

RFM06U3X

1. Applications

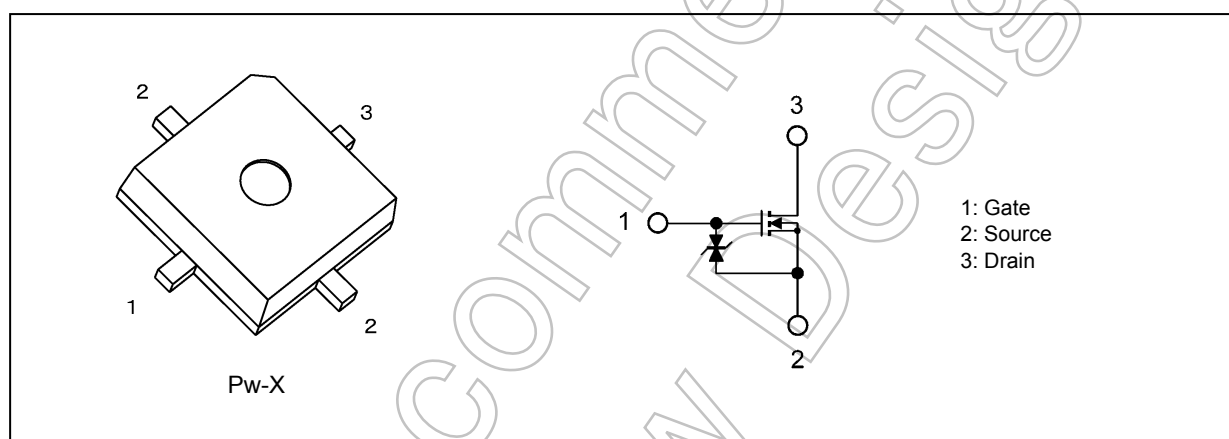
- VHF/UHF-Band Power Amplifiers

Note: This product is intended for radio-frequency power amplifiers of telecommunications equipment. This product is neither intended nor warranted for any other use. Do not use this product except for radio-frequency power amplifiers of telecommunications equipment.

2. Features

- Output power: $P_O = 6.0 \text{ W}$ (typ.)
- High gain: $G_{PS} = 10.8 \text{ dB}$ (typ.)
- Drain efficiency: $\eta_D = 60 \%$ (typ.)

3. Packaging and Internal Circuit



4. Absolute Maximum Ratings (Note) (Unless otherwise specified, $T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Note	Rating	Unit
Drain-source voltage	V_{DS}		16	V
Gate-source voltage	V_{GS}		3	V
Drain current	I_D		5	A
Power dissipation	P_D	(Note 1)	20	W
Channel temperature	T_{ch}		150	$^\circ\text{C}$
Storage temperature	T_{stg}		-45 to 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.).

Note 1: $T_c = 25^\circ\text{C}$ (When mounted on a 1.6 mm (t) glass-epoxy PCB with heatsink)

Note: This transistor is sensitive to electrostatic discharge and should be handled with care.

Note: Care should be taken not to drop this device because it is sensitive to dropping impact stress.

5. Electrical Characteristics (Note) (Unless otherwise specified, $T_a = 25\text{ }^{\circ}\text{C}$)

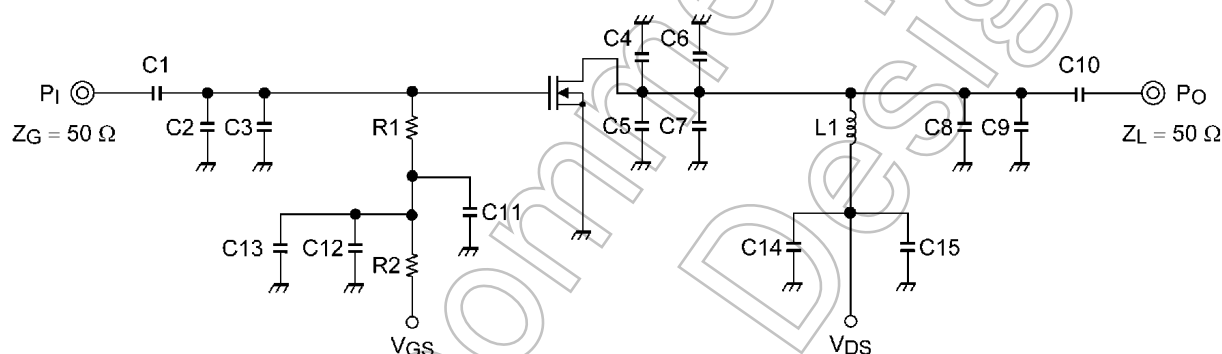
Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Drain-source leakage current	I_{DSS}		$V_{DS} = 7.2\text{ V}$, $V_{GS} = 0\text{ V}$	—	—	50	μA
Gate-source leakage current	I_{GSS}		$V_{GS} = 3\text{ V}$	—	—	10	μA
Gate threshold voltage	V_{th}		$V_{DS} = 3.6\text{ V}$, $I_D = 0.1\text{ mA}$	0.1	0.6	1.1	V
Output power	P_O		$V_{DS} = 3.6\text{ V}$, $I_{idle} = 2.7\text{ A}$ ($V_{GS} = \text{adjust}$), $f = 520\text{ MHz}$, $P_I = 0.5\text{ W}$, $Z_G = Z_L = 50\text{ }\Omega$	5.0	6.0	—	W
Drain efficiency	η_D			53	60	—	%
Power gain	G_{PS}			10.0	10.8	—	dB
Maximum load mismatch without damage	—	(Note 1)	$V_{DS} = 3.6\text{ V}$, $P_O = 6\text{ W}$ ($P_I = \text{adjust}$), $I_{idle} = 2.7\text{ A}$ ($V_{GS} = \text{adjust}$), $f = 520\text{ MHz}$, VSWR LOAD 20:1 all phase	—	—	—	—

Note: These performance characteristics were measured using Toshiba-specified tools.

Note 1: Not damaged

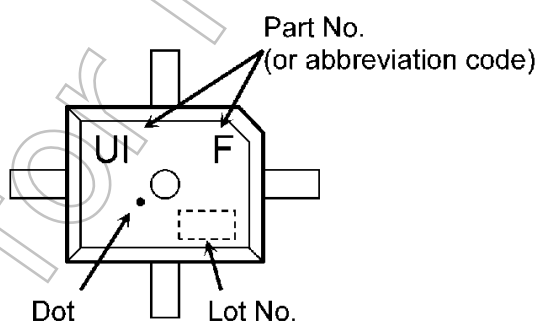
6. Output Power Test Fixture

(Test condition: $f = 520\text{ MHz}$, $V_{DS} = 3.6\text{ V}$, $I_{idle} = 2.7\text{ A}$, $P_I = 0.5\text{ W}$)

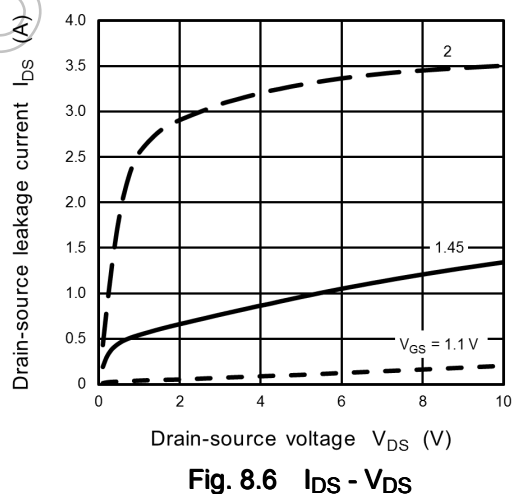
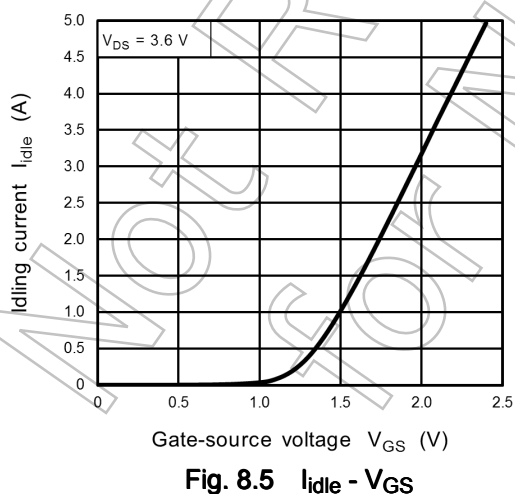
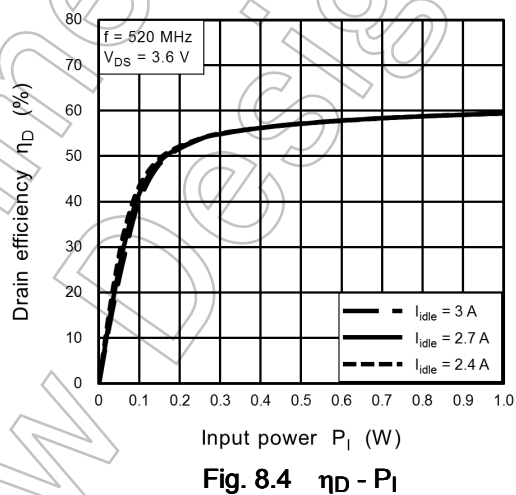
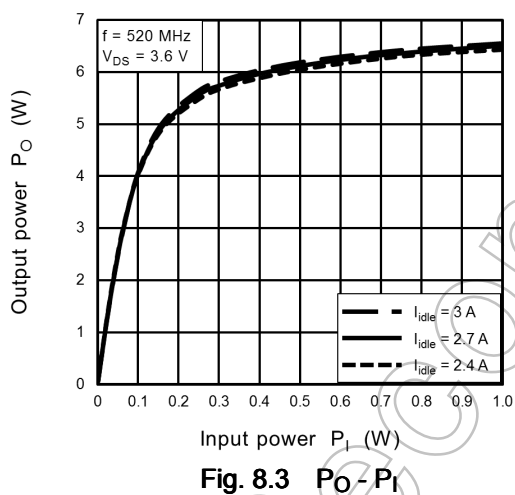
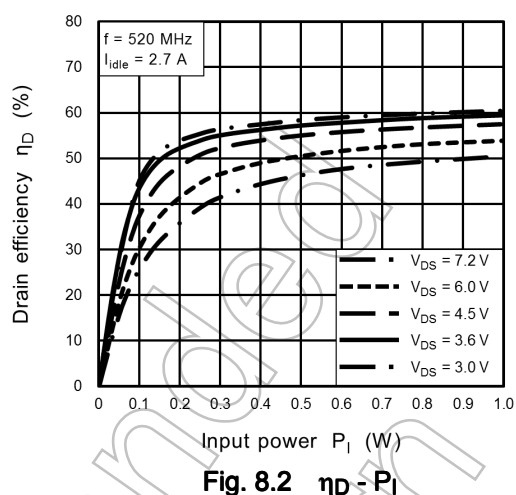
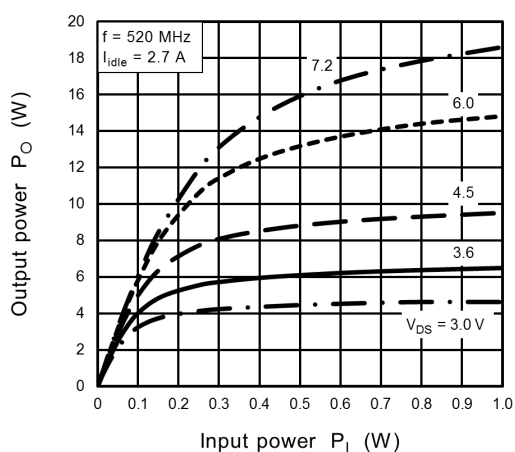


C1: 1000 pF	C6: 10 pF	C11: 2200 pF	L1: $\phi 0.6\text{ mm}$ enamel wire, 3.0 ID, 5.5 T
C2: 2 pF	C7: 5 pF	C12: 2200 pF	R1: 120 Ω
C3: 39 pF	C8: 22 pF	C13: 15 μF	R2: 1.5 k Ω
C4: 18 pF	C9: 1 pF	C14: 2200 pF	
C5: 18 pF	C10: 1000 pF	C15: 47 μF	

7. Marking



8. Characteristics Curves (Note)



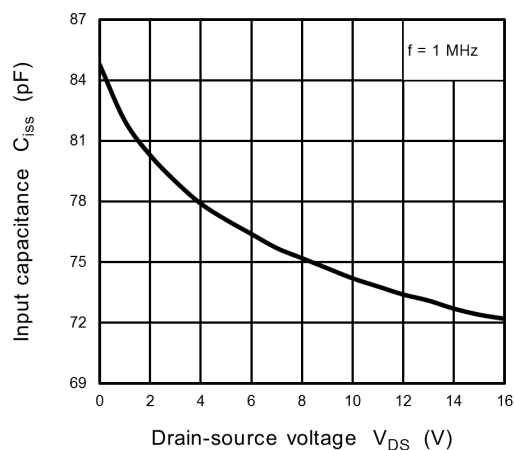


Fig. 8.7 $C_{iss} - V_{DS}$

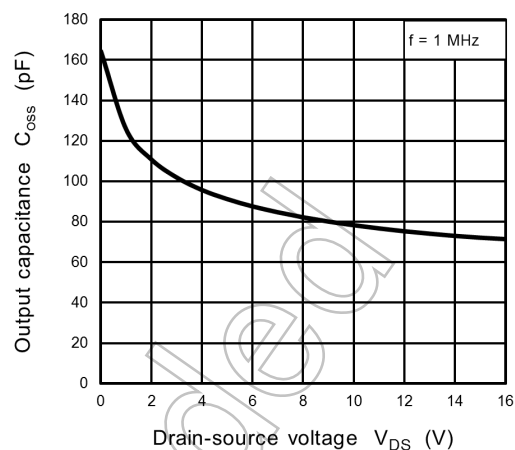


Fig. 8.8 $C_{oss} - V_{DS}$

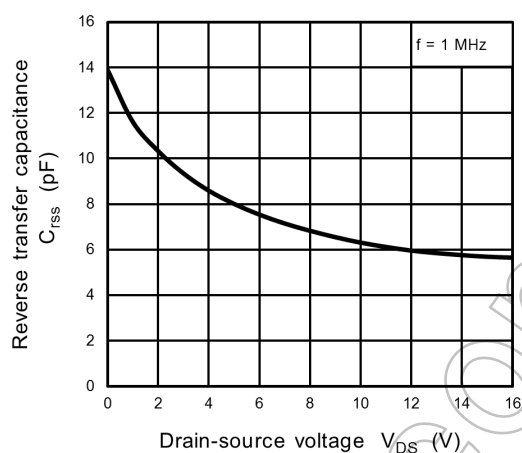
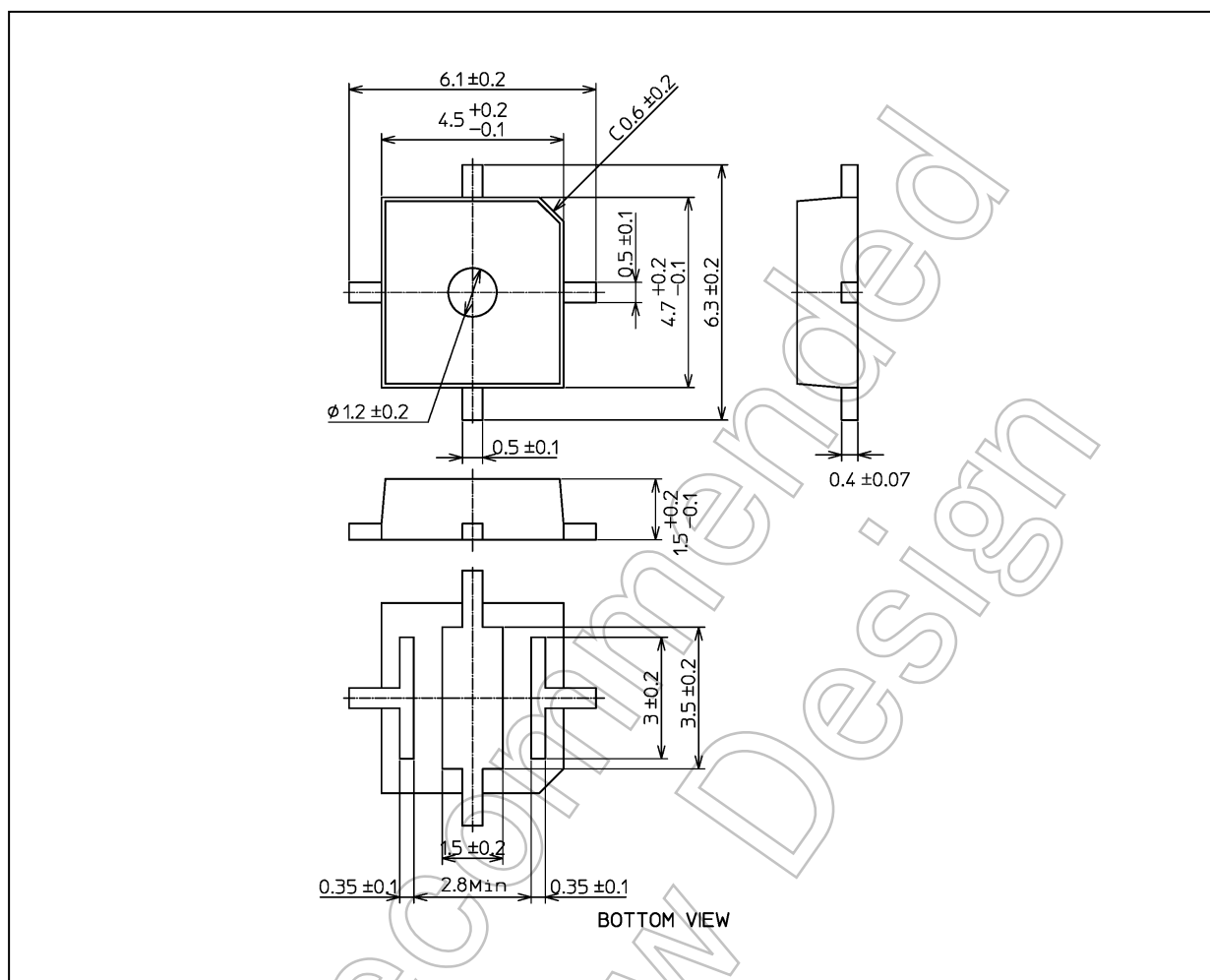


Fig. 8.9 $C_{rss} - V_{DS}$

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

Package Dimensions

Unit: mm



Weight: 0.08 g (typ.)

Package Name(s)
TOSHIBA: 2-5N1S
Nickname: Pw-X

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