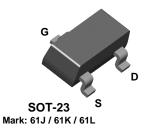


PN4091 PN4092 PN4093 MMBF4091 MMBF4092 **MMBF4093**





NOTE: Source & Drain are interchangeable

N-Channel Switch

This device is designed for low level analog switching, sample and hold circuits and chopper stabalized 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.

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
$R_{\theta JC}$	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)

Symbol	Parameter	Test Conditions	S	Min	Max	Units
OFF CHAF	RACTERISTICS					
V _{(BR)GSS}	Gate-Source Breakdown Voltage	$I_G = 1.0 \mu A, V_{DS} = 0$		- 40		V
V _{GS(off)}	Gate-Source Cutoff Voltage	$V_{DS} = 20 \text{ V}, I_{D} = 1.0 \text{ nA}$	4091	- 5.0	- 10	V
. ,			4092	- 2.0	- 7.0	V
1	Drain-Gate Leakage Current	$V_{DG} = 20 \text{ V}, I_{S} = 0$	4093	- 1.0	- 5.0 - 200	V pA
I _{DGO}	Diain-Gate Leakage Current	$V_{DG} = 20 \text{ V}, \text{ Is} = 0$ $V_{DG} = 20 \text{ V}, \text{ Is} = 0, \text{ T}_{A} = 15$	0°C		- 400	nA
I _{D(off)}	Drain Cutoff Leakage Current	V _{DS} = 20 V, V _{GS} = - 12 V	4091		200	pА
	_	$V_{DS} = 20 \text{ V}, V_{GS} = -8.0 \text{ V}$	4092		200	pА
		$V_{DS} = 20 \text{ V}, V_{GS} = -6.0 \text{ V}$ $V_{DS} = 20 \text{ V}, V_{GS} = -12 \text{ V},$	4093		200	pA
		$T_A = 150^{\circ}C$	4091		400	nA
		$V_{DS} = 20 \text{ V}, V_{GS} = -8.0 \text{ V},$				
		T _A = 150°C	4092		400	nA
		$V_{DS} = 20 \text{ V}, V_{GS} = -6.0 \text{ V},$			400	nA
		$T_A = 150^{\circ}C$	4093		400	ША
ON CHARA	ACTERISTICS Zero-Gate Voltage Drain Current*	$V_{DS} = 20 \text{ V}, V_{GS} = 0$	4091	30		mA
500		, 55 , 55 ;	4092	15		mA
			4093	8.0		mA
V _{DS(on)}	Drain-Source On Voltage	$I_D = 6.6 \text{ mA}, V_{GS} = 0$	4091		0.2	V V
		$I_D = 4.0 \text{ mA}, V_{GS} = 0$ $I_D = 2.5 \text{ mA}, V_{GS} = 0$	4092 4093		0.2 0.2	V
r _{DS(on)}	Drain-Source On Resistance	$I_D = 1.0 \text{ mA}, V_{GS} = 0$	4091		30	Ω
103(011)		1.5 1.6 1.12 1, 1.65	4092		50	Ω
			4093		80	Ω
	GNAL CHARACTERISTICS	Tv. v. o.(.4011b	4004	Т	I 00	
r _{ds(on)}	Drain-Source On Resistance	$V_{DS} = V_{GS} = 0$, f= 1.0 kHz	4091 4092		30 50	Ω
			4093		80	Ω
Ciss	Input Capacitance	$V_{DS} = 20, V_{GS} = 0, f = 1.0 N$	ЛНz		16	pF
C _{rss}	Reverse Transfer Capacitance	V _{GS} = - 20 V, f = 1.0 MHz			5.0	pF
SWITCHII t _{on}	NG CHARACTERISTICS Turn-On Time	$I_{D(on)} = 12 \text{ mA}$	4091		25 35	ns ns
		$I_{D(on)} = 6.0 \text{ mA}$	4092 4093		60	ns
t _o u	Turn-Off Time	$I_{D(on)} = 3.0 \text{ mA}$ $V_{GS(off)} = 12 \text{ V}$	4093		40	ns
t _{off}		$V_{GS(off)} = 12 \text{ V}$ $V_{GS(off)} = 6.0 \text{ V}$	4091		60	ns
		1 V(3S(OH) - 0.0 V				

^{*}Pulse Test: Pulse Width \leq 300 μ s, Duty Cycle \leq 1.0%

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