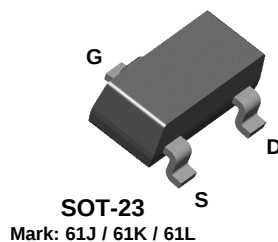
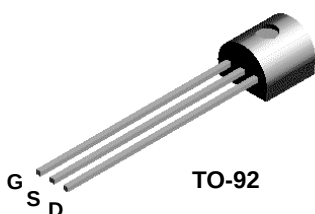


**PN4091
PN4092
PN4093**

**MMBF4091
MMBF4092
MMBF4093**



NOTE: Source & Drain
are interchangeable

N-Channel Switch

This device is designed for low level analog switching, sample and hold circuits and chopper stabilized amplifiers. Sourced from Process 51. See J111 for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{DG}	Drain-Gate Voltage	40	V
V_{GS}	Gate-Source Voltage	- 40	V
I_{GF}	Forward Gate Current	50	mA
T_J, T_{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

1) These ratings are based on a maximum junction temperature of 150 degrees C.

2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max		Units
		PN4091-4093	*MMBF4091-4093	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	350 2.8	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	556	°C/W

*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

N-Channel Switch

(continued)

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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OFF CHARACTERISTICS

V _{(BR)GSS}	Gate-Source Breakdown Voltage	I _G = 1.0 μ A, V _{DS} = 0	- 40		V
V _{GS(off)}	Gate-Source Cutoff Voltage	V _{DS} = 20 V, I _D = 1.0 nA	4091 4092 4093	- 5.0 - 2.0 - 1.0	V V V
I _{DGO}	Drain-Gate Leakage Current	V _{DG} = 20 V, I _S = 0 V _{DG} = 20 V, I _S = 0, T _A = 150°C		- 200 - 400	pA nA
I _{D(off)}	Drain Cutoff Leakage Current	V _{DS} = 20 V, V _{GS} = - 12 V V _{DS} = 20 V, V _{GS} = - 8.0 V V _{DS} = 20 V, V _{GS} = - 6.0 V V _{DS} = 20 V, V _{GS} = - 12 V, T _A = 150°C V _{DS} = 20 V, V _{GS} = - 8.0 V, T _A = 150°C V _{DS} = 20 V, V _{GS} = - 6.0 V, T _A = 150°C	4091 4092 4093 4091 4092 4093	200 200 200 400 400 400	pA pA pA nA nA nA

ON CHARACTERISTICS

I _{DSS}	Zero-Gate Voltage Drain Current*	V _{DS} = 20 V, V _{GS} = 0	4091 4092 4093	30 15 8.0	mA mA mA
V _{DS(on)}	Drain-Source On Voltage	I _D = 6.6 mA, V _{GS} = 0 I _D = 4.0 mA, V _{GS} = 0 I _D = 2.5 mA, V _{GS} = 0	4091 4092 4093	0.2 0.2 0.2	V V V
r _{DS(on)}	Drain-Source On Resistance	I _D = 1.0 mA, V _{GS} = 0	4091 4092 4093	30 50 80	Ω Ω Ω

SMALL-SIGNAL CHARACTERISTICS

r _{ds(on)}	Drain-Source On Resistance	V _{DS} = V _{GS} = 0, f = 1.0 kHz	4091 4092 4093	30 50 80	Ω Ω Ω
C _{iss}	Input Capacitance	V _{DS} = 20, V _{GS} = 0, f = 1.0 MHz		16	pF
C _{rss}	Reverse Transfer Capacitance	V _{GS} = - 20 V, f = 1.0 MHz		5.0	pF

SWITCHING CHARACTERISTICS

t _{on}	Turn-On Time	I _{D(on)} = 12 mA I _{D(on)} = 6.0 mA I _{D(on)} = 3.0 mA	4091 4092 4093	25 35 60	ns ns ns
t _{off}	Turn-Off Time	V _{GS(off)} = 12 V V _{GS(off)} = 6.0 V V _{GS(off)} = 3.0 V	4091 4092 4093	40 60 80	ns ns ns

*Pulse Test: Pulse Width $\leq$ 300 μ s, Duty Cycle $\leq$ 1.0%

PN4091 / 4092 / 4093 / MMBF4091 / 4092 / 4093

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