

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

## 2SK1310A

RF POWER MOS FET for VHF TV BROADCAST TRANSMITTER

Unit in mm

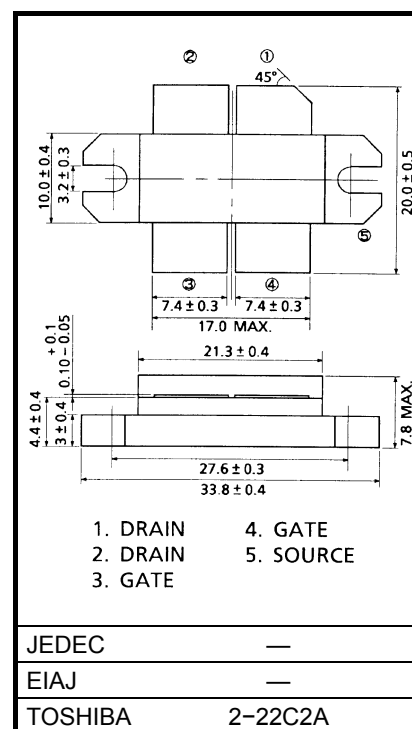
- Output Power :  $P_o \geq 190$  W (Min.)
- Drain Efficiency :  $\eta_D = 65\%$  (Typ.)
- Frequency :  $f = 230$  MHz
- Push-Pull Structure Package

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	100	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	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	$T_{stg}$	$-55 \sim 150$	$^\circ\text{C}$

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).



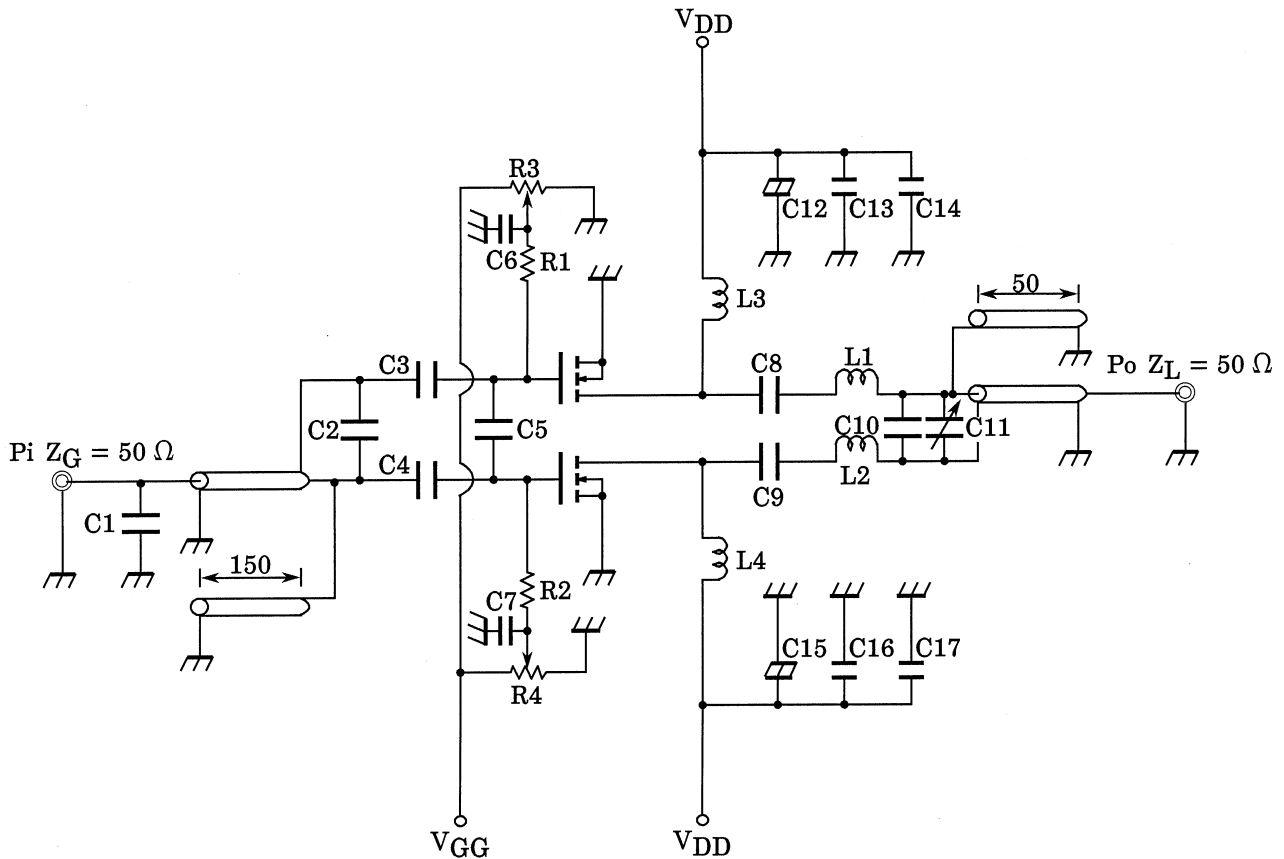
Weight: 17.5 g

ELECTRICAL CHARACTERISTICS (T<sub>c</sub> = 25°C)

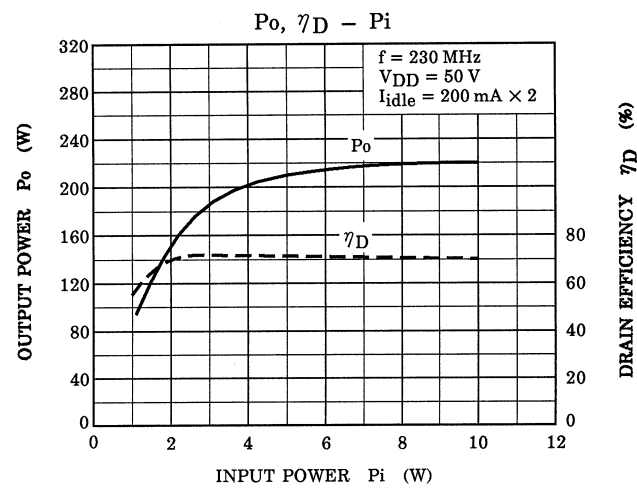
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Power	P <sub>o</sub>	V <sub>DD</sub> = 50 V, I <sub>idle</sub> = 0.2 A × 2 P <sub>i</sub> = 10 W, f = 230 MHz *	190	220	—	W
Drain Efficiency	η <sub>D</sub>		—	65	—	%
Drain-Source Breakdown Voltage	V <sub>(BR)</sub> DSS	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0	100	—	—	V
Drain Cut-off Current	I <sub>DSS</sub>	V <sub>DS</sub> = 80 V, V <sub>GS</sub> = 0	—	—	1.0	mA
Gate Threshold Voltage	V <sub>th</sub>	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V	0.5	—	3.0	V
Drain-Source ON Resistance	R <sub>DS (on)</sub>	I <sub>D</sub> = 4 A, V <sub>GS</sub> = 10 V **	—	0.9	1.5	Ω
Drain-Source ON Voltage	V <sub>DS (on)</sub>	I <sub>D</sub> = 4 A, V <sub>GS</sub> = 10 V **	—	3.6	6.0	V
Forward Transfer Admittance	Y <sub>fs</sub>	I <sub>D</sub> = 3 A, V <sub>DS</sub> = 20 V **	0.9	1.3	—	S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 50 V, V <sub>GS</sub> = 0, f = 1 MHz	—	100	—	pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> = 50 V, V <sub>GS</sub> = 0, f = 1 MHz	—	40	—	pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> = 50 V, V <sub>GS</sub> = 0, f = 1 MHz	—	1	—	pF

\*: Push-Pull Operation    \*\*: Pulse Test

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

**RF OUTPUT POWER TEST FIXTURE**


C1 :	1pF	MICA CAPACITOR
C2 :	33 pF × 3 (PARALLEL)	MICA CAPACITOR
C3, C4, C8, C9, C13, C16 :	1000 pF	MICA CAPACITOR
C5 :	33 pF	MICA CAPACITOR
C6, C7 :	0.01 μF × 2 (PARALLEL)	CERAMIC CAPACITOR
C10 :	14 pF	MICA CAPACITOR
C11 :	~20 pF	AIR TRIMMER CAPACITOR
C12, C15 :	100 μF, 100 V	ELECTROLYTIC CAPACITOR
C14, C17 :	4700 pF	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 :	1 kΩ	VARIABLE RESISTOR



**CAUTION**

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

**RESTRICTIONS ON PRODUCT USE**

20070701-EN GENERAL

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