

# RFM06U3X

## 1. Applications

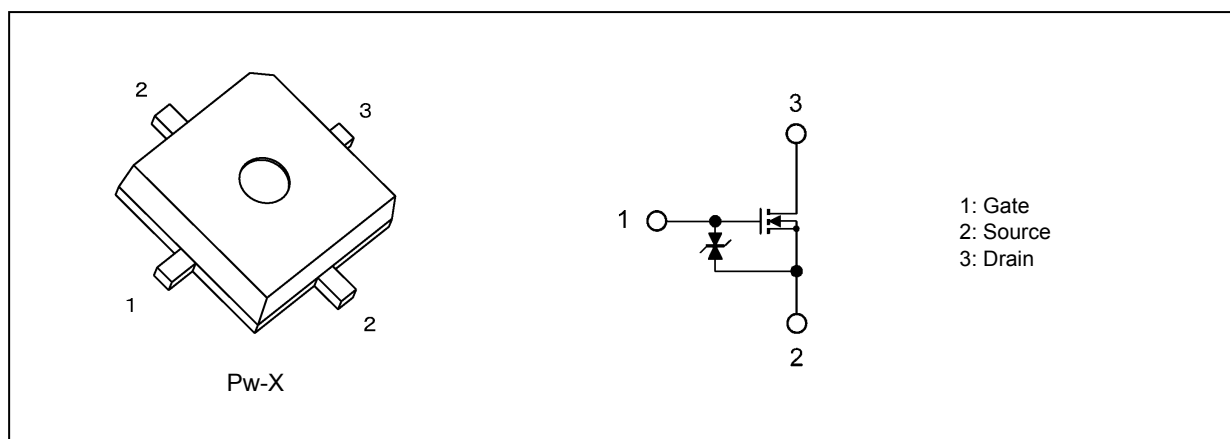
- VHF/UHF-Band Power Amplifiers

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

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

## 3. Packaging and Internal Circuit



## 4. Absolute Maximum Ratings (Note) (Unless otherwise specified, $T_a = 25$ °C)

Characteristics	Symbol	Note	Rating	Unit
Drain-source voltage	$V_{DSS}$		16	V
Gate-source voltage	$V_{GSS}$		3	V
Drain current	$I_D$		5	A
Power dissipation	$P_D$	(Note 1)	20	W
Channel temperature	$T_{ch}$		150	°C
Storage temperature	$T_{stg}$		-45 to 150	°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:  $T_c = 25$  °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.

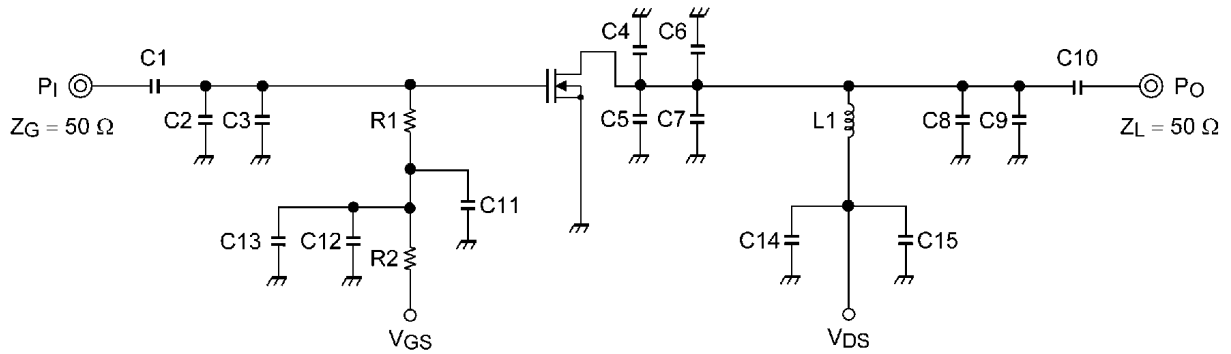
**5. Electrical Characteristics (Note) (Unless otherwise specified,  $T_a = 25\text{ }^\circ\text{C}$ )**

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	$\mu\text{A}$
Gate-source leakage current	$I_{GSS}$		$V_{GS} = 3\text{ V}$	—	—	10	$\mu\text{A}$
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	$P_O$		$V_{DS} = 3.6\text{ V}, I_{idle} = 2.7\text{ A}$ ( $V_{GS} =$ adjust),	5.0	6.0	—	W
Drain efficiency	$\eta_D$		$f = 520\text{ MHz}, P_I = 0.5\text{ W}, Z_G = Z_L = 50\ \Omega$	53	60	—	%
Power gain	$G_{PS}$			10.0	10.8	—	dB
Maximum load mismatch without damage	—	(Note 1)	$V_{DS} = 3.6\text{ V}, P_O = 6\text{ W}$ ( $P_I =$ adjust), $I_{idle} = 2.7\text{ A}$ ( $V_{GS} =$ adjust), $f = 520\text{ MHz}$ , VSWR LOAD 20:1 all phase	—	—	—	—

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

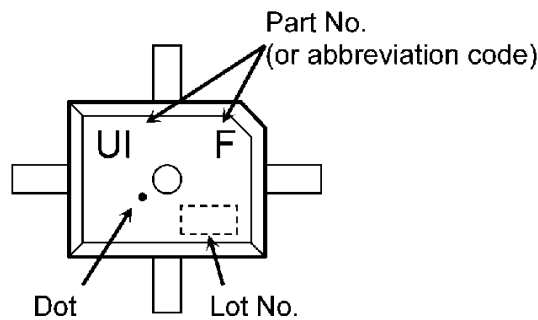
Note 1: Not damaged

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

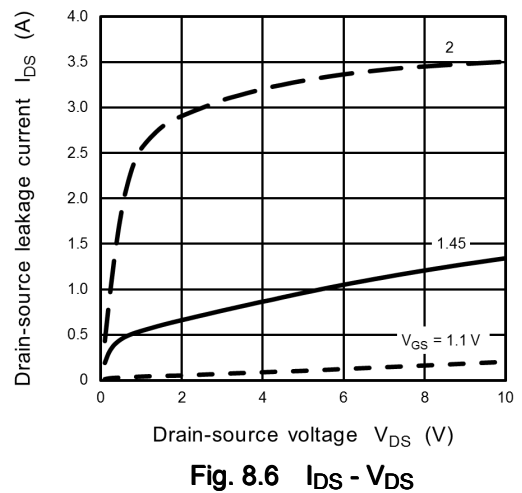
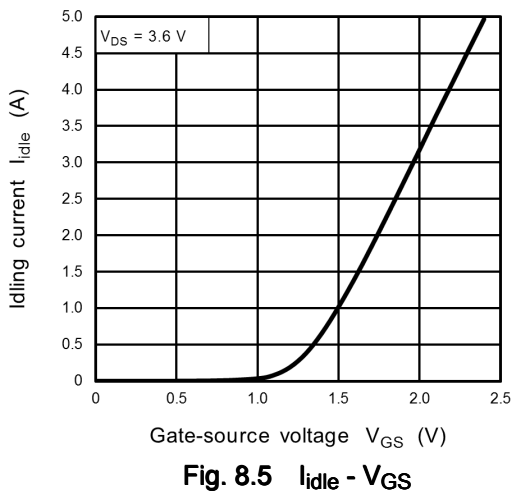
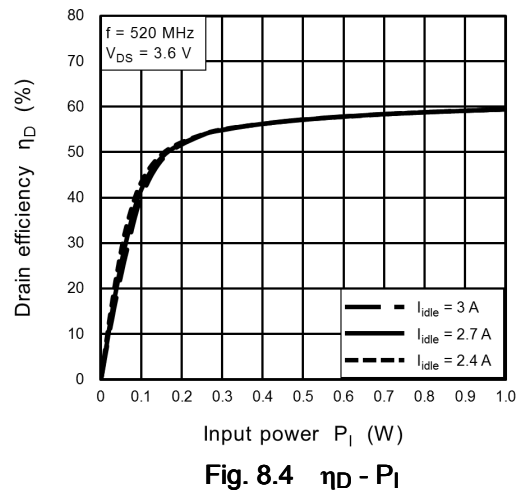
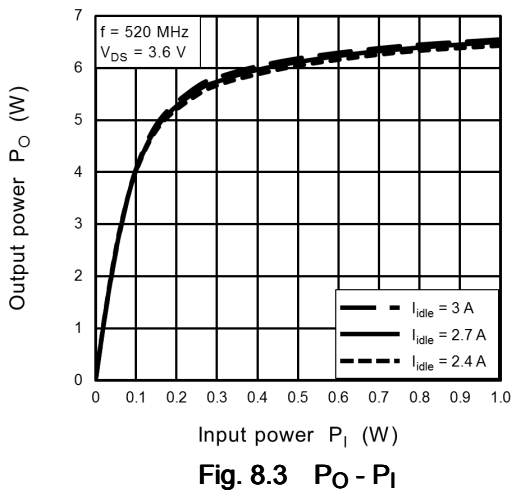
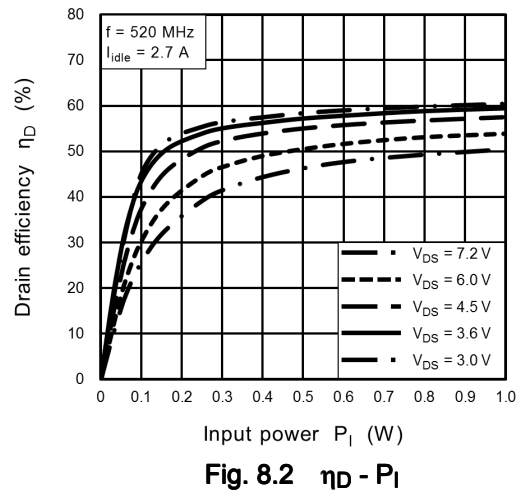
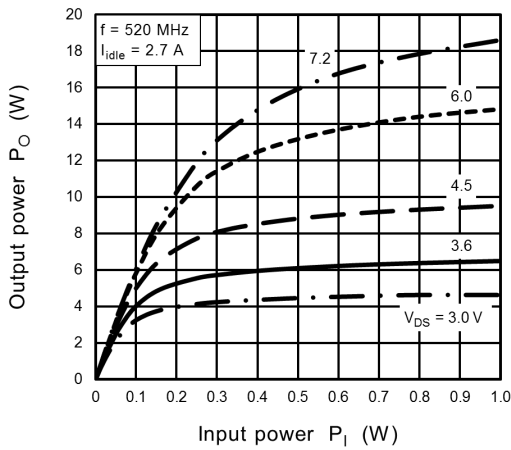


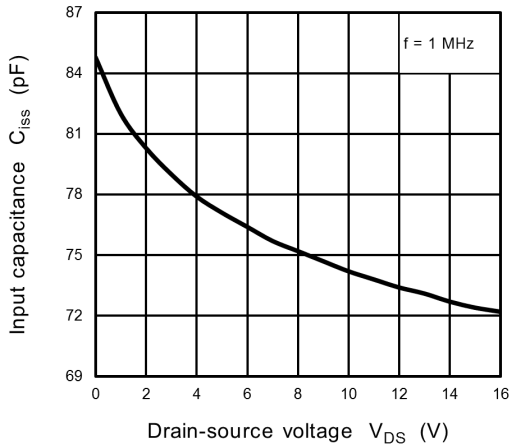
- C1: 1000 pF    C6: 10 pF    C11: 2200 pF    L1:  $\phi 0.6\text{ mm}$  enamel wire, 3.0 ID, 5.5 T
- C2: 2 pF    C7: 5 pF    C12: 2200 pF    R1: 120  $\Omega$
- C3: 39 pF    C8: 22 pF    C13: 15  $\mu\text{F}$     R2: 1.5 k $\Omega$
- C4: 18 pF    C9: 1 pF    C14: 2200 pF
- C5: 18 pF    C10: 1000 pF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

**7. Marking**

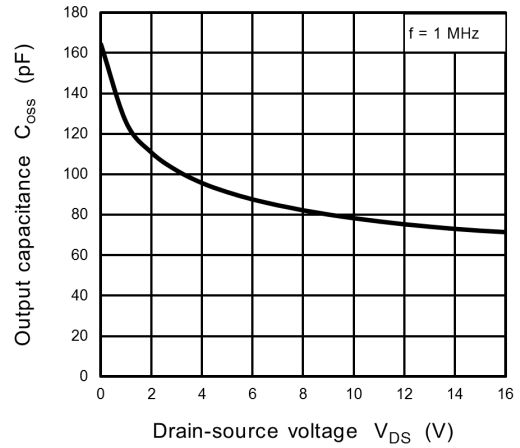


**8. Characteristics Curves (Note)**

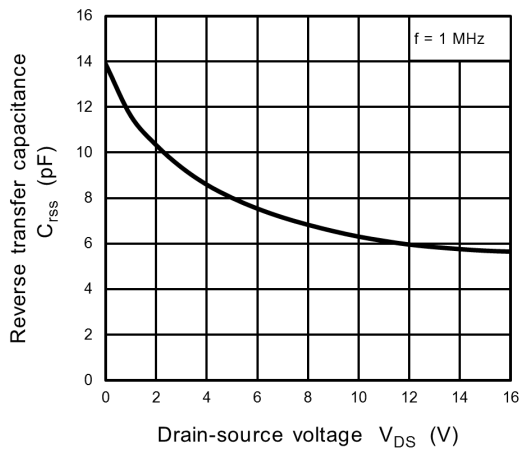




**Fig. 8.7  $C_{iss} - V_{DS}$**



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

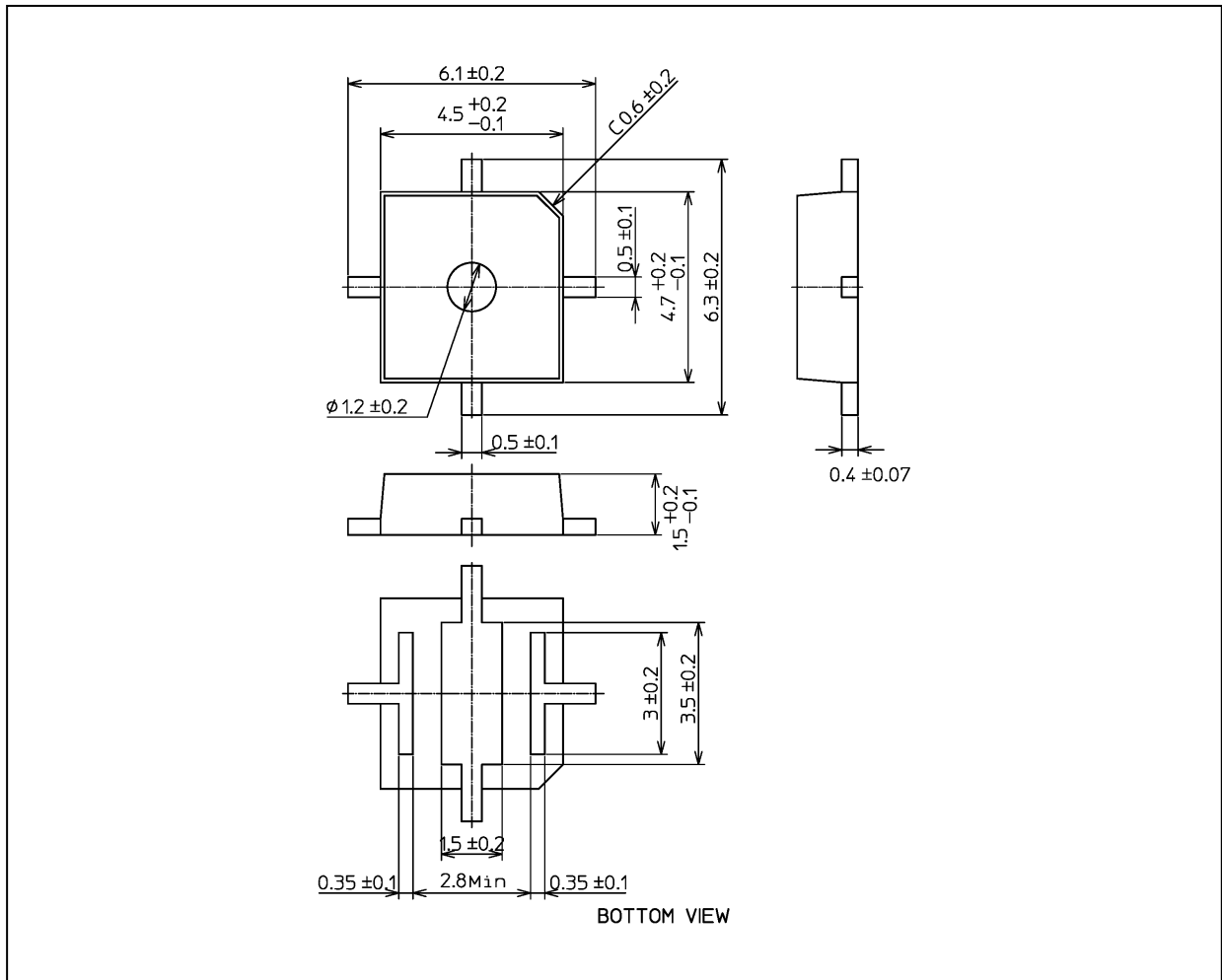


**Fig. 8.9  $C_{rss} - V_{DS}$**

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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