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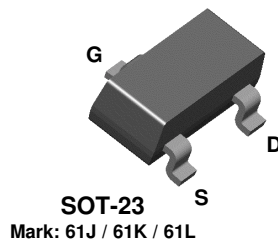
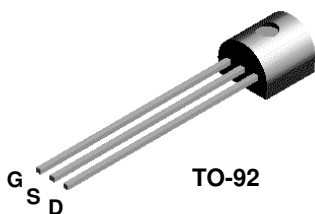
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**PN4091
PN4092
PN4093**

**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	625	350	mW
	Derate above 25°C	5.0	2.8	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	125		°C/W
R _{θJA}	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 μA, V _{DS} = 0		- 40	V
V _{GS(off)}	Gate-Source Cutoff Voltage	V _{DS} = 20 V, I _D = 1.0 nA	4091	- 5.0	- 10
			4092	- 2.0	- 7.0
			4093	- 1.0	- 5.0
I _{DG0}	Drain-Gate Leakage Current	V _{DG} = 20 V, I _S = 0		- 200	pA
		V _{DG} = 20 V, I _S = 0, T _A = 150°C		- 400	nA
I _{D(off)}	Drain Cutoff Leakage Current	V _{DS} = 20 V, V _{GS} = - 12 V	4091		200
		V _{DS} = 20 V, V _{GS} = - 8.0 V	4092		200
		V _{DS} = 20 V, V _{GS} = - 6.0 V	4093		200
		V _{DS} = 20 V, V _{GS} = - 12 V, T _A = 150°C	4091		400
		V _{DS} = 20 V, V _{GS} = - 8.0 V, T _A = 150°C	4092		400
		V _{DS} = 20 V, V _{GS} = - 6.0 V, T _A = 150°C	4093		400

ON CHARACTERISTICS

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

SMALL-SIGNAL CHARACTERISTICS

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

SWITCHING CHARACTERISTICS

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

*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 1.0%

PN4091 / 4092 / 4093 / MMBF4091 / 4092 / 4093

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Datasheet Identification	Product Status	Definition
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