

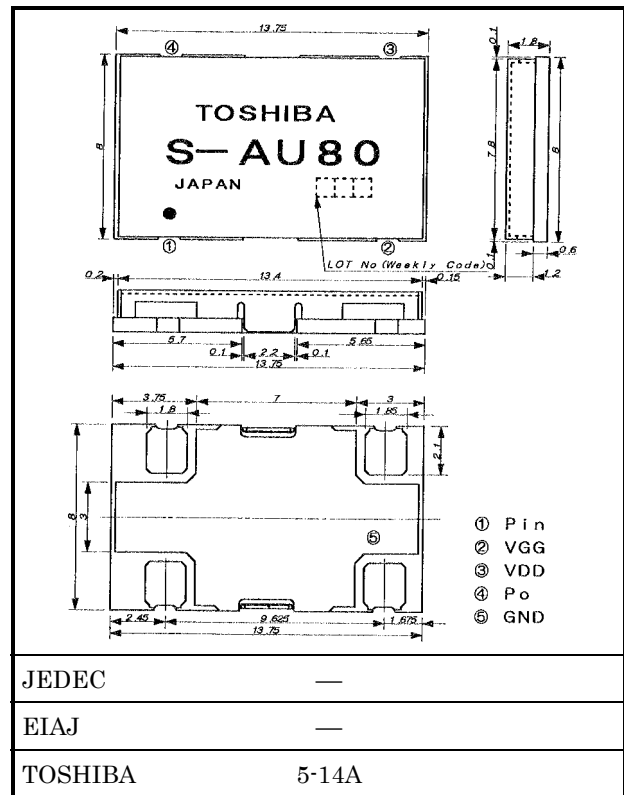
TOSHIBA RF Power Amplifier Module

S - A U 8 0

900 MHz Band Amplifier Applications (GSM)

Unit: mm

- Output Power: $P_o = 35.0$ dBmW (typ.)
- Power Gain: $G_p = 35.0$ dB (typ.)
- Total Efficiency: $\eta_T = 43\%$ (typ.)



Maximum Ratings (Ta = 25°C)

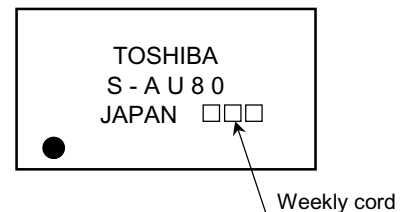
Characteristic	Symbol	Rating	Unit
DC Supply Voltage	V _{DD}	8 (Note1)	V
DC Supply Voltage	V _{GG}	5 (Note2)	V
DC Current	I _{DD}	5	A
Input Power	P _i	6	dBmW
Output Power	P _o	36 (Note3)	dBmW
Operating Case Temperature Range	T _{c (opr)}	−30~85	°C
Storage Temperature Range	T _{stg}	−40~110	°C

Note1: This value is specified at no operation (V_{GG} = 0 V, P_i = none)

Note2: This value is specified at no operation (V_{DD} = 0 V, P_i = none)

Note3: This value is specified at no 50 Ω load operation

Type Name



961001EAA1

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Electrical Characteristics (Ta = 25°C)

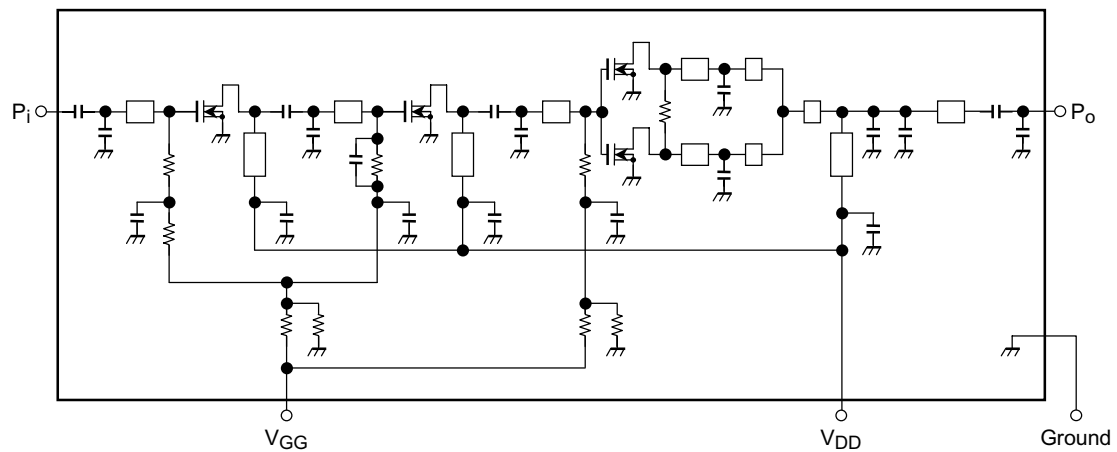
Characteristic	Symbol	Test Condition		Min	Typ.	Max	Unit
Frequency range	f _{range}	—		880	—	915	MHz
Leakage current	I _{leak}	V _{DD} = 6.0, V _{GG} = 0 V		—	500	—	μA
Output power	P _o	P _i = 0 dBmW, V _{DD} = 3.6 V, V _{GG} ≤ 2.5 V Z _G = Z _L = 50 Ω		34.5	35.0	—	dBmW
Power gain	G _p			34.5	35.0	—	dB
Total efficiency (Note4)	Eff	P _i = 0 dBmW, V _{DD} = 3.6 V, V _{GG} ≤ 2.5 V P _o = 34.5 dBmW, Z _G = Z _L = 50 Ω		37	43	—	%
Input VSWR	VSWR	P _i = 0 dBmW, V _{DD} = 3.6 V, V _{GG} ≤ 2.5 V P _o = 34.5 dBmW, Z _G = Z _L = 50 Ω		—	—	3.0	—
Control current	I _{cont}			—	0.5	1.0	mA
2nd harmonics	2 nd HRM			—	−45	−35	dB
3rd harmonics	3 rd HRM			—	−50	−40	dB
Low voltage power	P _o -L	P _i = 0 dBmW, V _{DD} = 3.2 V, V _{GG} ≤ 2.5 V Z _G = Z _L = 50 Ω, T _c = 85°C		33.5	34.0	—	dBmW
Isolation	P _o -iso	P _i = 0 dBmW, V _{DD} = 3.6 V, V _{GG} = 0.3 V Z _G = Z _L = 50 Ω		—	−40	−37	dBmW
AM-AM conversion	AM _{con}	P _{i1} = 0 dBmW, P _{i2} = −40 dBmW P _{in2} = P _{i1} + 200 kHz, V _{DD} = 3.6 V P _o = 7~34.5 dBmW (V _{GG} = adjust) Z _G = Z _L = 50 Ω	f ₀ − 200 kHz	—	−30	—	dB
			f ₀ + 200 kHz	—	−30	—	dB
Switching time (Note5)	t _r /t _f	V _{DD} = 3.6 V P _o = 0~34.5 dBmW (V _{GG} = adjust) P _i = 0 dBmW, Z _G = Z _L = 50 Ω		—	1.0	—	μs
Noise Power	NRB	f ₀ = 915 MHz, P _{in} = 0 dBmW P _o = 34.5 dBmW, RBW = 100 kHz V _{DD} = 3.6 V, V _{GG} = adjust	f ₀ + 20 MHz	—	−82	—	dBmW
			f ₀ + 10 MHz	—	−78	—	dBmW
Load Mismatch	—	P _i = 0 dBmW, V _{DD} = 3.2~4.3 V P _o ≤ 34.5 dBmW (V _{GG} = adjust), Z _G = 50 Ω VSWR LOAD 6:1 ALL PHASE		No degradation			—
Stability	—	P _i = 0 dBmW, V _{DD} = 3.2~4.3 V V _{GG} = 0~2.5 V, Z _G = 50 Ω P _o ≤ 34.5 dBmW (@Z _L = 50 Ω) VSWR LOAD 6:1 ALL PHASE		All spurious output than 60 dB below desired signal			—

Note4: Output power P_o is defined at the root point of the module output pin P_o .
The coefficient of output power loss in the P.C.B. output is showed as follows:
 $1/(S21)^2 = 1/(0.9809)^2 = 1.04$

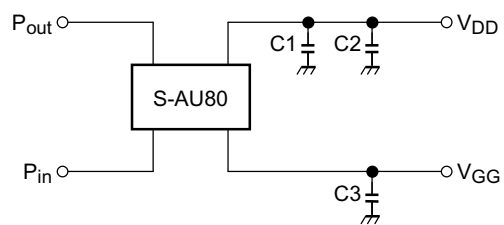
Note5: GSM pulse is applied to V_{GG} (1/8 duty 575 μs)

*: This transistor is the electrostatic sensitive device. Please handle with caution.

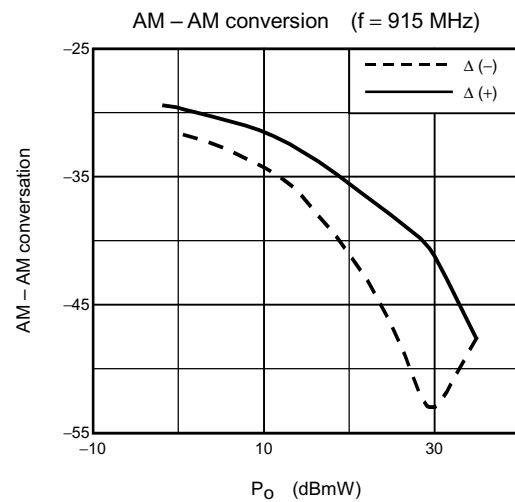
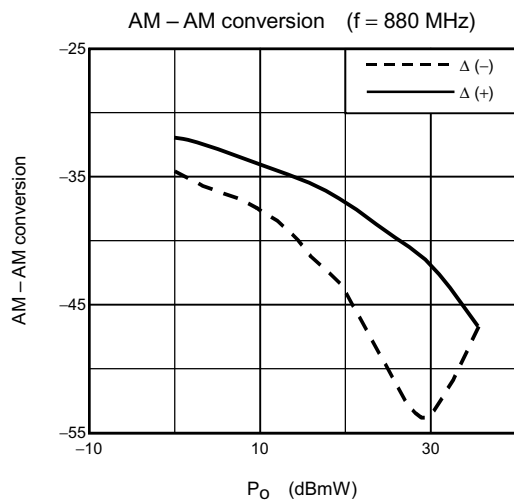
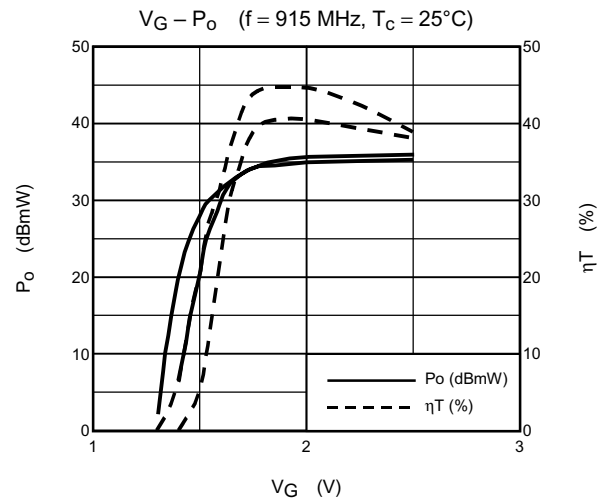
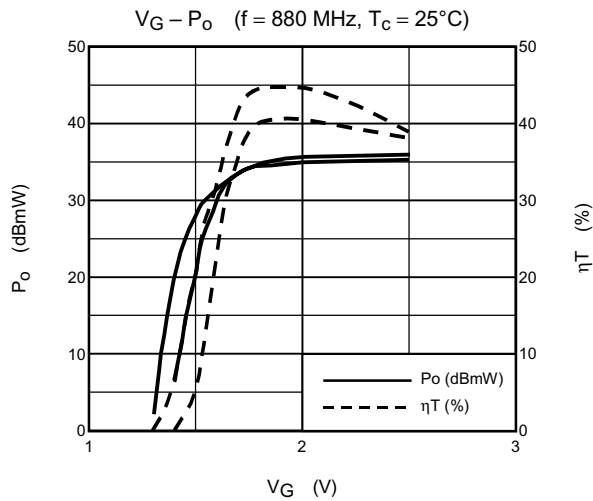
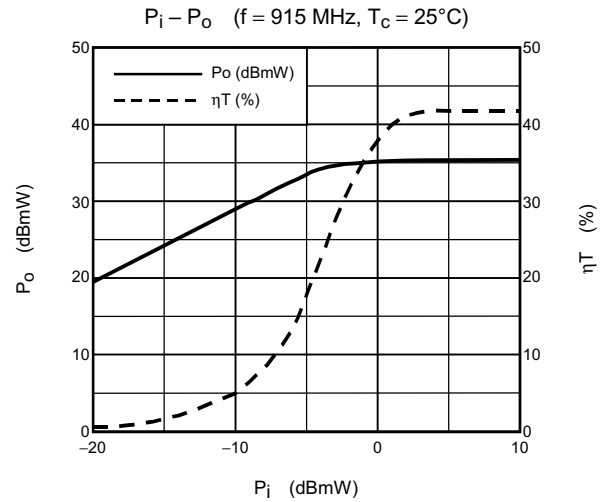
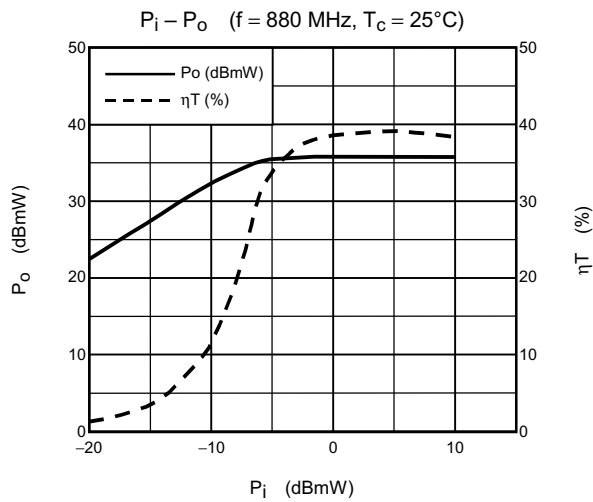
Schematic



Test Circuit



C1: 10000 pF
C2: 10 μ F
C3: 100 pF



*: These are only typical curves and devices are not necessarily guaranteed at these curves.