

**Phase-out/Discontinued**

**2SK874**

**DESCRIPTION** The 2SK874 is N-channel MOS Field Effect Power Transistor designed for switching power supplies, DC-DC converters.

- FEATURES**
- Suitable for switching power supplies, actuator controls, and pulse circuits
  - Low  $R_{DS(on)}$
  - No second breakdown

**ABSOLUTE MAXIMUM RATINGS**

Maximum Temperatures

Storage Temperature . . . . .  $-55$  to  $+150$  °C

Channel Temperature . . . . .  $150$  °C Maximum

Maximum Power Dissipation ( $T_c = 25$  °C)

Total Power Dissipation . . . . . 100 W

Maximum Voltages and Currents ( $T_a = 25$  °C)

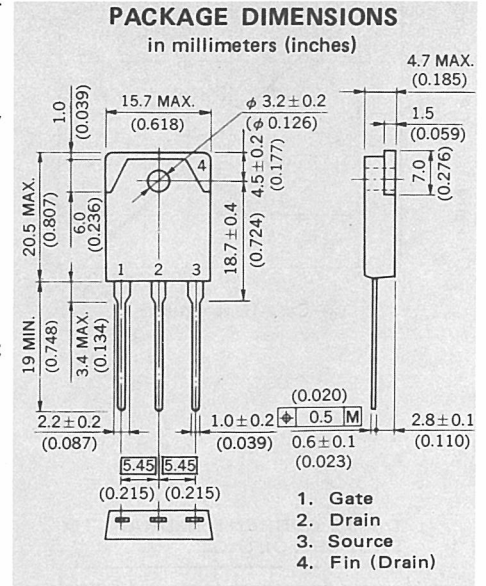
$V_{DSS}$  Drain to Source Voltage . . . . . 500 V

$V_{GSS}$  Gate to Source Voltage . . . . .  $\pm 20$  V

$I_{D(DC)}$  Drain Current (DC) . . . . .  $\pm 8$  A

$I_{D(pulse)}$  Drain Current (pulse)\* . . . . .  $\pm 32$  A

\*PW  $\leq 100$   $\mu$ s, Duty Cycle  $\leq 2\%$

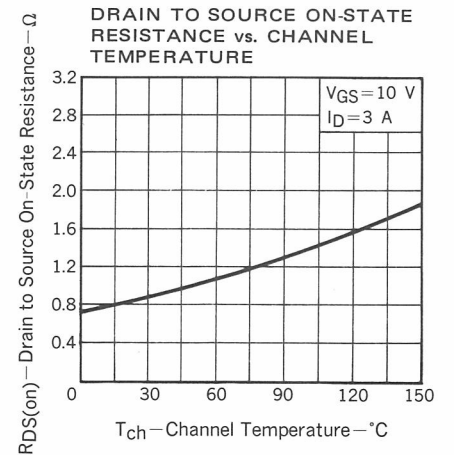
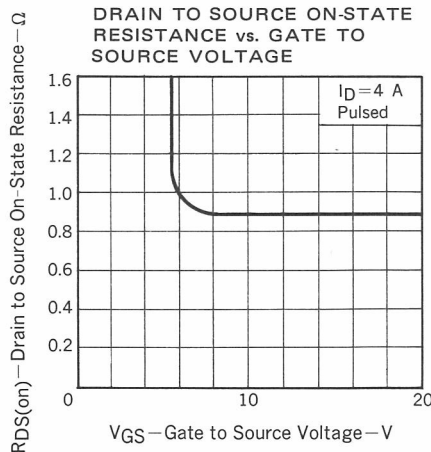
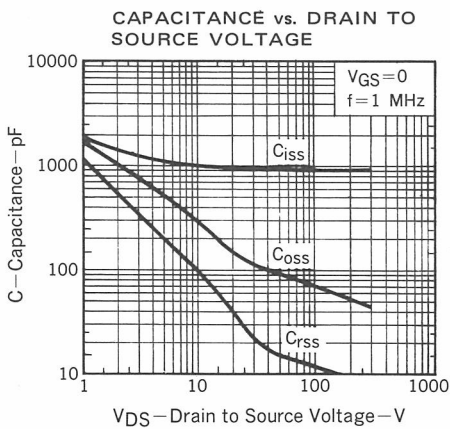
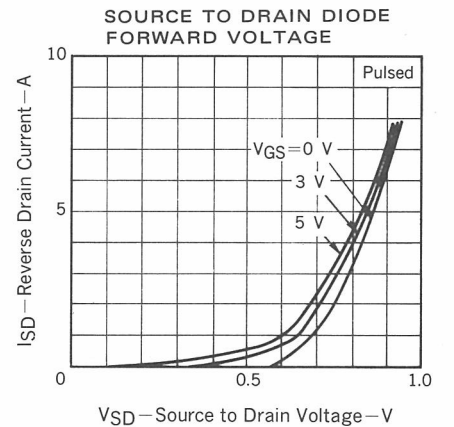
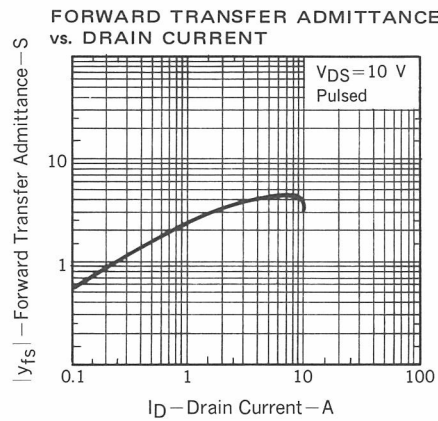
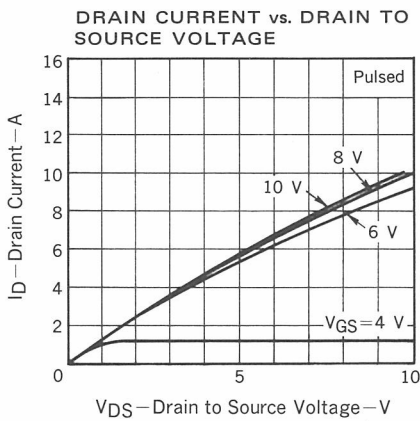
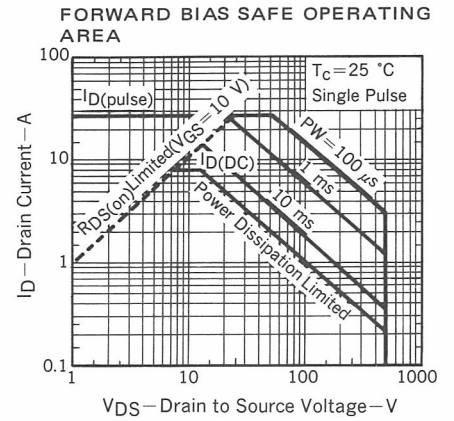
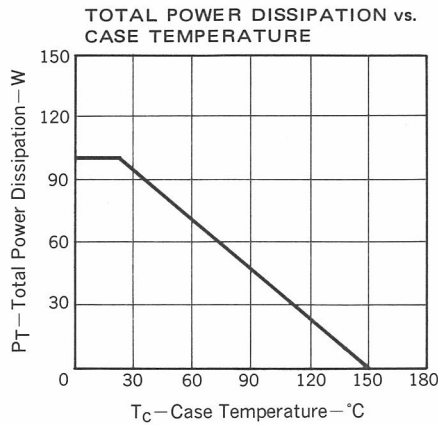
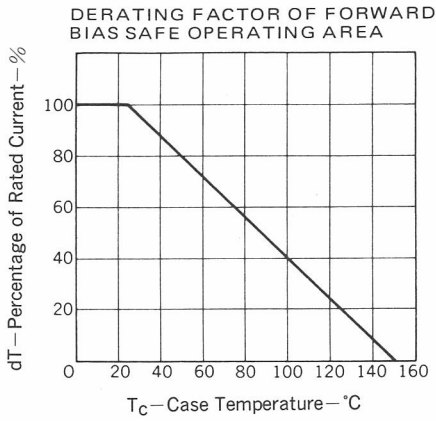


**ELECTRICAL CHARACTERISTICS ( $T_a = 25$  °C)**

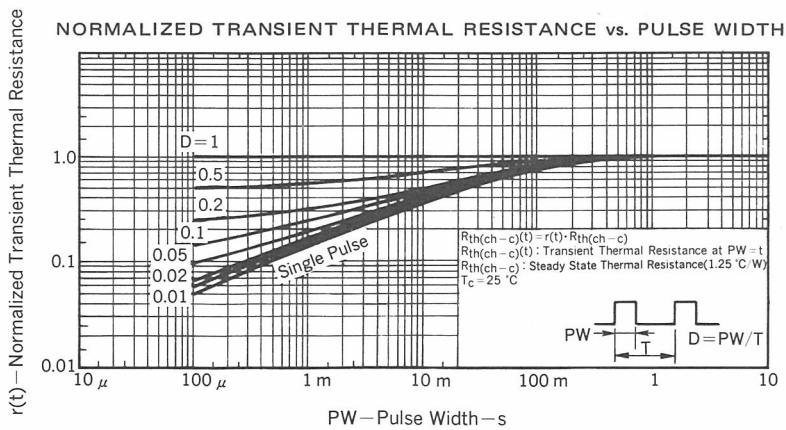
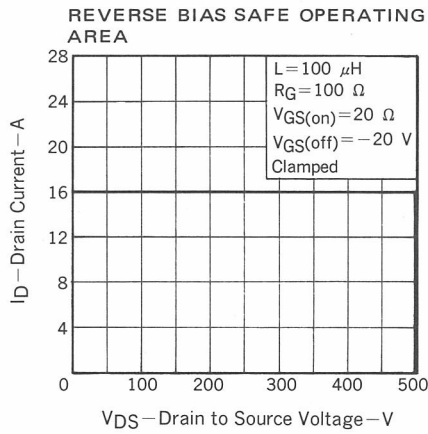
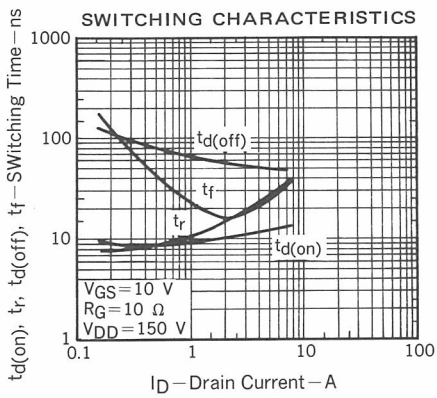
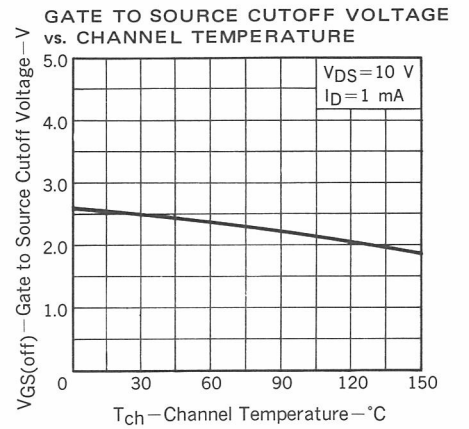
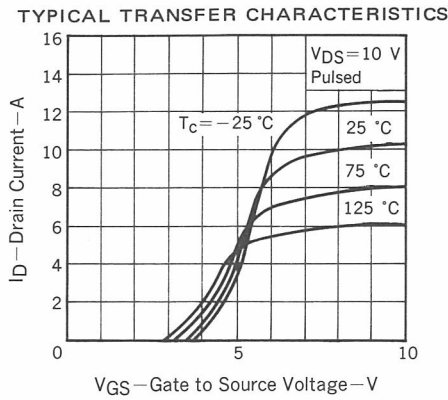
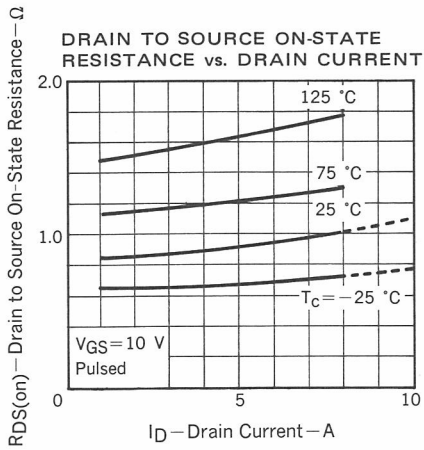
| SYMBOL        | CHARACTERISTIC                      | MIN. | TYP. | MAX.      | UNIT     | TEST CONDITIONS  |
|---------------|-------------------------------------|------|------|-----------|----------|--|
| $I_{DSS}$     | Drain Leakage Current               |      |      | 100       | $\mu$ A  | $V_{DS} = 500$ V, $V_{GS} = 0$   |
| $I_{GSS}$     | Gate to Source Leakage Current      |      |      | $\pm 100$ | nA       | $V_{GS} = \pm 20$ V, $V_{DS} = 0$  |
| $V_{GS(off)}$ | Gate to Source Cutoff Voltage       | 1.5  |      | 3.5       | V        | $V_{DS} = 10$ V, $I_D = 1$ mA  |
| $ Y_{fs} $    | Forward Transfer Admittance         | 3.0  |      |           | S        | $V_{DS} = 10$ V, $I_D = 4$ A   |
| $R_{DS(on)}$  | Drain to Source On-State Resistance |      | 0.9  | 1.2       | $\Omega$ | $V_{GS} = 10$ V, $I_D = 4$ A   |
| $C_{iss}$     | Input Capacitance                   |      | 1300 |           | pF       | $V_{DS} = 10$ V, $V_{GS} = 0$ , $f = 1$ MHz  |
| $C_{oss}$     | Output Capacitance                  |      | 500  |           | pF       |  |
| $C_{rss}$     | Reverse Transfer Capacitance        |      | 70   |           | pF       |  |
| $t_{d(on)}$   | Turn-On Delay Time                  |      | 20   |           | ns       | $I_D = 4$ A, $V_{DD} \cong 150$ V<br>$V_{GS(on)} = 10$ V<br>$R_{in} = 10$ $\Omega$ |
| $t_r$         | Rise Time                           |      | 50   |           | ns       |  |
| $t_{d(off)}$  | Turn-Off Delay Time                 |      | 100  |           | ns       |  |
| $t_f$         | Fall Time                           |      | 50   |           | ns       |  |

**Phase-out/Discontinued**

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

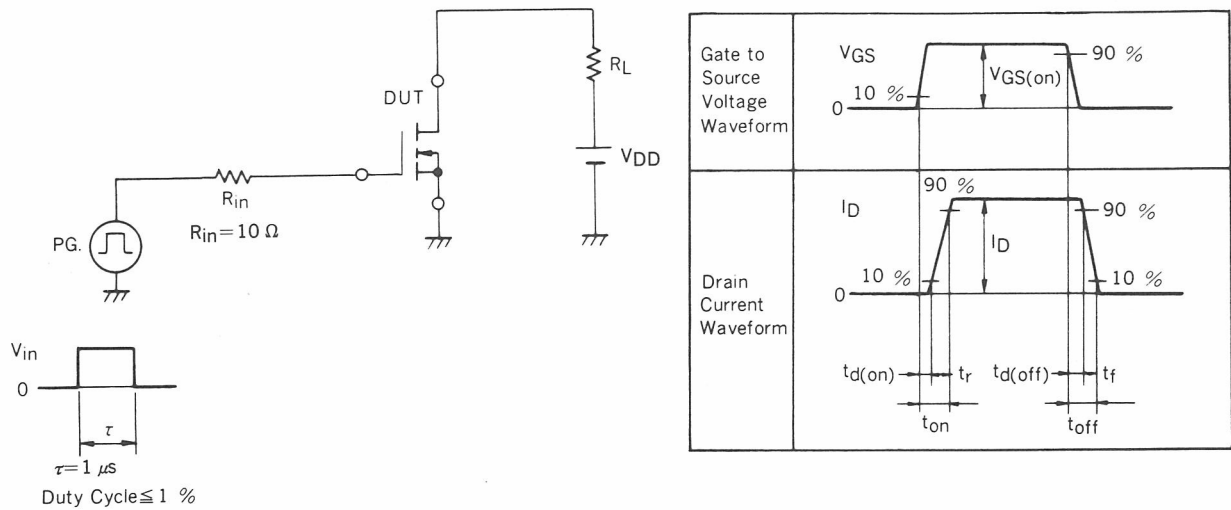


**Phase-out/Discontinued**

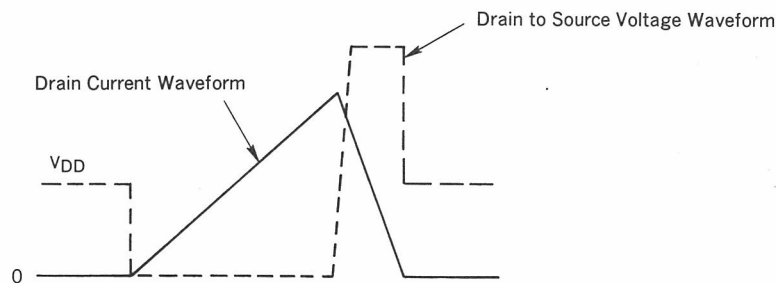
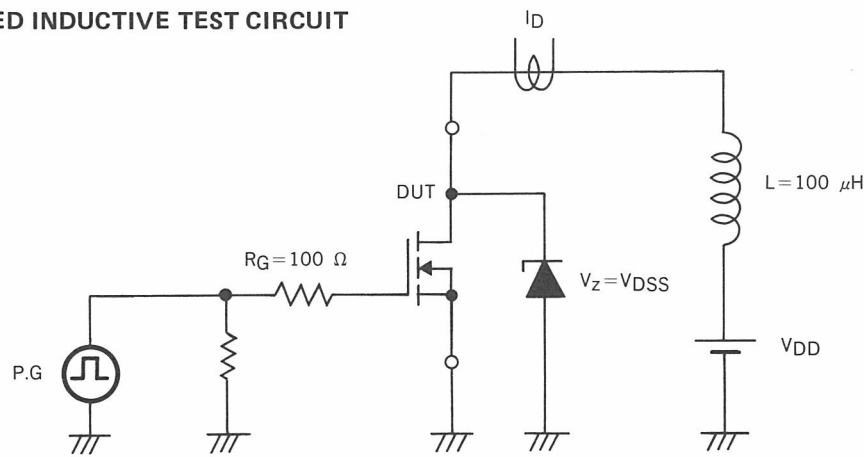


**Phase-out/Discontinued**

**SWITCHING TIME TEST CIRCUIT**



**CLAMPED INDUCTIVE TEST CIRCUIT**



Clamped Inductive Waveforms