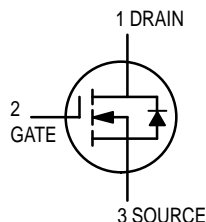
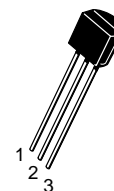


TMOS Switching

N-Channel — Enhancement



BS107
BS107A



CASE 29-04, STYLE 30
TO-92 (TO-226AA)

MAXIMUM RATINGS

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

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Zero-Gate-Voltage Drain Current ($V_{DS} = 130$ Vdc, $V_{GS} = 0$)	I_{DSS}	—	—	30	nAdc
Drain-Source Breakdown Voltage ($V_{GS} = 0$, $I_D = 100 \mu A$ dc)	$V_{(BR)DSX}$	200	—	—	Vdc
Gate Reverse Current ($V_{GS} = 15$ Vdc, $V_{DS} = 0$)	I_{GSS}	—	0.01	10	nAdc

ON CHARACTERISTICS⁽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)		—	4.5	6.0	
($I_D = 100$ mAdc)		—	4.8	6.4	
($I_D = 250$ mAdc)		—	—	—	

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

- The Power Dissipation of the package may result in a lower continuous drain current.
- Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2.0\%$.

RESISTIVE SWITCHING

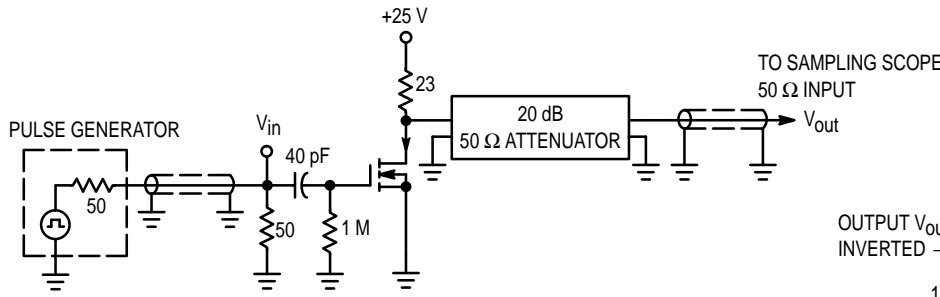


Figure 1. Switching Test Circuit

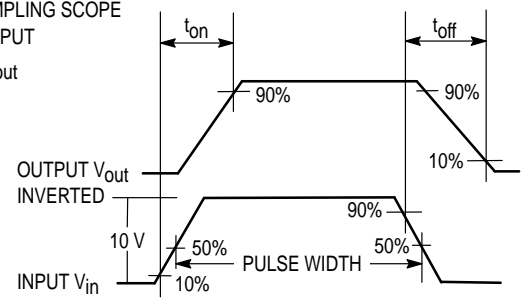


Figure 2. Switching Waveforms

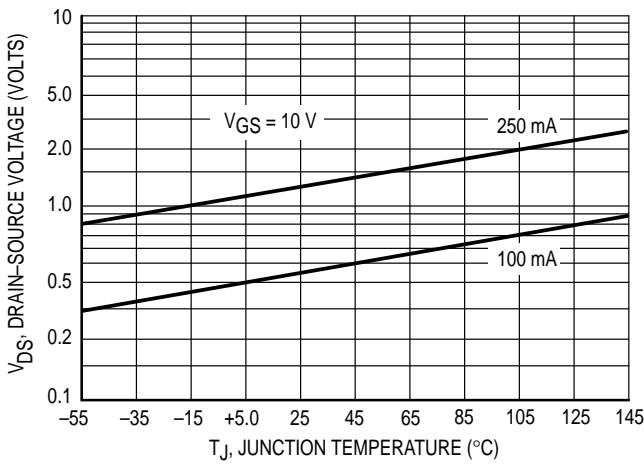


Figure 3. On Voltage versus Temperature

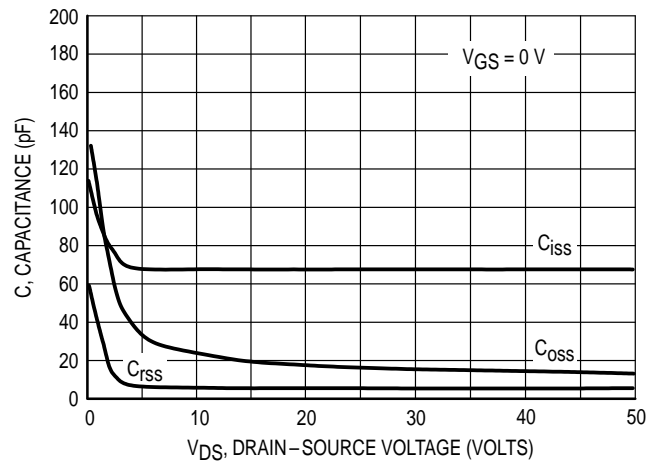


Figure 4. Capacitance Variation

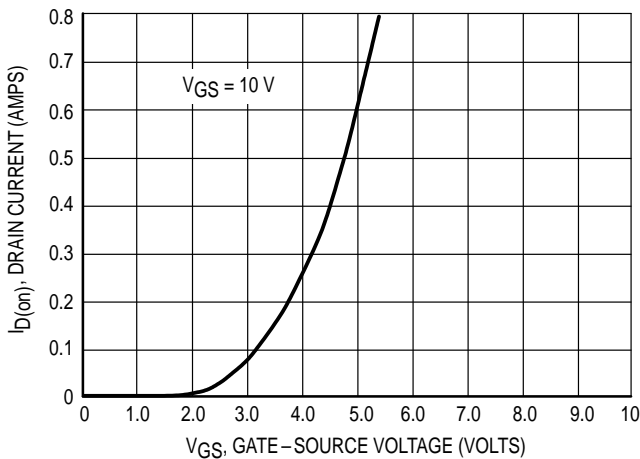


Figure 5. Transfer Characteristic

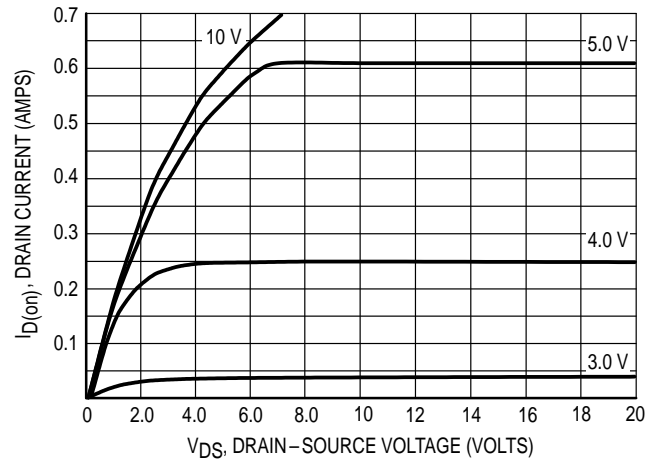


Figure 6. Output Characteristic

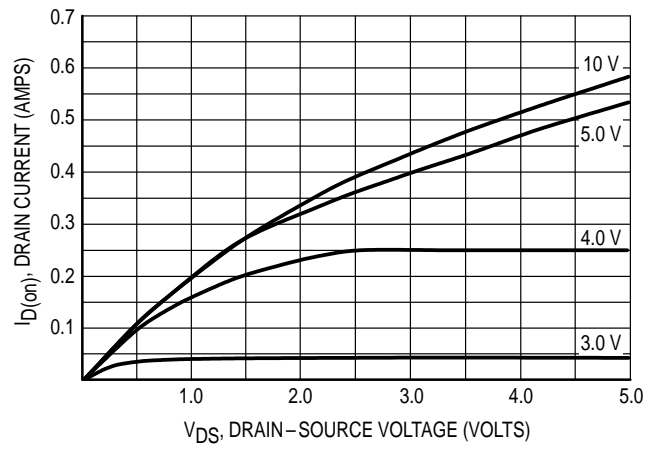
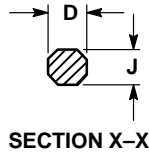
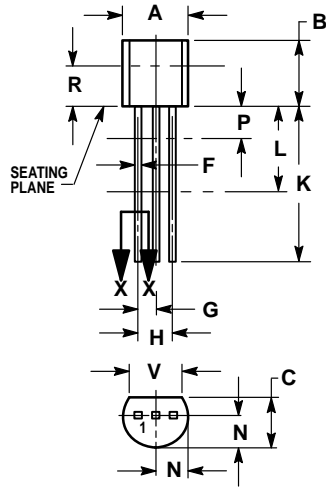


Figure 7. Saturation Characteristic

PACKAGE DIMENSIONS



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	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	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
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	—

CASE 029-04
(TO-226AA)
ISSUE AD

STYLE 30:

1. DRAIN
2. GATE
3. SOURCE

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