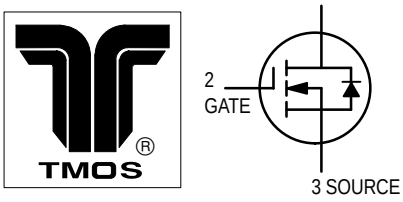
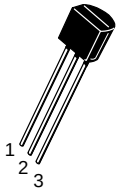
TMOS Switching
N–Channel — Enhancement

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 — Continuous — Non–repetitive ($t_p \leq 50$ μs)	 V_{GS} V_{GSM}	 ±20 ±30	 Vdc Vpk
Drain Current Continuous(1) Pulsed(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

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(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

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%.

REV 1

RESISTIVE SWITCHING

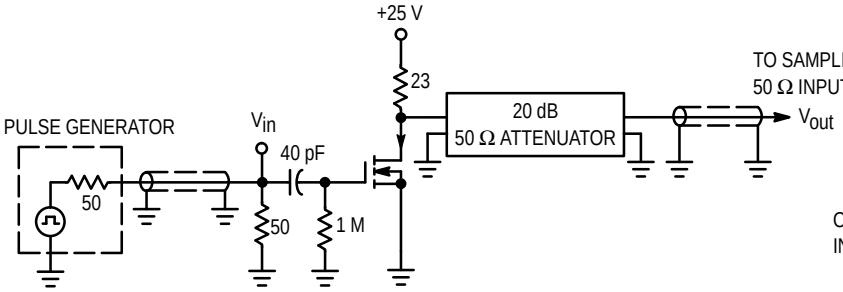


Figure 1. Switching Test Circuit

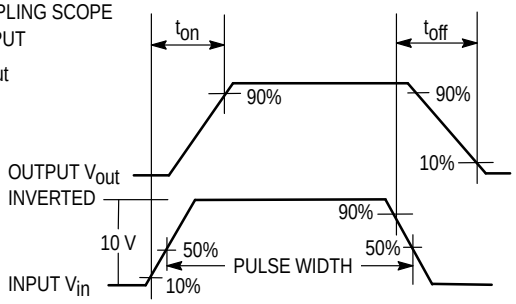


Figure 2. Switching Waveforms

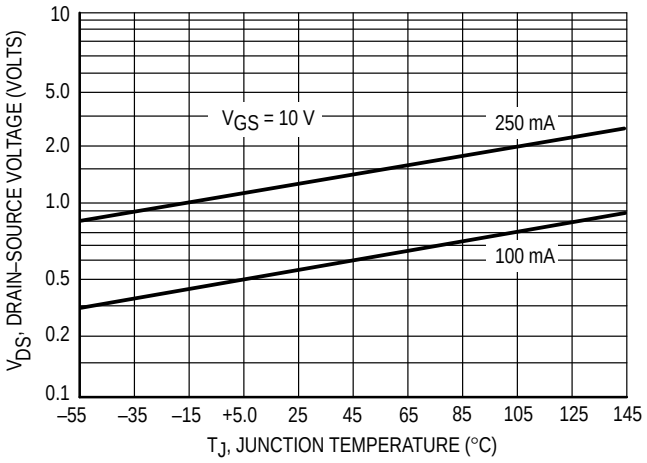


Figure 3. On Voltage versus Temperature

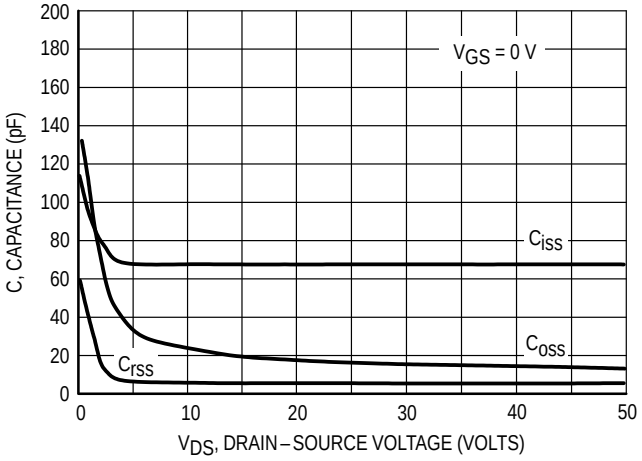


Figure 4. Capacitance Variation

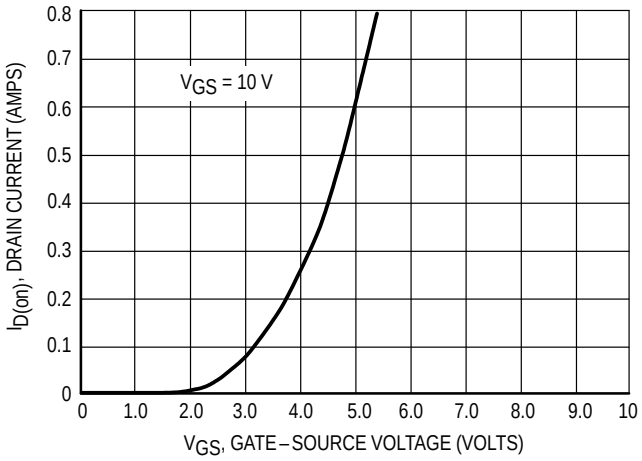


Figure 5. Transfer Characteristic

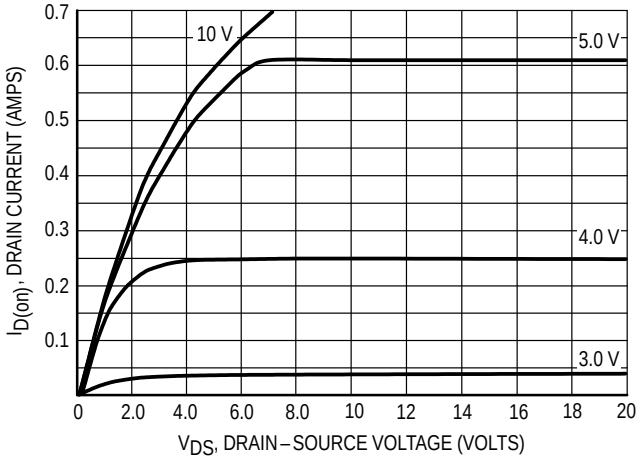


Figure 6. Output Characteristic

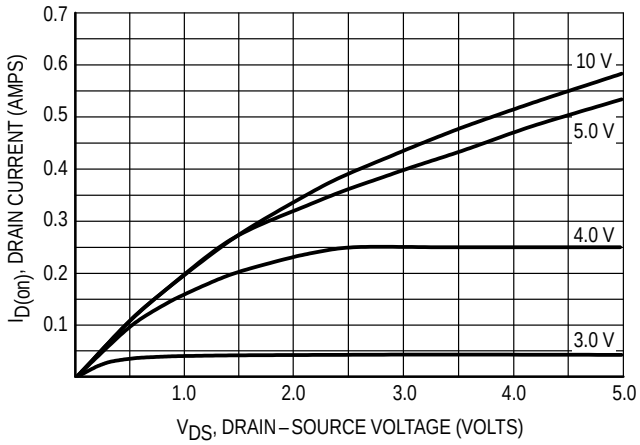
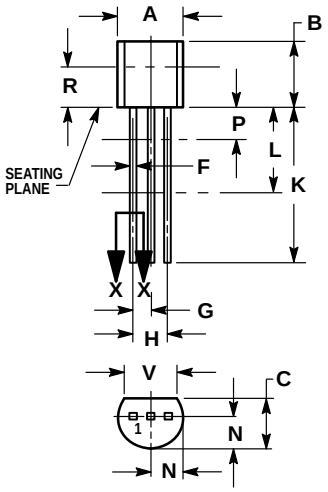
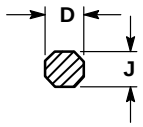


Figure 7. Saturation Characteristic

PACKAGE DIMENSIONS





SECTION X–X

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.

	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	0.022	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:
PIN 1. DRAIN
2. GATE
3. SOURCE

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