

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)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q101, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q101) for High Reliability.**
- <https://www.diodes.com/quality/product-definitions/>

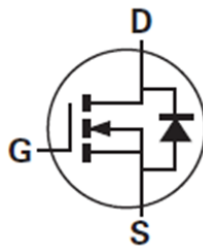
Mechanical Data

- 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)

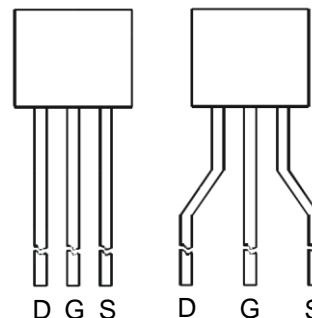
E-Line
(TO-92 Compatible)



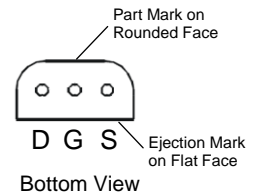
Flat Face View



Device Symbol



Rounded Face View



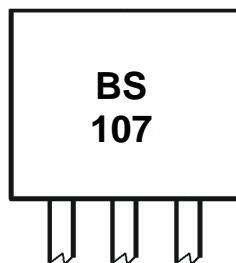
Bottom View

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) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



Rounded Face View

BS107 = Product Type Marking Code

Maximum Ratings (@T_A = +25°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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	500	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	200	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R _{θJL}	71	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

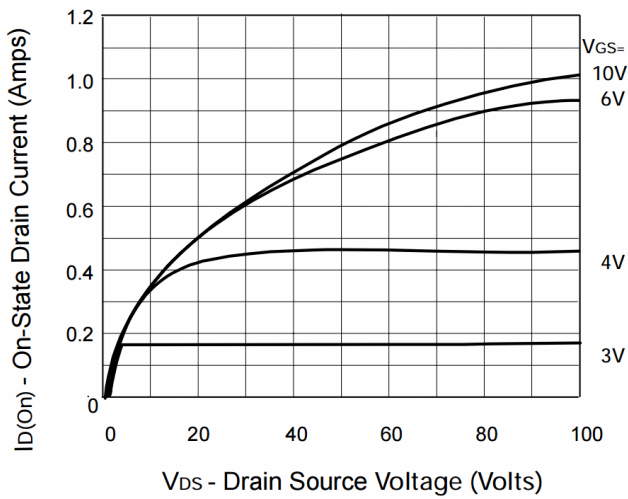
- Notes:
- For a through-hole device mounted on the minimum recommended pad layout with 12mm lead length from the bottom of package to the single-sided FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 - Thermal resistance from junction to solder-point at the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

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

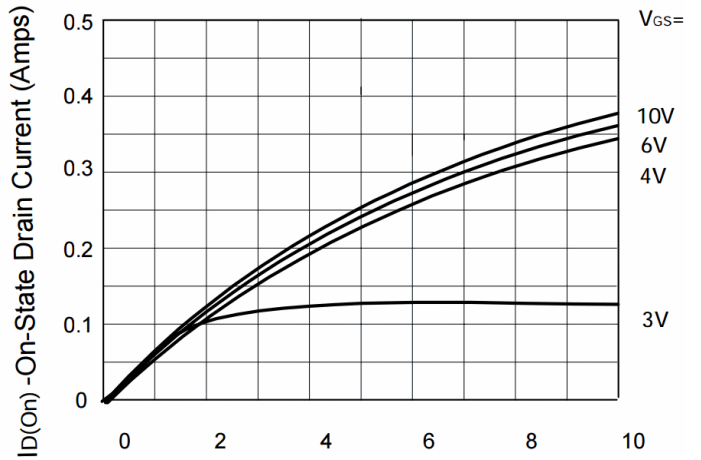
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	200	230	—	V	I _D = 100µA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	30	nA	V _{DS} = 130V, V _{GS} = 0V
Drain Cut-Off Current	I _{DSX}	—	—	1	µA	V _{DS} = 70V, V _{GS} = 0.2V
Gate-Source Leakage	I _{GSS}	—	—	±10	nA	V _{GS} = ±15V, V _{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	1.0	—	3.0	V	I _D = 1mA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 7)	R _{DS(ON)}	—	15	23	Ω	V _{GS} = 2.6V, I _D = 25mA
			—	30		V _{GS} = 5V, I _D = 100mA
Forward Transconductance (Notes 7 & 9)	g _{fs}	100	—	—	mS	V _{DS} = 25V, I _D = 250mA
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iSS}	—	—	85	pF	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	—	20		
Reverse Transfer Capacitance	C _{rss}	—	—	7		
Turn-On Delay Time (Note 8)	t _{D(ON)}	—	—	7	ns	V _{DD} = 25V, I _D = 250mA
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 ≤ 300µs. Duty cycle ≤ 2%.
 - Switching characteristics are independent of operating junction temperature. Switching times are measured with 50Ω source impedance and <5ns rise time on a pulse generator.
 - For design aid only, not subject to production testing.

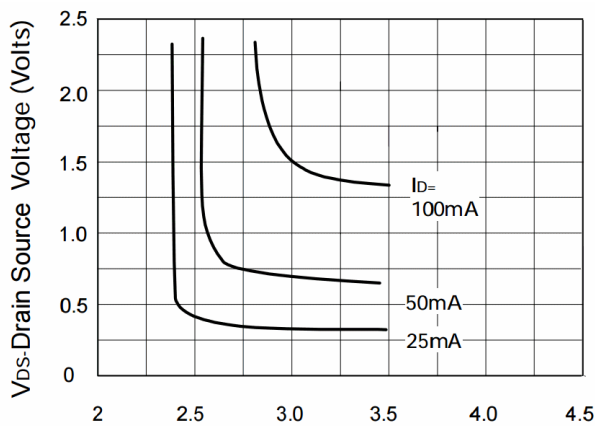
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



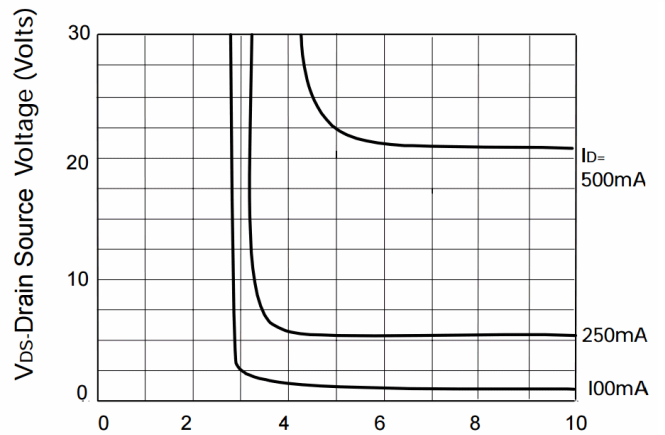
Output Characteristics



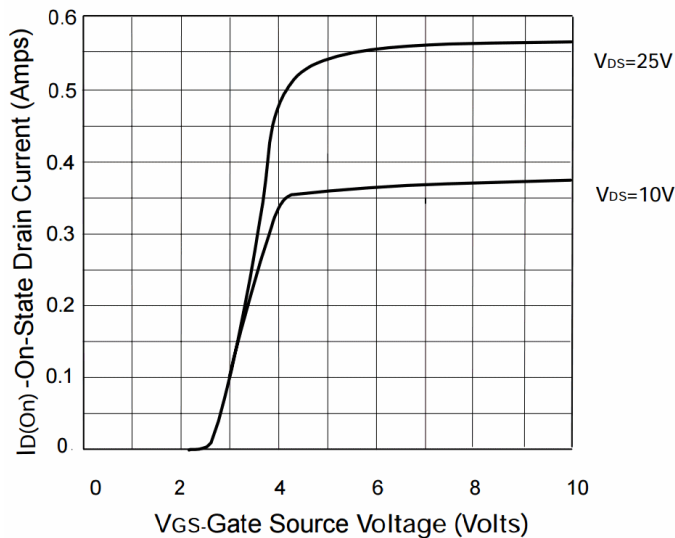
Saturation Characteristics



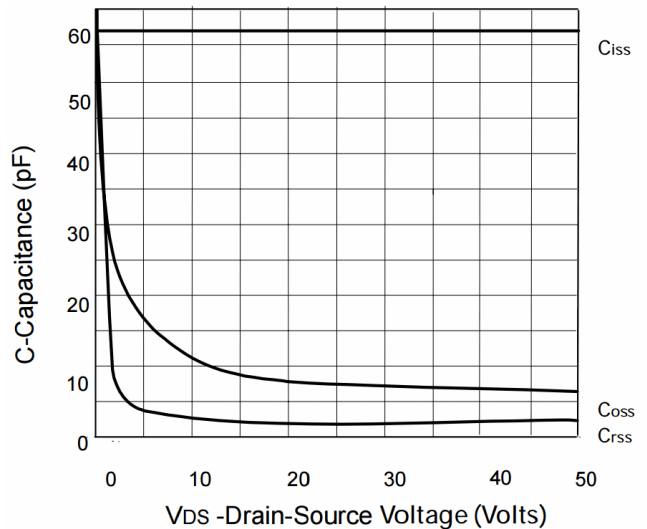
Voltage Saturation Characteristics



Voltage Saturation Characteristics



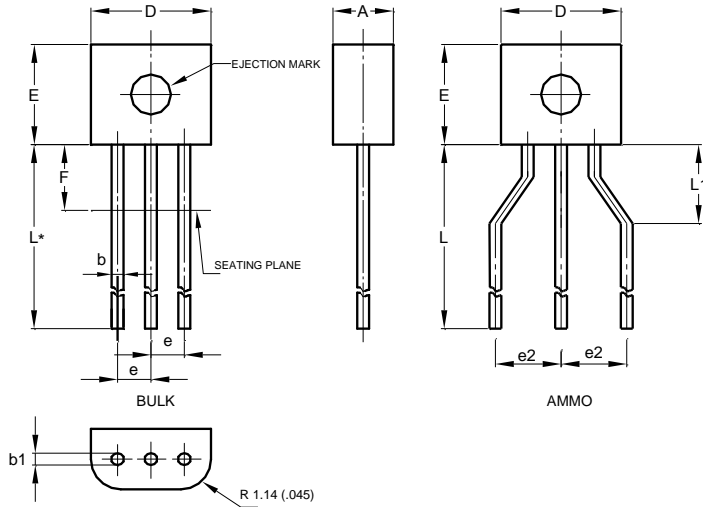
Transfer characteristics



Capacitance v drain-source voltage

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> 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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