TOSHIBA Field Effect Transistor Silicon N-Channel Dual Gate MOS Type

3SK294

TV Tuner, VHF RF Amplifier Application

- Superior cross modulation performance
- Low reverse transfer capacitance: $C_{rss} = 20$ fF (typ.)
- Low noise figure: NF = 1.4dB (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V _{DS}	12.5	V
Gate 1-source voltage	V _{G1S}	±8	V
Gate 2-source voltage	V _{G2S}	±8	V
Drain current	Ι _D	30	mA
Drain power dissipation	PD	100	mW
Channel temperature	T _{ch}	125	°C
Storage temperature range	T _{stg}	-55 to 125	°C

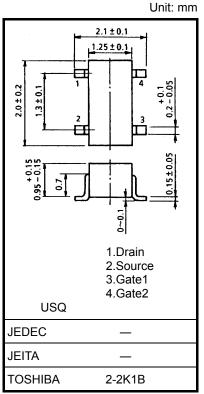
Note: Using continuously under heavy loads (e.g. the application of high

temperature, etc.) may cause this product to decrease in the

temperature/current/voltage and the significant change in

reliability significantly even if the operating conditions (i.e.

operating temperature/current/voltage, etc.) are within the



Weight: 6 mg (typ.)

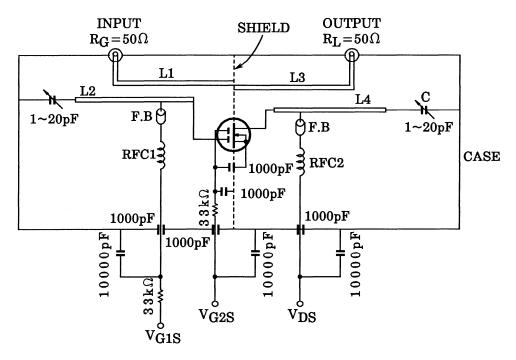
absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate 1 leakage current	I _{G1SS}	$V_{DS} = 0, V_{G1S} = \pm 6 V, V_{G2S} = 0$	_	_	±50	nA
Gate 2 leakage current	I _{G2SS}	$V_{DS} = 0, V_{G1S} = 0, V_{G2S} = \pm 6 V$	_	_	±50	nA
Drain-source voltage	V (BR) DSX	$\label{eq:VG1S} \begin{array}{l} V_{G1S} = -0.5 \ V, \ V_{G2S} = -0.5 \ V, \\ I_D = 100 \ \mu A \end{array}$	12.5	_	_	V
Drain current	I _{DSS}	$V_{DS} = 6 \text{ V}, V_{G1S} = 0, V_{G2S} = 4.5 \text{ V}$	_	_	0.1	mA
Gate 1-source cut-off voltage	V _{G1S} (OFF)	$V_{DS} = 6 \text{ V}, \text{ V}_{G2S} = 4.5 \text{ V}, \text{ I}_{D} = 100 \mu\text{A}$	0.3	0.9	1.3	V
Gate 2-source cut-off voltage	V _{G2S (OFF)}	$V_{DS} = 6 \text{ V}, V_{G1S} = 4.0 \text{ V}, I_D = 100 \mu\text{A}$	0.5	1.0	1.5	V
Forward transfer admittance	Y _{fs}	$V_{DS} = 6 V, V_{G2S} = 4.5 V, I_D = 10 mA, f = 1 kHz$	19.5	23.5	_	mS
Input capacitance	C _{iss}	V _{DS} = 6 V, V _{G2S} = 4.5 V, I _D = 10 mA,		2.5	3.1	pF
Reverse transfer capacitance	C _{rss}	f = 1 MHz		20	40	fF
Power gain	G _{ps}	$V_{DS} = 6 \text{ V}, \text{ V}_{G2S} = 4.5 \text{ V}, \text{ I}_{D} = 10 \text{ mA},$	23.5	26.0	_	dB
Noise figure	NF	f = 500 MHz (Figure 1)		1.4	2.5	dB

Electrical Characteristics (Ta = 25°C)

Start of commercial production 1996-10

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L1 to L4: ϕ 0.8 mm silver plated copper wire

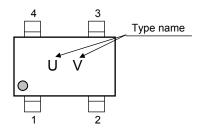
C: Air trimmer TTA25A200A (MURATA Manufacturing, Co., Ltd.)

RFC 1: 0.35 mm UEW 3I.D. 7 T

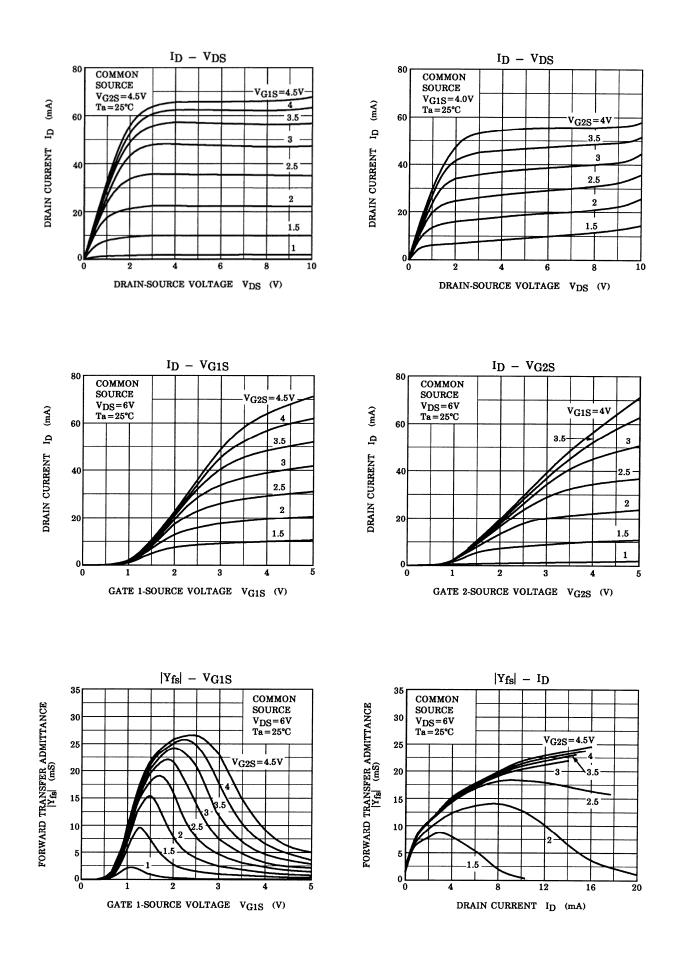
RFC 2: 00.35 mm UEW 3I.D. 10 T

Figure 1 G_{ps,} NF Test Circuit

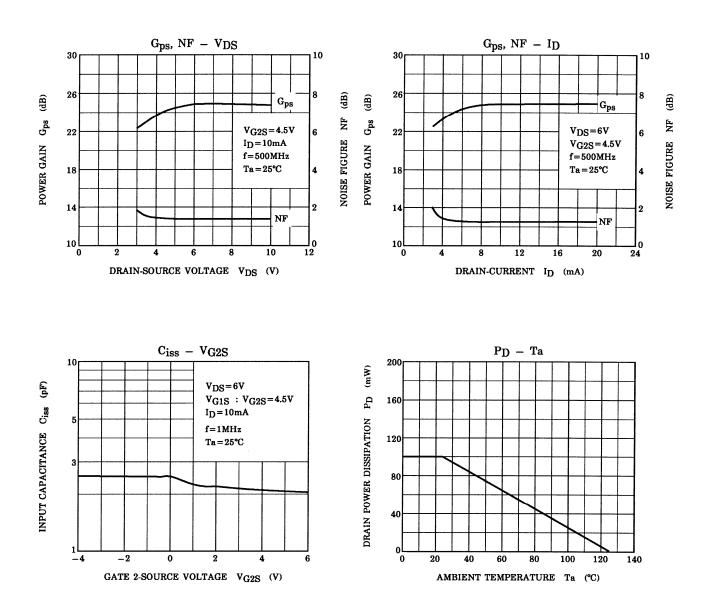
Marking



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