

2SK1223

Silicon N-channel Power F-MOS FET

■ Features

- Low ON resistance $R_{DS(on)}$: $R_{DS(on)1} = 0.02\Omega$ (typ.)
- High switching rate : $t_r = 350\text{ns}$ (typ.)
- No secondary breakdown
- High breakdown voltage

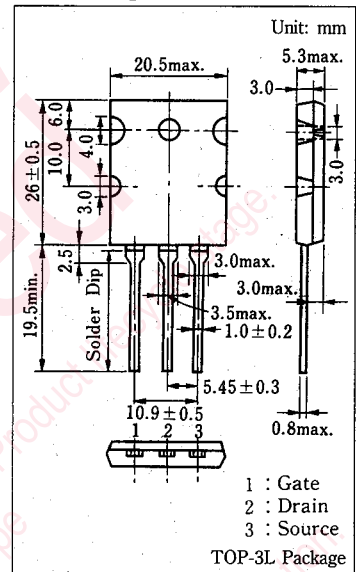
■ Application

- DC-DC converter
- No contact relay
- Solenoid drive
- Motor drive

■ Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

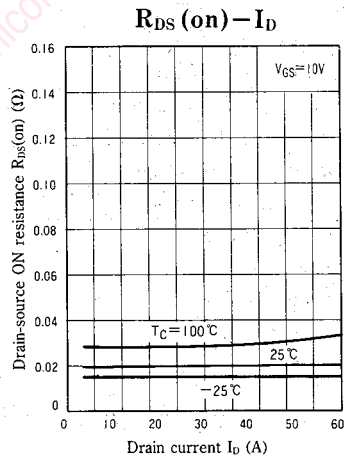
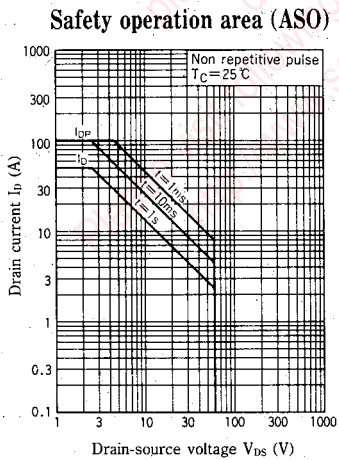
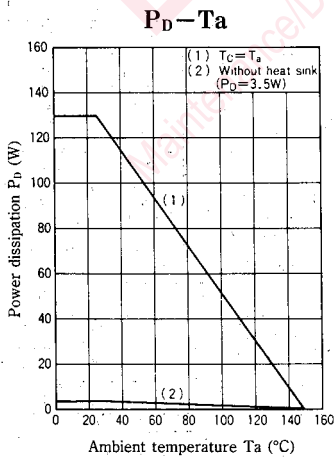
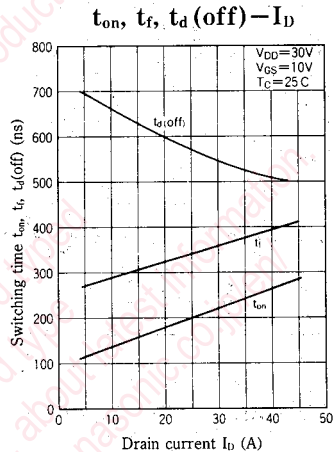
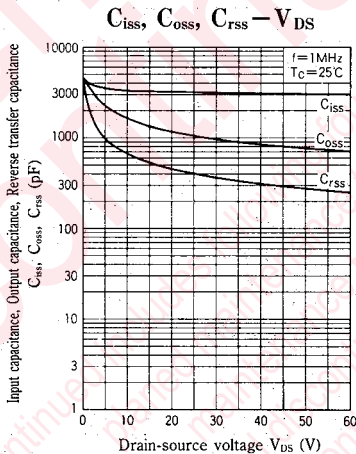
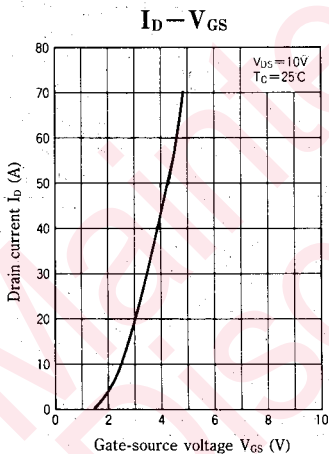
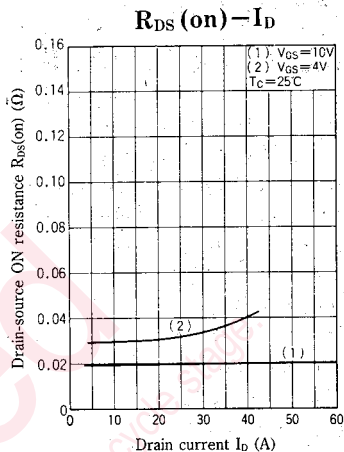
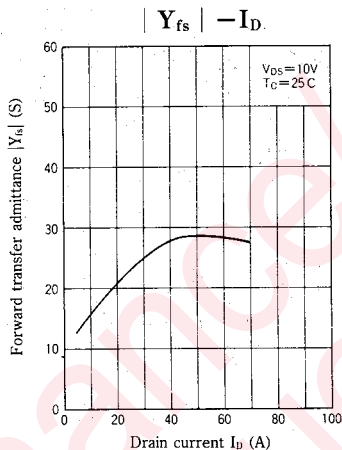
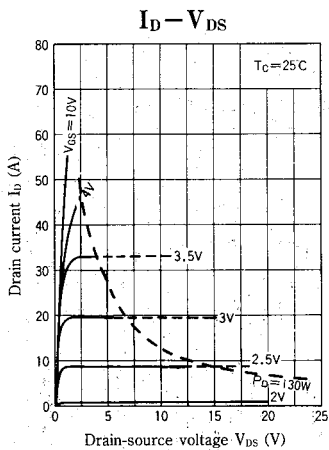
| Item | Symbol | Value | Unit |
|----------------------|--------------------|--------------------------|------------------|
| Drain-source voltage | V_{DSS} | 60 | V |
| Gate-source voltage | V_{GSS} | ± 20 | V |
| Drain current | At 4V driving | I_D | 25 |
| | DC | I_D | 50 |
| | Peak-to-peak value | I_{DP} | 100 |
| Power dissipation | P_D | $T_c = 25^\circ\text{C}$ | 130 |
| | | $T_a = 25^\circ\text{C}$ | 3.5 |
| Channel temperature | T_{ch} | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | $-55 \sim +150$ | $^\circ\text{C}$ |

■ Package Dimensions



■ Electrical Characteristics ($T_c = 25^\circ\text{C}$)

| Item | Symbol | Condition | min. | typ. | max. | Unit | |
|------------------------------|-------------------|---|------|------|---------|---------------|----|
| Drain current | I_{DSS} | $V_{DS} = 40\text{V}, V_{GS} = 0$ | | | 10 | μA | |
| Gate-source current | I_{GSS} | $V_{GS} = \pm 20\text{V}, V_{DS} = 0$ | | | ± 1 | μA | |
| Drain-source voltage | V_{DSS} | $I_D = 1\text{mA}, V_{GS} = 0$ | 60 | | | V | |
| Gate threshold voltage | V_{th} | $V_{DS} = 10\text{V}, I_D = 1\text{mA}$ | 1 | | 2.5 | V | |
| Drain-source ON resistance | $R_{DS(on)1}$ | $V_{GS} = 10\text{V}, I_D = 25\text{A}$ | | 0.02 | 0.03 | Ω | |
| Drain-source ON resistance | $R_{DS(on)2}$ | $V_{GS} = 4\text{V}, I_D = 13\text{A}$ | | 0.03 | 0.045 | Ω | |
| Drain-source ON voltage | $V_{DS(on)}$ | $V_{GS} = 10\text{V}, I_{DS} = 50\text{A}$ | | | 1.7 | V | |
| Forward transfer admittance | $ Y_{fs} $ | $V_{DS} = 10\text{V}, I_D = 25\text{A}$ | 12 | 25 | | S | |
| Input capacitance | C_{iss} | $V_{DS} = 10\text{V}, V_{GS} = 0, f = 1\text{MHz}$ | | 3200 | | pF | |
| Output capacitance | C_{oss} | | | | 1600 | | pF |
| Reverse transfer capacitance | C_{rss} | | | | 550 | | pF |
| Turn-on time | t_{on} | $V_{GS} = 10\text{V}, I_D = 25\text{A}$ $V_{DD} = 30\text{V}, R_L = 1.2\Omega$ | | 200 | | ns | |
| Fall time | t_f | | | 350 | | ns | |
| Delay time | $t_d(\text{off})$ | | | 580 | | ns | |



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