

NOS100B ■ NOS101B ■ NOS102B



N-Channel Depletion Mode MOSPOWER

Advance Information

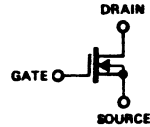
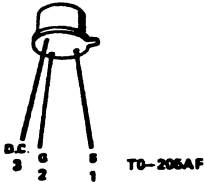
APPLICATIONS

- Current Regulators
- Normally Closed Relay
- Telephone Line Switches

PRODUCT SUMMARY

Part Number	BV _{DSS} Volts	r _{DS(ON)} (ohms)	Package
NOS100B	150	4.5	T0-205AF
NOS101B	120	4.5	T0-206AF
NOS102B	80	4.5	T0-205AF

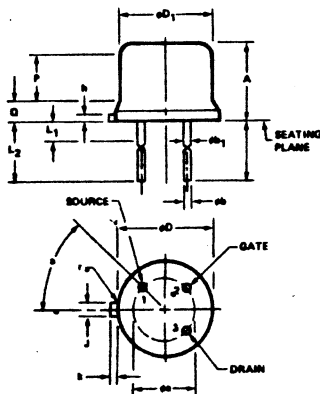
PIN 1 - Source
PIN 2 - Gate
CASE - Drain



ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Parameter	NOS100B	NOS101B	NOS102B	Units
V _{DS}	150	120	80	V
V _{DGR}	150	120	80	V
I _D @ T _C = 25°C	500	500	500	mA
I _D @ T _C = 100°C	500	500	500	mA
I _{DM}	1.8	1.8	1.8	A
V _{GS}	±40	±40	±40	V
P _D @ T _C = 25°C	20	20	20	W
P _D @ T _C = 100°C	8	8	8	W
Junction to Case	Linear Derating Factor	0.16	0.16	W/°C
Junction to Ambient	Linear Derating Factor	5.7	5.7	mW/°C
T _J	Operating and Storage Temperature Range	-40 To 125°C	-40 To 125°C	°C
Lead Temperature	(1/16" from case for 10 secs.)	300	300	°C

- 1 Pulse Test: Pulswidth < 300µsec, Duty Cycle < 2%
- 2 Die Limits Current Capability



Ltr	Dimensions			
	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	0.160	0.180	4.07	4.57
a	0.200 TP		5.08 TP	
eb	0.016	0.021	0.41	0.53
eb1	0.018	0.019	0.41	0.48
ed	0.336	0.370	8.51	9.40
ed1	0.306	0.336	7.75	8.51
h	0.009	0.041	0.23	1.04
i	0.028	0.034	0.71	0.86
k	0.029	0.046	0.74	1.14
L	0.800	0.760	12.70	19.36
L1		0.060		1.27
L2	0.260		6.35	
P	0.100		2.54	
Q		0.060		1.27
r		0.010		0.25
e	45 TP		45 TP	

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

STATIC

Parameter	Type	Min.	Typ.	Max.	Units	Test Conditions
BVDSX Drain-Source Breakdown Voltage	NOS100B	150			V	$V_{GS} = -10\text{V}$ $I_D = 1\text{mA}$
	NOS101B	120			V	
	NOS102B	100			V	
VGS(OFF) Gate-Source Cut Off Voltage	All		-4	-10	V	$V_{DS} = 50\text{V}$, $I_D = 10\mu\text{A}$
IGSSF Gate-Body Leakage Forward	All		10	100	nA	$V_{GS} = 20\text{V}$
IGSSR Gate-Body Leakage Reverse	All		10	100	nA	$V_{GS} = -20\text{V}$
IDSX Drain-Source Off Current	All		1	10	μA	$V_{DS} = 80\text{V}$, $V_{GS} = -10\text{V}$
	All		0.5	1	mA	$V_{DS} = 80\text{V}$, $V_{GS} = -10\text{V}$ $T_C = 125^\circ\text{C}$
ID(on) On-State Drain Current ¹	All	0.2				$V_{DS} > 15\text{V}$, $V_{GS} = 0$
	All	1				$V_{DS} > 15\text{V}$, $V_{GS} = 10\text{V}$
VDS(on) Static Drain-Source On-State Voltage ¹	All			0.45	V	$V_{GS} = 0$, $I_D = 100\text{mA}$
	All					
RDS(on) Static Drain-Source On-State Resistance ¹	All		3.5	4.5	Ω	$V_{GS} = 0$, $I_D = 100\text{mA}$
	All					
RDS(on) Static Drain-Source On-State Resistance ¹	All		5.3		Ω	$V_{GS} = 0$, $I_D = 100\text{mA}$, $T_J = 125^\circ\text{C}$
	All					


DYNAMIC

g_{fs} Forward Transconductance ¹	All		500		mS (U)	$V_{DS} > 2V_{DS(ON)}$, $I_D = 200\text{mA}$
C_{iss} Input Capacitance	All		200		pF	$V_{GS} = -10\text{V}$, $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$
C_{oss} Output Capacitance	All		100		pF	
C_{rss} Reverse Transfer Capacitance	All		40		pF	
$t_{d(on)}$ Turn-On Delay Time	All		10		ns	$V_{DD} = 80\text{V}$, $I_D = 0.1\text{A}$
t_r Rise Time	All		15		ns	$R_g = 25\Omega$, $R_L = 700\Omega$
$t_{d(off)}$ Turn-Off Delay Time	All		8		ns	(MOSFET switching times are essentially independent of operating temperature.)
t_f Fall Time	All				ns	

THERMAL RESISTANCE

R_{thJC} Junction-to-Case	All		4.5	8.25	$^\circ\text{C/W}$	
R_{thJA} Junction-to-Ambient	All		130	175	$^\circ\text{C/W}$	Free Air Operation

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous Source Current (Body Diode)	All			0.5	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier 
	All			1.8	A	
I_{SM} Source Current ¹ (Body Diode)	All					
V_{SD} Diode Forward Voltage ¹	All		0.35	0.45	V	$T_C = 25^\circ\text{C}$, $I_S = 0.1$, $V_{GS} = 0$

¹ Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

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