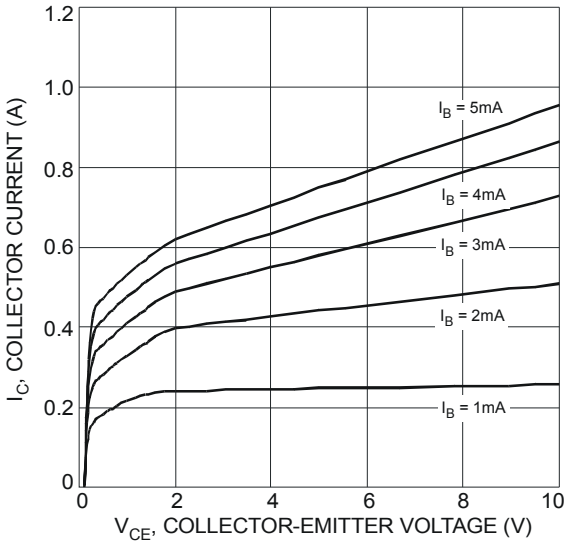

Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

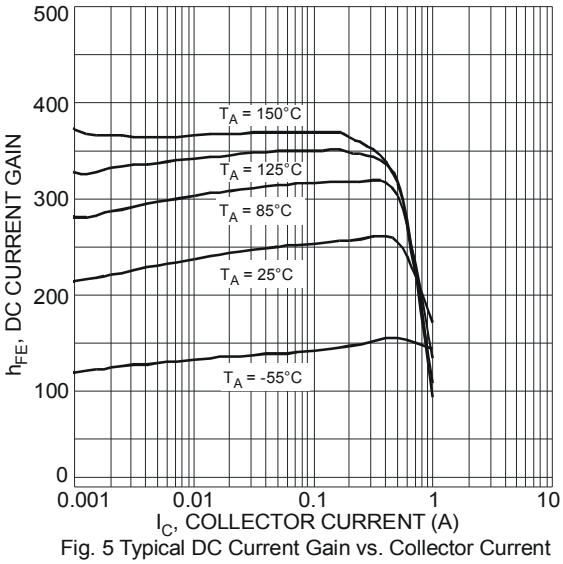

Fig. 5 Typical DC Current Gain vs. Collector Current

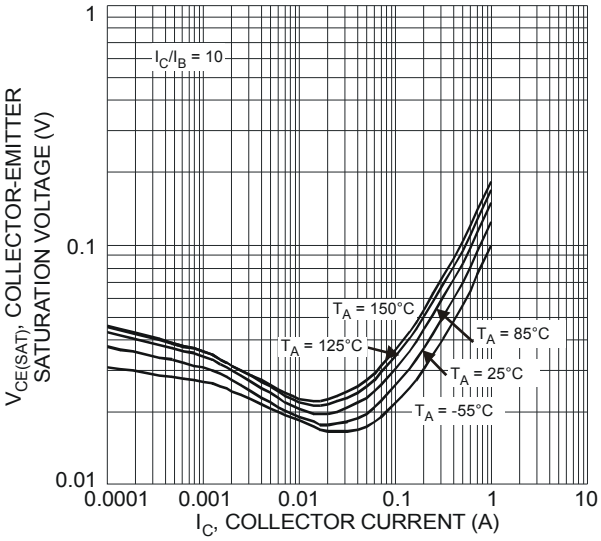

Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

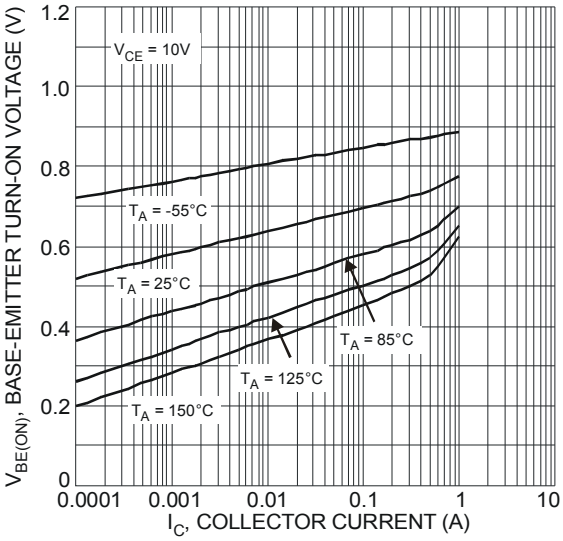

Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

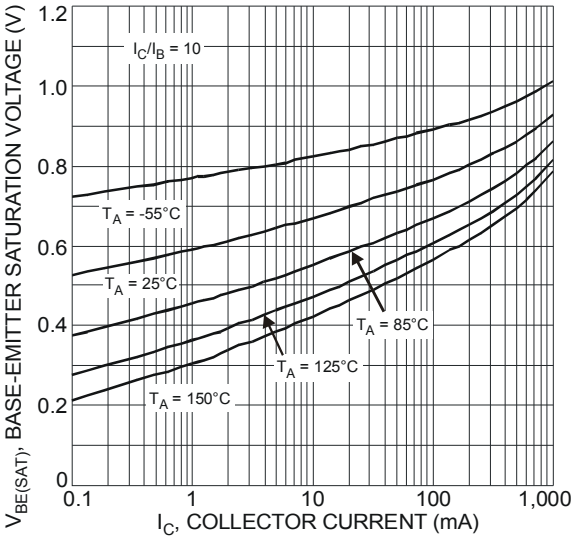

Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

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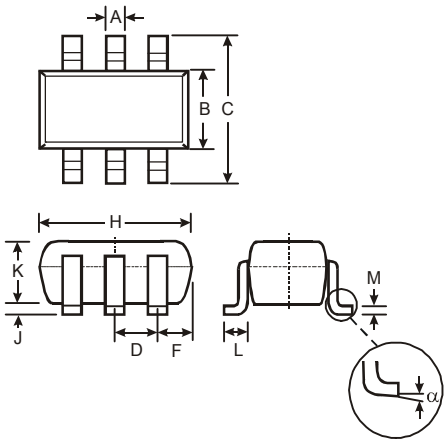
Package Outline Dimensions

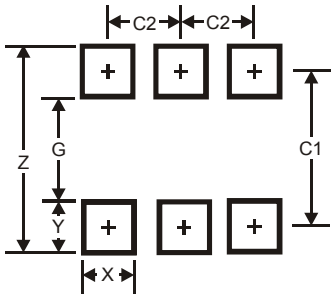
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT363			
Dim	**Min**	**Max**	**Typ**
A	0.10	0.30	0.25
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	0.65 Typ		
F	0.40	0.45	0.425
H	1.80	2.20	2.15
J	0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.22	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	2.5
G	1.3
X	0.42
Y	0.6
C1	1.9
C2	0.65

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