

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

## 2SK1739A

RF Power MOS FET for UHF TV Broadcast Transmitter

Unit in mm

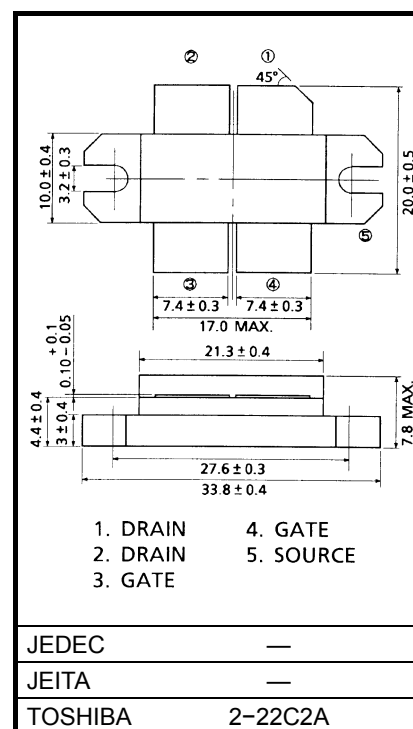
- Output Power :  $P_o \geq 90$  W (min.)
- Drain Efficiency :  $\eta_D = 50\%$  (typ.)
- Frequency :  $f = 770$  MHz
- Push-Pull Structure Package

### Absolute Maximum Ratings ( $T_c = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	80	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current	$I_D$	11	A
Reverse Drain Current	$I_{DR}$	11	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 (typ.)

## Electrical Characteristics (Tc = 25°C)

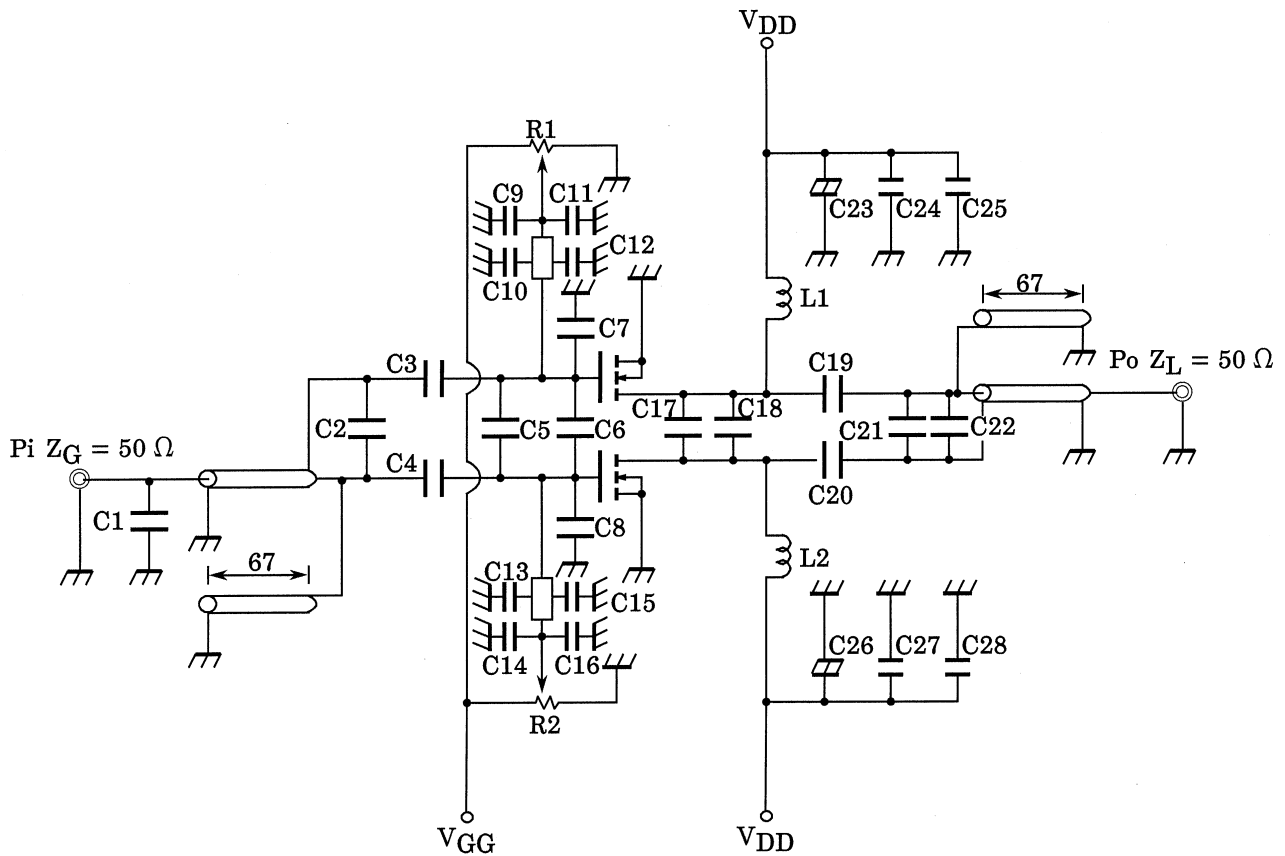
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Power	P <sub>o</sub>	V <sub>DD</sub> = 40 V, I <sub>idle</sub> = 0.2 A × 2 P <sub>i</sub> = 10 W, f = 770 MHz *	90	110	—	W
Drain Efficiency	η <sub>D</sub>		—	50	—	%
Drain-Source Breakdown Voltage	V <sub>(BR)</sub> DSS	I <sub>D</sub> = 5 mA, V <sub>GS</sub> = 0	80	—	—	V
Drain Cut-off Current	I <sub>DSS</sub>	V <sub>DS</sub> = 60 V, V <sub>GS</sub> = 0	—	—	1.0	mA
Gate Threshold Voltage	V <sub>th</sub>	I <sub>D</sub> = 0.5 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> = 2 A, V <sub>GS</sub> = 10 V **	—	0.5	1.5	Ω
Drain-Source ON Voltage	V <sub>DS(on)</sub>	I <sub>D</sub> = 2 A, V <sub>GS</sub> = 10 V **	—	1.0	3.0	V
Forward Transfer Admittance	Y <sub>fs</sub>	I <sub>D</sub> = 1.5 A, V <sub>DS</sub> = 20 V **	0.9	1.3	—	S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 40 V, V <sub>GS</sub> = 0, f = 1 MHz	—	80	—	pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> = 40 V, V <sub>GS</sub> = 0, f = 1 MHz	—	40	—	pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> = 40 V, V <sub>GS</sub> = 0, f = 1 MHz	—	1	—	pF

\*: Push-Pull Operation

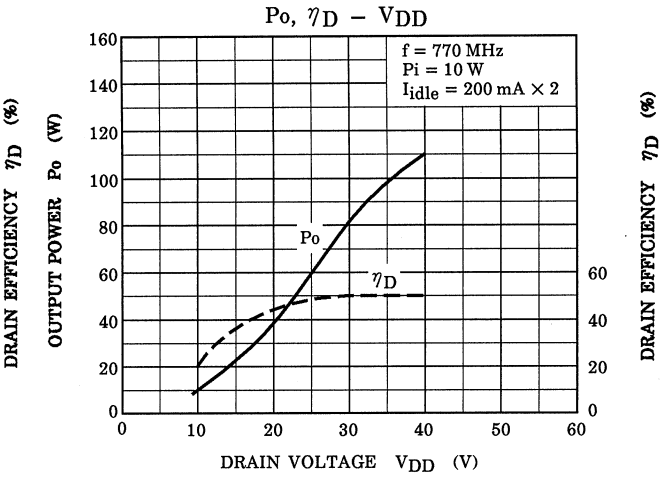
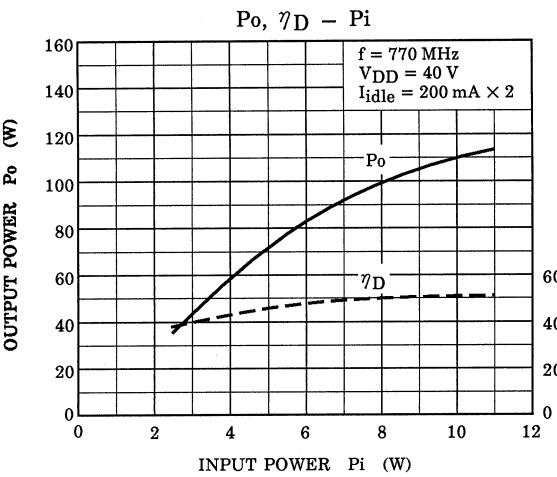
\*\*: Pulse Test

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

## RF Output Power Test Fixture



C1 :	2 pF	MICA CAPACITOR
C2, C21 :	1 pF	MICA CAPACITOR
C3, C4 :	220 pF	MICA CAPACITOR
C5 :	6 pF	MICA CAPACITOR
C6 :	10 pF	MICA CAPACITOR
C7, C8, C9, C10, C13, C14, C25, C28 :	4700 pF	CERAMIC CAPACITOR
C11, C12, C15, C16 :	10000 pF	CERAMIC CAPACITOR
C17, C18 :	8 pF	MICA CAPACITOR
C19, C20 :	200 pF × 2	CERAMIC CAPACITOR
C22 :	3 pF	MICA CAPACITOR
C23, C26 :	100 μF, 80 V	ELECTROLYTIC CAPACITOR
C24, C27 :	1000 pF	MICA CAPACITOR
L1, L2 :	4.0T, 5.0ID, ø1.0	SILVER PLATED COPPER WIRE
R1, R2 :	1 kΩ	VARIABLE RESISTOR



**Caution**

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

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