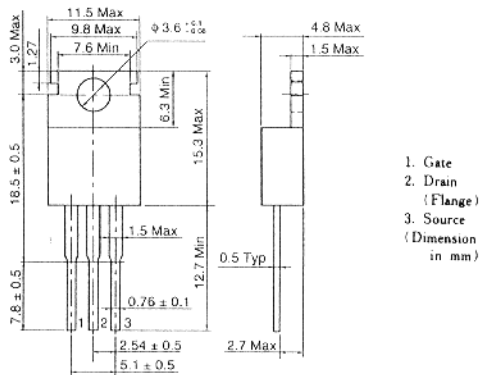
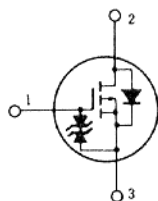


2SJ173

SILICON P-CHANNEL MOS FET HIGH SPEED POWER SWITCHING

FEATURES

- Low On-Resistance
- High Speed Switching
- Low Drive Current
- 4 V Gate Drive Device
 - Can be driven from 5 V source
- Suitable for Motor Drive, DC-DC Converter, Power Switch and Solenoid Drive



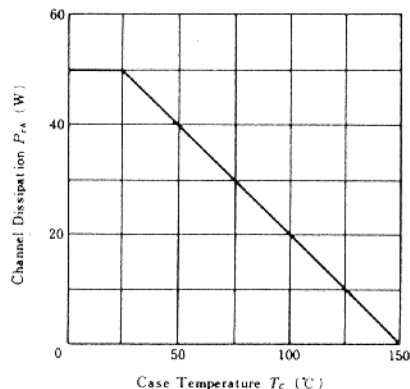
(JEDEC TO-220AB)

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

| Item | Symbol | Rating | Unit |
|--|------------------|------------|------------------|
| Drain-Source Voltage | V_{DS} | -60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Drain Current | I_D | -15 | A |
| Drain Peak Current | $I_{D(pulse)}$ * | -60 | A |
| Body-Drain Diode Reverse Drain Current | I_{DR} | -15 | A |
| Channel Dissipation | P_{ch} ** | 50 | W |
| Channel Temperature | T_{ch} | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 ~ +150 | $^\circ\text{C}$ |

* $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$
** Value at $T_c = 25^\circ\text{C}$

POWER VS. TEMPERATURE DERATING

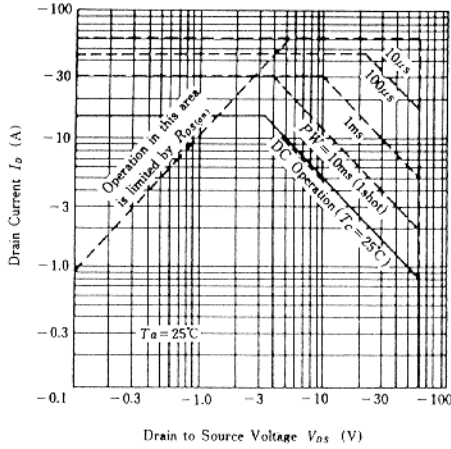


ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

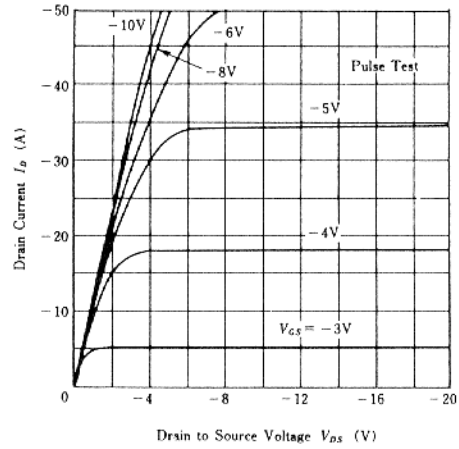
| Item | Symbol | Test Condition | min. | typ. | max. | Unit |
|---|---------------|--|----------|------|----------|---------------|
| Drain-Source Breakdown Voltage | $V_{(BR)DS}$ | $I_D = -10\text{mA}$, $V_{GS} = 0$ | -60 | — | — | V |
| Gate-Source Breakdown Voltage | $V_{(BR)GS}$ | $I_G = \pm 100 \mu\text{A}$, $V_{DS} = 0$ | ± 20 | — | — | V |
| Gate-Source Leak Current | I_{GSS} | $V_{GS} = \pm 16\text{V}$, $V_{DS} = 0$ | — | — | ± 10 | μA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS} = -50\text{V}$, $V_{GS} = 0$ | — | — | -250 | μA |
| Gate-Source Cutoff Voltage | $V_{GS(off)}$ | $I_D = -1\text{mA}$, $V_{DS} = -10\text{V}$ | -1.0 | — | -2.0 | V |
| Static Drain-Source on State Resistance | $R_{DS(on)}$ | $I_D = -8\text{A}$, $V_{GS} = -10\text{V}^*$ | — | 0.09 | 0.11 | Ω |
| | | $I_D = -8\text{A}$, $V_{GS} = -4\text{V}^*$ | — | 0.13 | 0.17 | |
| Forward Transfer Admittance | $ y_{fs} $ | $I_D = -8\text{A}$, $V_{DS} = -10\text{V}^*$ | 6.0 | 9.5 | — | S |
| Input Capacitance | C_{iss} | $V_{DS} = -10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$ | — | 1400 | — | pF |
| Output Capacitance | C_{oss} | | — | 720 | — | pF |
| Reverse Transfer Capacitance | C_{riss} | | — | 220 | — | pF |
| Turn-on Delay Time | $t_{d(on)}$ | | — | 15 | — | ns |
| Rise Time | t_r | $I_D = -8\text{A}$, $V_{GS} = -10\text{V}$, $R_L = 3.75 \Omega$ | — | 120 | — | ns |
| Turn-off Delay Time | $t_{d(off)}$ | | — | 220 | — | ns |
| Fall Time | t_f | | — | 160 | — | ns |
| Body-Drain Diode Forward Voltage | V_{DF} | $I_F = -15\text{A}$, $V_{GS} = 0$ | — | -1.2 | — | V |
| Body-Drain Diode Reverse Recovery Time | t_{rr} | $I_F = -15\text{A}$, $V_{GS} = 0$ $di_F/dt = 50\text{A}/\mu\text{s}$ | — | 230 | — | ns |

* Pulse Test

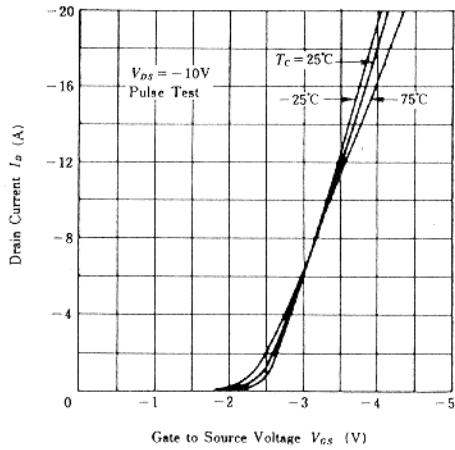
MAXIMUM SAFE OPERATION AREA



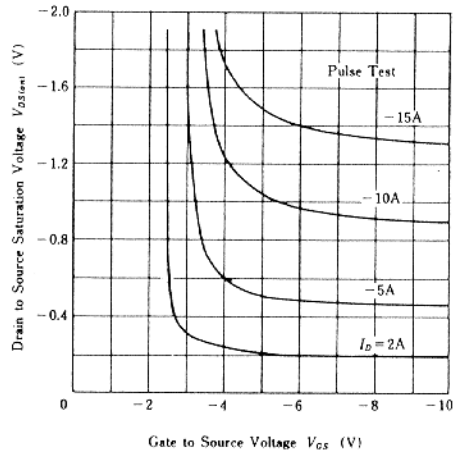
TYPICAL OUTPUT CHARACTERISTICS



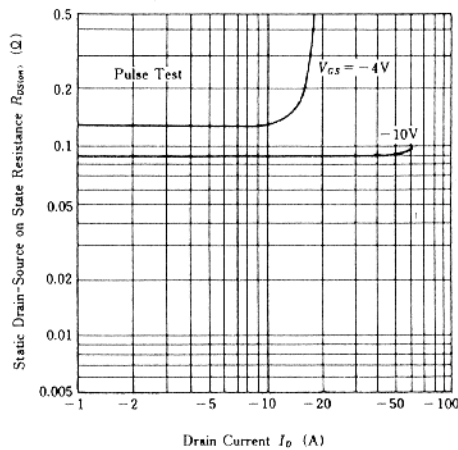
TYPICAL TRANSFER CHARACTERISTICS



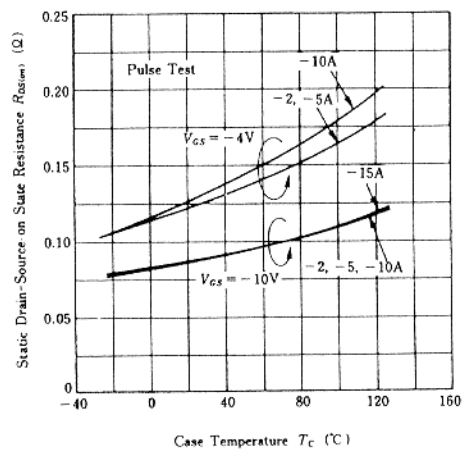
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



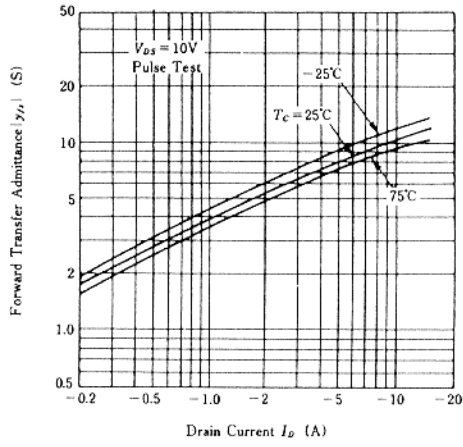
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT



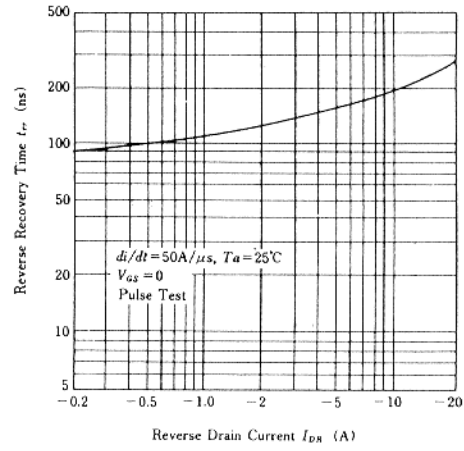
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



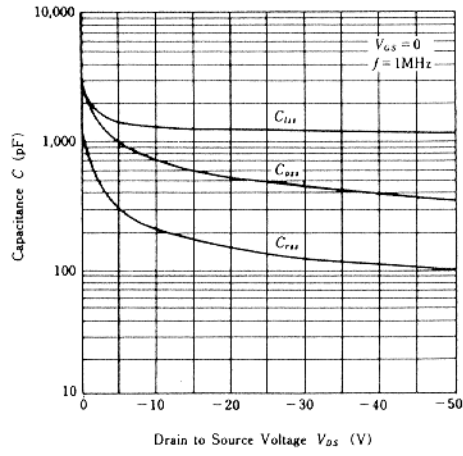
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



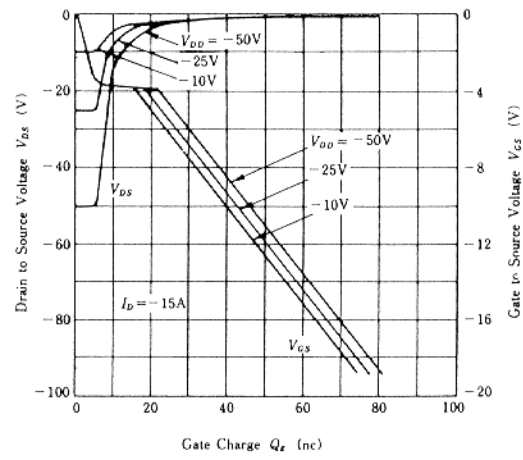
BODY-DRAIN DIODE REVERSE RECOVERY TIME



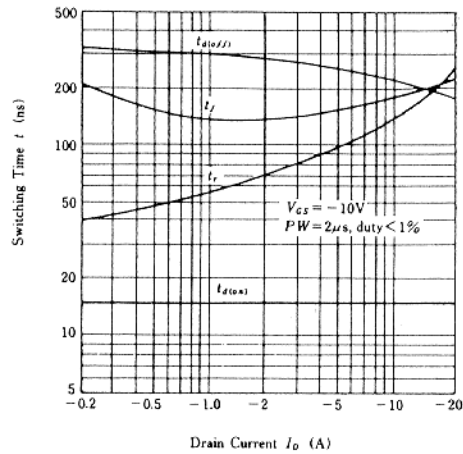
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



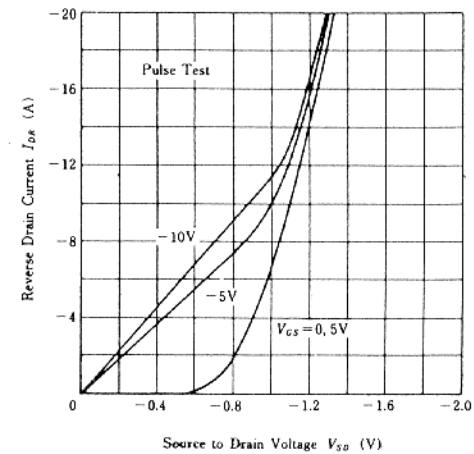
DYNAMIC INPUT CHARACTERISTICS



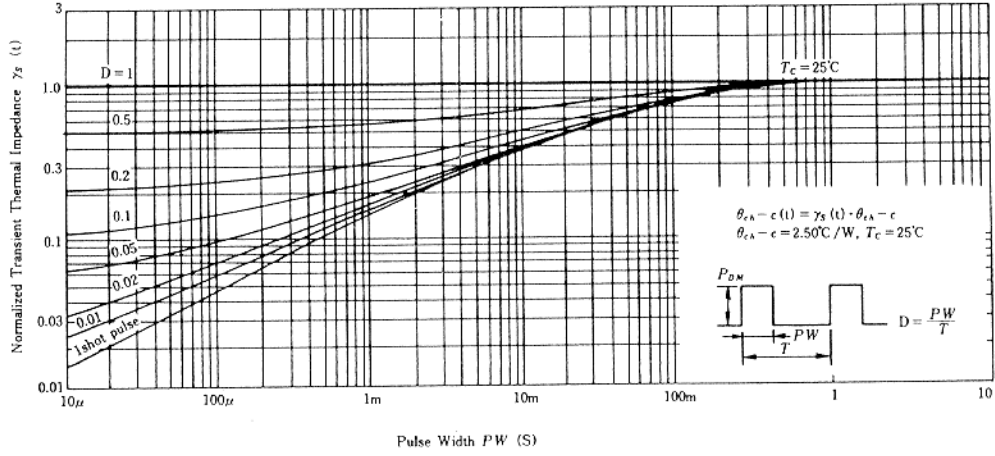
SWITCHING CHARACTERISTICS



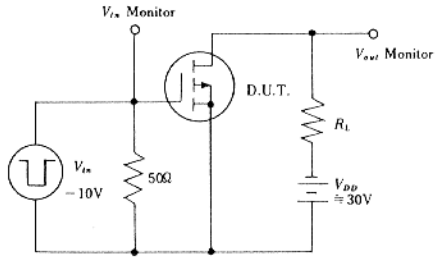
REVERSE DRAIN CURRENT VS. SOURCE TO DRAIN VOLTAGE



NORMALIZED TRANSIENT THERMAL IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

