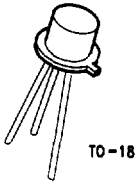




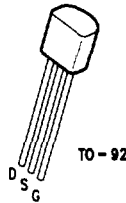
**2N4391
2N4392
2N4393**



TO-18

TL/G/10100-9

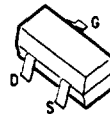
**PN4391
PN4392
PN4393**



TO-92

TL/G/10100-2

**MMBF4391
MMBF4392
MMBF4393**



TO-236
(SOT-23)

TL/G/10100-6

General Purpose N-Channel JFET Transistor

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Min	Typ	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage ($I_G = 1.0 \mu\text{Adc}$, $V_{DS} = 0$)	30			Vdc
I_{GSS}	Gate Reverse Current ($V_{GS} = 15 \text{ Vdc}$, $V_{DS} = 0$) ($V_{GS} = 15 \text{ Vdc}$, $V_{DS} = 0$, $T_A = 100^\circ\text{C}$)			1.0 0.2	nAdc μAdc
$I_{D(off)}$	Drain-Cutoff Current ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 12 \text{ Vdc}$) ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 12 \text{ Vdc}$, $T_A = 100^\circ\text{C}$)			1.0 0.1	nAdc μAdc
V_{GS}	Gate Source Voltage ($V_{DS} = 15 \text{ Vdc}$, $I_D = 10 \text{ nAdc}$)	4391 4392 4393	4.0 2.0 0.5	10 5.0 3.0	Vdc
ON CHARACTERISTICS					
I_{DSS}	Zero-Gate-Voltage Drain Current, (Note 1) ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$)	4391 4392 4393	60 25 5.0	130 75 30	mAdc
$V_{DS(on)}$	Drain-Source On-Voltage ($I_D = 12 \text{ mAdc}$, $V_{GS} = 0$) ($I_D = 6.0 \text{ mAdc}$, $V_{GS} = 0$) ($I_D = 3.0 \text{ mAdc}$, $V_{GS} = 0$)	4391 4392 4393		0.4 0.4 0.4	Vdc
$r_{DS(on)}$	Static Drain-Source On Resistance ($I_D = 1.0 \text{ mAdc}$, $V_{GS} = 0$)	4391 4392 4393		30 60 100	Ω

General Purpose N-Channel JFET Transistor (Continued)**Electrical Characteristics** $T_A = 25^\circ\text{C}$ unless otherwise noted (Continued)

Symbol	Parameter	Min	Typ	Max	Units
SMALL-SIGNAL CHARACTERISTICS					
$ y_{fs} $	Forward Transfer Admittance				
	($V_{DS} = 15\text{ Vdc}$, $I_D = 60\text{ mAdc}$, $f = 1.0\text{ kHz}$)	4391	20		mmhos
	($V_{DS} = 15\text{ Vdc}$, $I_D = 25\text{ mAdc}$, $f = 1.0\text{ kHz}$)	4392	17		
	($V_{DS} = 15\text{ Vdc}$, $I_D = 5.0\text{ mAdc}$, $f = 1.0\text{ kHz}$)	4393	12		
$r_{DS(on)}$	Drain-Source On Resistance				
	($V_{GS} = 0$, $I_D = 0$, $f = 1.0\text{ kHz}$)	4391		30	Ω
		4392		60	
		4393		100	
C_{iss}	Input Capacitance		8.0	14	V
C_{rss}	Reverse Transfer Capacitance				
	($V_{GS} = 12\text{ Vdc}$, $V_{DS} = 0$, $f = 1.0\text{ MHz}$)		2.5	3.5	pF
	($V_{DS} = 15\text{ Vdc}$, $I_D = 10\text{ mAdc}$, $f = 1.0\text{ MHz}$)		3.2		
SWITCHING CHARACTERISTICS					
t_r	Rise Time (See Figure 2)				
	($I_{D(on)} = 12\text{ mAdc}$)	4391	1.2	5.0	ns
	($I_{D(on)} = 6.0\text{ mAdc}$)	4392	2.0	5.0	
	($I_{D(on)} = 3.0\text{ mAdc}$)	4393	2.5	5.0	
t_f	Fall Time (See Figure 4)				
	($V_{GS(off)} = 12\text{ Vdc}$)	4391	7.0	15	ns
	($V_{GS(off)} = 7.0\text{ Vdc}$)	4392	15	20	
	($V_{GS(off)} = 5.0\text{ Vdc}$)	4393	29	35	
t_{on}	Turn-On Time (See Figures 1 and 2)				
	($I_{D(on)} = 12\text{ mAdc}$)	4391	3.0	15	ns
	($I_{D(on)} = 6.0\text{ mAdc}$)	4392	4.0	15	
	($I_{D(on)} = 3.0\text{ mAdc}$)	4393	6.5	15	
t_{off}	Turn-Off Time (See Figures 3 and 4)				
	($V_{GS(off)} = 12\text{ Vdc}$)	4391	10	20	ns
	($V_{GS(off)} = 7.0\text{ Vdc}$)	4392	20	35	
	($V_{GS(off)} = 5.0\text{ Vdc}$)	4393	37	55	

Note 1: Pulse Width $\leq 100\ \mu\text{s}$, Duty Cycle $\leq 1.0\%$.

Note 2: For characteristics curves, see Process 51.