

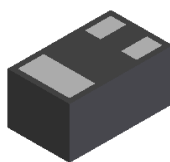
Features

- 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)**

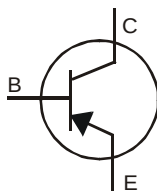
Mechanical Data

- 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)

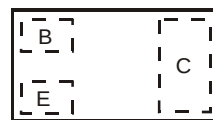
DFN1006-3



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>.

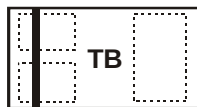
Marking Information

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-15	V
Collector-Emitter Voltage	V_{CEO}	-15	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current - Continuous	I_C	-500	mA
Peak Pulse Collector Current	I_{CM}	-1	A
Peak Base Current	I_{BM}	-100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4) @ $T_A = 25^\circ\text{C}$	P_D	250	mW
Thermal Resistance, Junction to Ambient (Note 4) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	500	$^\circ\text{C/W}$
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.

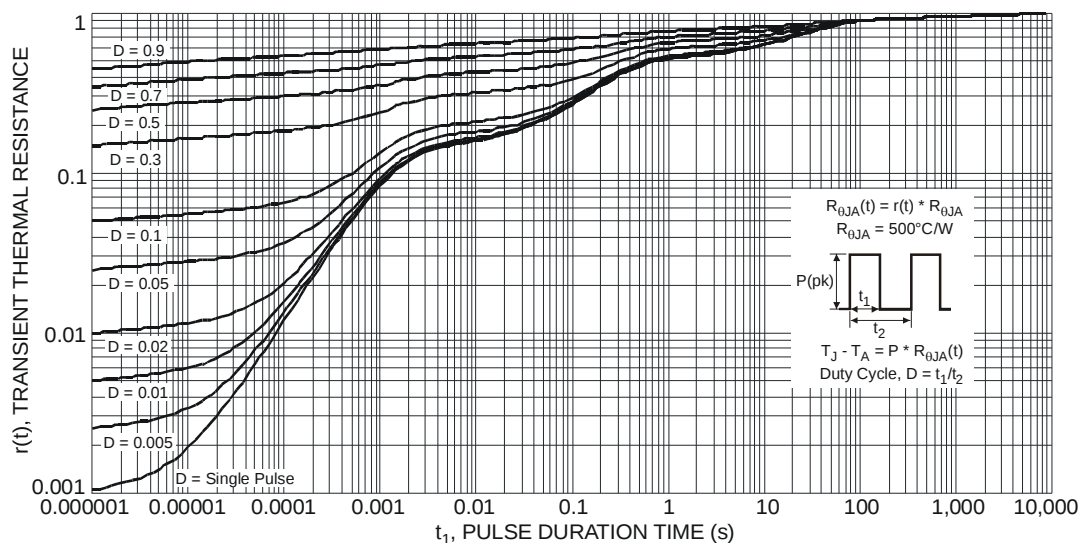


Fig. 1 Transient Thermal Response

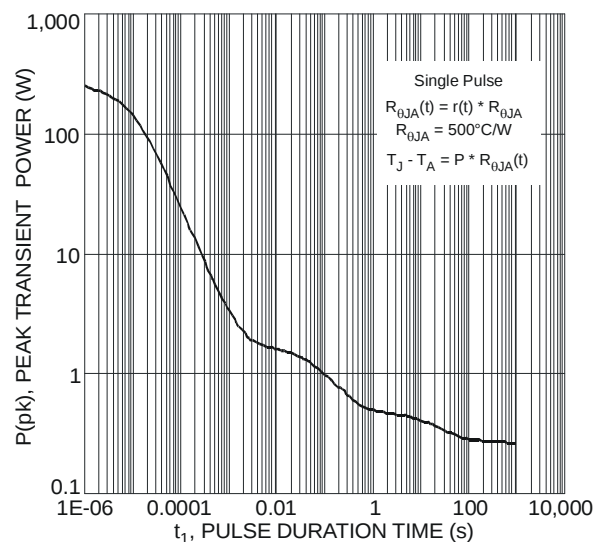


Fig. 2 Single Pulse Maximum Power Dissipation

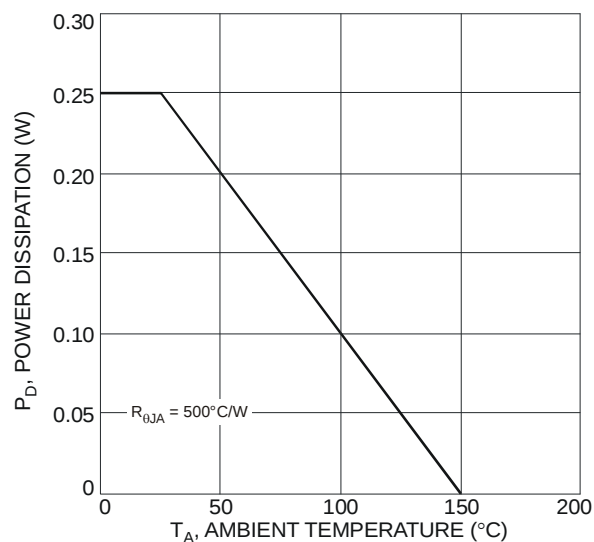


Fig. 3 Power Dissipation vs. Ambient Temperature (Note 4)

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
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 μA	$V_{CB} = -15\text{V}$, $I_E = 0$ $V_{CB} = -15\text{V}$, $I_E = 0$, $T_A = 150^\circ\text{C}$
Emitter Cutoff Current	I_{EBO}	—	—	-100	nA	$V_{EB} = -5\text{V}$, $I_C = 0$
ON CHARACTERISTICS (Note 5)						
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	m Ω	$I_C = -500\text{mA}$, $I_B = -50\text{mA}$
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	$V_{CE} = -2\text{V}$, $I_C = -100\text{mA}$
SMALL SIGNAL CHARACTERISTICS						
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 μs . Duty cycle $\leq 2\%$.

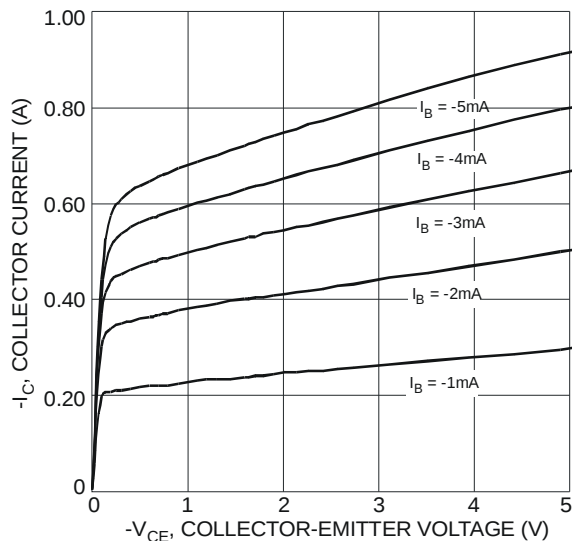


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

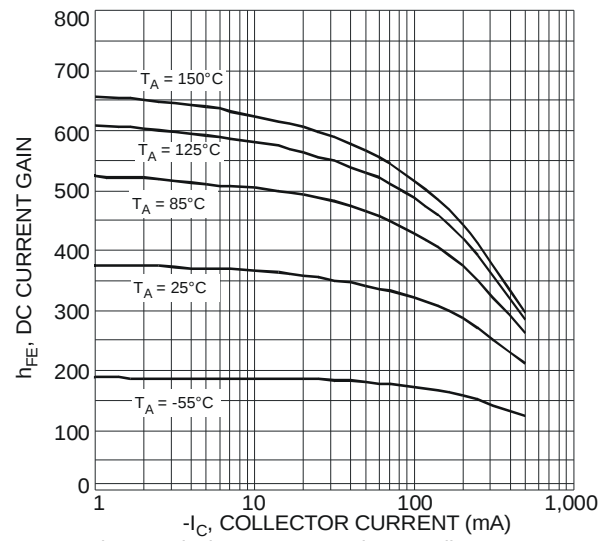


Fig. 5 Typical DC Current Gain vs. Collector Current

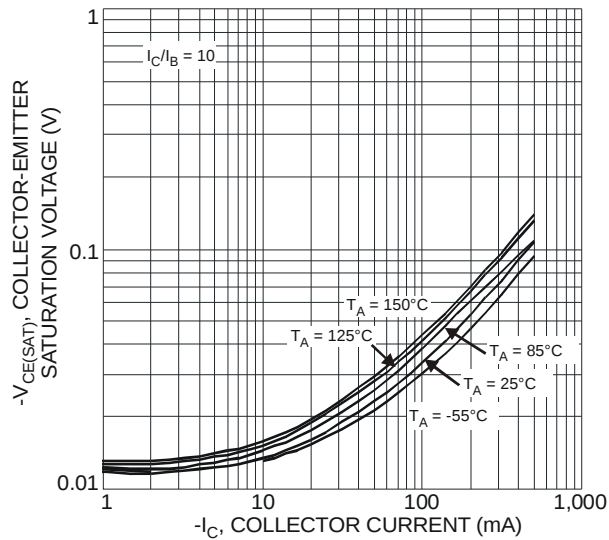


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

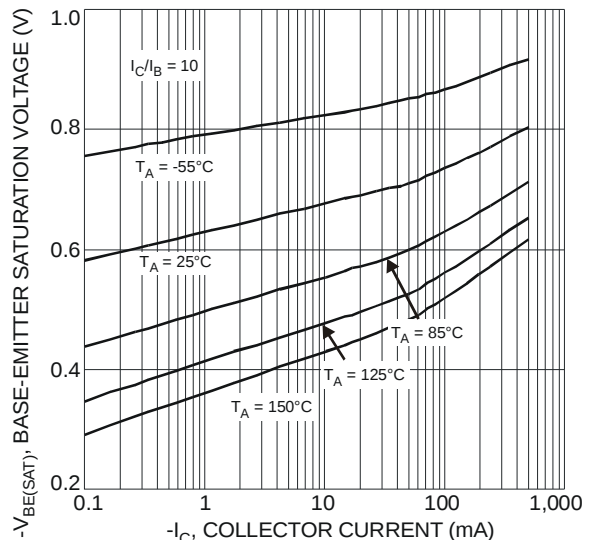


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

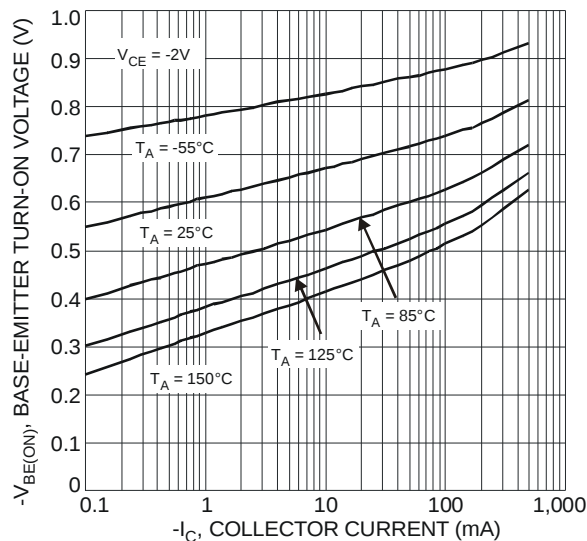


Fig. 8 Typical Base-Emitter Turn-On Voltage vs. Collector Current

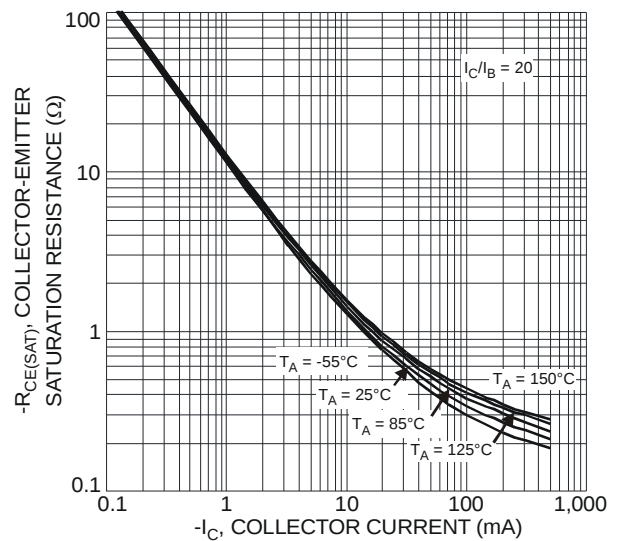
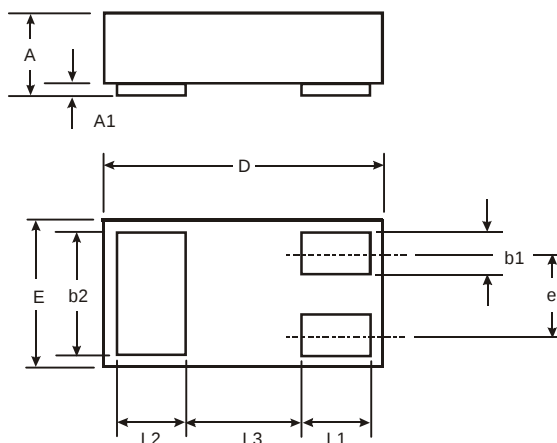


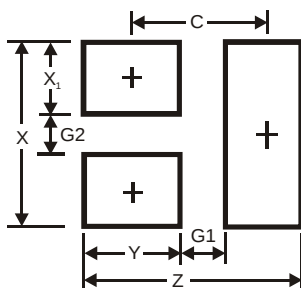
Fig. 9 Typical Collector-Emitter Saturation Resistance vs. Collector Current

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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