

2N3970, 2N3971, 2N3972

N-Channel Silicon Junction Field-Effect Transistor

- Low $r_{DS(on)}$
- $I_{D(off)} < 250$ pA
- Fast Switching

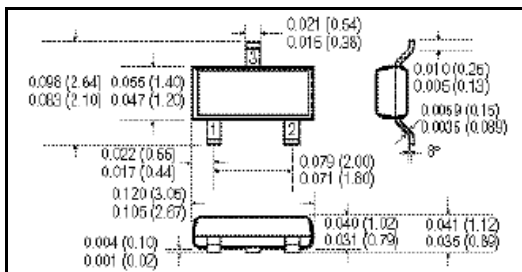
Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Reverse Gate Source & Gate Drain Voltage	-40V
Continuous Forward Gate Current	50 mA
Continuous Device Power Dissipation	300 mW
Power Derating	1.7 mW/°C
Operating Temperature Range	-55°C to +125°C
Storage Temperature Range	-65°C to +150°C

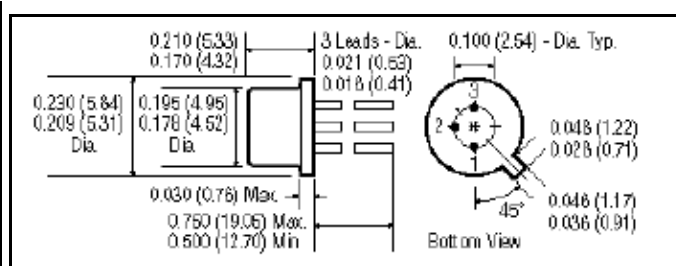
At 25°C free air temperature Static Electrical Characteristics		2N3970		2N3971		2N3972		Process NJ132	
		Min	Max	Min	Max	Min	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	-40		-40		-40		V	$I_G = -1$ uA, $V_{DS} = 0$ V
Gate Reverse Current	I_{GSS}		-1		-1		-1	nA	$V_{GS} = -20$ V, $V_{DS} = 0$ V
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	-4	-10	-2	-5	-0.5	-3	V	$V_{DS} = 20$ V, $I_D = 1$ nA
Drain Reverse Current	I_{DGO}		250 500		250 500		250 500	pA nA	$V_{DG} = 20$ V, $I_S = 0$ A 150°C
Drain Cutoff Current	$I_{D(off)}$		250 500		250 500		250 500	pA nA	$V_{DS} = 20$ V, $V_{GS} = -12$ V 150°C
Drain Source On Voltage	$V_{DS(ON)}$		1 (20)		1.5 (10)		2 (5)	V	$V_{GS} = 0$ V, $I_D = ()$ mA
Drain Saturation Current (pulsed)	I_{DSS}	50	150	25	75	5	30	mA	$V_{DS} = 20$ V, $V_{GS} = 0$ V

Dynamic Electrical Characteristics

Drain -Source On Resistance	$r_{ds(on)}$		30		60		100	Ω	$V_{GS} = 0$ V, $I_D = 0$ A f = 1 kHz
Common-Source Input Capacitance	C_{iss}		25		25		25	pF	$V_{DS} = -20$ V, $V_{GS} = 0$ V f = 1 MHz
Common-Source Reverse Transfer Capacitance	C_{rss}		6		6		6	pF	$V_{DS} = 0$ V, $V_{GS} = -12$ V f = 1 MHz
Turn-On Delay Time	t_d		10		15		40	nS	$V_{DD} = 10$ V, $V_{GS(on)} = 0$ V
Rise Time	t_r		10		15		40	nS	$V_{DD} = 10$ V, $V_{GS(on)} = 0$ V
Turn-Off Time	t_{off}		30		60		100	nS	$V_{DD} = 10$ V, $V_{GS(on)} = 0$ V



SOT-23: SMP3970, SMP3971, SMP3972
1-Source, 2-Drain, 3-Gate



TO-18: 2N3970, 2N3971, 2N3972
1-Source, 2-Drain, 3-Gate & Case

Dimensions
in Inches
(mm)



715 N. Glenville Dr., Ste. 400
Richardson, TX 75081
(972) 238-9700 Fax (972) 238-5338
www.interfet.com