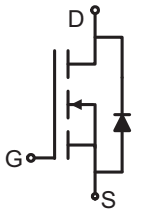
RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

BSS127

N-Channel Enhancement Mode Power MOSFET

Description

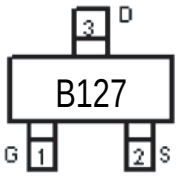
This new generation uses advanced planar technology MOSFET, provide excellent high voltage and fast switching, making it ideal for small-signal and level shift applications.



Schematic diagram

Features

- Low Input Capacitance
- High BV_{DSS} Rating for Power Application
- Low Input/Output Leakage



Marking and pin assignment

Application

- Motor Control
- DC-DC Converters
- Power management
- Backlighting
- Halogen-free

SOT-23 top view

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
B127	BSS127	SOT-23	Ø180mm	8 mm	3000 units

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A =25℃	I_D	0.021	A
	T_A =70℃		0.017	
Drain Current -Pulsed (Note 1)		I_{DM}	0.09	A
Maximum Power Dissipation		P_D	0.5	W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	250	℃/W

2020-11/82/43
REV:B

Electrical Characteristics (T_A=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	600	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=600V,V_{GS}=0V	-	-	0.1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	±10	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=8 μA	1.4	2.0	2.6	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=0.016A	-	310	500	Ω
		V_{GS}=4.5V, I_D=0.016A	-	330	600	
Forward Transconductance	g_{FS}	|V_{DS}|>2|I_D|R_{DS}(ON)MAX I_D=0.01A	0.007	0.015	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=25V,V_{GS}=0V, F=1.0MHz	-	21	28	PF
Output Capacitance	C_{oss}		-	2.4	3	PF
Reverse Transfer Capacitance	C_{rss}		-	1.0	1.5	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=300V,I_D=0.01A V_{GS}=10V,R_{GEN}=6Ω	-	6.1	19	nS
Turn-on Rise Time	t_r		-	9.7	14.5	nS
Turn-Off Delay Time	$t_{d(off)}$		-	14	21	nS
Turn-Off Fall Time	t_f		-	115	170	nS
Total Gate Charge	Q_g	V_{DS}=300V,I_D=0.01A, V_{GS}=10V	-	0.07	0.10	nC
Gate-Source Charge	Q_{gs}		-	0.31	0.5	nC
Gate-Drain Charge	Q_{gd}		-	0.65	1.0	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S =0.016A	-	0.82	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	0.016	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

RATING AND CHARACTERISTICS CURVES (BSS127)

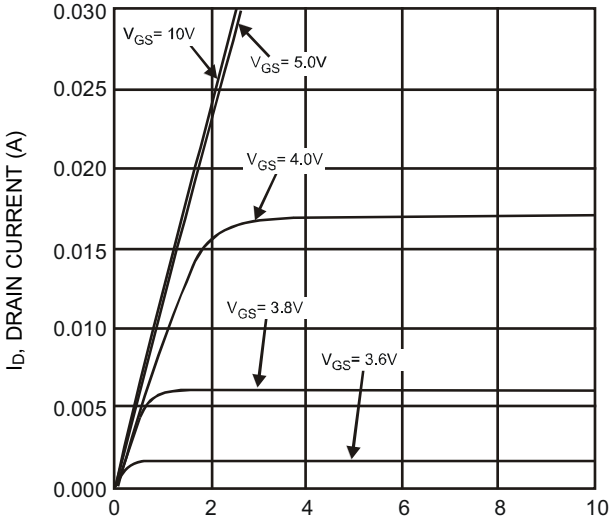


Figure 1 Typical Output Characteristics

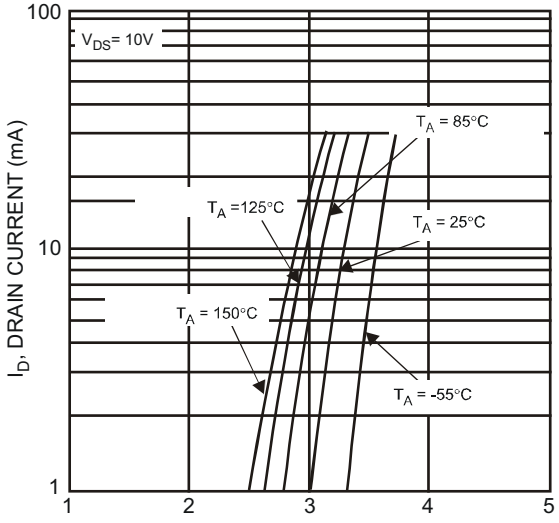


Figure 2 Typical Transfer Characteristics

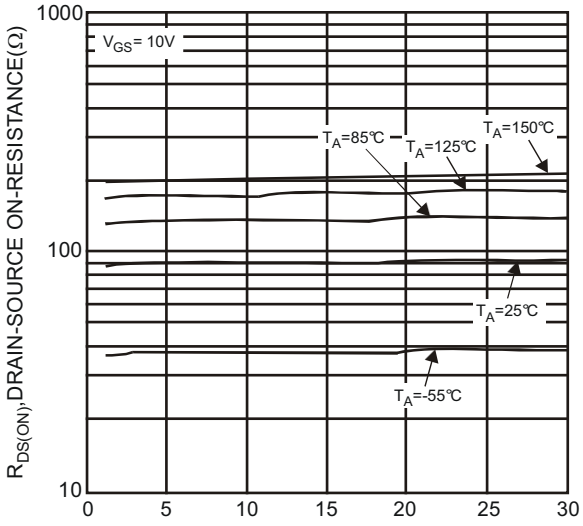


Figure 3 Typical On-Resistance vs. Drain Current and Temperature

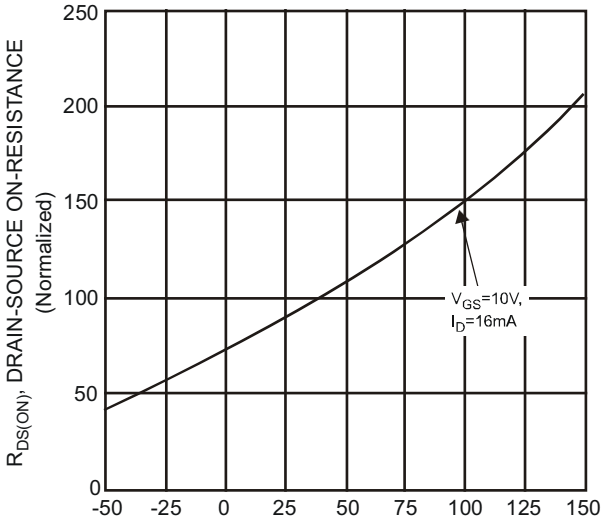


Figure 4 On-Resistance Variation with Temperature

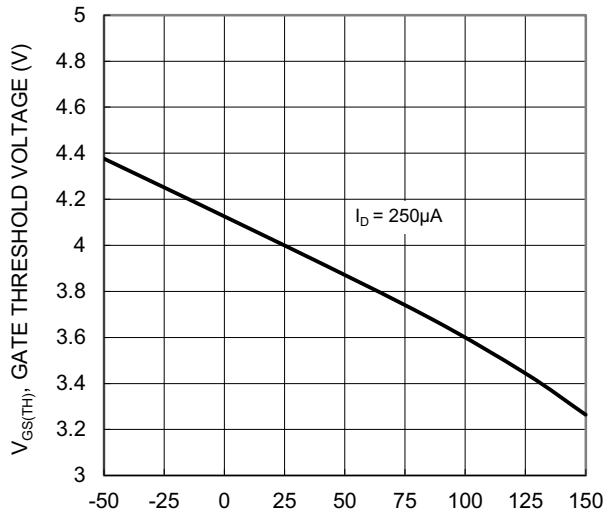


Figure 5. Gate Threshold Variation vs. Ambient Temperature

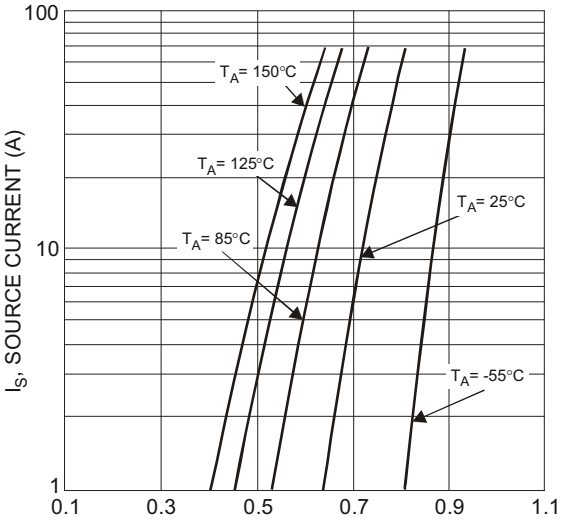


Figure 6 Diode Forward Voltage vs. Current

RATING AND CHARACTERISTICS CURVES (BSS127)

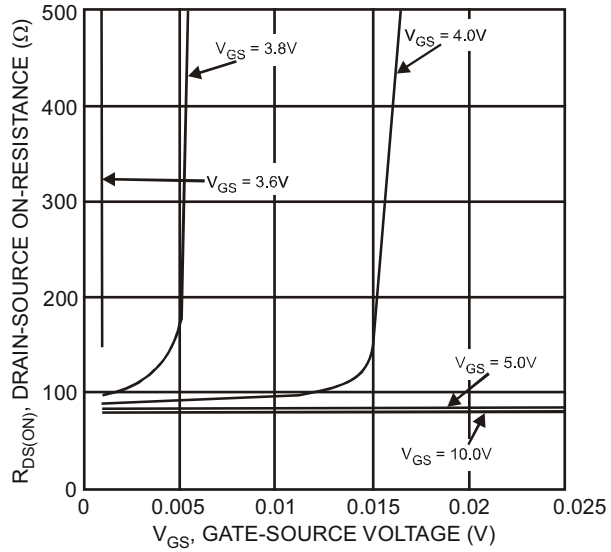


Figure 7 Typical On-Resistance vs. Drain Current and Gate Voltage

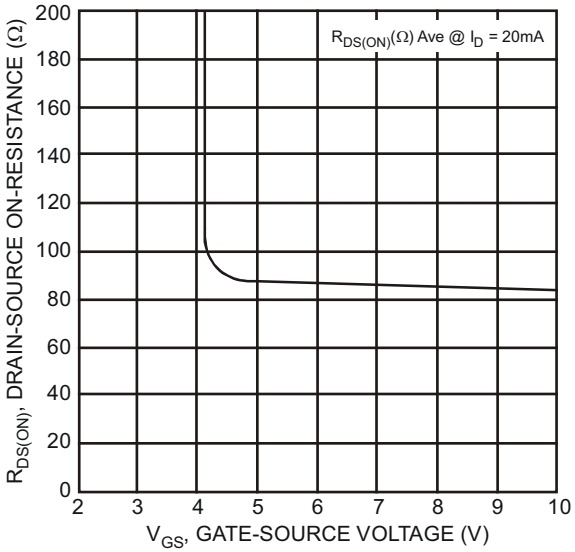


Figure 8 Typical Transfer Characteristic

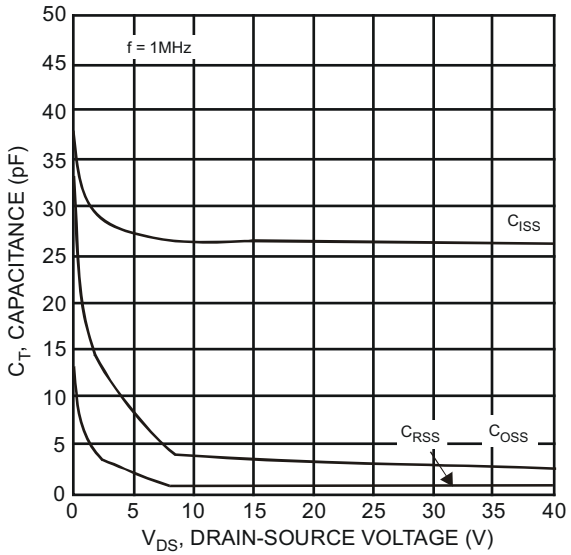


Figure 9 Typical Junction Capacitance

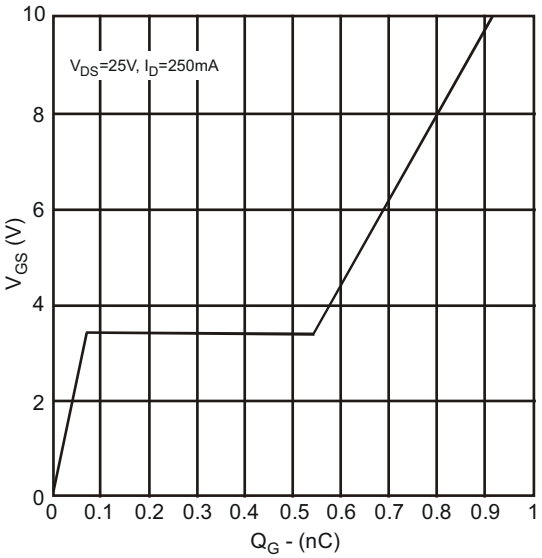


Figure 10 Gate Charge Characteristics

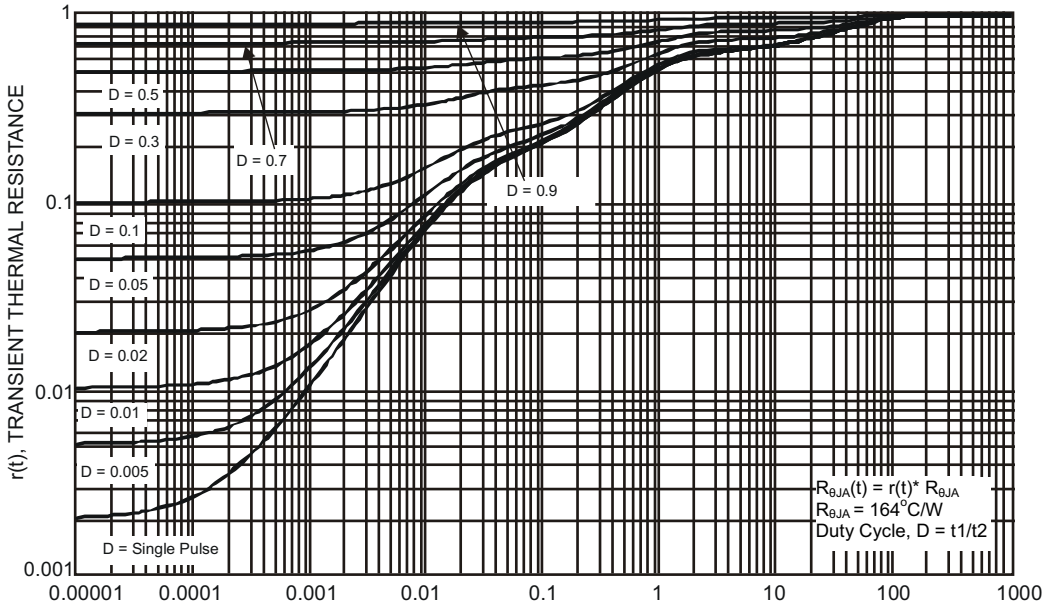
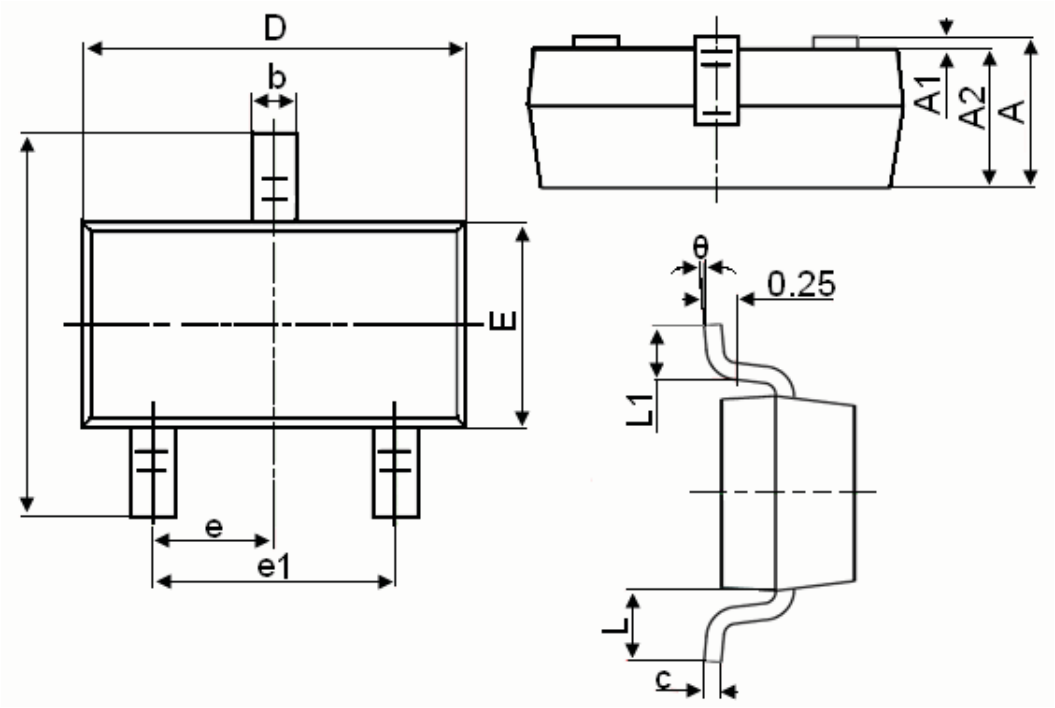


Figure 11 Transient Thermal Resistance

SOT-23 Package Information



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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