

### Features

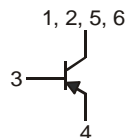
- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching
- Ultra Small Surface Mount Package
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **ESD rating: 400V-MM, 8KV-HBM**

### Mechanical Data

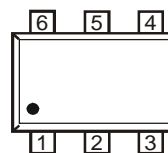
- Case: SOT-363
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.006 grams (approximate)



Top View



Top View  
Device Schematic



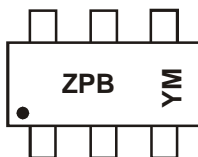
Top View  
Pin Out Configuration

### Ordering Information

Part Number	Case	Packaging
DSL12AW-7	SOT-363	3000/Tape & Reel

- Notes:
1. No purposefully added lead.
  2. Diodes Inc's "Green" policy can be found on our website at <http://www.diodes.com>

### Marking Information



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

#### Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	V	W	X	Y	Z	A	B	C

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	$V_{CBO}$	-12	V
Collector-Emitter Voltage	$V_{CEO}$	-12	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current - Continuous	$I_C$	-2	A
Peak Pulse Collector Current	$I_{CM}$	-3	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ $T_A = 25^\circ\text{C}$	$P_D$	450	mW
Thermal Resistance, Junction to Ambient (Note 3) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	275	$^\circ\text{C/W}$
Power Dissipation (Note 4) @ $T_A = 25^\circ\text{C}$	$P_D$	650	mW
Thermal Resistance, Junction to Ambient (Note 3) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	192	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes: 3. Device mounted on FR-4 PCB, with minimum recommended pad layout.  
4. Device mounted on FR-4 PCB, mounted on 25mmx25mm square pad 1oz coverage of copper

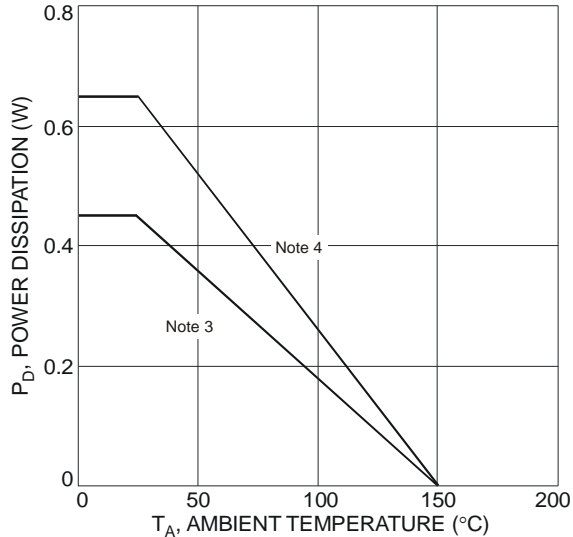


Fig. 1 Power Dissipation vs. Ambient Temperature

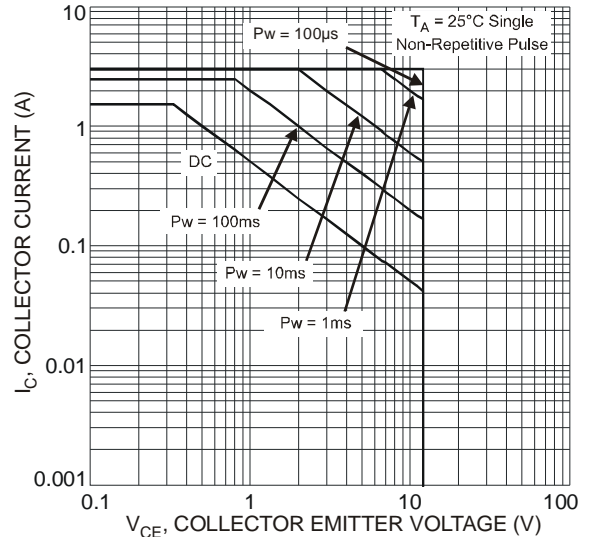


Fig. 2 Safe Operating Area

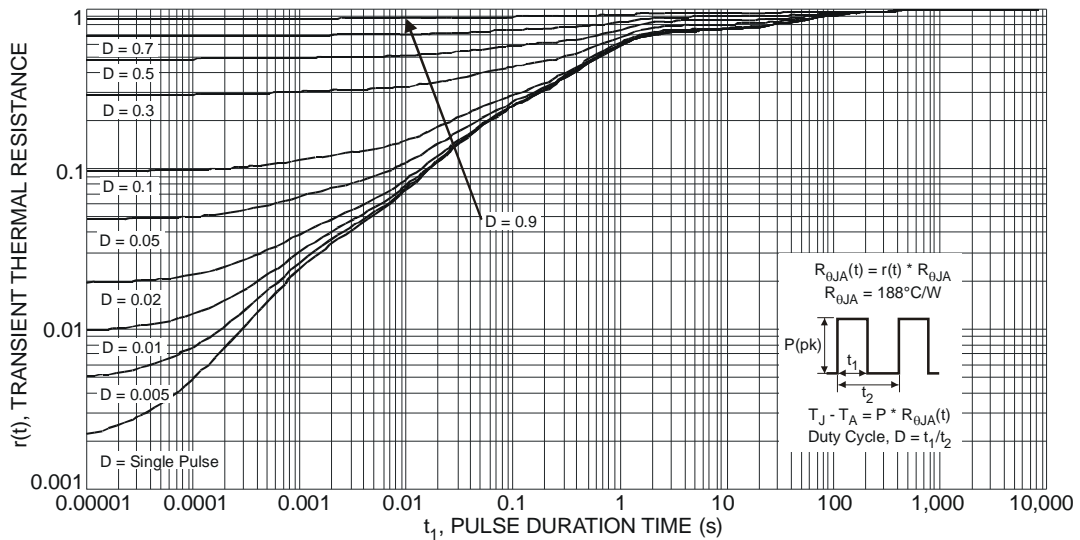


Fig. 3 Transient Thermal Response

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	$BV_{CBO}$	-12	-35	—	V	$I_C = -100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 5)	$BV_{CEO}$	-12	-20	—	V	$I_C = -10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-5	-8.3	—	V	$I_E = -100\mu\text{A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$	—	-1	-100	nA	$V_{CB} = -12\text{V}, I_E = 0$
Collector Cutoff Current	$I_{CES}$	—	-1	-100	nA	$V_{CE} = -12\text{V}, V_{BE} = 0$
Emitter Cutoff Current	$I_{EBO}$	—	-1	-100	nA	$V_{EB} = -5\text{V}, I_C = 0$
<b>ON CHARACTERISTICS</b>						
DC Current Gain (Note 5)	$h_{FE}$	100	175	—	V	$V_{CE} = -1.5\text{V}, I_C = -0.5\text{A}$ $V_{CE} = -1.5\text{V}, I_C = -0.8\text{A}$ $V_{CE} = -1.5\text{V}, I_C = -1\text{A}$
Collector-Emitter Saturation Voltage (Note 5)	$V_{CE(sat)}$	—	-70	-160	mV	$I_C = -0.5\text{A}, I_B = -10\text{mA}$ $I_C = -0.8\text{A}, I_B = -16\text{mA}$ $I_C = -1\text{A}, I_B = -20\text{mA}$
Collector-Emitter Saturation Resistance	$R_{CE(sat)}$	—	—	290	m $\Omega$	$I_C = -1\text{A}, I_B = -20\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-0.95	V	$I_C = -1\text{A}, I_B = -20\text{mA}$
Base-Emitter Turn On Voltage	$V_{BE(on)}$	—	—	-0.95	V	$V_{CE} = -1.5\text{V}, I_C = -1\text{A}$
Output Capacitance	$C_{obo}$	—	—	65	pF	$V_{CB} = -1.5\text{V}, f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	$f_T$	—	180	—	MHz	$V_{CE} = -5\text{V}, I_C = -100\text{mA}, f = 100\text{MHz}$

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

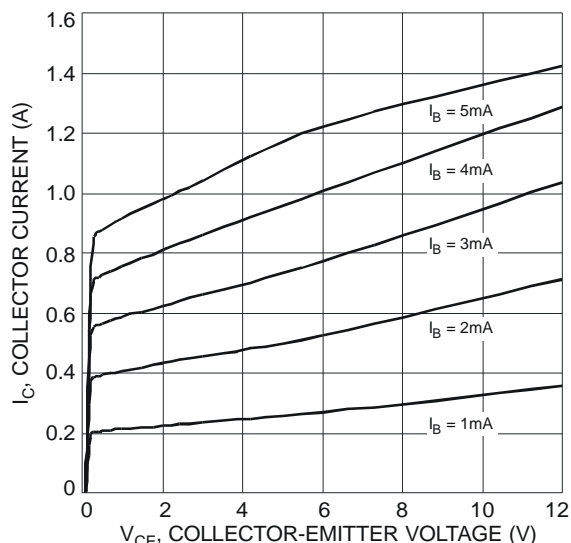


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

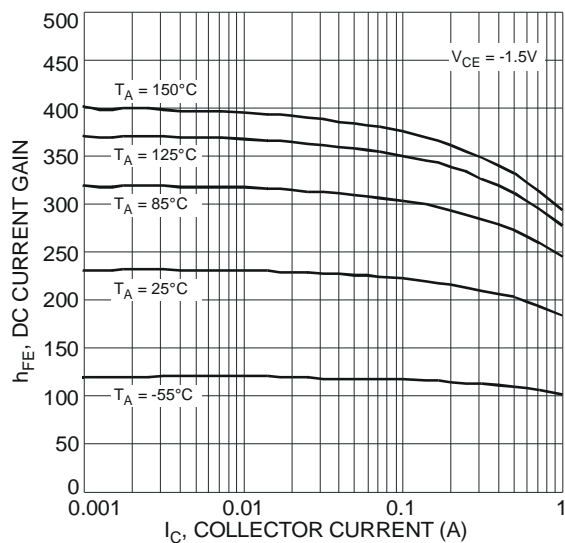


Fig. 5 Typical DC Current Gain vs. Collector Current

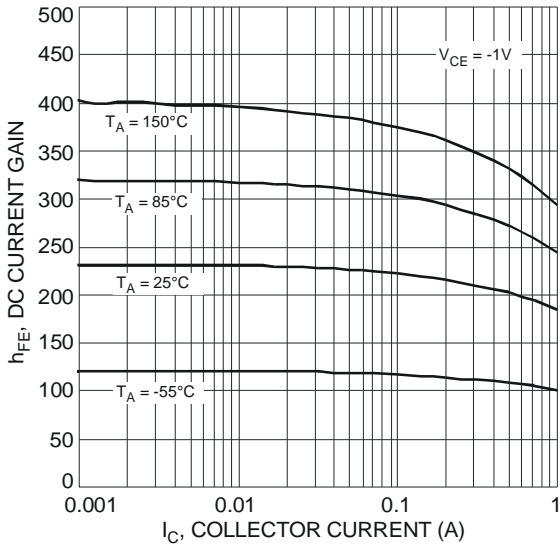


Fig. 6 Typical DC Current Gain vs. Collector Current

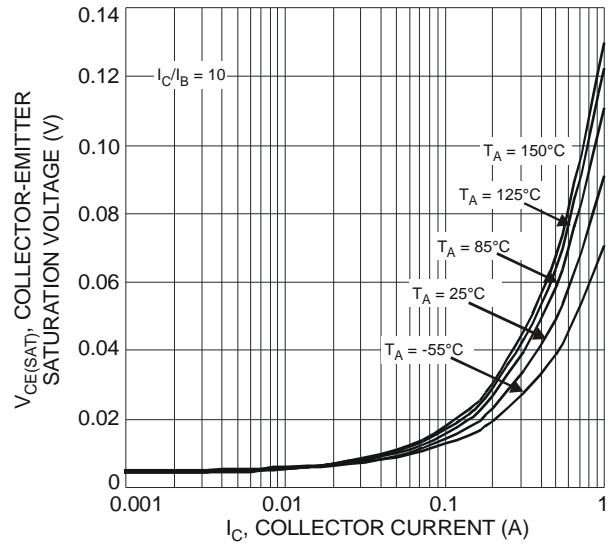


Fig. 7 Typical Collector-Emitter Saturation Voltage vs. Collector Current

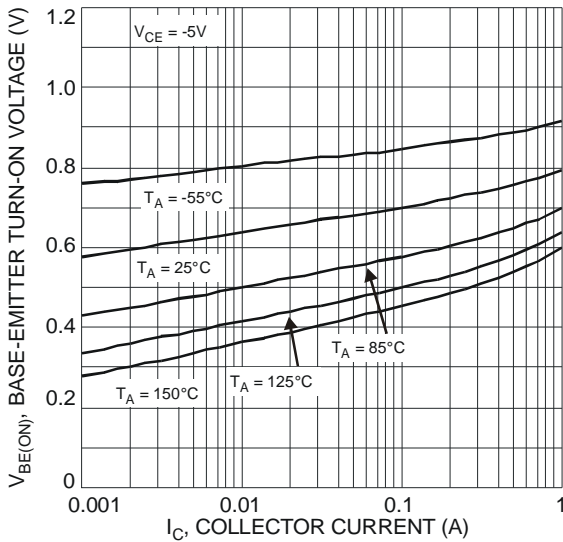


Fig. 8 Typical Base-Emitter Turn-On Voltage vs. Collector Current

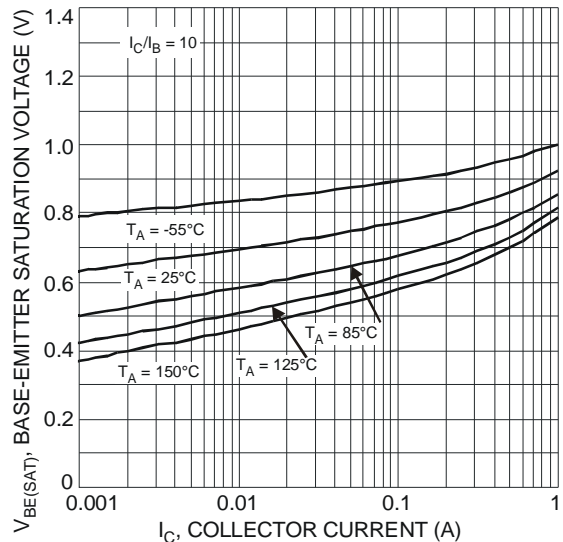


Fig. 9 Typical Base-Emitter Saturation Voltage vs. Collector Current

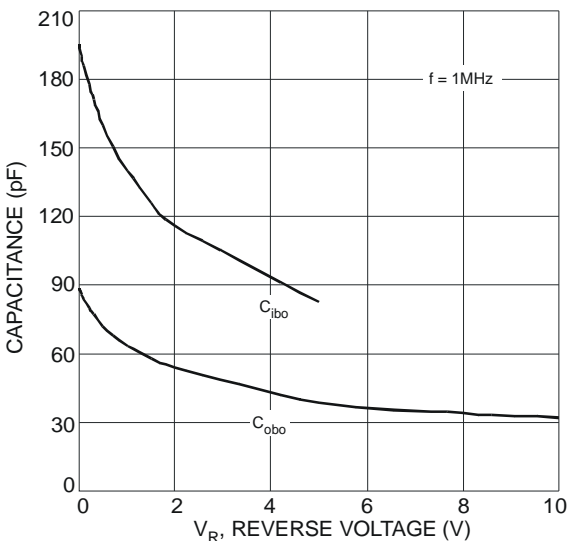
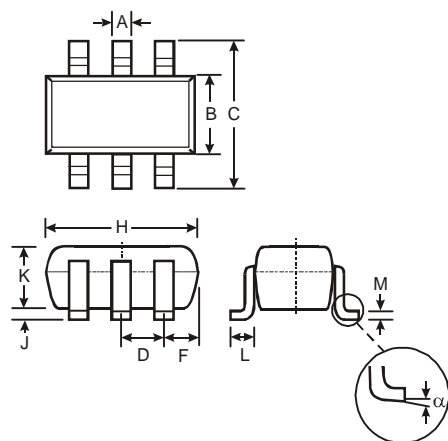


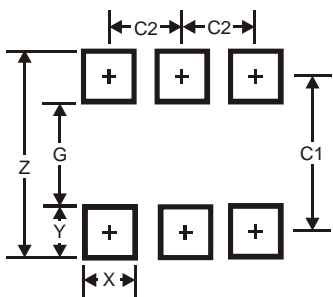
Fig. 10 Typical Capacitance Characteristics

**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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