

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 | | Unit | Process PJ99 | |
|-----------------------------------|---------------|------|------|-------|------|------|--|--|
| | | Min | Max | Min | Max | | Test Conditions | |
| Gate Source Breakdown Voltage | $V_{(BR)GSS}$ | 30 | | 30 | | V | $I_G = 1\ \mu\text{A}, V_{DS} = \emptyset\text{V}$ | |
| Gate Reverse Current | I_{GSS} | | 1 | | 1 | nA | $V_{GS} = 20\text{V}, V_{DS} = \emptyset\text{V}$ | |
| 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 | $V_{DS} = -15\text{V}, V_{GS} = \emptyset\text{V}$ | |
| 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 | $V_{GS} = \emptyset, V_{DS} < = 0.1\text{V}$ | | $f = 1\ \text{kHz}$ |

Dynamic Electrical Characteristics

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

Switching Characteristics

| | | | | ns | | | | |
|---------------------|--------------|----|----|----|---------------|-------------|-------------|----------|
| | | | | | J176 | J177 | | |
| Turn ON Delay Time | $t_{d(on)}$ | 15 | 20 | ns | V_{DD} | - 6 | - 6 | V |
| Rise Time | t_r | 20 | 25 | ns | $V_{GS(OFF)}$ | 6 | 3 | V |
| Turn OFF Delay Time | $t_{d(off)}$ | 15 | 20 | ns | R_L | 5.6k | 10k | Ω |
| Fall Time | t_f | 20 | 25 | ns | $V_{GS(ON)}$ | \emptyset | \emptyset | V |

TO-226AA Package

Dimensions in Inches (mm)

Pin Configuration

1 Drain, 2 Gate, 3 Source

Surface Mount

SMPJ176, SMPJ177

