

J176, J177

P-Channel Silicon Junction Field-Effect Transistor

- Choppers
- Commutators
- Analog Switches

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

Reverse Gate Source & Reverse Gate Drain Voltage

– 30 V

Continuous Forward Gate Current

50 mA

Continuous Device Power Dissipation

360 mW

Power Derating

3.27 mW/°C

At 25°C free air temperature:

Static Electrical Characteristics

		J176		J177		Process PJ99	
		Min	Max	Min	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	30		30		V	$I_G = 1\ \mu\text{A}$, $V_{DS} = 0\text{V}$
Gate Reverse Current	I_{GSS}		1		1	nA	$V_{GS} = 20\text{V}$, $V_{DS} = 0\text{V}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	1	4	0.8	2.25	V	$V_{DS} = -15\text{V}$, $I_D = -10\text{nA}$
Drain Saturation Current (Pulsed)	I_{DSS}	– 2	– 35	– 1.5	– 20	mA	$V_{DS} = -15\text{V}$, $V_{GS} = 0\text{V}$
Drain Cutoff Current	$I_{D(OFF)}$		– 1		– 1	nA	$V_{DS} = -15\text{V}$, $V_{GS} = 10\text{V}$

Dynamic Electrical Characteristics

Max

Max

Drain Source ON Resistance	$r_{ds(on)}$	250	300	Ω	$V_{GS} = 0$, $V_{DS} \leq 0.1\text{V}$	$f = 1\text{ kHz}$
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Dynamic Electrical Characteristics

Typ

Typ

Drain Gate Capacitance	C_{gd}	5.5	5.5	pF	$V_{DS} = 0\text{V}$, $V_{GS} = 10\text{V}$	$f = 1\text{ MHz}$
Source Gate Capacitance	C_{gs}	5.5	5.5	pF	$V_{DS} = 0\text{V}$, $V_{GS} = 10\text{V}$	$f = 1\text{ MHz}$
Drain Gate + Source Gate Capacitance	$C_{gd} + C_{gs}$	32	32	pF	$V_{DS} = V_{GS} = 0\text{V}$	$f = 1\text{ MHz}$

Switching Characteristics

Turn ON Delay Time	$t_{d(on)}$	15	20	ns	J176 J177	
Rise Time	t_r	20	25	ns		V_{DD} – 6 V
Turn OFF Delay Time	$t_{d(off)}$	15	20	ns		$V_{GS(OFF)}$ 6 V
Fall Time	t_f	20	25	ns		R_L 5.6 k Ω
					$V_{GS(ON)}$ $\emptyset$	$\emptyset$ V

TO-226AA Package

Dimensions in Inches (mm)

Pin Configuration

1 Drain, 2 Gate, 3 Source

Surface Mount

SMPJ176, SMPJ177



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