

# RFM03U3P

## 1. Applications

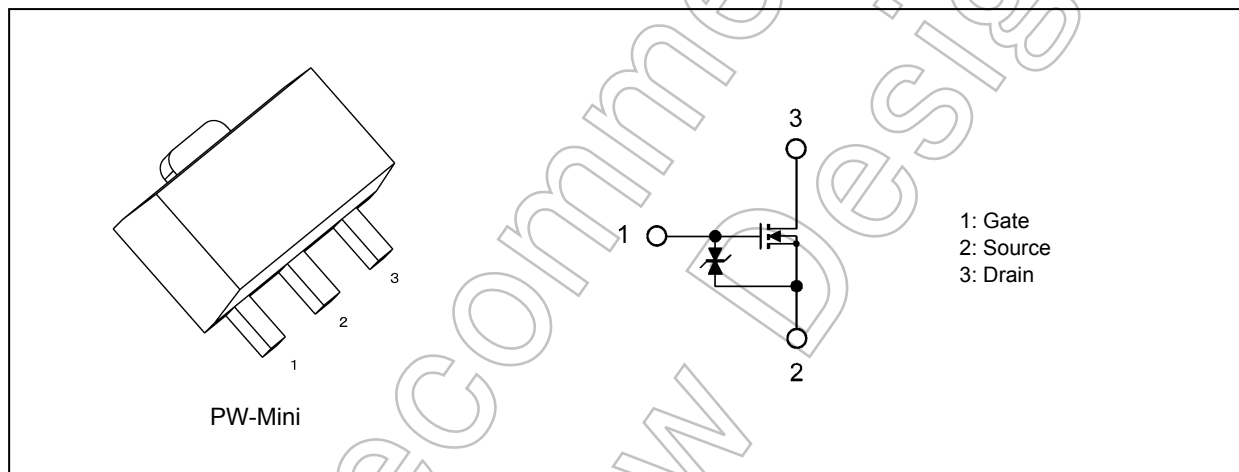
- VHF/UHF-Band Power Amplifiers

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:  $P_O = 3.0 \text{ W}$  (typ.)
- (2) High gain:  $G_{PS} = 14.8 \text{ dB}$  (typ.)
- (3) Drain efficiency:  $\eta_D = 60 \%$  (typ.)

## 3. Packaging and Internal Circuit



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

Characteristics	Symbol	Note	Rating	Unit
Drain-source voltage	$V_{DSS}$		16	V
Gate-source voltage	$V_{GSS}$		3	V
Drain current	$I_D$		2.5	A
Power dissipation	$P_D$	(Note 1)	7	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:  $T_c = 25 \text{ }^\circ\text{C}$  (When mounted on a 0.4 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.

Start of commercial production

2015-04

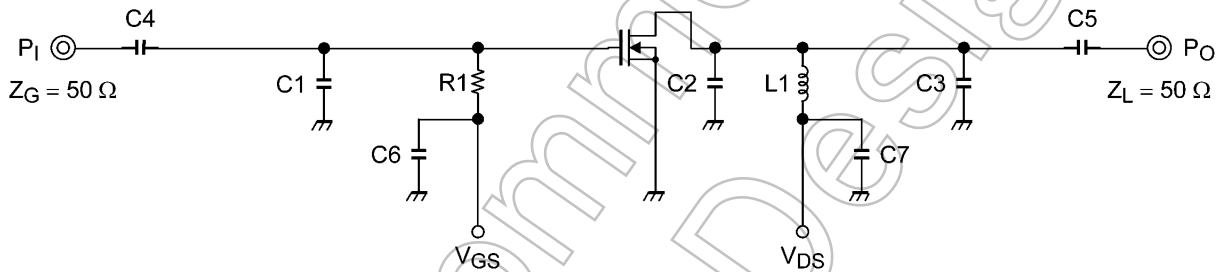
**5. Electrical Characteristics (Note) (Unless otherwise specified,  $T_a = 25\text{ }^\circ\text{C}$ )**

Characteristics	Symbol	Note	Test Condition	Min	Typ.	Max	Unit
Drain-source leakage current	$I_{DSS}$		$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V}$	—	—	10	$\mu\text{A}$
Gate-source leakage current	$I_{GSS}$		$V_{GS} = 3\text{ V}$	—	—	5	$\mu\text{A}$
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	$P_O$		$V_{DS} = 3.6\text{ V}, I_{idle} = 500\text{ mA}$ ( $V_{GS} = \text{adjust}$ ), $f = 470\text{ MHz}, P_1 = 0.1\text{ W}, Z_G = Z_L = 50\ \Omega$	2.3	3.0	—	W
Drain efficiency	$\eta_D$			50	60	—	%
Power gain	$G_{PS}$			13.6	14.8	—	dB
Maximum load mismatch without damage	—	(Note 1)	$V_{DS} = 3.6\text{ V}, P_O = 3\text{ W}$ ( $P_1 = \text{adjust}$ ), $I_{idle} = 500\text{ mA}$ ( $V_{GS} = \text{adjust}$ ), $f = 470\text{ MHz}$ , VSWR LOAD 20:1 all phase	—	—	—	—

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

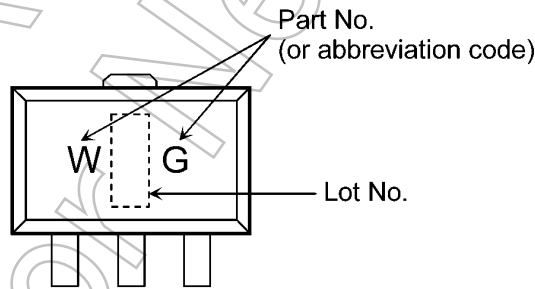
Note 1: Not damaged

**6. Output Power Test Fixture (Test condition:  $f = 470\text{ MHz}, V_{DS} = 3.6\text{ V}, I_{idle} = 500\text{ mA}, P_1 = 0.1\text{ W}$ )**

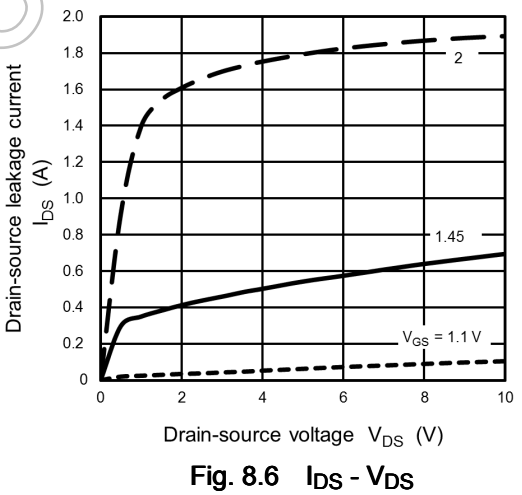
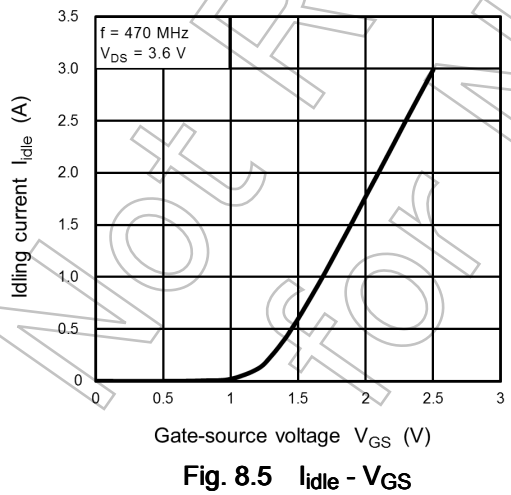
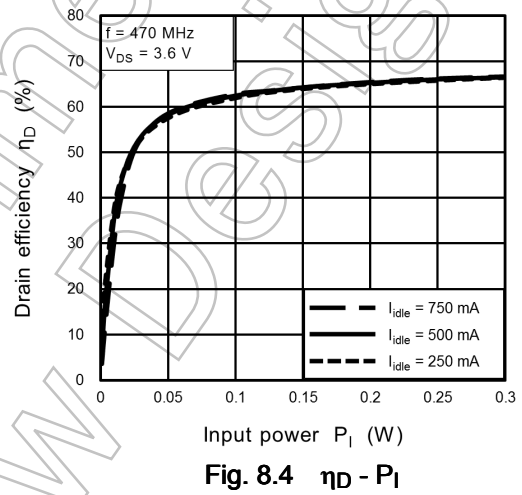
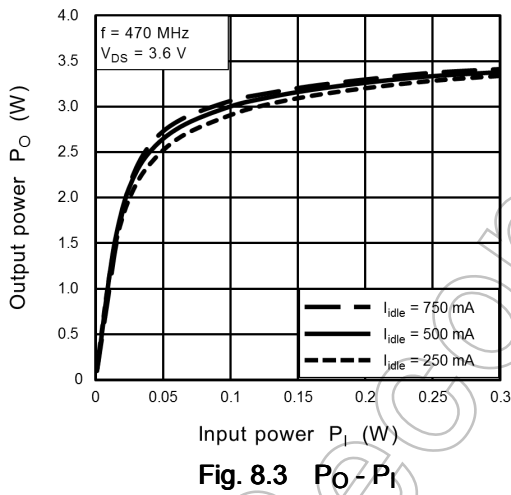
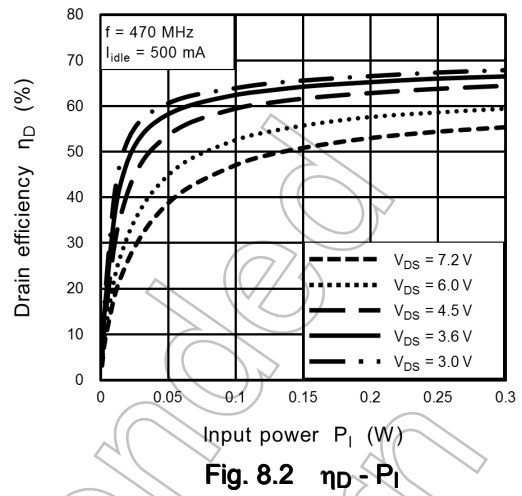
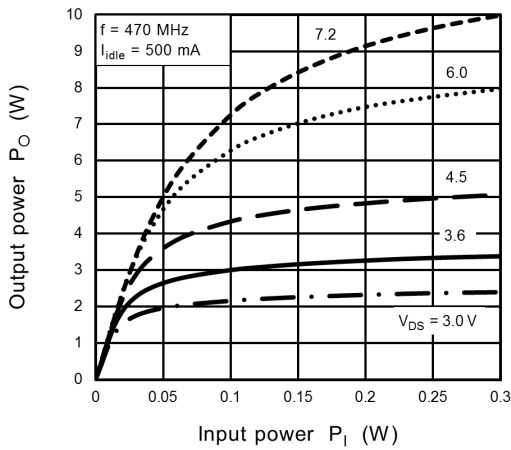


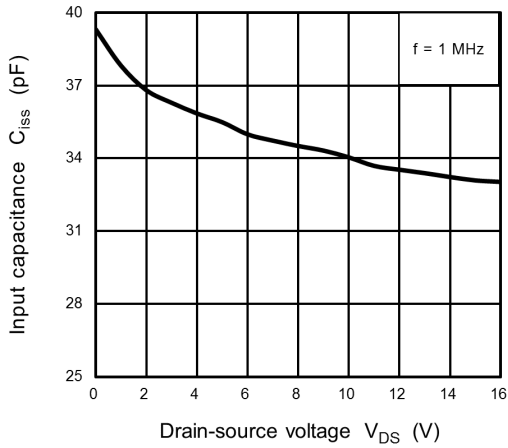
- C1: 39 pF      C4: 2200 pF      C7: 30  $\mu\text{F}$       L1:  $\phi 0.5\text{ mm}$  enamel wire, 5.0 ID, 8.5 T
- C2: 43 pF      C5: 2200 pF      R1: 470  $\Omega$
- C3: 20 pF      C6: 30  $\mu\text{F}$

**7. Marking**

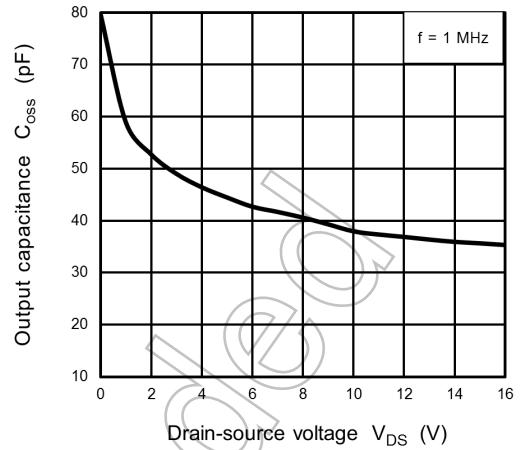


**8. Characteristics Curves (Note)**

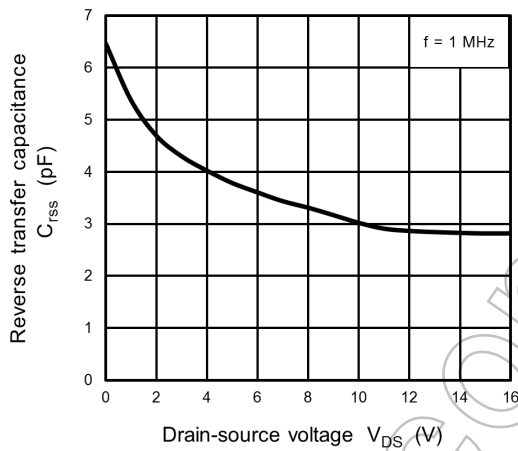




**Fig. 8.7  $C_{iss} - V_{DS}$**



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

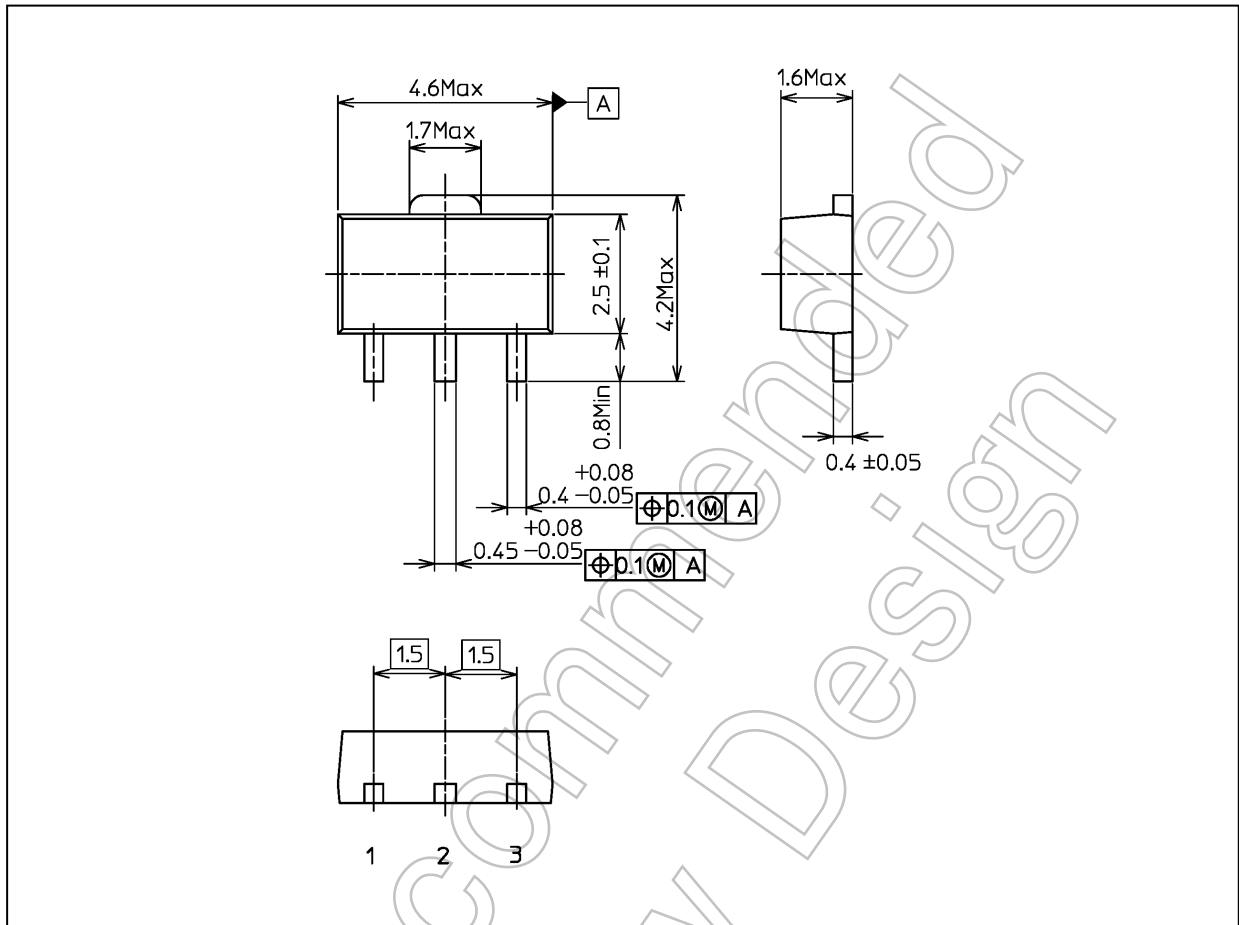


**Fig. 8.9  $C_{rss} - V_{DS}$**

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

**Package Dimensions**

Unit: mm



Weight: 0.05 g (typ.)

Package Name(s)
TOSHIBA: 2-5K1S
Nickname: PW-Mini

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