

RFM03U3P

1. Applications

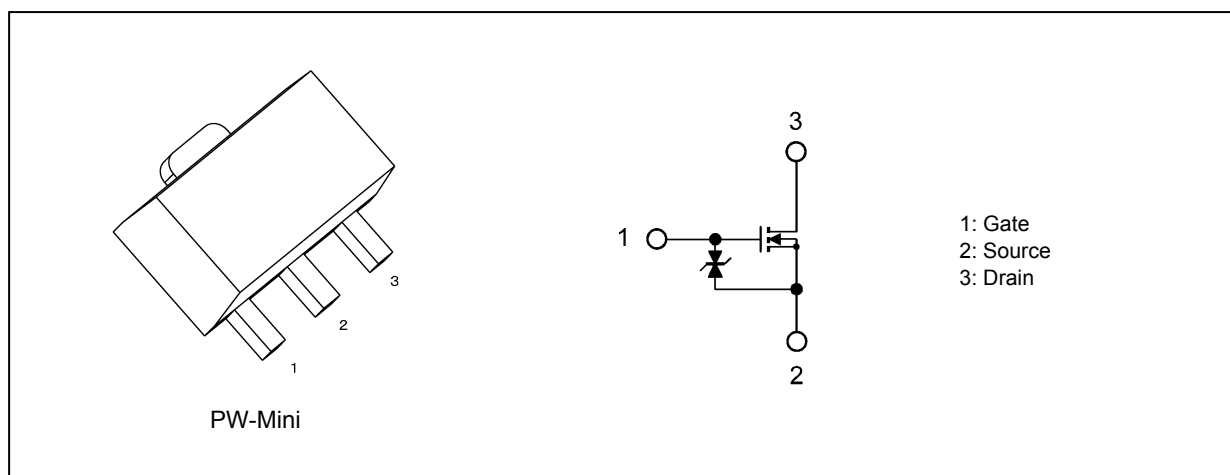
- VHF/UHF-Band Power Amplifiers

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

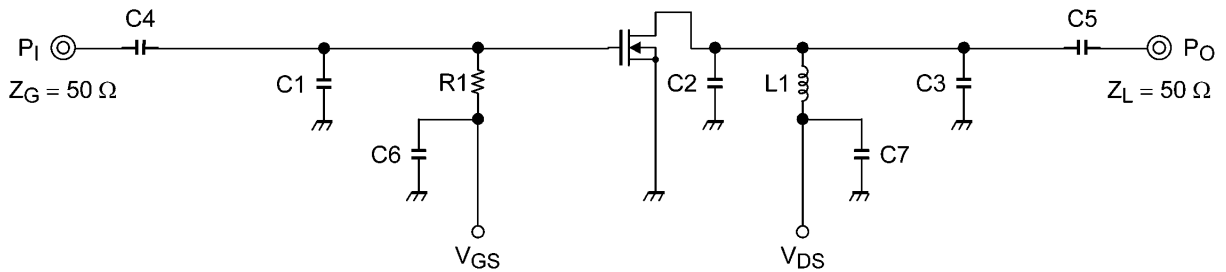
5. Electrical Characteristics (Note) (Unless otherwise specified, $T_a = 25\text{ }^\circ\text{C}$)

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	μA
Gate-source leakage current	I_{GSS}		$V_{GS} = 3\text{ V}$	—	—	5	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		$V_{DS} = 3.6\text{ V}, I_{idle} = 500\text{ mA}$ ($V_{GS} = \text{adjust}$), $f = 470\text{ MHz}, P_I = 0.1\text{ W}, Z_G = Z_L = 50\ \Omega$	2.3	3.0	—	W
Drain efficiency	η_D			50	60	—	%
Power gain	G_{PS}			13.6	14.8	—	dB
Maximum load mismatch without damage	—	(Note 1)	$V_{DS} = 3.6\text{ V}, P_O = 3\text{ W}$ ($P_I = \text{adjust}$), $I_{idle} = 500\text{ mA}$ ($V_{GS} = \text{adjust}$), $f = 470\text{ MHz}$, VSWR LOAD 20:1 all phase	—	—	—	—

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

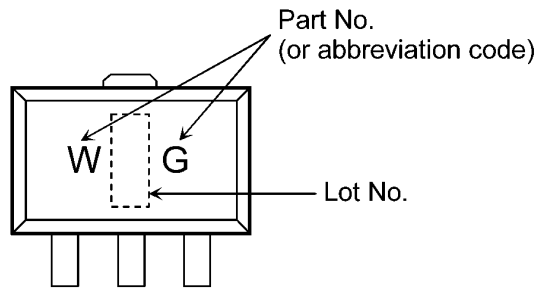
Note 1: Not damaged

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

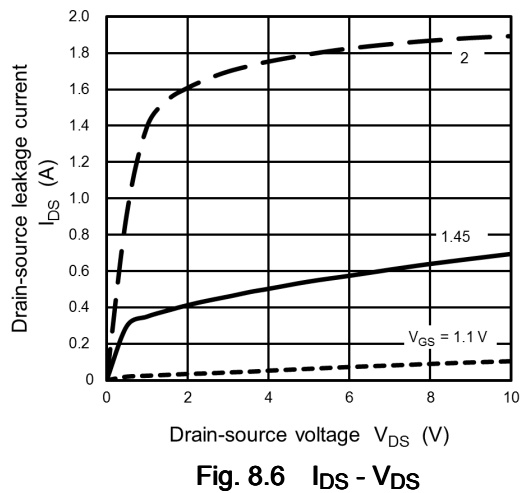
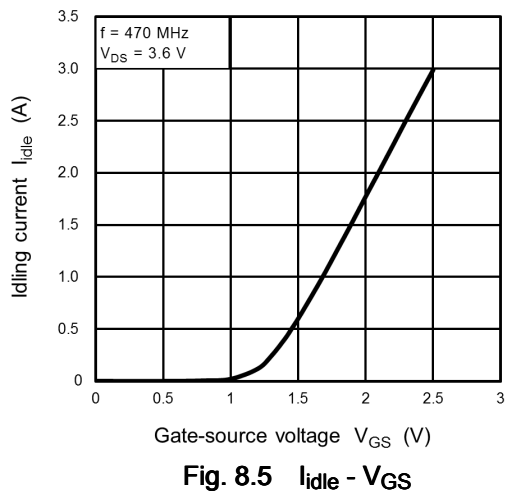
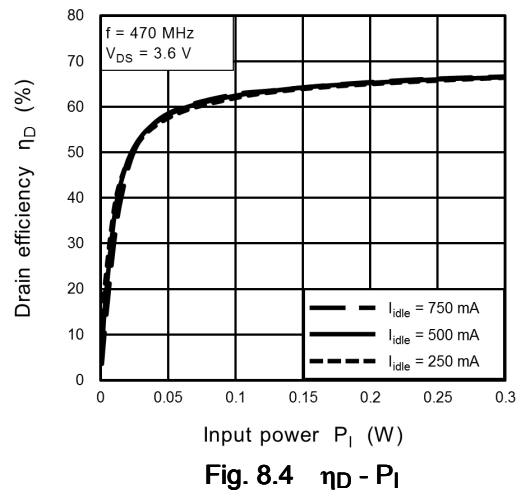
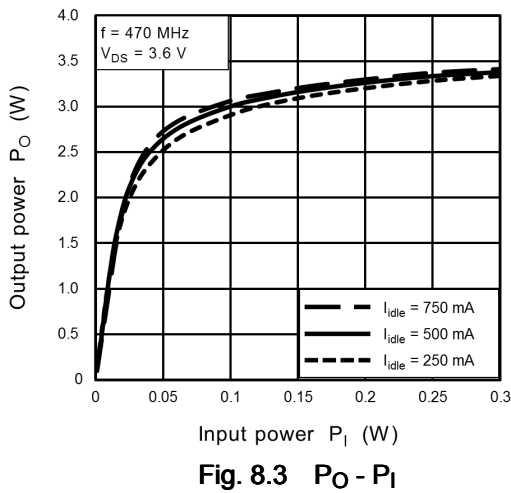
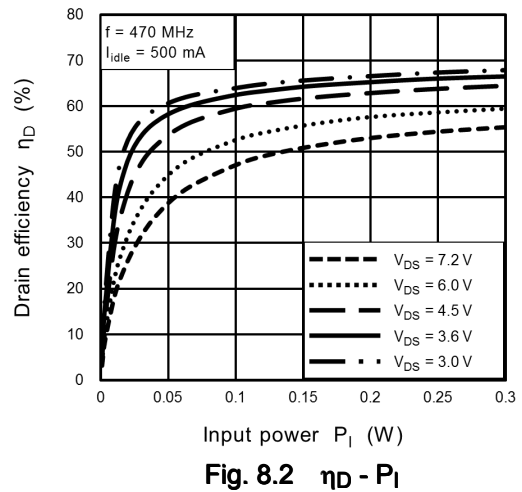
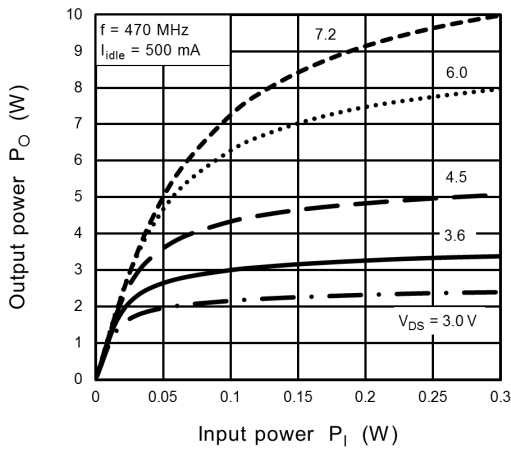


- C1: 39 pF C4: 2200 pF C7: 30 μF L1: $\phi 0.5\text{ mm}$ enamel wire, 5.0 ID, 8.5 T
- C2: 43 pF C5: 2200 pF R1: 470 Ω
- C3: 20 pF C6: 30 μF

7. Marking



8. Characteristics Curves (Note)



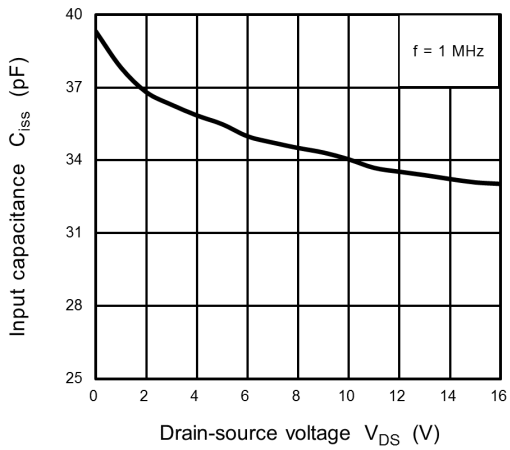


Fig. 8.7 $C_{iss} - V_{DS}$

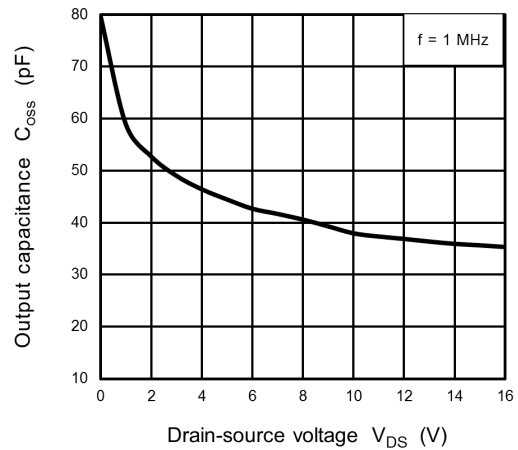


Fig. 8.8 $C_{oss} - V_{DS}$

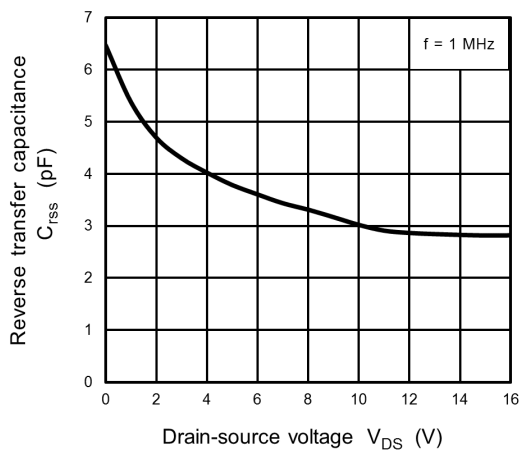
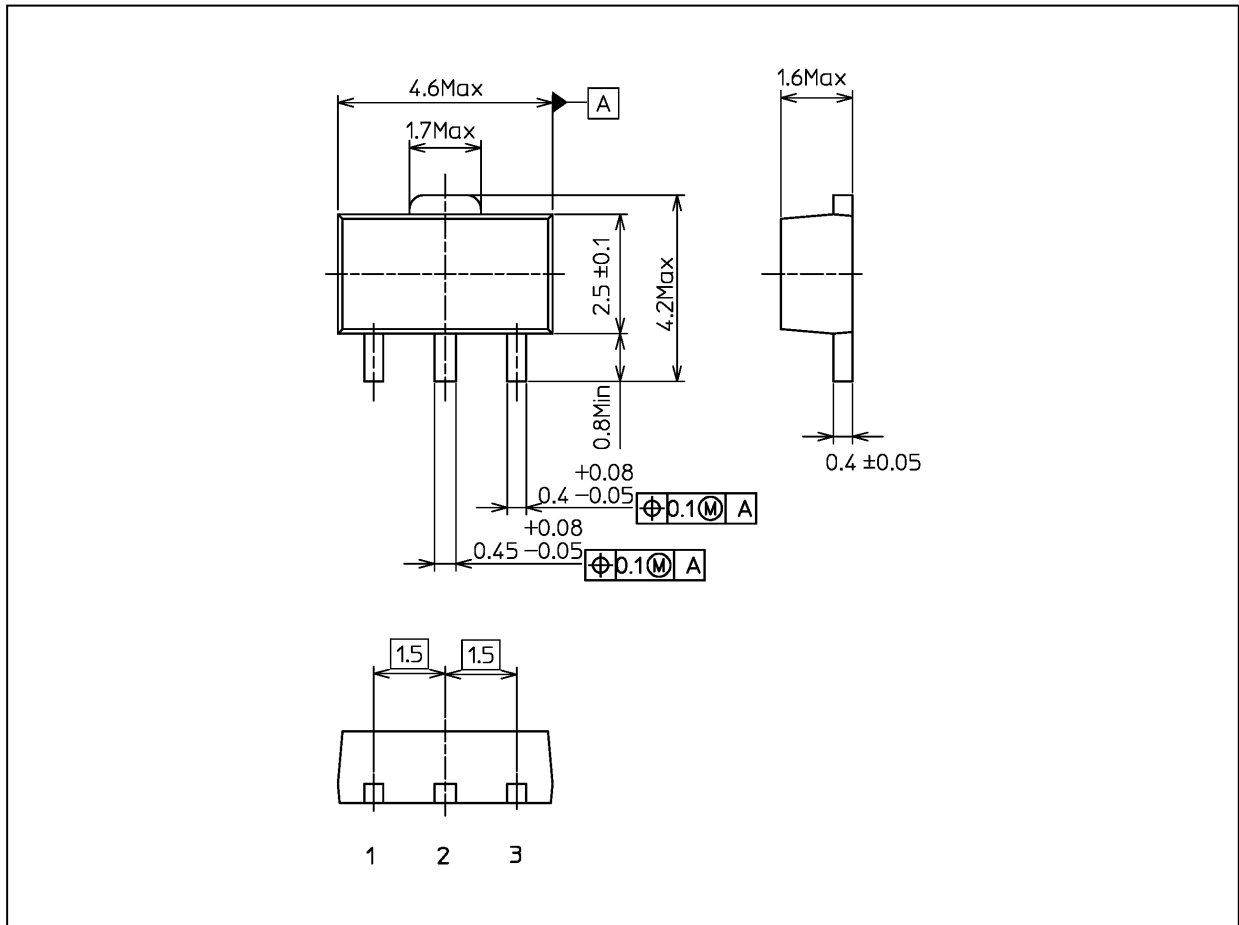


Fig. 8.9 $C_{rss} - V_{DS}$

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

Package Dimensions

Unit: mm



Weight: 0.05 g (typ.)

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

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