

2SK430(L), 2SK430(S)

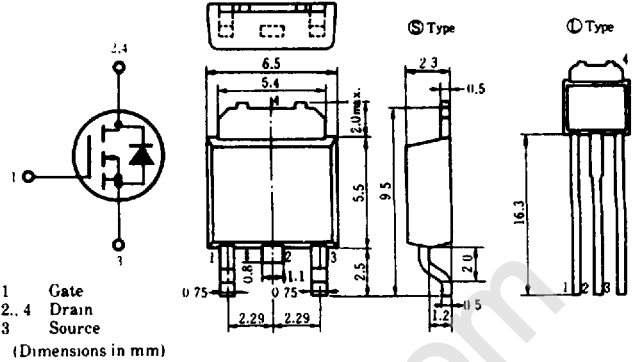
HITACHI/(OPTOELECTRONICS)

SILICON N-CHANNEL MOS FET

HIGH SPEED POWER SWITCHING
HIGH FREQUENCY POWER AMPLIFIER

■ FEATURES

- Low On-Resistance.
- High Speed Switching.
- High Cutoff Frequency.
- No Secondary Breakdown.
- Suitable for Switching Regulator and DC-DC Converter.



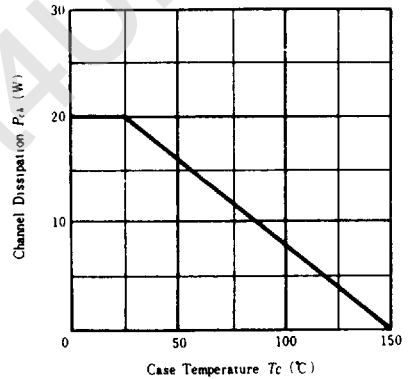
(DPAK)

■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

| Item | Symbol | Rating | Unit |
|--|----------------------|-----------------|------------------|
| Drain-Source Voltage | V_{DS} | 150 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Drain Current | I_D | 3 | A |
| Drain Peak Current | $I_{D(\text{peak})}$ | 6 | A |
| Body-Drain Diode Reverse Drain Current | I_{DR} | 3 | A |
| Channel Dissipation | P_{ch}^* | 20 | W |
| Channel Temperature | T_{ch} | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | $-55 \sim +150$ | $^\circ\text{C}$ |

*Value at $T_c=25^\circ\text{C}$

POWER VS. TEMPERATURE DERATING

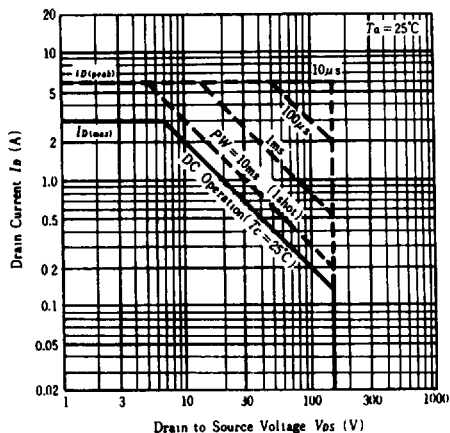


■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

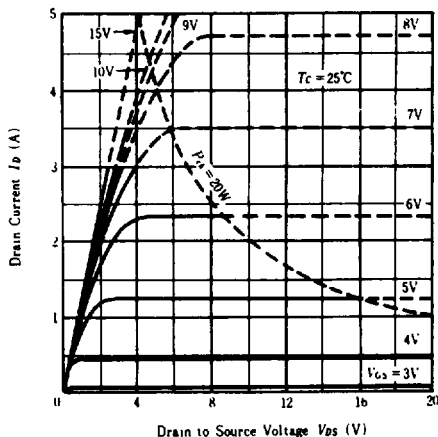
| Item | Symbol | Test Condition | min. | typ. | max. | Unit |
|---|---------------|---|------|------|---------|---------------|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $I_D=10\text{mA}, V_{GS}=0$ | 150 | — | — | V |
| Gate-Source Leak Current | I_{GSS} | $V_{GS}=\pm 20\text{V}, V_{DS}=0$ | — | — | ± 1 | μA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=120\text{V}, V_{GS}=0$ | — | — | 1 | mA |
| Gate-Source Cutoff Voltage | $V_{GS(off)}$ | $I_D=1\text{mA}, V_{DS}=10\text{V}$ | 1.0 | — | 4.0 | V |
| Static Drain-Source On State Resistance | $R_{DS(on)}$ | $I_D=2\text{A}, V_{GS}=15\text{V}^*$ | — | 0.8 | 1.0 | Ω |
| Drain-Source Saturation Voltage | $V_{DS(on)}$ | $I_D=2\text{A}, V_{GS}=15\text{V}^*$ | — | 1.6 | 2.0 | V |
| Forward Transfer Admittance | $ y_{fs} $ | $I_D=2\text{A}, V_{DS}=10\text{V}^*$ | 0.5 | 0.9 | — | S |
| Input Capacitance | C_{iss} | $V_{DS}=10\text{V}, V_{GS}=0, f=1\text{MHz}$ | — | 260 | — | pF |
| Output Capacitance | C_{oss} | | — | 100 | — | pF |
| Reverse Transfer Capacitance | C_{rss} | | — | 14 | — | pF |
| Turn-on Delay Time | $t_{A(on)}$ | $I_D=2\text{A}, V_{GS}=15\text{V}, R_L=15\Omega$ | — | 10 | — | ns |
| Rise Time | t_r | | — | 25 | — | ns |
| Turn-off Delay Time | $t_{A(off)}$ | | — | 30 | — | ns |
| Fall Time | t_f | | — | 20 | — | ns |
| Body-Drain Diode Forward Voltage | V_{DF} | $I_F=2\text{A}, V_{GS}=0$ | — | 0.8 | — | V |
| Body-Drain Diode Reverse Recovery Time | t_{rr} | $I_F=2\text{A}, V_{GS}=0$ $dI_F/dt=50\text{A}/\mu\text{s}$ | — | 200 | — | ns |

*Pulse Test

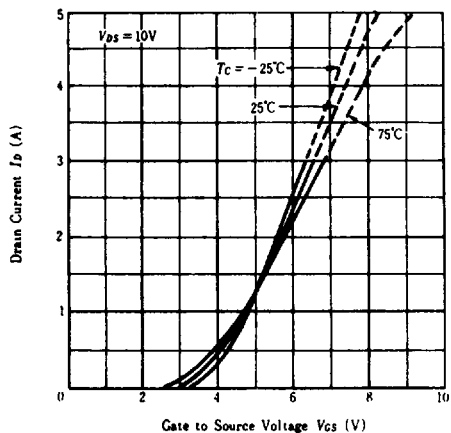
MAXIMUM SAFE OPERATION AREA



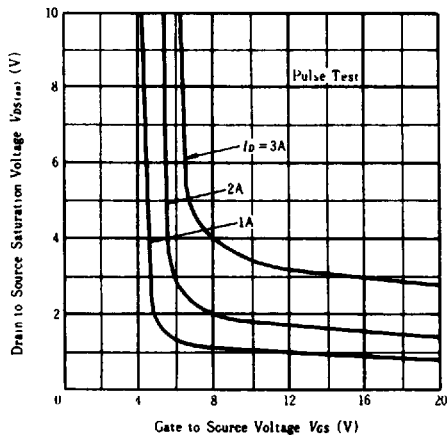
TYPICAL OUTPUT CHARACTERISTICS



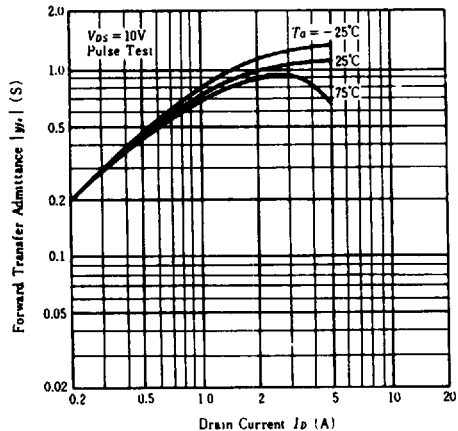
TYPICAL TRANSFER CHARACTERISTICS



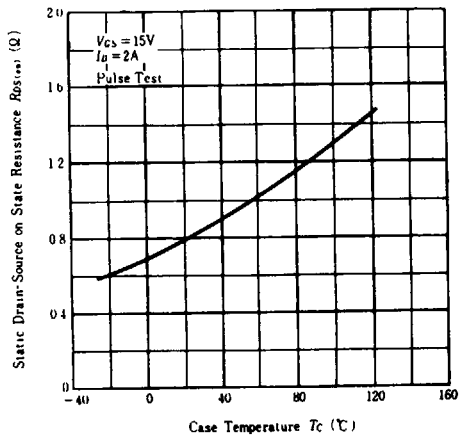
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



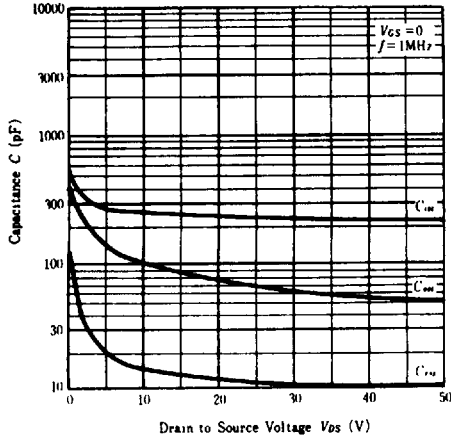
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



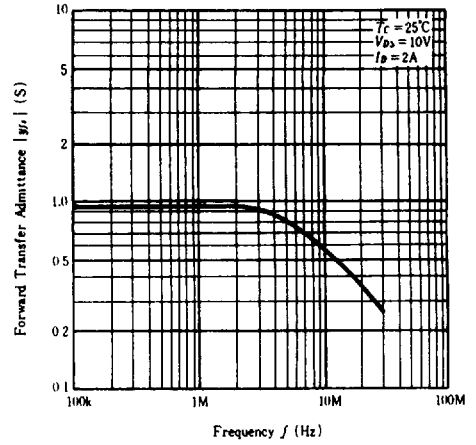
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



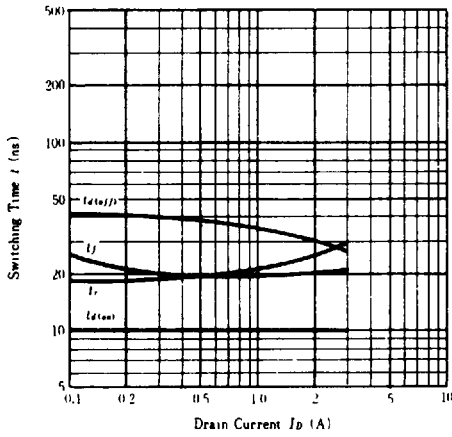
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



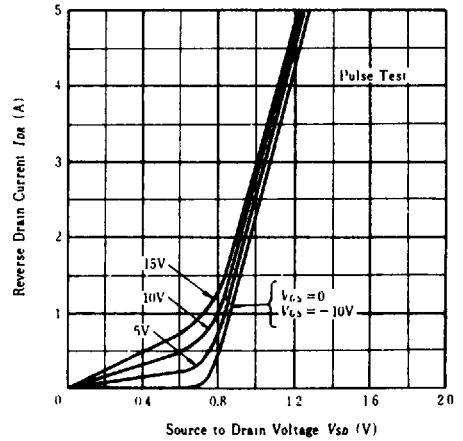
FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



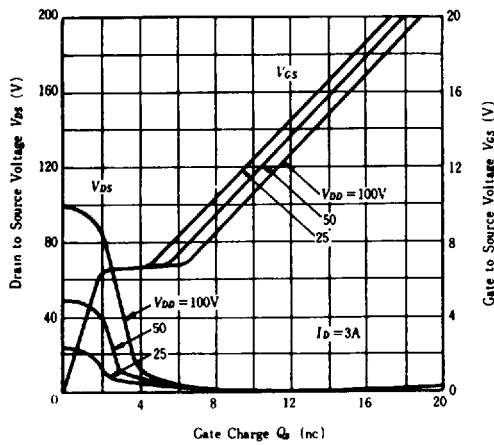
SWITCHING CHARACTERISTICS



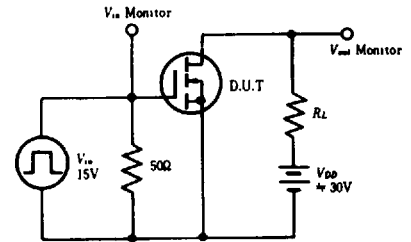
MAXIMUM BODY-DRAIN DIODE FORWARD VOLTAGE



DYNAMIC INPUT CHARACTERISTICS



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

