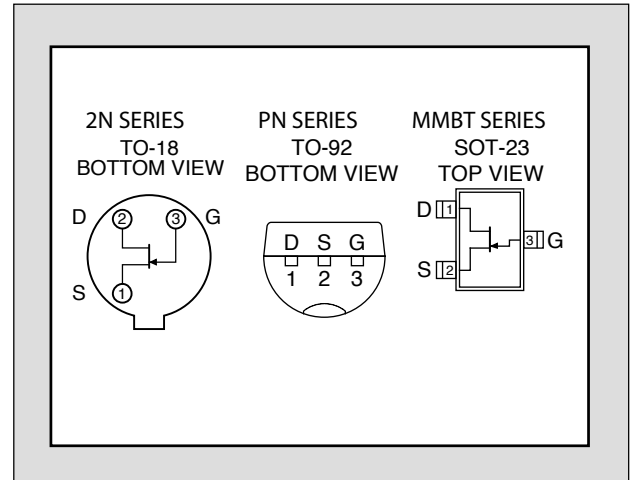


2N3971 / PN4391,2,3 / MMBT4391

SERIES

SINGLE N-CHANNEL JFET SWITCH

FEATURES	
Replacement for Siliconix 2N3971 /PN/ 4391, 4392, & 4393	
LOW ON RESISTANCE	$r_{DS(on)} \leq 30\Omega$
FAST SWITCHING	$t_{ON} \leq 15ns$
ABSOLUTE MAXIMUM RATINGS ¹ @ 25 °C (unless otherwise stated)	
Maximum Temperatures	
Storage Temperature (2N3971)	-65 to 200° C
Storage Temperature (PN/MMBT)	-55 to 150° C
Junction Operating Temperature 2N3971	-55 to 200° C
Junction Operating Temperature (PN 4391,2,3)	-55 to 150° C
Maximum Power Dissipation	
Continuous Power Dissipation 2N3971	180mW
Continuous Power Dissipation (PN/MMBT)	350mW
Maximum Currents	
Gate Current	50mA
Maximum Voltages	
Gate to Drain or Source 2N3971	-40V
Gate to Drain or Source (MMBT)	-35V



STATIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

SYM.	CHARACTERISTIC	TYP	2N3971		PN4392		PN4393		UNIT	CONDITIONS	
			MIN	MAX	MIN	MAX	MIN	MAX			
BV _{GSS}	Gate to Source Breakdown Voltage	2N3971	-40		-40		-40		V	I _G = -1μA, V _{DS} = 0V	
		MMBT	-35		-35		-35				
V _{GS(off)}	Gate to Source Cutoff Voltage	2N3971	-2	-5	-2	-5	-0.5	-3			V _{DS} = 20V, I _D = 1nA
		MMBT	-4	-10	-2	-5	-0.5	-3			V _{DS} = 15V, I _D = 10nA
V _{GS(F)}	Gate to Source Forward Voltage	0.7		1		1		1			I _G = 1mA, V _{DS} = 0V
V _{DS(on)}	Drain to Source On Voltage		0.25					0.4			V _{GS} = 0V, I _D = 3mA
			0.3			0.4			V _{GS} = 0V, I _D = 6mA		
			0.35	0.4					V _{GS} = 0V, I _D = 12mA		
I _{DSS}	Drain to Source Saturation Current ²	2N3971	25	75	25	75	5	30	mA	V _{DS} = 20V, V _{GS} = 0V	
		PN	50	100	25	100	5	60			
		MMBT	50		25		5				
I _{GSS}	Gate Leakage Current	2N3971	-5	-100		-100		-100	pA	V _{GS} = -20V, V _{DS} = 0V	
		PN	-5	-1000		-1000		-1000			
I _G	Gate Operating Current	-5							pA	V _{DG} = 15V, I _D = 10mA	

STATIC ELECTRICAL CHARACTERISTICS CONT. @25 °C (unless otherwise stated)

SYM.	CHARACTERISTIC	TYP	2N3971		PN4392		PN4393		UNIT	CONDITIONS
			MIN	MAX	MIN	MAX	MIN	MAX		
I _{D(off)}	Drain Cutoff Current	2N3941	5					100	pA	V _{DS} = 20V, V _{GS} = -5V
			5			100				V _{DS} = 20V, V _{GS} = -7V
			5	250						V _{DS} = 20V, V _{GS} = -12V
		PN4392,3	5					1000		V _{DS} = 20V, V _{GS} = -5V
			5			1000				V _{DS} = 20V, V _{GS} = -7V
			5	1000						V _{DS} = 20V, V _{GS} = -12V
		MMBT	5		100	100		100		V _{DS} = 10V, V _{GS} = -10V
r _{DS(on)}	Drain to Source On Resistance			30		60		100	Ω	V _{GS} = 0V, I _D = 1 mA

DYNAMIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

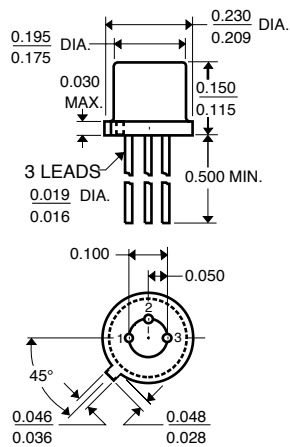
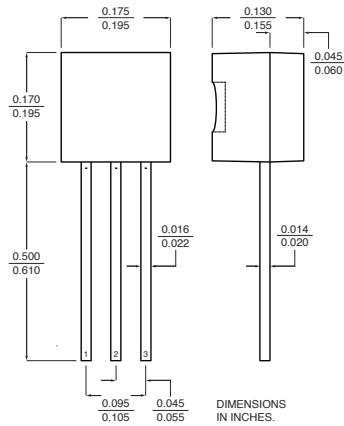
SYM.	CHARACTERISTIC	TYP	2N3971		PN4392		PN4393		UNIT	CONDITIONS
			MIN	MAX	MIN	MAX	MIN	MAX		
g _{fs}	Forward Transconductance	6							mS	V _{DS} = 20V, I _D = 1mA
g _{os}	Output Conductance	25							μS	f = 1 kHz
r _{ds(on)}	Drain to Source On Resistance			30		60		100	Ω	V _{GS} = 0V, I _D = 0A f = 1 kHz
C _{iss}	Input Capacitance	2N3971	12	14	14	14	14		pF	V _{DS} = 20V, V _{GS} = 0V f = 1 MHz
		PN	12	16	16	16	16			
		MMBT	13							
C _{rss}	Reverse Transfer Capacitance	2N3971	3.3					3.5	pF	V _{DS} = 0V, V _{GS} = -5V f = 1 MHz
		PN	3.5					5		
		MMBT	3.6							
		2N3971	3.2			3.5				V _{DS} = 0V, V _{GS} = -7V f = 1 MHz
		PN	3.4			5				
		MMBT	3.5							
		2N3971	2.8	3.5						V _{DS} = 0V, V _{GS} = -12V f = 1 MHz
		PN	3.0	5						
MMBT	3.1									
e _n	Equivalent Input Noise Voltage	3							nV/√Hz	V _{DS} = 10V, I _D = 10mA f = 1 kHz

SWITCHING ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

SYM.	CHARACTERISTIC	TYP	2N3971		4392		4393		UNIT	CONDITIONS
			MIN	MAX	MIN	MAX	MIN	MAX		
t _{d(on)}	Turn On Time	2N/PN	2	15		15		15	ns	V _{DD} = 10V, V _{GS(H)} = 0V
t _r		MMBT	2							
		2N/PN	2	5		5		5		
t _{d(off)}		MMBT	2							
	2N/PN	6	20		35		50			
t _f	Turn Off Time	2N/PN	13	15		20		30		
		MMBT	13							

SWITCHING CIRCUIT CHARACTERISTICS

SYM.	4391	4392	4393
$V_{GS(L)}$	-12V	-7V	-5V
R_L	800 Ω	1600 Ω	3200 Ω
$I_{D(on)}$	12mA	6mA	3mA

**TO-18
Three Lead**

TO-92

SOT-23
