

CentralTM Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

2N4391
2N4392
2N4393

SILICON N-CHANNEL
JUNCTION FIELD-EFFECT
TRANSISTOR

JEDEC TO-18 CASE

DESCRIPTION

The CENTRAL SEMICONDUCTOR 2N4391 series types are N-Channel Junction Field Effect Transistors designed for analog switching and chopper applications.

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

	SYMBOL		UNITS
Drain-Gate Voltage	V_{DG}	40	V
Source-Gate Voltage	V_{SG}	40	V
Gate Current	I_G	50	mA
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	1.8	W
Operating and Storage			
Junction Temperature	T_J, T_{stg}	-65 to +175	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	TEST CONDITIONS	2N4391		2N4392		2N4393		UNITS
		MIN	MAX	MIN	MAX	MIN	MAX	
I_{GSS}	$V_{GS} = 20\text{V}$		0.1		0.1		0.1	nA
I_{GSS}	$V_{GS} = 20\text{V}, T_A = 125^\circ\text{C}$		0.2		0.2		0.2	μA
I_{DSS}	$V_{DS} = 20\text{V}$	50	150	25	75	5.0	30	mA
$I_{D(off)}$	$V_{DS} = 20\text{V}, V_{GS} = 12\text{V}$		0.1		-		-	nA
$I_{D(off)}$	$V_{DS} = 20\text{V}, V_{GS} = 7.0\text{V}$		-		0.1		-	nA
$I_{D(off)}$	$V_{DS} = 20\text{V}, V_{GS} = 5.0\text{V}$		-		-		0.1	nA
$I_{D(off)}$	$V_{DS} = 20\text{V}, V_{GS} = 12\text{V}, T_A = 150^\circ\text{C}$		0.2		-		-	μA
$I_{D(off)}$	$V_{DS} = 20\text{V}, V_{GS} = 7.0\text{V}, T_A = 150^\circ\text{C}$		-		0.2		-	μA
$I_{D(off)}$	$V_{DS} = 20\text{V}, V_{GS} = 5.0\text{V}, T_A = 150^\circ\text{C}$		-		-		0.2	μA
BV_{GSS}	$I_G = 1.0\mu\text{A}$	40		40		40		V
$V_{GS(off)}$	$V_{DS} = 20\text{V}, I_D = 1.0\text{nA}$	4.0	10	2.0	5.0	0.5	3.0	V
$V_{GS(f)}$	$V_{DS} = 0, I_G = 1.0\text{mA}$		1.0		1.0		1.0	V
$V_{DS(on)}$	$I_D = 12\text{mA}$		0.4		-		-	V
$V_{DS(on)}$	$I_D = 6.0\text{mA}$		-		0.4		-	V
$V_{DS(on)}$	$I_D = 3.0\text{mA}$		-		-		0.4	V
$r_{DS(on)}$	$I_D = 1.0\text{mA}, V_{GS} = 0$		30		60		100	Ω
$r_{ds(on)}$	$I_D = 0, V_{GS} = 0, f = 1.0\text{kHz}$		30		60		100	Ω

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>2N4391</u>		<u>2N4392</u>		<u>2N4393</u>		<u>UNITS</u>
		<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>	<u>MIN</u>	<u>MAX</u>	
C_{rss}	$V_{DS}=0, V_{GS}=12\text{V}, f=1.0\text{MHz}$		3.5		-		-	pF
C_{rss}	$V_{DS}=0, V_{GS}=7.0\text{V}, f=1.0\text{MHz}$		-		3.5		-	pF
C_{rss}	$V_{DS}=0, V_{GS}=5.0\text{V}, f=1.0\text{MHz}$		-		-		3.5	pF
C_{iss}	$V_{DS}=20\text{V}, V_{GS}=0, f=1.0\text{MHz}$		14		14		14	pF
t_r	$I_{D(on)}=12\text{mA}$		5.0		-		-	ns
t_r	$I_{D(on)}=6.0\text{mA}$		-		5.0		-	ns
t_r	$I_{D(on)}=3.0\text{mA}$		-		-		5.0	ns
t_f	$V_{GS(off)}=12\text{V}$		15		-		-	ns
t_f	$V_{GS(off)}=7.0\text{V}$		-		20		-	ns
t_f	$V_{GS(off)}=5.0\text{V}$		-		-		30	ns
t_{on}	$I_{D(on)}=12\text{mA}$		15		-		-	ns
t_{on}	$I_{D(on)}=6.0\text{mA}$		-		15		-	ns
t_{on}	$I_{D(on)}=3.0\text{mA}$		-		-		15	ns
t_{off}	$V_{GS(off)}=12\text{V}$		20		-		-	ns
t_{off}	$V_{GS(off)}=7.0\text{V}$		-		35		-	ns
t_{off}	$V_{GS(off)}=5.0\text{V}$		-		-		50	ns

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