

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

2SK1310

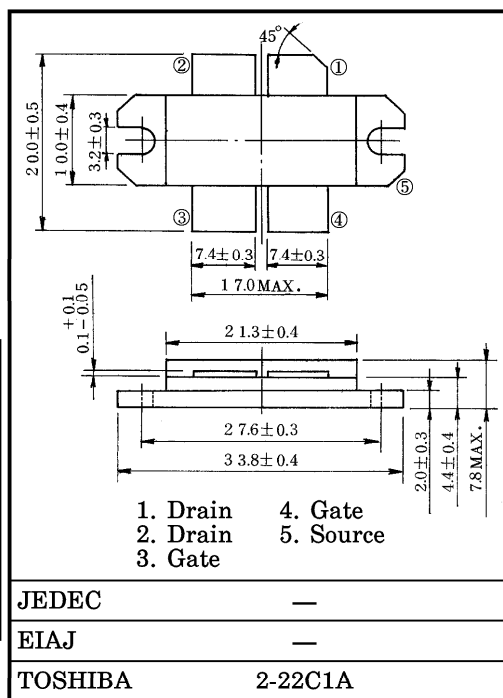
RF POWER MOS FET
for VHF TV BROADCAST TRANSMITTER

Unit in mm

- Output Power : $P_o \geq 190\text{W}$ (Min.)
- Drain Efficiency : $\eta_D = 65\%$ (Typ.)
- Frequency : $f = 230\text{MHz}$
- Push - Pull Structure Package

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	I_D	12	A
Reverse Drain Current	I_{DR}	12	A
Drain Power Dissipation	P_D	250	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	$-55 \sim 150$	$^\circ\text{C}$



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

Weight : 17.5g

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Power	P_o	$V_{DD} = 50\text{V}, I_{idle} = 0.2\text{A} \times 2$	190	220	—	W
Drain Efficiency	η_D	$P_i = 10\text{W}, f = 230\text{MHz} *$	—	65	—	%
Drain-Source Breakdown Voltage	$V_{(BR) DSS}$	$I_D = 10\text{mA}, V_{GS} = 0$	100	—	—	V
Drain Cut-off Current	I_{DSS}	$V_{DS} = 80\text{V}, V_{GS} = 0$	—	—	1.0	mA
Gate Threshold Voltage	V_{th}	$I_D = 1\text{mA}, V_{DS} = 10\text{V}$	0.5	—	3.0	V
Drain-Source ON Resistance	$R_{DS(on)}$	$I_D = 4\text{A}, V_{GS} = 10\text{V} **$	—	0.9	1.5	Ω
Drain-Source ON Voltage	$V_{DS(on)}$	$I_D = 4\text{A}, V_{GS} = 10\text{V} **$	—	3.6	6.0	V
Forward Transfer Admittance	$ Y_{fs} $	$I_D = 3\text{A}, V_{DS} = 20\text{V} **$	0.9	1.3	—	S
Input Capacitance	C_{iss}	$V_{DS} = 50\text{V}, V_{GS} = 0$ $f = 1\text{MHz}$	—	100	—	pF
Output Capacitance	C_{oss}	$V_{DS} = 50\text{V}, V_{GS} = 0$ $f = 1\text{MHz}$	—	40	—	pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = 50\text{V}, V_{GS} = 0$ $f = 1\text{MHz}$	—	1	—	pF

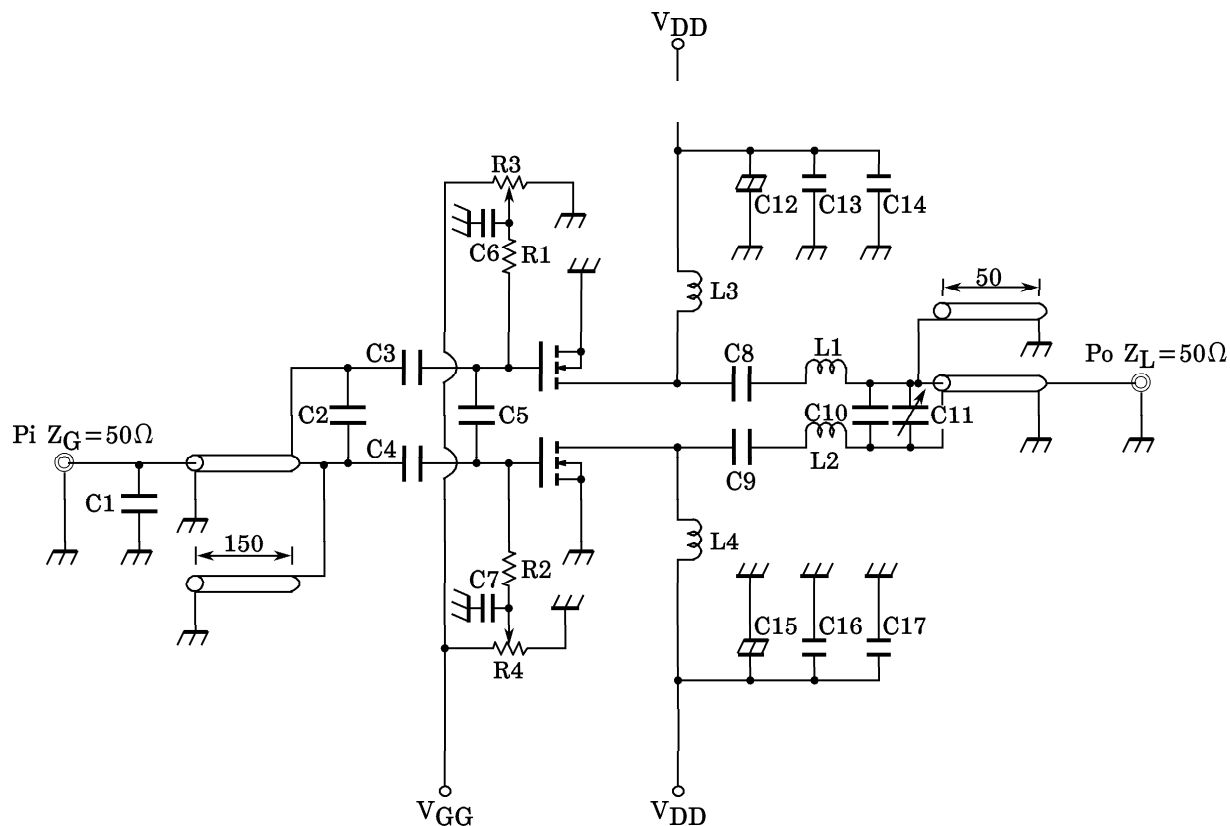
* Push-Pull Operation ** Pulse Test

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

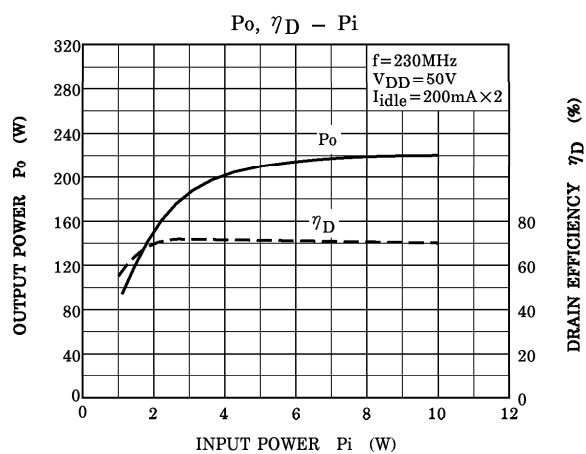
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RF OUTPUT POWER TEST FIXTURE



- | | | |
|----------------------------|-----------------------|---------------------------|
| C1 : | 1pF | MICA CAPACITOR |
| C2 : | 33pF × 3 (PARALLEL) | MICA CAPACITOR |
| C3, C4, C8, C9, C13, C16 : | 1000pF | MICA CAPACITOR |
| C5 : | 33pF | MICA CAPACITOR |
| C6, C7 : | 0.01μF × 2 (PARALLEL) | CERAMIC CAPACITOR |
| C10 : | 14pF | MICA CAPACITOR |
| C11 : | ~20pF | AIR TRIMMER CAPACITOR |
| C12, C15 : | 100μF, 100V | ELECTROLYTIC CAPACITOR |
| C14, C17 : | 4700pF | CERAMIC CAPACITOR |
| L1, L2 : | 0.5T, 5ID ø1.0 | SILVER PLATED COPPER WIRE |
| L3, L4 : | 3.0T, 5ID ø1.0 | SILVER PLATED COPPER WIRE |
| R1, R2 : | 220 Ω × 2 (PARALLEL) | |
| R3, R4 : | 1kΩ | VARIABLE RESISTOR |



CAUTION

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