

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

# 2SK1028

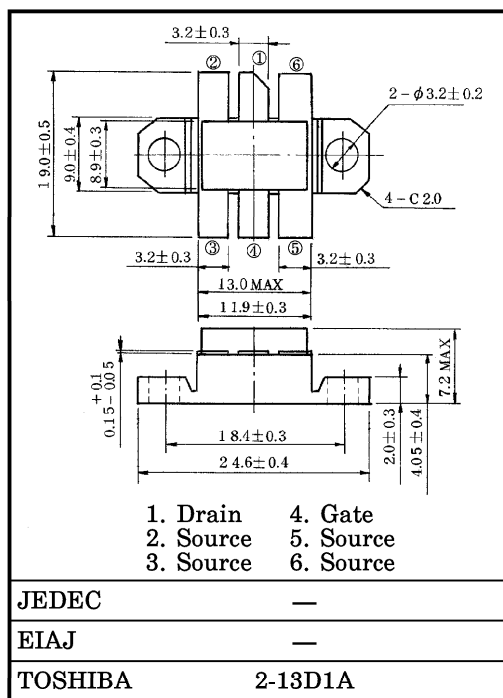
RF POWER MOS FET  
for VHF TV BROADCAST TRANSMITTER

Unit in mm

- Output Power :  $P_o \geq 100W$  (Min.)
- Drain Efficiency :  $\eta_D = 70%$  (Typ.)
- Frequency :  $f = 230MHz$

MAXIMUM RATINGS ( $T_c = 25^\circ C$ )

| CHARACTERISTIC            | SYMBOL    | RATING         | UNIT       |
|---------------------------|-----------|----------------|------------|
| Drain-Source Voltage      | $V_{DSS}$ | 100            | V          |
| Gate-Source Voltage       | $V_{GSS}$ | $\pm 20$       | V          |
| Drain Current             | $I_D$     | 6              | A          |
| Reverse Drain Current     | $I_{DR}$  | 6              | A          |
| Drain Power Dissipation   | $P_D$     | 125            | W          |
| Channel Temperature       | $T_{ch}$  | 150            | $^\circ C$ |
| Storage Temperature Range | $T_{stg}$ | $-55 \sim 150$ | $^\circ C$ |



ELECTRICAL CHARACTERISTICS ( $T_c = 25^\circ C$ )

Weight : 10g

| CHARACTERISTIC                 | SYMBOL         | TEST CONDITION                           | MIN. | TYP. | MAX. | UNIT     |
|--------------------------------|----------------|--|------|------|------|----------|
| Output Power                   | $P_o$          | $V_{DD} = 50V, I_{idle} = 0.2A$          | 100  | —    | —    | W        |
| Drain Efficiency               | $\eta_D$       | $P_i = 5W, f = 230MHz$                   | —    | 70   | —    | %        |
| Drain-Source Breakdown Voltage | $V_{(BR) DSS}$ | $I_D = 10mA, V_{GS} = 0$                 | 100  | —    | —    | V        |
| Drain Cut-off Current          | $I_{DSS}$      | $V_{DS} = 80V, V_{GS} = 0$               | —    | —    | 1.0  | mA       |
| Gate Threshold Voltage         | $V_{th}$       | $I_D = 1mA, V_{DS} = 10V$                | 0.5  | —    | 3.0  | V        |
| Drain-Source ON Resistance     | $R_{DS(on)}$   | $I_D = 4A, V_{GS} = 10V$ *               | —    | 0.9  | 1.5  | $\Omega$ |
| Drain-Source ON Voltage        | $V_{DS(on)}$   | $I_D = 4A, V_{GS} = 10V$ *               | —    | 3.6  | 6.0  | V        |
| Forward Transfer Admittance    | $ Y_{fs} $     | $I_D = 3A, V_{DS} = 20V$ *               | 0.9  | 1.3  | —    | S        |
| Input Capacitance              | $C_{iss}$      | $V_{DS} = 50V, V_{GS} = 0$<br>$f = 1MHz$ | —    | 100  | —    | pF       |
| Output Capacitance             | $C_{oss}$      | $V_{DS} = 50V, V_{GS} = 0$<br>$f = 1MHz$ | —    | 40   | —    | pF       |
| Reverse Transfer Capacitance   | $C_{rss}$      | $V_{DS} = 50V, V_{GS} = 0$<br>$f = 1MHz$ | —    | 1    | —    | pF       |

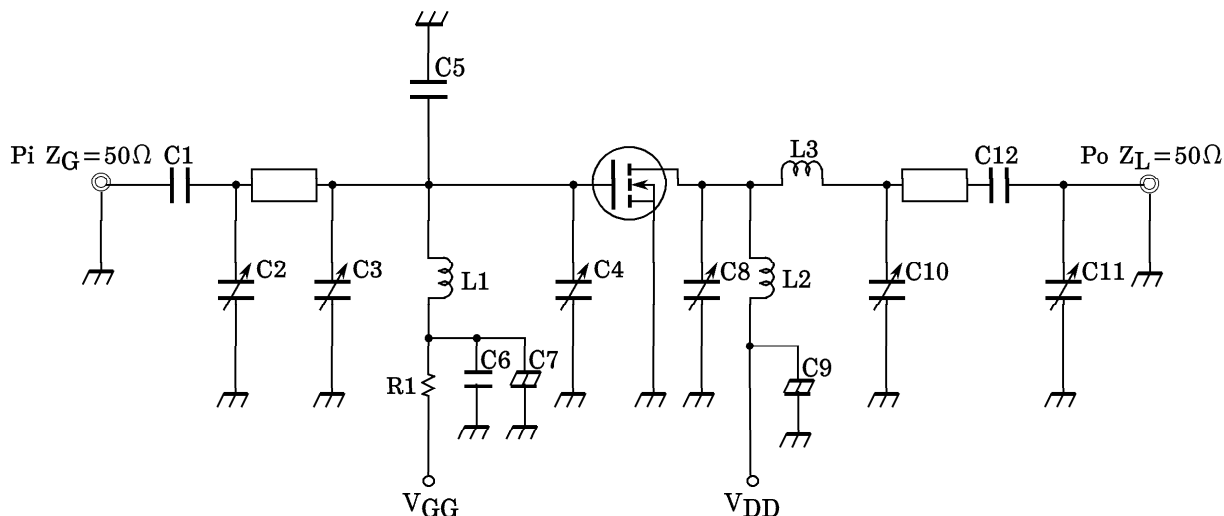
\* Pulse Test

This transistor is the electrostatic sensitive device. Please handle with caution.

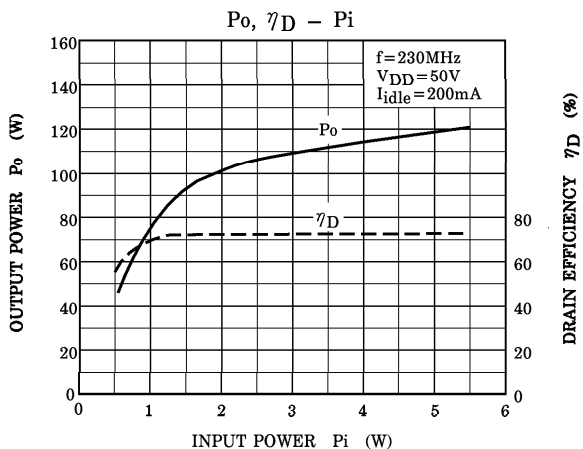
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RF OUTPUT POWER TEST FIXTURE



|                      |   |                |                        |
|----------------------|---|----------------|------------------------|
| C1, C12              | : | 4700pF         | CERAMIC CAPACITOR      |
| C2, C3, C4, C10, C11 | : | ~30pF          | VARIABLE CAPACITOR     |
| C5                   | : | 47pF           | CERAMIC CAPACITOR      |
| C6                   | : | 10,000pF       | CERAMIC CAPACITOR      |
| C7                   | : | 10μF, 50V      | ELECTROLYTIC CAPACITOR |
| C8                   | : | ~5pF           | VARIABLE CAPACITOR     |
| C9                   | : | 10μF, 250V     | ELECTROLYTIC CAPACITOR |
| L1                   | : | 9T, 6ID ø1.0   | ENAMEL WIRE            |
| L2                   | : | 5T, 7ID ø1.0   | ENAMEL WIRE            |
| L3                   | : | 0.5T, 3ID ø1.0 | ENAMEL WIRE            |
| R1                   | : | 9.1kΩ          |                        |



CAUTION

These are only typical curves and devices are not necessarily guaranteed at these curves.