



THE DATASHEET OF BS107P



200V N-CHANNEL ENHANCEMENT MODE VERTICAL DMOSFET

Features

- $BV_{DSS} > 200V$
- $R_{DS(ON)} \leq 23\Omega$ @ $V_{GS} = 2.6V$
- $I_D = 120mA$ Maximum Continuous Drain Current
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

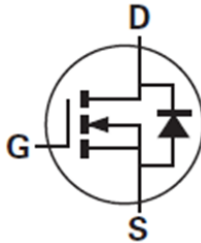
Mechanical Data

- Case: E-Line (TO-92 Compatible)
- Case Material: Molded Plastic, "Green" Molding Compound
UL Flammability Rating 94V-0
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.159 grams (Approximate)

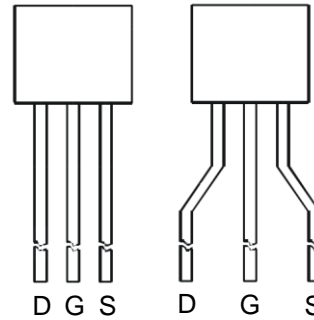
E-Line
(TO-92 Compatible)



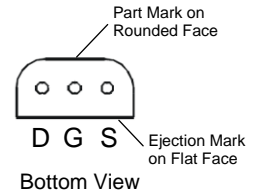
Flat Face View



Device Symbol



Rounded Face View



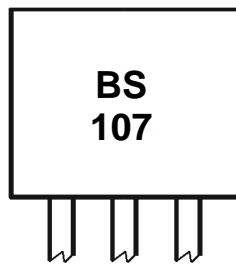
Bottom View

Ordering Information (Note 4)

Product	Marking	Package	Leads	Quantity
BS107P	BS107	E-Line	Straight	4,000 Loose in a Box
BS107PSTZ	BS107	E-Line	Joggled	2,000 Taped per Ammo Box

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See 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.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



Rounded Face View

BS107 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	200	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current	I_D	120	mA
Pulsed Drain Current	I_{DM}	2	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	71	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

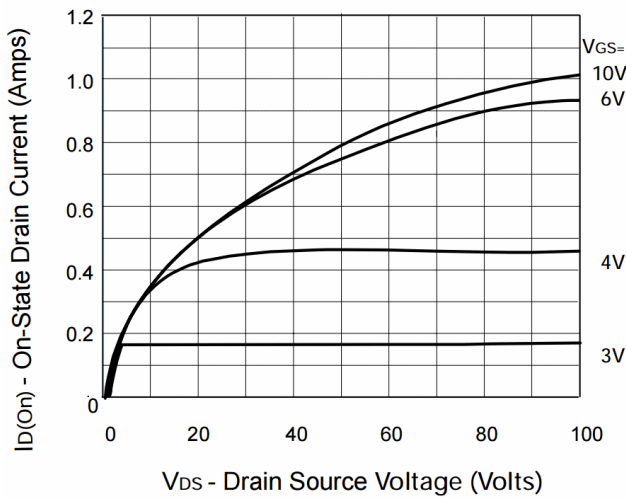
- Notes:
- For a through-hole device mounted on the minimum recommended pad layout with 12mm lead length from the bottom of package to the single-sided FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 - Thermal resistance from junction to solder-point at the seating plane (2.5mm from the bottom of package along the drain lead).

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

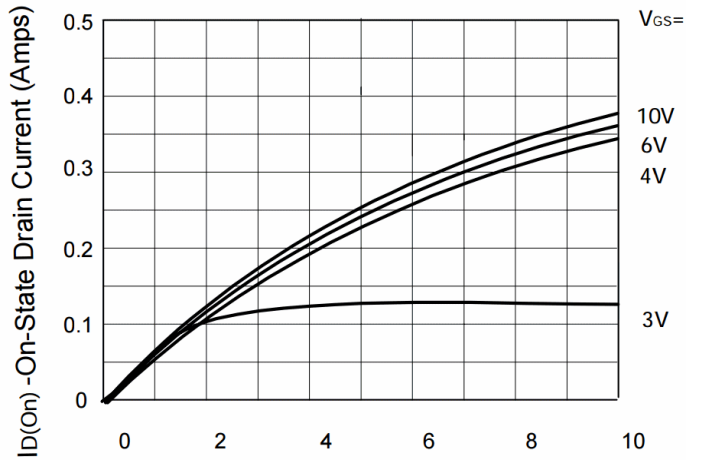
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	200	230	—	V	$I_D = 100\mu\text{A}, V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	30	nA	$V_{DS} = 130\text{V}, V_{GS} = 0\text{V}$
Drain Cut-Off Current	I_{DSX}	—	—	1	μA	$V_{DS} = 70\text{V}, V_{GS} = 0.2\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 10	nA	$V_{GS} = \pm 15\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	1.0	—	3.0	V	$I_D = 1\text{mA}, V_{DS} = V_{GS}$
Static Drain-Source On-Resistance (Note 7)	$R_{DS(ON)}$	—	15	23	Ω	$V_{GS} = 2.6\text{V}, I_D = 25\text{mA}$
			—	30		$V_{GS} = 5\text{V}, I_D = 100\text{mA}$
Forward Transconductance (Notes 7 & 9)	g_{fs}	100	—	—	mS	$V_{DS} = 25\text{V}, I_D = 250\text{mA}$
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	—	85	pF	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	—	20		
Reverse Transfer Capacitance	C_{rss}	—	—	7		
Turn-On Delay Time (Note 8)	$t_{D(ON)}$	—	—	7	ns	$V_{DD} = 25\text{V}, I_D = 250\text{mA}$
Turn-On Rise Time (Note 8)	t_R	—	—	8		
Turn-Off Delay Time (Note 8)	$t_{D(OFF)}$	—	—	16		
Turn-Off Fall Time (Note 8)	t_F	—	—	8		

- Notes:
- Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.
 - Switching characteristics are independent of operating junction temperature. Switching times are measured with 50Ω source impedance and $< 5\text{ns}$ rise time on a pulse generator.
 - For design aid only, not subject to production testing.

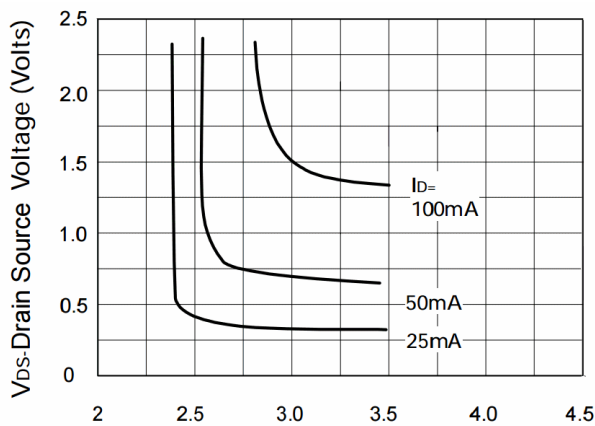
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



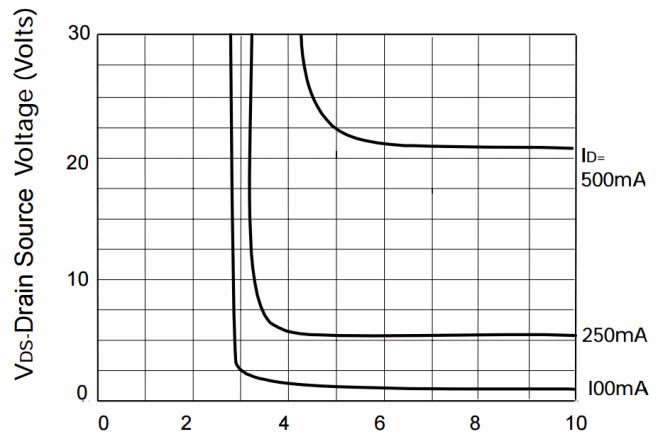
Output Characteristics



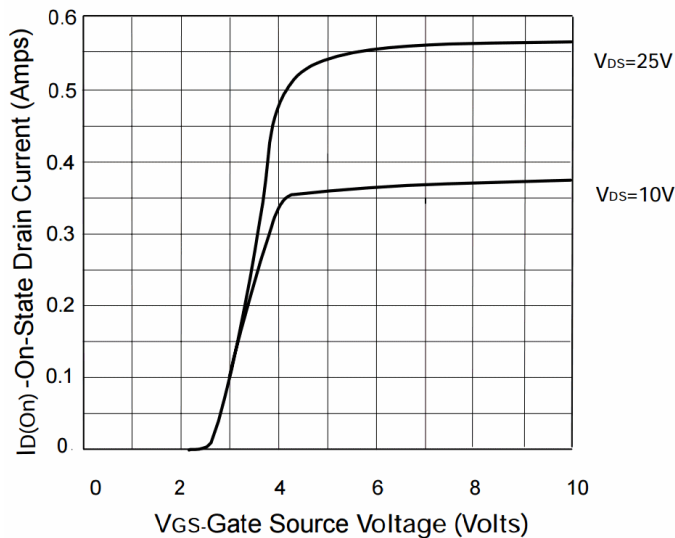
Saturation Characteristics



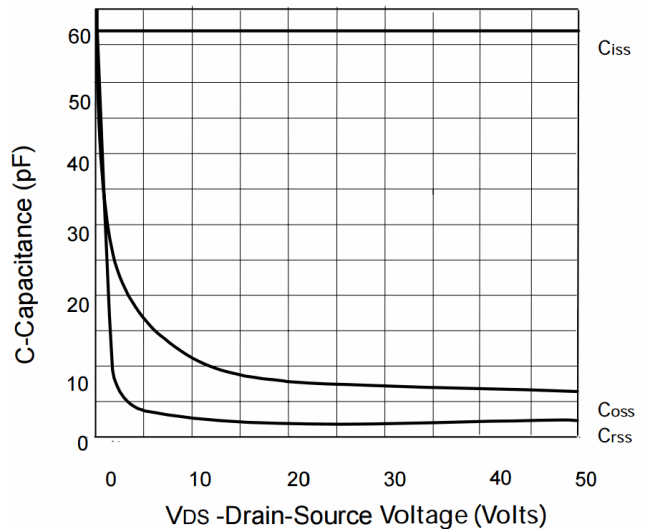
Voltage Saturation Characteristics



Voltage Saturation Characteristics



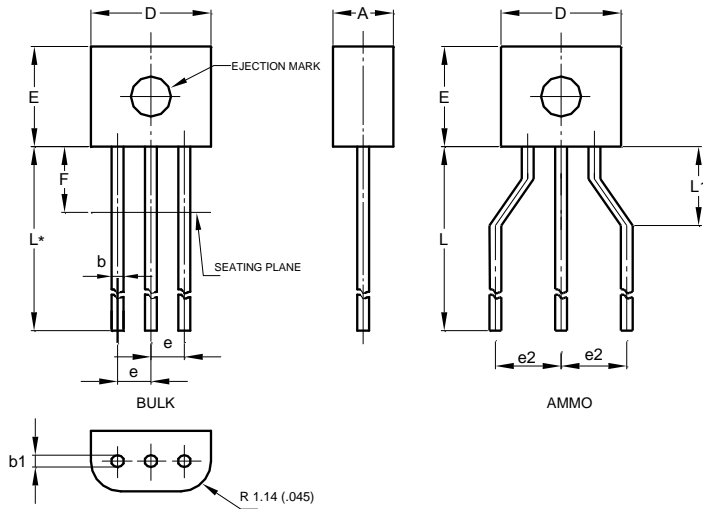
Transfer characteristics



Capacitance v drain-source voltage

Package Outline Dimensions

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



E-Line			
Dim	Min	Max	Typ
A	2.16	2.41	-
b	0.41	0.495	-
b1	0.41	0.495	-
D	4.37	4.77	-
E	3.61	4.01	-
e	-	-	1.27
e2	-	-	2.54
F	-	2.50	-
L	13.00	13.97	-
L1	2.50	3.50	-
All Dimensions in mm			

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