

J174; J175; J176; J177

P-channel silicon field-effect transistors

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

| | | | | |
|---|--------------|------|-------------|------------------|
| Drain-source voltage | $\pm V_{DS}$ | max. | 30 | V |
| Gate-source voltage | V_{GSO} | max. | 30 | V |
| Gate-drain voltage | V_{GDO} | max. | 30 | V |
| Gate current (DC) | $-I_G$ | max. | 50 | mA |
| Total power dissipation up to $T_{amb} = 50^\circ\text{C}$ | P_{tot} | max. | 400 | mW |
| Storage temperature range | T_{stg} | | -65 to +150 | $^\circ\text{C}$ |
| Junction temperature | T_j | max. | 150 | $^\circ\text{C}$ |

THERMAL RESISTANCE

| | | | | |
|--------------------------------------|---------------|---|-----|-----|
| From junction to ambient in free air | $R_{th\ j-a}$ | = | 250 | K/W |
|--------------------------------------|---------------|---|-----|-----|

STATIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise specified

| | | J174 | J175 | J176 | J177 |
|---|----------------------------|-----------|---------|---------|---------------|
| Gate cut-off current $V_{GS} = 20\text{ V}; V_{DS} = 0$ | I_{GSS} max. | 1 | 1 | 1 | 1 nA |
| Drain cut-off current $-V_{DS} = 15\text{ V}; V_{GS} = 10\text{ V}$ | $-I_{DSX}$ max. | 1 | 1 | 1 | 1 nA |
| Drain current $-V_{DS} = 15\text{ V}; V_{GS} = 10\text{ V}$ | $-I_{DSS}$ min. max. | 20 135 | 7 70 | 2 35 | 1.5 20 mA |
| Gate-source breakdown voltage $I_G = 1\ \mu\text{A}; V_{DS} = 0$ | $V_{(BR)GSS}$ min. | 30 | 30 | 30 | 30 V |
| Gate-source cut-off voltage $-I_D = 10\text{ nA}; V_{DS} = -15\text{ V}$ | $V_{GS\ off}$ min. max. | 5 10 | 3 6 | 1 4 | 0.8 2.25 V |
| Drain-source ON-resistance $-V_{DS} = 0.1\text{ V}; V_{GS} = 0$ | R_{Dson} max. | 85 | 125 | 250 | 300 Ω |

DYNAMIC CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise specified

Input capacitance, $f = 1\text{ MHz}$

| | | | | |
|---|----------|------|----|----|
| $V_{GS} = 10\text{ V}; V_{DS} = 0\text{ V}$ | C_{is} | typ. | 8 | pF |
| $V_{GS} = V_{DS} = 0$ | C_{is} | typ. | 30 | pF |

Feedback capacitance, $f = 1\text{ MHz}$

| | | | | |
|---|----------|------|---|----|
| $V_{GS} = 10\text{ V}; V_{DS} = 0\text{ V}$ | C_{rs} | typ. | 4 | pF |
|---|----------|------|---|----|

Switching times (see Fig.2 + 3)

| | | J174 | J175 | J176 | J177 |
|---------------|----------------|------|------|------|-------|
| Delay time | t_d typ. | 2 | 5 | 15 | 20 ns |
| Rise time | t_r typ. | 5 | 10 | 20 | 25 ns |
| Turn-on time | t_{on} typ. | 7 | 15 | 35 | 45 ns |
| Storage time | t_s typ. | 5 | 10 | 15 | 20 ns |
| Fall time | t_f typ. | 10 | 20 | 20 | 25 ns |
| Turn-off time | t_{off} typ. | 15 | 30 | 35 | 45 ns |

Test conditions:

| | | | | |
|---------------|-----|------|------|---------------|
| $-V_{DD}$ | 10 | 6 | 6 | 6 V |
| $V_{GS\ off}$ | 12 | 8 | 6 | 3 V |
| R_L | 560 | 1200 | 2000 | 2900 Ω |
| $V_{GS\ on}$ | 0 | 0 | 0 | 0 V |

