



**THE DATASHEET OF  
DSS9110Y-7**



## Features

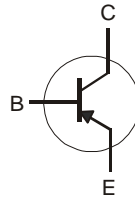
- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- Complementary NPN Type Available (DSS8110Y)
- Ultra Small Surface Mount Package
- **“Lead Free”, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free “Green” Device (Note 2)**
- **ESD rating: 400V-MM, 8KV-HBM**

## Mechanical Data

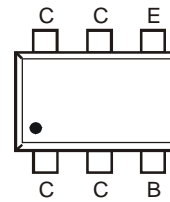
- Case: SOT-363
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.006 grams (approximate)



Top View



Device Symbol



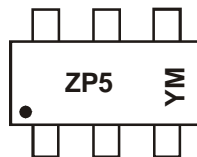
Top View  
Pin Out Configuration

## Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS9110Y-7	ZP5	7	8mm	3,000

- Notes:
1. No purposefully added lead.
  2. Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>
  3. For packaging details, go to our website at <http://www.diodes.com>

## Marking Information



ZP5 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: V = 2008)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2010	2011	2012	2013	2014	2015	2016	2017
Code	X	Y	Z	A	B	C	D	E

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

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  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**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4) @ $T_A = 25^\circ\text{C}$	$P_D$	625	mW
Thermal Resistance, Junction to Ambient (Note 4) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	200	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Notes: 4. Device mounted on FR-4 PCB, with minimum recommended pad layout.

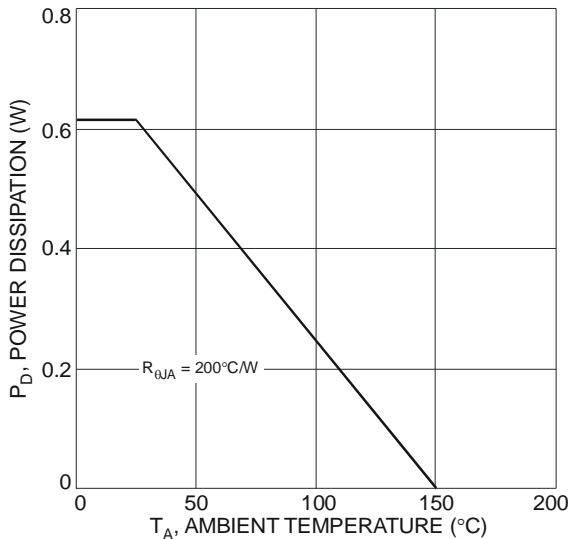


Fig. 1 Power Dissipation vs. Ambient Temperature

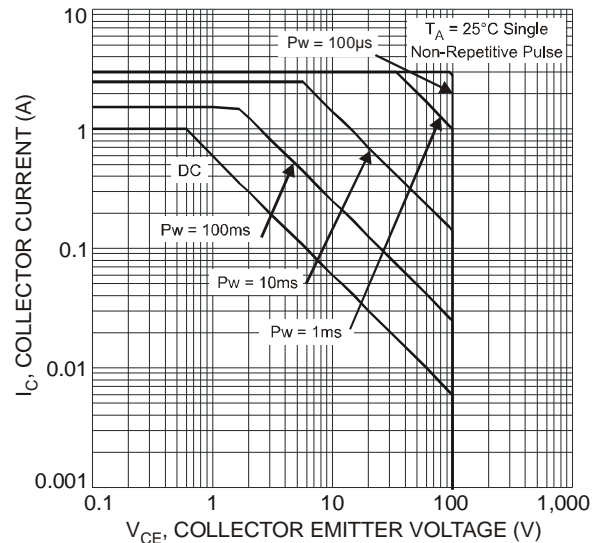


Fig. 2 Safe Operating Area

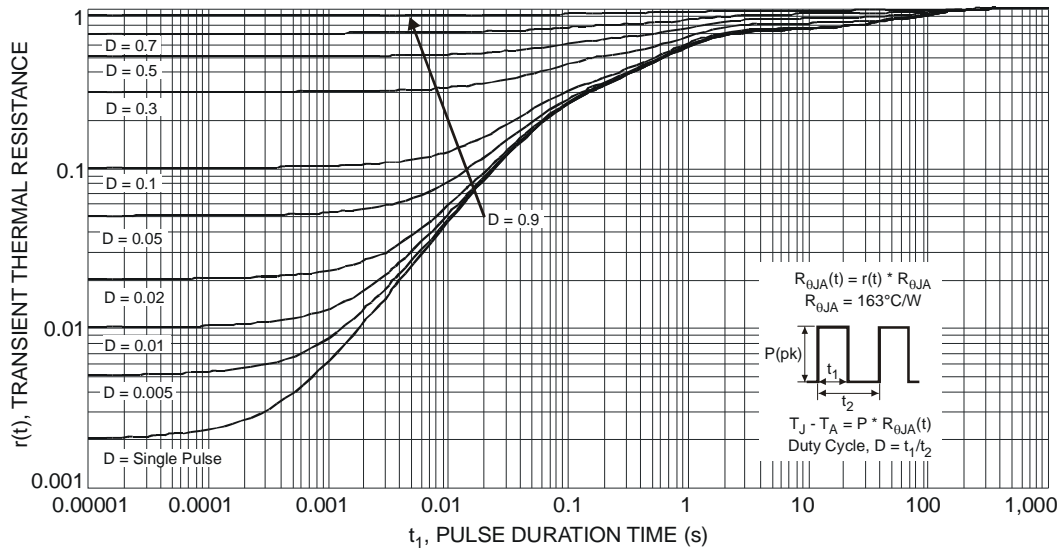


Fig. 3 Transient Thermal Response

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-120	—	—	V	$I_C = -100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 5)	$BV_{CEO}$	-100	—	—	V	$I_C = -10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-5	—	—	V	$I_E = -100\mu\text{A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$	—	—	-100 -50	nA $\mu\text{A}$	$V_{CB} = -80\text{V}, I_E = 0$ $V_{CB} = -80\text{V}, I_E = 0, T_A = 150^\circ\text{C}$
Collector Cutoff Current	$I_{CES}$	—	—	-100	nA	$V_{CE} = -80\text{V}, V_{BE} = 0$
Emitter Cutoff Current	$I_{EBO}$	—	—	-100	nA	$V_{EB} = -4\text{V}, I_C = 0$
DC Current Gain (Note 5)	$h_{FE}$	150	—	—	V	$V_{CE} = -5\text{V}, I_C = -1\text{mA}$
		150	—	—		$V_{CE} = -5\text{V}, I_C = -250\text{mA}$
		150	—	450		$V_{CE} = -5\text{V}, I_C = -500\text{mA}$
		125	—	—		$V_{CE} = -5\text{V}, I_C = -1\text{A}$
Collector-Emitter Saturation Voltage (Note 5)	$V_{CE(sat)}$	—	—	-120 -180 -320	mV	$I_C = -250\text{mA}, I_B = -25\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$ $I_C = -1\text{A}, I_B = -100\text{mA}$
Collector-Emitter Saturation Resistance	$R_{CE(sat)}$	—	—	320	m $\Omega$	$I_C = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.1	V	$I_C = -1\text{A}, I_B = -100\text{mA}$
Base-Emitter Turn On Voltage	$V_{BE(on)}$	—	—	-1	V	$V_{CE} = -5\text{V}, I_C = -1\text{A}$
Output Capacitance	$C_{obo}$	—	16	—	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	$f_T$	100	—	—	MHz	$V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
Delay Time	$t_d$	—	27	—	ns	$V_{CC} = -10\text{V}, I_C = -1\text{A},$ $I_{B1} = -I_{B2} = -50\text{mA}$
Rise Time	$t_r$	—	230	—	ns	
Storage Time	$t_s$	—	165	—	ns	
Fall Time	$t_f$	—	160	—	ns	

Notes: 5. Measured under pulsed conditions. Pulse width = 300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

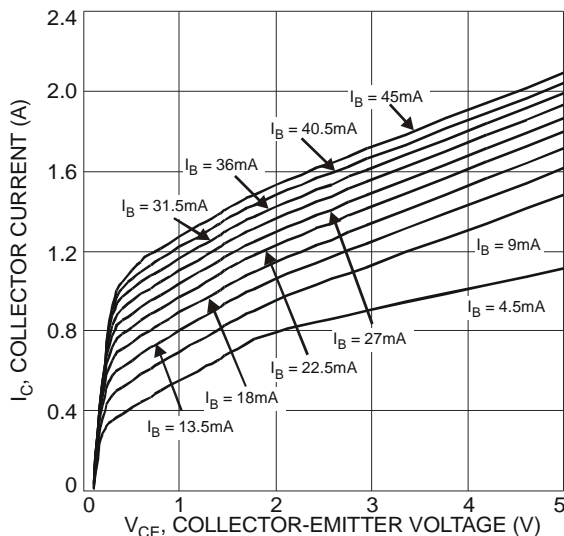


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

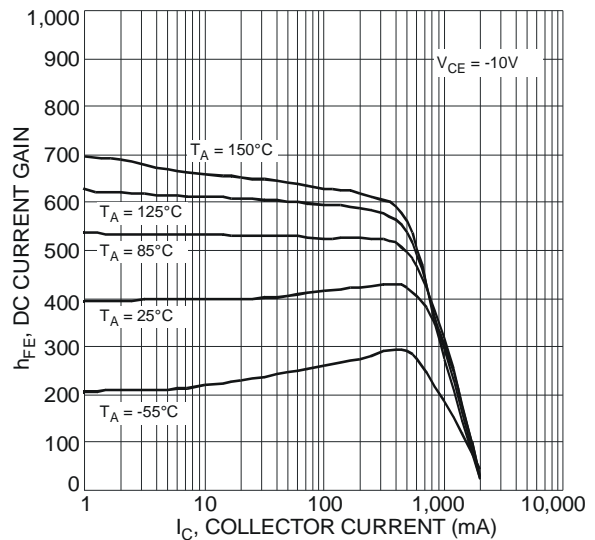


Fig. 5 Typical DC Current Gain vs. Collector Current

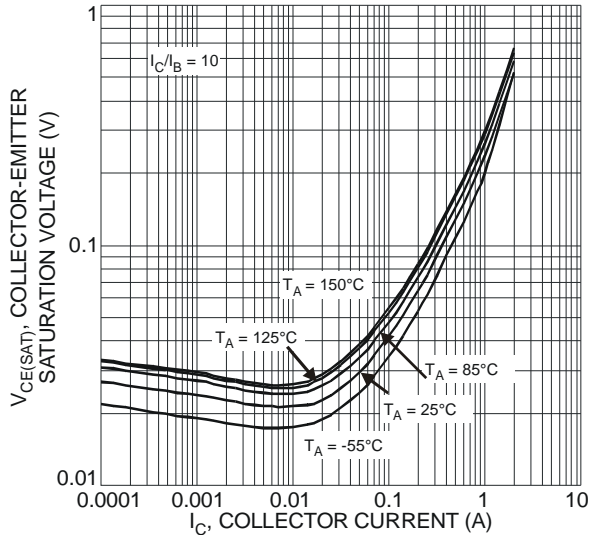


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

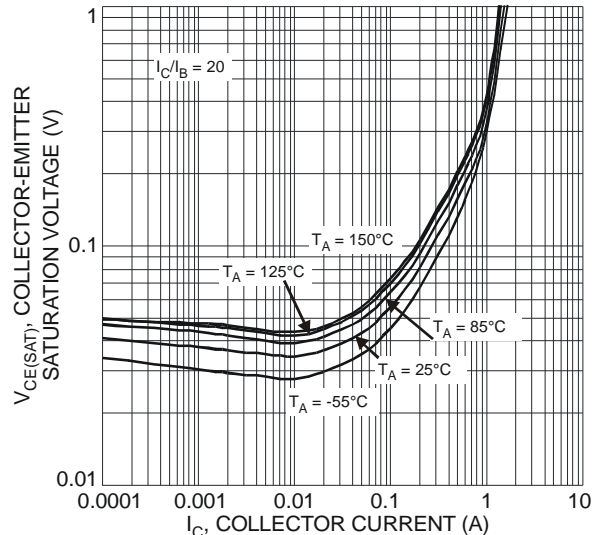


Fig. 7 Typical Collector-Emitter Saturation Voltage vs. Collector Current

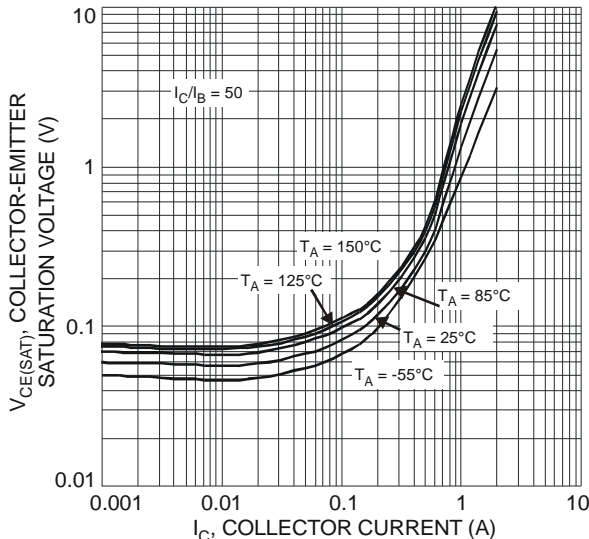


Fig. 8 Typical Collector-Emitter Saturation Voltage vs. Collector Current

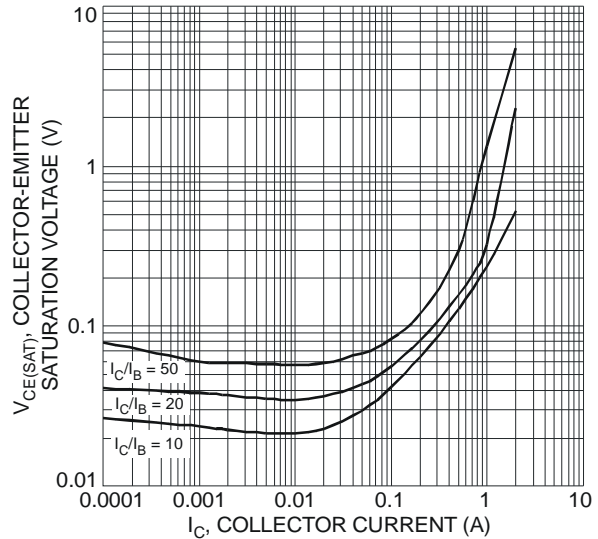


Fig. 9 Typical Collector-Emitter Saturation Voltage vs. Collector Current

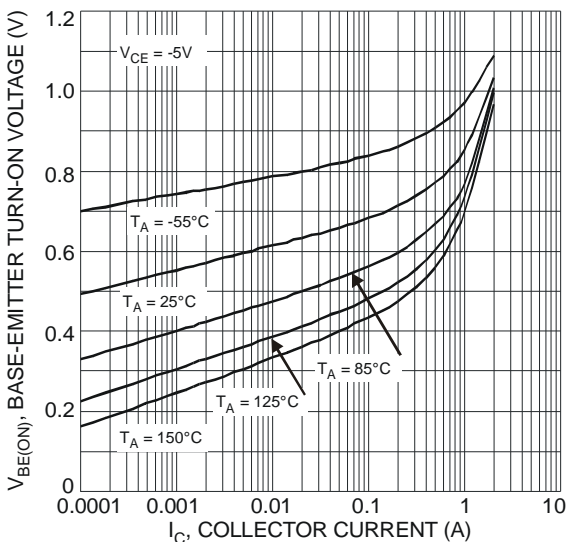


Fig. 10 Typical Base-Emitter Turn-On Voltage vs. Collector Current

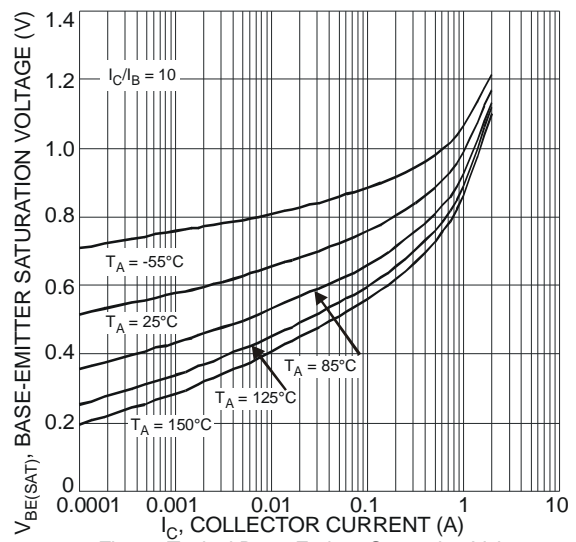
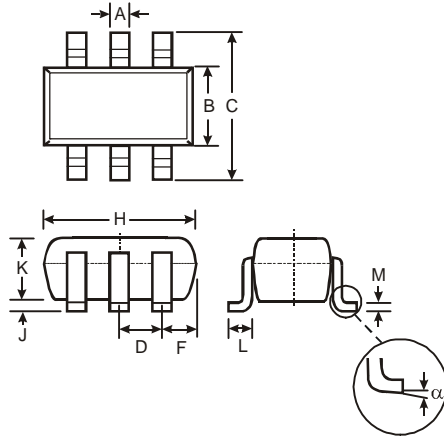


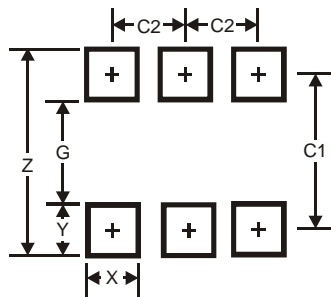
Fig. 11 Typical Base-Emitter Saturation Voltage vs. Collector Current

**Package Outline Dimensions**



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Typ	
F	0.40	0.45
H	1.80	2.20
J	0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.22
α	0°	8°
All Dimensions in mm		

**Suggested Pad Layout**



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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