

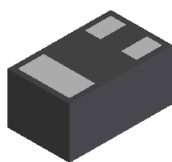
## Features

- Low Collector-Emitter Saturation Voltage,  $V_{CE(sat)}$
- Ultra-Small Leadless Surface Mount Package
- ESD: HBM 8kV, MM 400V
- Complementary NPN Type Available (DSS2515M)
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free. "Green" Device (Note 2)

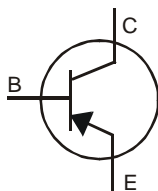
## Mechanical Data

- Case: DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.0009 grams (Approximate)

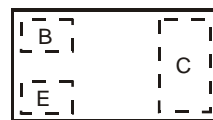
DFN1006-3



Bottom View



Device Symbol



Top View  
Device Schematic

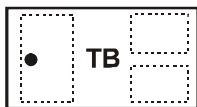
## Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS3515M-7	TB	7	8	3,000
DSS3515M-7B	TB	7	8	10,000

- 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>.

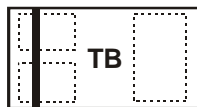
## Marking Information

DSS3515M-7



Top View  
Dot Denotes Collector Side

DSS3515M-7B



Top View  
Bar Denotes Base and Emitter Side

TB = Product Type Marking Code

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-15	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-15	V
Emitter-Base Voltage	V <sub>EBO</sub>	-6	V
Collector Current - Continuous	I <sub>C</sub>	-500	mA
Peak Pulse Collector Current	I <sub>CM</sub>	-1	A
Peak Base Current	I <sub>BM</sub>	-100	mA

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4) @ T <sub>A</sub> = 25°C	P <sub>D</sub>	250	mW
Thermal Resistance, Junction to Ambient (Note 4) @ T <sub>A</sub> = 25°C	R <sub>θJA</sub>	500	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

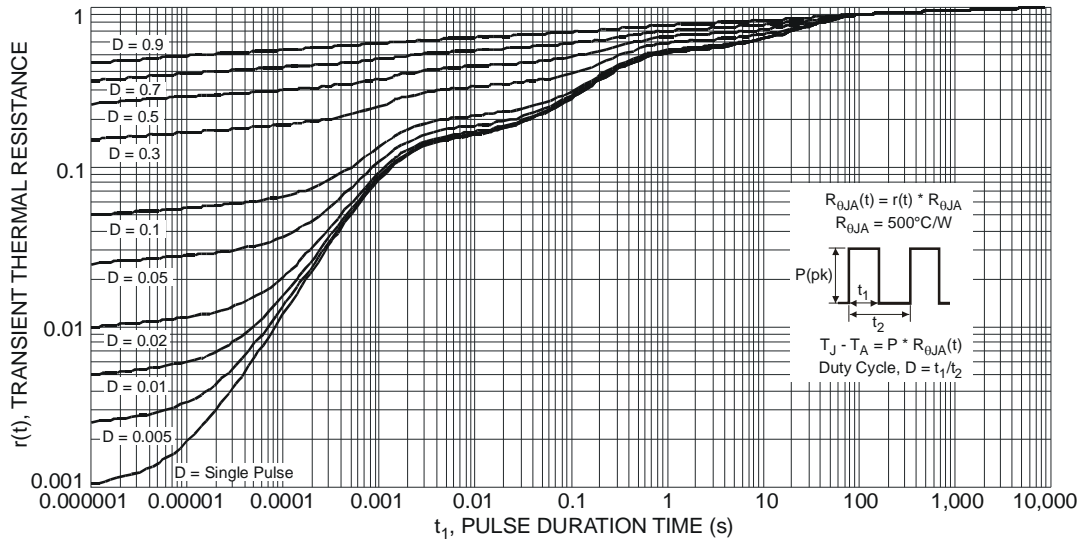


Fig. 1 Transient Thermal Response

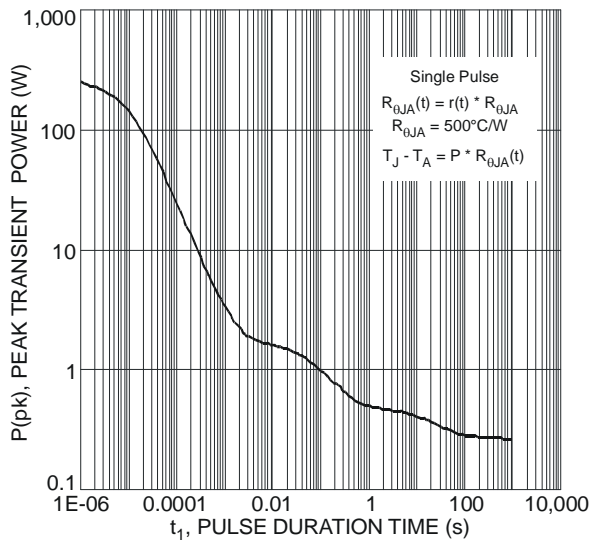


Fig. 2 Single Pulse Maximum Power Dissipation

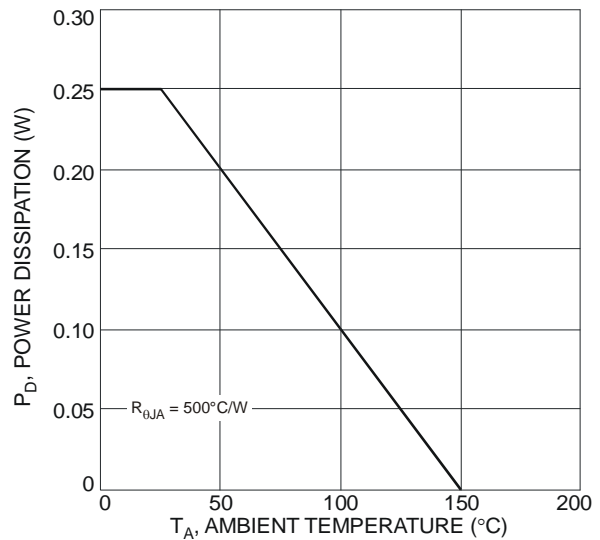


Fig. 3 Power Dissipation vs. Ambient Temperature (Note 4)

**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	$BV_{CBO}$	-15	—	—	V	$I_C = -100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 5)	$BV_{CEO}$	-15	—	—	V	$I_C = -10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-6	—	—	V	$I_E = -100\mu\text{A}, I_C = 0$
Collector Cutoff Current	$I_{CBO}$	—	—	-100 -50	nA $\mu\text{A}$	$V_{CB} = -15\text{V}, I_E = 0$ $V_{CB} = -15\text{V}, I_E = 0, T_A = 150^\circ\text{C}$
Emitter Cutoff Current	$I_{EBO}$	—	—	-100	nA	$V_{EB} = -5\text{V}, I_C = 0$
<b>ON CHARACTERISTICS (Note 5)</b>						
DC Current Gain	$h_{FE}$	200 150 90	— — —	— — —	—	$V_{CE} = -2\text{V}, I_C = -10\text{mA}$ $V_{CE} = -2\text{V}, I_C = -100\text{mA}$ $V_{CE} = -2\text{V}, I_C = -500\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	— — —	— — —	-25 -150 -250	mV	$I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -200\text{mA}, I_B = -10\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$
Collector-Emitter Saturation Resistance	$R_{CE(sat)}$	—	—	500	$\text{m}\Omega$	$I_C = -500\text{mA}, I_B = -50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.1	V	$I_C = -500\text{mA}, I_B = -50\text{mA}$
Base-Emitter Turn On Voltage	$V_{BE(on)}$	—	—	-0.9	V	$V_{CE} = -2\text{V}, I_C = -100\text{mA}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Output Capacitance	$C_{obo}$	—	—	10	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	$f_T$	100	340	—	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  $\leq 2\%$ .

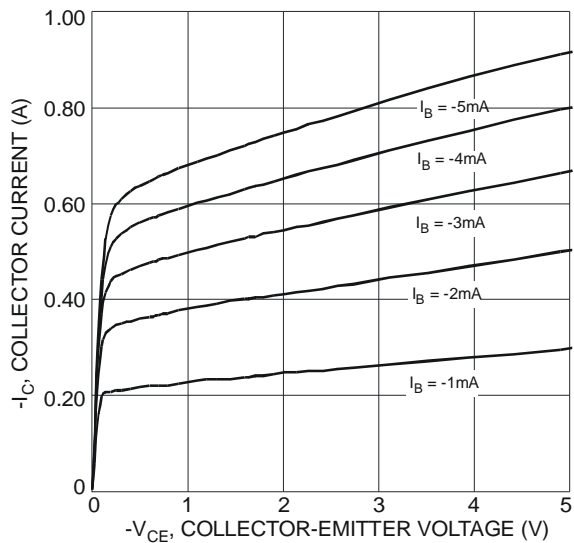


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

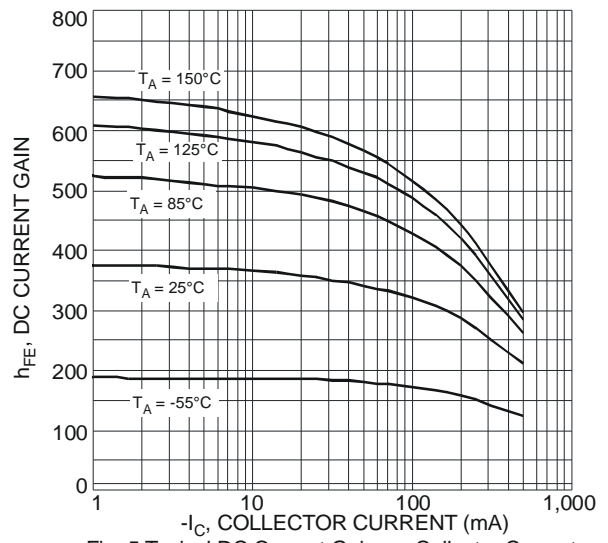


Fig. 5 Typical DC Current Gain vs. Collector Current

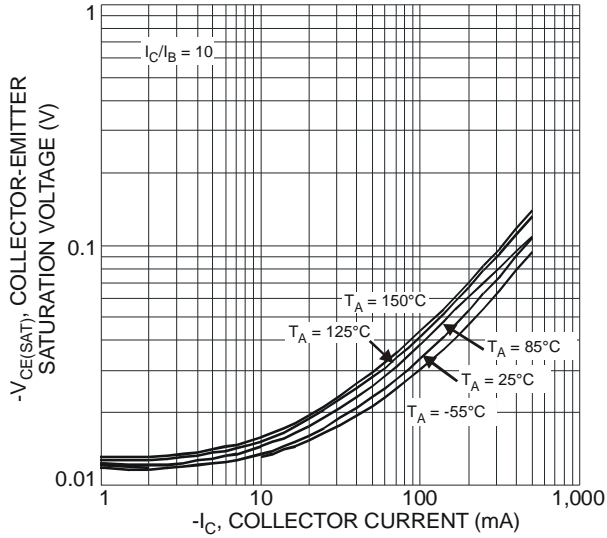


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

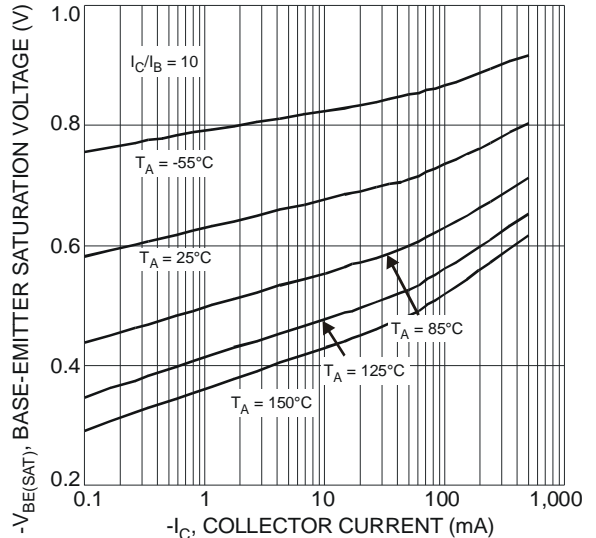


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

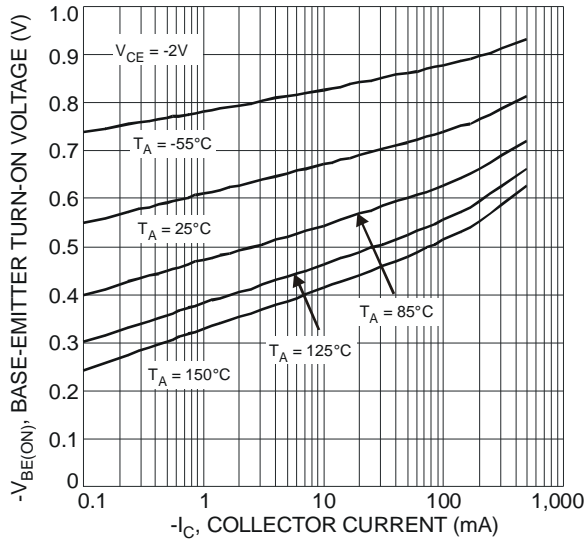


Fig. 8 Typical Base-Emitter Turn-On Voltage vs. Collector Current

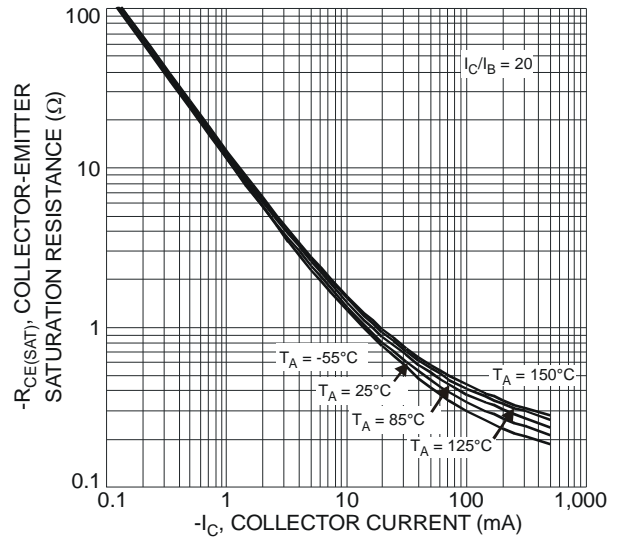
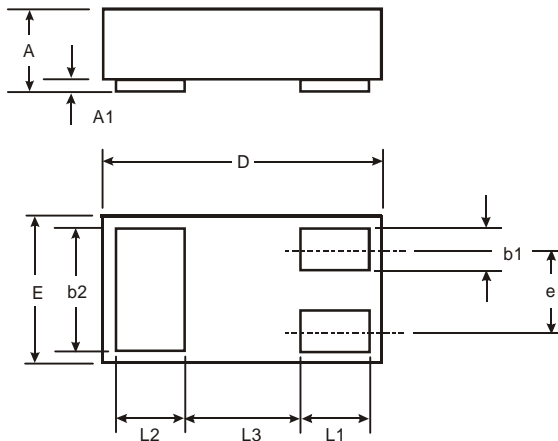


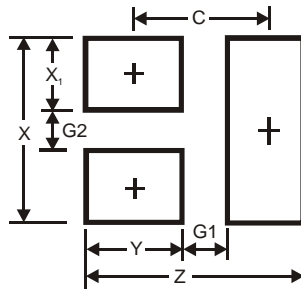
Fig. 9 Typical Collector-Emitter Saturation Resistance vs. Collector Current

**Package Outline Dimensions**



DFN1006-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.03
b1	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	—	—	0.40
All Dimensions in mm			

## Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.1
G1	0.3
G2	0.2
X	0.7
X1	0.25
Y	0.4
C	0.7

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