



DSS2515M

#### 15V LOW V<sub>CE(sat)</sub> NPN SURFACE MOUNT TRANSISTOR

#### **Features**

- Low Collector-Emitter Saturation Voltage, V<sub>CE(sat)</sub>
- Ultra-Small Leadless Surface Mount Package
- ESD HBM SKV MM 400V
- Complementary PNP Type Available (DSS3515M)
- "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)

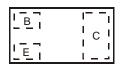
#### DFN1006-3



**Bottom View** 



Device Symbol



Top View Device Schematic

### Ordering Information (Note 3)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS2515M-7	TA	7	8mm	3,000
DSS2515M-7B	TA	7	8mm	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.

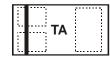
# **Marking Information**

DSS2515M-7



Top View Dot Denotes Collector Side

DSS2515M-7B



Top View Bar Denotes Base and Emitter Side

TA = Product Type Marking Code



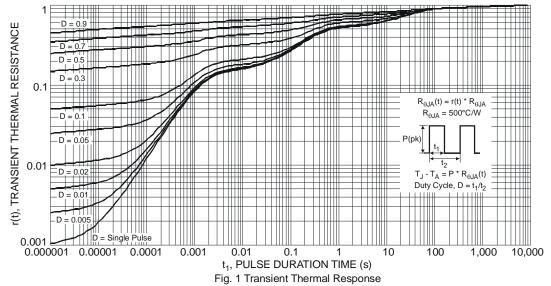
#### Maximum Ratings @TA = 25°C unless otherwise specified

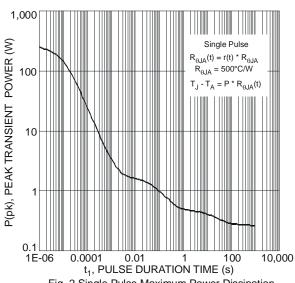
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	15	V
Collector-Emitter Voltage	$V_{CEO}$	15	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current - Continuous	Ic	500	mA
Peak Pulse Collector Current	I <sub>CM</sub>	1	Α
Peak Base Current	I <sub>BM</sub>	100	mA

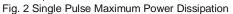
#### **Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4) @ T <sub>A</sub> = 25°C	PD	250	mW
Thermal Resistance, Junction to Ambient (Note 4) @ T <sub>A</sub> = 25°C	$R_{ heta JA}$	500	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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







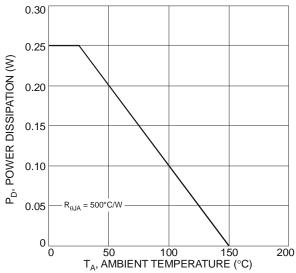


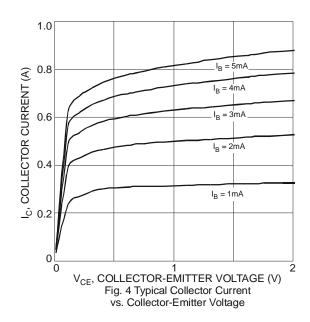
Fig. 3 Power Dissipation vs. Ambient Temperature (Note 4)

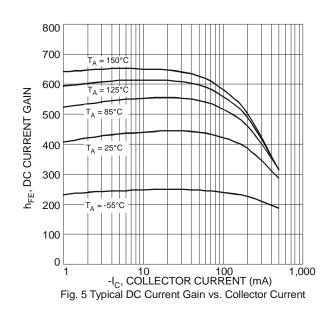


## Electrical Characteristics @TA = 25°C unless otherwise specified

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	15	_	_	V	$I_C = 100 \mu A, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 5)	BV <sub>CEO</sub>	15	_	_	V	$I_C = 10 \text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	6	_	_	V	$I_E = 100 \mu A, I_C = 0$
Collector Cutoff Current		_		100	nA	$V_{CB} = 15V, I_{E} = 0$
Collector Cutoff Current	I <sub>CBO</sub>			50	μΑ	$V_{CB} = 15V$ , $I_E = 0$ , $T_A = 150$ °C
Emitter Cutoff Current	I <sub>EBO</sub>		_	100	nA	$V_{EB} = 5V, I_{C} = 0$
ON CHARACTERISTICS (Note 5)						
		200	_	_		$V_{CE} = 2V$ , $I_C = 10mA$
DC Current Gain	h <sub>FE</sub>	150	_	_	_	$V_{CE} = 2V, I_{C} = 100mA$
		90	_			$V_{CE} = 2V, I_{C} = 500mA$
		_	_	25		$I_C = 10 \text{mA}, I_B = 0.5 \text{mA}$
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	_	_	150	mV	$I_C = 200 \text{mA}, I_B = 10 \text{mA}$
		_	_	250		$I_C = 500 \text{mA}, I_B = 50 \text{mA}$
Collector-Emitter Saturation Resistance	R <sub>CE(sat)</sub>	_	_	500	mΩ	$I_C = 500 \text{mA}, I_B = 50 \text{mA}$
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	_	_	1.1	V	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA
Base-Emitter Turn On Voltage	V <sub>BE(on)</sub>	_	_	0.9	V	V <sub>CE</sub> = 2V, I <sub>C</sub> = 100mA
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C <sub>obo</sub>		_	6	pF	V <sub>CB</sub> = 10V, f = 1.0MHz
Current Gain-Bandwidth Product	f <sub>T</sub>	250	_	_	MHz	$V_{CE} = 5V, I_{C} = 100mA, f = 100MHz$

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







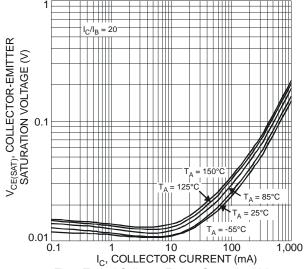
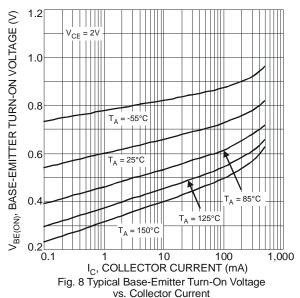


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current



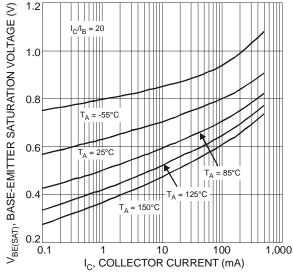


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

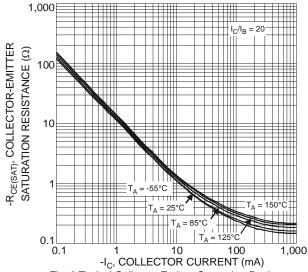
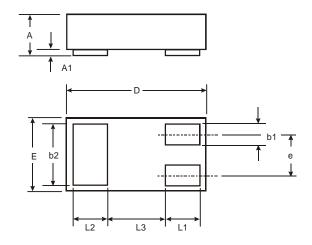


Fig. 9 Typical Collector-Emitter Saturation Resistance vs. Collector Current

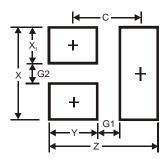
# Package Outline Dimensions



DFN1006-3				
Dim	Min	Max	Тур	
Α	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	
Е	0.55	0.675	0.60	
е	_		0.35	
L1	0.20	0.30	0.25	
L2	0.20	0.30	0.25	
L3	_	_	0.40	
All	All Dimensions in mm			



#### Suggested Pad Layout



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

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