BS107, BS107A

Preferred Device

Small Signal MOSFET 250 mAmps, 200 Volts

N–Channel TO–92

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain–Source Voltage	V_{DS}	200	Vdc
Gate–Source Voltage – Continuous – Non–repetitive ($t_p \le 50$ μs)	 V_{GS} V_{GSM}	 ±20 ±30	 Vdc Vpk
Drain Current Continuous (Note 1.) Pulsed (Note 2.)	 I_D I_{DM}	 250 500	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	350	mW
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to 150	°C

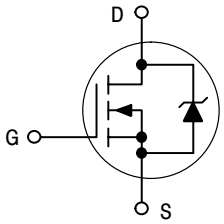
1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

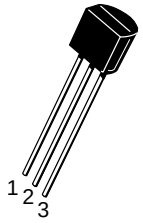
ON Semiconductor

http://onsemi.com

250 mAMPS
200 VOLTS
$R_{DS(on)}$ = 14 Ω (BS107)
$R_{DS(on)}$ = 6.4 Ω (BS107A)

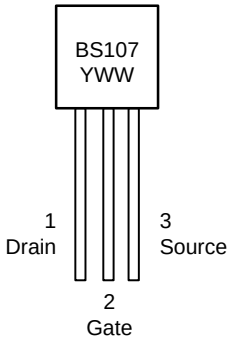
N–Channel





TO–92
CASE 29
Style 30

MARKING DIAGRAM & PIN ASSIGNMENT



Y = Year
WW = Work Week

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Zero–Gate–Voltage Drain Current (V_{DS} = 130 Vdc, V_{GS} = 0)	I_{DSS}	–	–	30	nAdc
Drain–Source Breakdown Voltage (V_{GS} = 0, I_D = 100 μAdc)	$V_{(BR)DSX}$	200	–	–	Vdc
Gate Reverse Current (V_{GS} = 15 Vdc, V_{DS} = 0)	I_{GSS}	–	0.01	10	nAdc
ON CHARACTERISTICS (Note 2.)					
Gate Threshold Voltage (I_D = 1.0 mAdc, V_{DS} = V_{GS})	$V_{GS(Th)}$	1.0	–	3.0	Vdc
Static Drain–Source On Resistance	$r_{DS(on)}$				Ohms
BS107 (V_{GS} = 2.6 Vdc, I_D = 20 mAdc)		–	–	28	
(V_{GS} = 10 Vdc, I_D = 200 mAdc)		–	–	14	
BS107A (V_{GS} = 10 Vdc)					
(I_D = 100 mAdc)		–	4.5	6.0	
(I_D = 250 mAdc)		–	4.8	6.4	
SMALL–SIGNAL CHARACTERISTICS					
Input Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)	C_{iss}	–	60	–	pF
Reverse Transfer Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)	C_{rss}	–	6.0	–	pF
Output Capacitance (V_{DS} = 25 Vdc, V_{GS} = 0, f = 1.0 MHz)	C_{oss}	–	30	–	pF
Forward Transconductance (V_{DS} = 25 Vdc, I_D = 250 mAdc)	g_{fs}	200	400	–	mmhos
SWITCHING CHARACTERISTICS					
Turn–On Time	t_{on}	–	6.0	15	ns
Turn–Off Time	t_{off}	–	12	15	ns

2. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

RESISTIVE SWITCHING

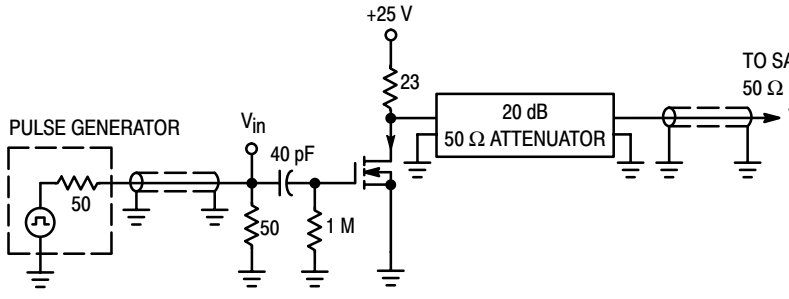


Figure 1. Switching Test Circuit

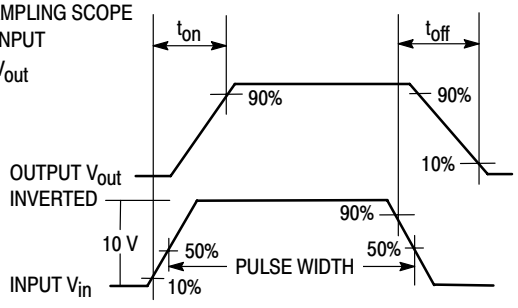


Figure 2. Switching Waveforms

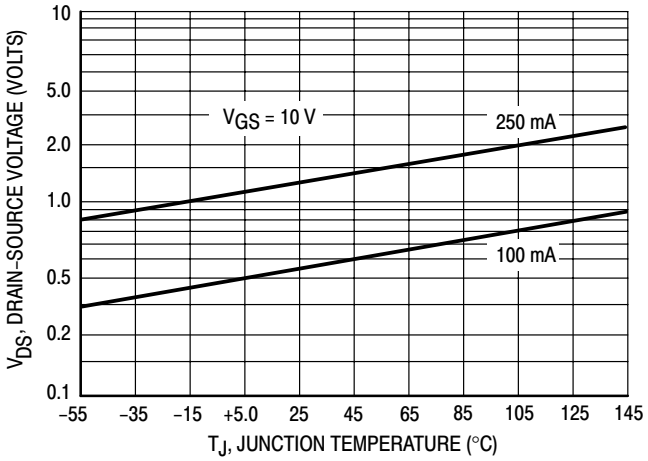


Figure 3. On Voltage versus Temperature

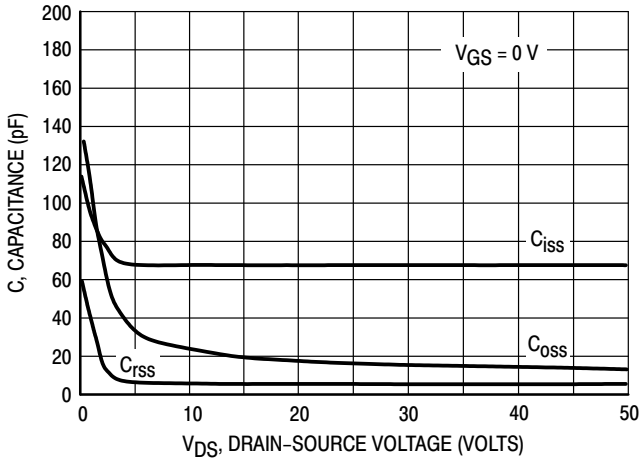


Figure 4. Capacitance Variation

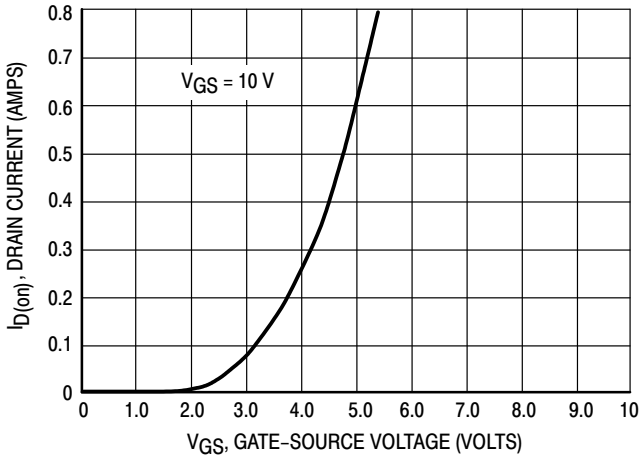


Figure 5. Transfer Characteristic

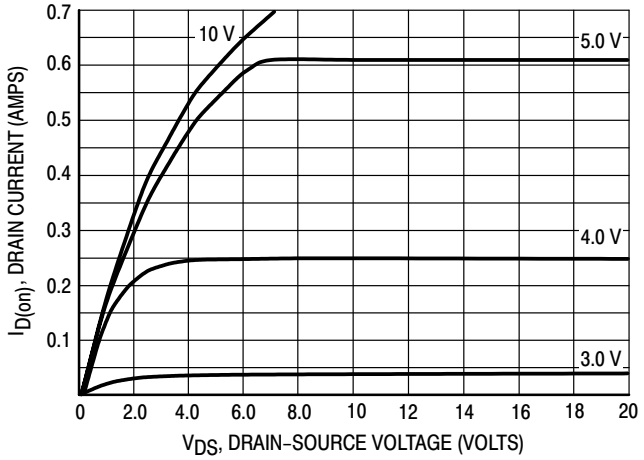


Figure 6. Output Characteristic

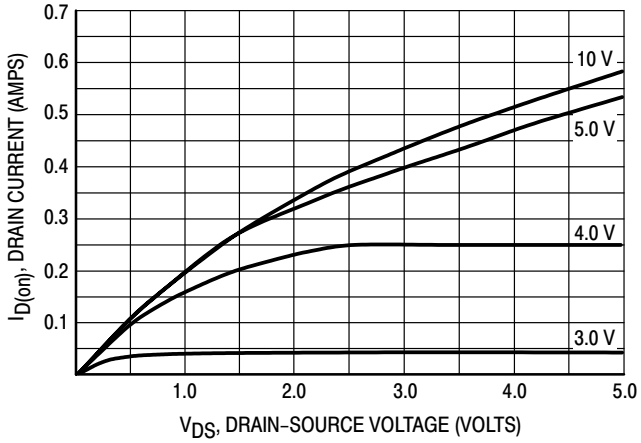


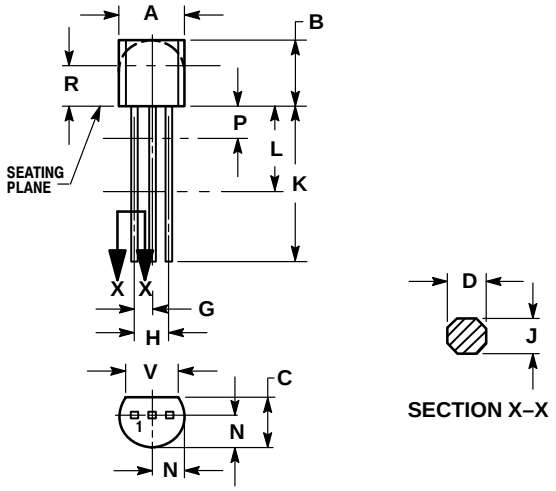
Figure 7. Saturation Characteristic

ORDERING INFORMATION

Device	Package	Shipping
BS107	TO–92	1000 Unit/Box
BS107RLRA	TO–92	2000 Tape & Reel
BS107RL1	TO–92	2000 Tape & Reel
BS107A	TO–92	1000 Units/Box
BS107ARLRM	TO–92	2000 Ammo Pack
BS107ARLRP	TO–92	2000 Ammo Pack
BS107ARL1	TO–92	2000 Tape & Reel

PACKAGE DIMENSIONS

TO–92
CASE 29–11
ISSUE AL



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---

STYLE 30:
PIN 1. DRAIN
2. GATE
3. SOURCE

Notes

Notes

PUBLICATION ORDERING INFORMATION

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