

## Features

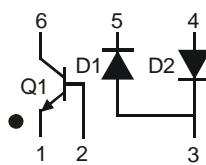
- Integrates one NPN Transistor (Q1) and two Switching Diodes (D1, D2) in a Single Compact Package
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)

## Mechanical Data

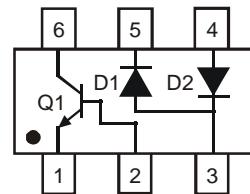
- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe (Lead-Free Plating). Solderable per MIL-STD-202, Method 208 (e3)
- Terminal Connections: See Diagram
- Weight: 0.01 grams (Approximate)



Top View



Device Schematic


 Top View  
 Pin Configuration

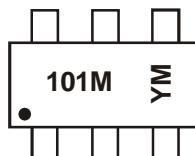
## Ordering Information (Note 4)

Part Number	Case	Packaging
DSM80101M-7	SOT26	3,000/Tape & Reel

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



101M = Product Type Marking Code

(See Electrical Characteristics Table)

YM = Date Code Marking

Y = Year (ex: B = 2014)

M = Month (ex: 9 = September)

### Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021				
Code	B	C	D	E	F	G	H	I				
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 – Q1** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	80	V
Collector-Emitter Voltage	$V_{CEO}$	80	V
Emitter-Base Voltage	$V_{EBO}$	6.0	V
Continuous Collector Current	$I_C(\text{MAX})$	500	mA
Peak Pulse Collector Current @ DC Increment for $I_C$ ; $I_B = 300\text{mA}$ ; Test Duration $>10\text{s}$ for each Step	$I_{CM}$	0.8	A
Base Current	$I_B$	200	mA

**Maximum Ratings – D1, D2** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Non-Repetitive Peak Reverse Voltage	$V_{RM}$	100	V
Peak Repetitive Reverse Voltage	$V_{RRM}$		
Working Peak Reverse Voltage	$V_{RWM}$	75	V
DC Blocking Voltage	$V_R$		
RMS Reverse Voltage	$V_{R(\text{RMS})}$	53	V
Forward Continuous Current (Note 5)	$I_{FM}$	300	mA
Average Rectified Output Current (Note 5)	$I_O$	200	mA
Non-Repetitive Peak Forward Surge Current @ $t = 1.0\mu\text{s}$	$I_{FSM}$	20	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	600	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	208	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 to +150	°C

**Electrical Characteristics – Q1** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic (Note 6)	Symbol	Min	Typical	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	80	—	—	V	$I_C = 100\mu\text{A}$ , $I_E = 0$
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	80	—	—	V	$I_C = 1.0\text{mA}$ , $I_B = 0$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	6.0	—	—	V	$I_E = 100\mu\text{A}$ , $I_C = 0$
Collector Cutoff Current	$I_{CBO}$	—	—	100	nA	$V_{CB} = 80\text{V}$ , $I_E = 0$
Collector-Emitter Saturation Voltage	$V_{CE(\text{SAT})}$	—	—	0.3	V	$I_C = 100\text{mA}$ , $I_B = 10\text{mA}$
DC Current Transfer Ratio	$h_{FE}$	120	180	350	—	$I_C = 10\text{mA}$ , $V_{CE} = 1.0\text{V}$

**Electrical Characteristics – D1, D2** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	75	—	V	$I_R = 100\mu\text{A}$
Forward Voltage	$V_F$	—	0.715	V	$I_F = 5.0\text{mA}$
		—	0.855		$I_F = 10\text{mA}$
		—	1.0		$I_F = 50\text{mA}$
		—	1.25		$I_F = 150\text{mA}$
		—	0.1		$V_R = 75\text{V}$
Leakage Current (Note 6)	$I_R$	—	25	nA	$V_R = 20\text{V}$
		—	2.0	pF	$V_R = 0\text{V}$ , $f = 1.0\text{MHz}$
Total Capacitance	$C_T$	—	4	ns	$I_F = I_R = 10\text{mA}$ , $I_{rr} = 0.1 \times I_R$ , $R_L = 100\Omega$
Reverse Recovery Time	$t_{rr}$	—	—	—	

Notes: 5. Device mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com>.  
6. Short duration pulse test used to minimize self-heating effect.

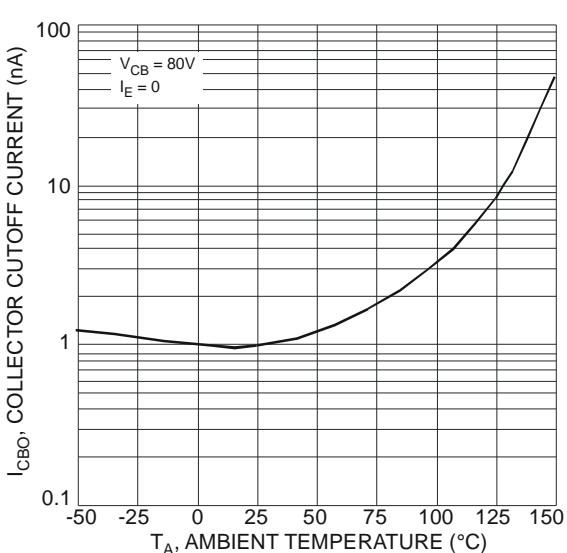
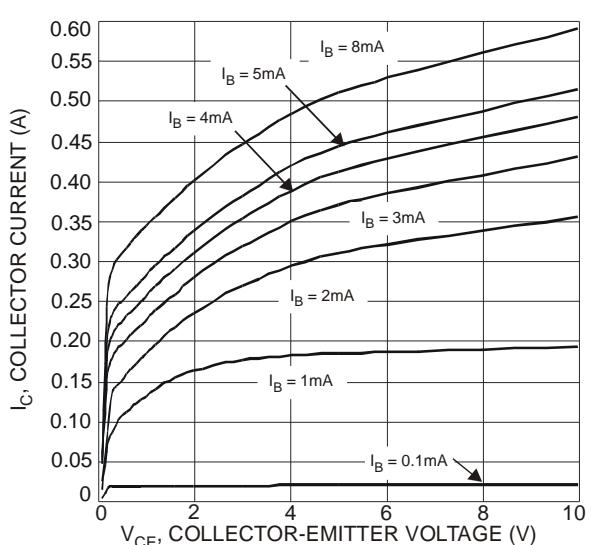
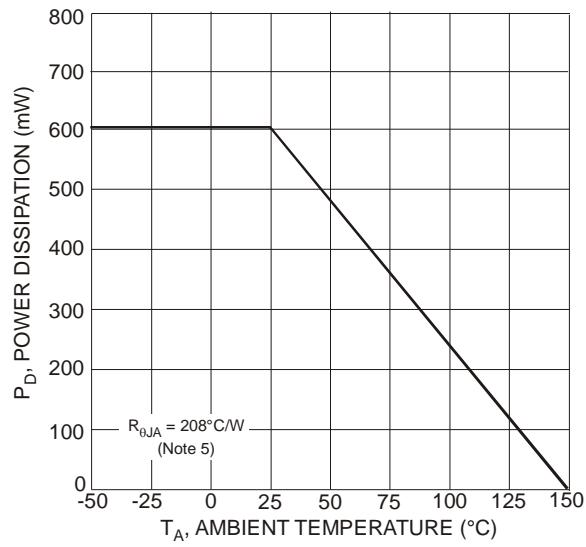
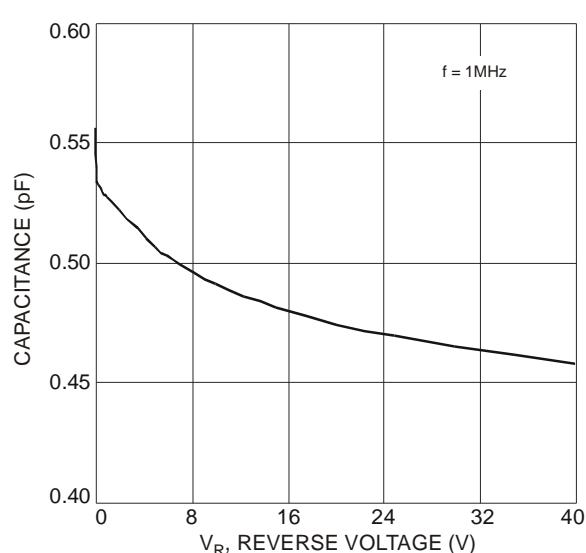
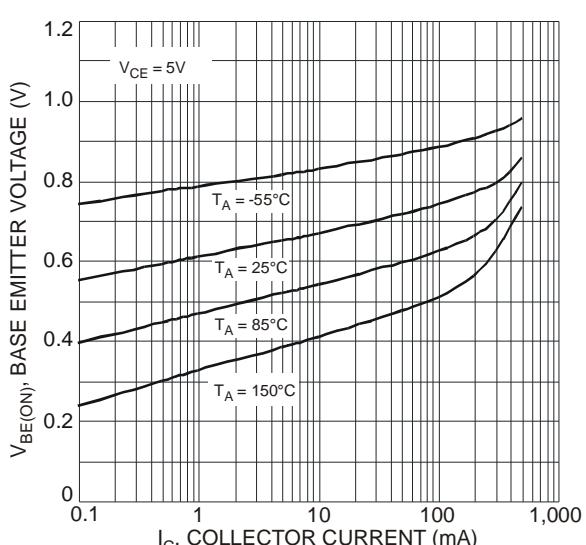
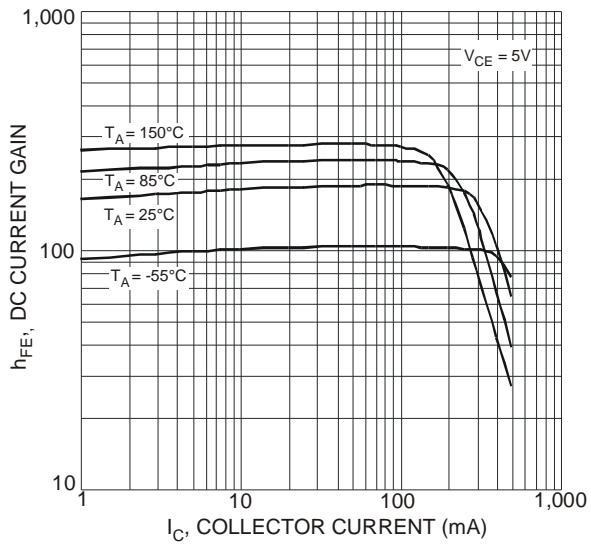


Fig. 5 Collector Cutoff Current vs. Ambient Temperature



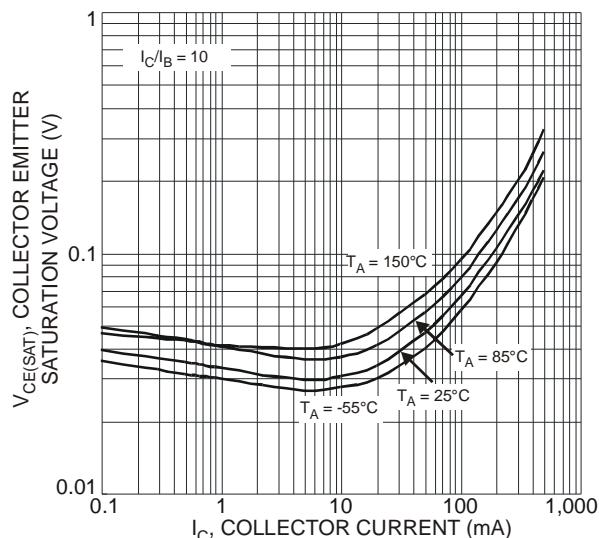


Fig. 7 Typical Collector Emitter Saturation Voltage vs. Ambient Temperature

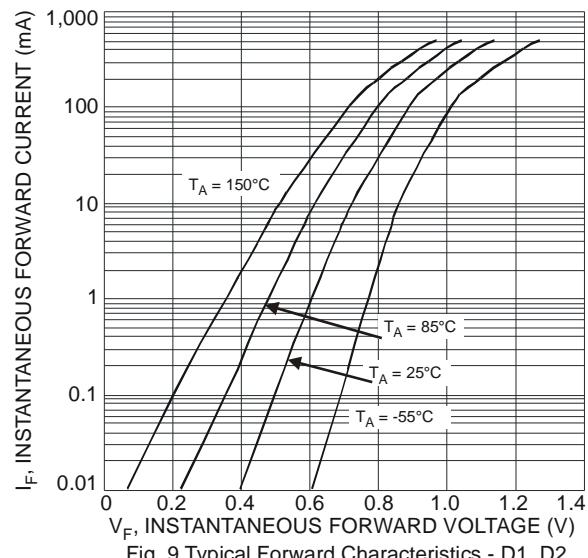


Fig. 9 Typical Forward Characteristics - D1, D2

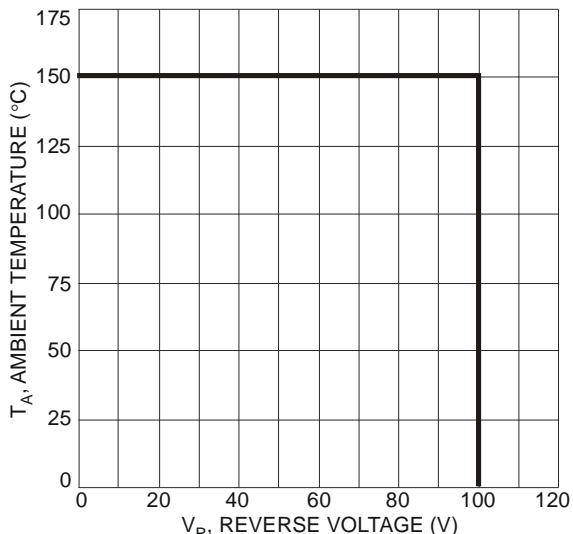


Fig. 11 Operating Temperature Derating - D1, D2

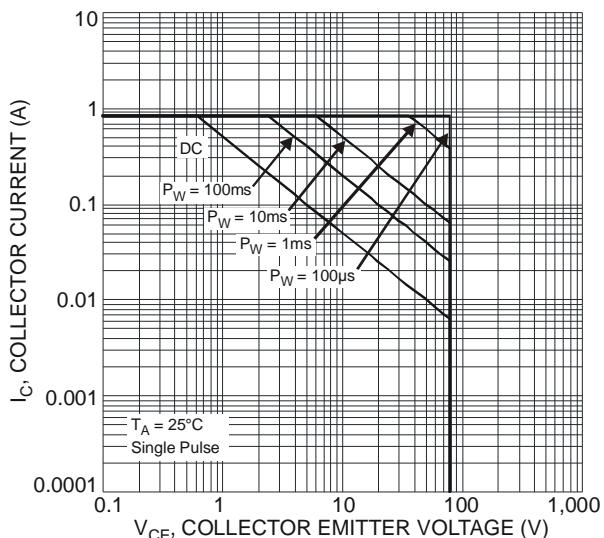


Fig. 8 Safe Operation Area for Q1

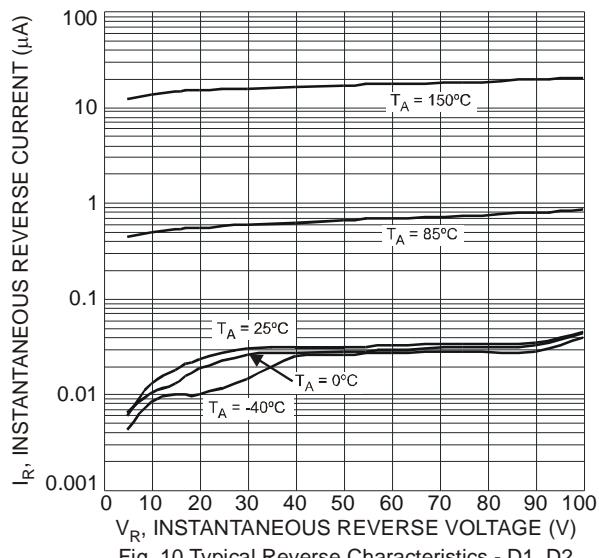
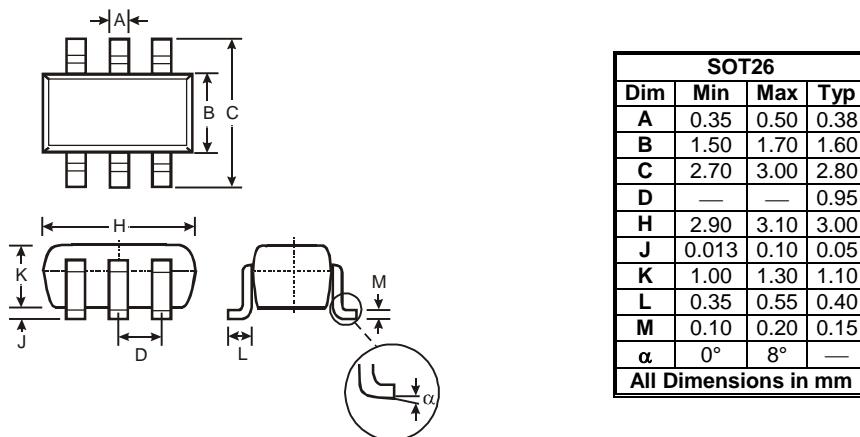


Fig. 10 Typical Reverse Characteristics - D1, D2

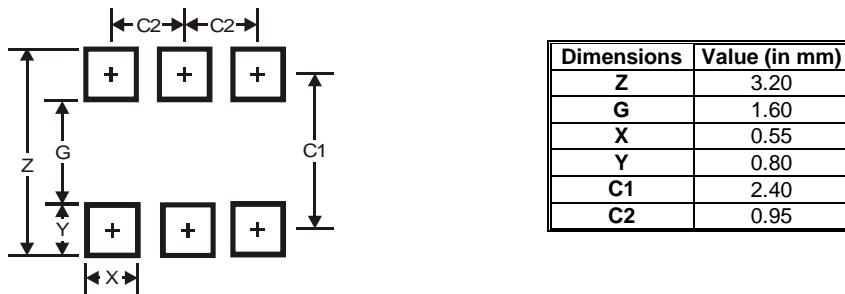
## Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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