A5G26H606W19N

Airfast RF Power GaN Transistor

Rev. 2 — 3 October 2025 **Product data sheet**

1 General description

This 85 W asymmetrical Doherty RF power GaN transistor is designed for cellular base station applications requiring very wide instantaneous bandwidth capability covering the frequency range of 2496 to 2690 MHz.

This part is characterized and performance is guaranteed for applications operating in the 2496 to 2690 MHz band. There is no guarantee of performance when this part is used in applications designed outside of these frequencies.

2 Features and benefits

- High terminal impedances for optimal broadband performance
- Advanced high performance in-package Doherty
- Improved linearized error vector magnitude with next generation signal
- Able to withstand extremely high output VSWR and broadband operating conditions
- Plastic package

3 Typical performance

Table 1. 2600 MHz — Typical Doherty single-carrier W-CDMA reference circuit performance

V_{DD} = 48 Vdc, I_{DQA} = 300 mA, V_{GSB} = -4.5 Vdc, P_{out} = 85 W Avg., input signal PAR = 9.9 dB @ 0.01 % probability on CCDF.[1]

Frequency	G_{ps} (dB)	η_D (%)	Output PAR (dB)	ACPR (dBc)
2496 MHz	14.3	53.6	7.9	-27.8
2595 MHz	14.6	52.3	7.9	-32.7
2690 MHz	13.9	50.8	8.0	-35.4

[1] All data measured with device soldered to NXP reference circuit.

4 Pinning information

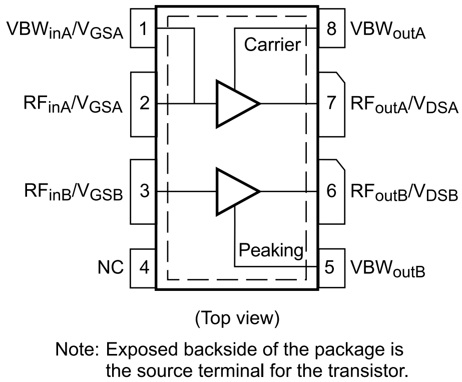


Figure 1. Pin configuration

5 Ordering information

Table 2. Ordering information

Device	Tape and reel information	Package
A5G26H606W19NR3	R3 suffix = 250 units, 44 mm tape width, 13-inch reel	OM-780-4S4S

6 Product marking

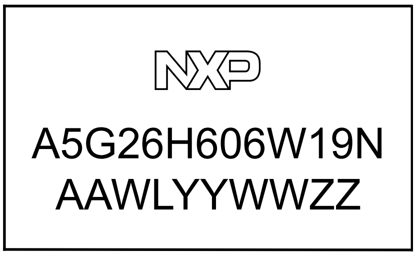


Figure 2. Product marking

Table 3. Product marking trace code

Identifier	Description
AA	Assembly location
WL	Wafer lot indicator
YYWW	Date code
ZZ	Assembly lot

7 Limiting values

Table 4. Limiting values

Symbol	Parameter	Conditions	Value	Unit
V_{DSS}	Drain-source voltage		125	Vdc
V_{GS}	Gate-source voltage		-8, 0	Vdc
V_{DD}	Operating voltage		55	Vdc
I_{GMAX}	Maximum forward gate current	$I_{G\ (A+B)}$, @ T_C = 25 °C	90	mA
T_{stg}	Storage temperature range		-65 to +150	°C
T_{CH}	Maximum channel temperature		225	°C

8 Recommended operating conditions

Table 5. Recommended operating conditions

Symbol	Parameter	Conditions	Value	Unit
V_{DD}	Operating voltage		48	Vdc

9 Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Value	Unit
$R_{\theta SC}$ (IR)	Thermal resistance by infrared measurement, active die surface-to-case	Case temperature 122 °C, $P_{D\text{-}Global}$ = 102 W	0.48[1]	°C/W
$R_{\theta CHC}$ (FEA)	Thermal resistance by finite element analysis, channel-to-case	Carrier (case temperature 122 °C, P_D = 62 W)	1.3[1][2]	°C/W
		Peaking (case temperature 115 °C, P_D = 22 W)	1.0[1][2]	°C/W

[1] Refer to AN1955, *Thermal Measurement Methodology of RF Power Amplifiers*. Go to https://www.nxp.com/RF and search for AN1955.
[2] $R_{\theta CHC}$ (FEA) must be used for purposes related to reliability and limitations on maximum channel temperature. MTTF may be estimated by the expression MTTF (hours) = $10^{[A + B/(T + 273)]}$, where T is the channel temperature in degrees Celsius, A = -11.6 and B = 9129.

10 ESD protection characteristics

Table 7. ESD protection characteristics

Test methodology	Class
Human Body Model (per JS-001-2023)	1B
Charge Device Model (per JS-002-2022)	C3

11 Moisture sensitivity level

Table 8. Moisture sensitivity level

Test methodology	Rating	Package peak temperature	Unit
Per JESD22-A113, IPC/JEDEC J-STD-020	3	245	°C

12 Electrical characteristics

12.1 DC characteristics — off characteristics

Table 9. DC characteristics — off characteristics

(T_A = 25 °C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Off characteristics[1]						
$I_{D(BR)}$	Off-state drain leakage	Carrier (V_{DS} = 150 Vdc, V_{GS} = -8 Vdc)	-	-	13.2	mAdc
		Peaking (V_{DS} = 150 Vdc, V_{GS} = -8 Vdc)	-	-	26.4	mAdc

[1] Each side of device measured separately.

12.2 DC characteristics — on characteristics

Table 10. DC characteristics — on characteristics

(T_A = 25 °C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On characteristics — Side A, Carrier						
$V_{GS(th)}$	Gate threshold voltage	V_{DS} = 10 Vdc, I_D = 30 mAdc	-4.6	-2.5	-1.9	Vdc
$V_{GSA(Q)}$	Gate quiescent voltage	V_{DD} = 48 Vdc, I_{DA} = 300 mAdc[1]	-3.1	-2.5	-2.1	Vdc
On characteristics — Side B, Peaking						
$V_{GS(th)}$	Gate threshold voltage	V_{DS} = 10 Vdc, I_D = 60 mAdc	-4.6	-2.6	-1.9	Vdc

[1] Measured in functional test.

12.3 Functional tests

Table 11. Functional tests

(In NXP Doherty production test fixture, T_A = 25 °C unless otherwise noted, 50 ohm system)[1] V_{DD} = 48 Vdc, I_{DQA} = 300 mA, V_{GSB} = (V_t - 2.07) Vdc, P_{out} = 85 W Avg., f = 2690 MHz, single-carrier W-CDMA, IQ magnitude clipping, input signal PAR = 9.9 dB @ 0.01 % probability on CCDF. ACPR measured in 3.84 MHz channel bandwidth @ ±5 MHz offset.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
G_{ps}	Power gain		12.8	13.7	17.8	dB
η_D	Drain efficiency		47.5	51.5	-	%
P_{sat}	Saturated power	Pulsed CW, 5 % duty cycle	55.8	56.5	-	dBm
ACPR	Adjacent channel power ratio		-	-37.6	-28.0	dBc

[1] Internally matched part.

12.4 Wideband ruggedness

Table 12. Wideband ruggedness

(In NXP Doherty production test fixture, T_A = 25 °C unless otherwise noted, 50 ohm system) I_{DQA} = 300 mA, V_{GSB} = -4.5 Vdc, f = 2595 MHz, Additive White Gaussian Noise (AWGN) with 10 dB PAR.

Characteristic	Test results
ISBW of 400 MHz at 55 Vdc, 138 W Avg. modulated output power (3 dB input overdrive from 85 W Avg. modulated output power)	No device degradation

12.5 Typical performance

Table 13. Typical performance

(In NXP Doherty reference circuit, T_A = 25 °C unless otherwise noted, 50 ohm system) V_{DD} = 48 Vdc, I_{DQA} = 300 mA, V_{GSB} = -4.5 Vdc, 2496–2690 MHz bandwidth.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Pulsed CW, 10 % duty cycle						
P_{sat}	Saturated power[1]		-	624	-	W
Φ	AM/PM[1] (Phase deviation from rated power to saturated power. Maximum number measured across the 2496–2690 MHz bandwidth.)		-	-11	-	°
ΔG	Gain variation @ Avg. power over temperature	-40 °C to +85 °C	-	0.018	-	dB/°C
$ΔP_{sat}$	Output power variation @ saturated power over temperature	-40 °C to +85 °C	-	0.003	-	dB/°C
Single-carrier W-CDMA, unclipped						
G_F	Gain flatness[1]	194 MHz bandwidth @ P_{out} = 85 W Avg.	-	0.5	-	dB
2-tone CW						
VBW_{res}	VBW resonance[1][2]		-	290	-	MHz

[1] All data measured with device soldered to NXP reference circuit.
[2] IMD third order inflection point.

Correct biasing sequence for GaN depletion mode transistors in a Doherty configuration

Bias ON the device

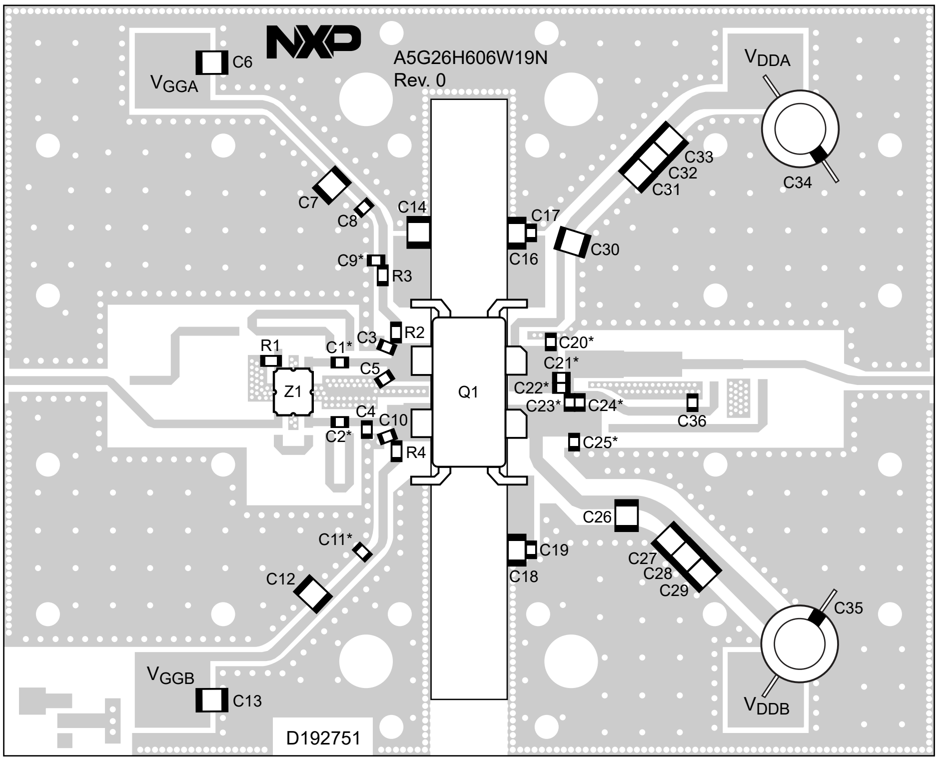
1. Set gate voltage V_{GSA} and V_{GSB} to -5 V.
2. Set drain voltage V_{DSA} and V_{DSB} to nominal supply voltage (+48 V).
3. Increase V_{GSA} (carrier side) until I_{DQA} current is attained.
4. Increase V_{GSB} (peaking side) to target bias voltage.
5. Apply RF input power to desired level.

Bias OFF the device

1. Disable RF input power.
2. Adjust gate voltage V_{GSA} and V_{GSB} to -5 V.
3. Adjust drain voltage V_{DSA} and V_{DSB} to 0 V. Allow adequate time for drain voltage to reduce to 0 V from external drain capacitors.
4. Disable V_{GSA} and V_{GSB}.

13 Component layout and parts list

13.1 Component layout



*C1, C2, C9, C11, C20, C21, C22, C23, C24 and C25 are mounted vertically.
Note: All data measured with device soldered to NXP reference circuit.

aaa-059935

Figure 3. A5G26H606W19N reference circuit component layout

13.2 Component designations and values

Table 14. A5G26H606W19N reference circuit component designations and values

Part	Description	Part Number	Manufacturer
C1, C2	18 pF chip capacitor	600F180JT250XT	ATC
C3	1.2 pF chip capacitor	600F1R2BT250XT	ATC
C4	0.3 pF chip capacitor	600F0R3BT250XT	ATC
C5	0.6 pF chip capacitor	600F0R6BT250XT	ATC
C6, C7, C12, C13, C14, C16, C18, C27, C28, C29, C31, C32, C33	10 μF chip capacitor	GRM32EC72A106KE05L	Murata
C8	12 pF chip capacitor	600F120JT250XT	ATC
C9, C11, C26, C30	18 pF chip capacitor	800B180JT500XT	ATC
C10, C25	1 pF chip capacitor	600F1R0BT250XT	ATC
C17, C19, C36	5.6 pF chip capacitor	600F5R6BT250XT	ATC
C20	1.8 pF chip capacitor	600F1R8BT250XT	ATC
C21	2.2 pF chip capacitor	600F2R2BT250XT	ATC
C22	2.4 pF chip capacitor	600F2R4BT250XT	ATC
C23, C24	1.6 pF chip capacitor	600F1R6BT250XT	ATC
C34, C35	220 μF, 100 V electrolytic capacitor	MCGPR100V227M16X26	Multicomp
Q1	RF power GaN transistor	A5G26H606W19N	NXP
R1	50 Ω, 8 W termination chip resistor	C8A50Z4A	Anaren/TTM
R2	2.2 Ω, 1/8 W chip resistor	CRCW08052R20JNEA	Vishay
R3	0 Ω, 1/8 W chip resistor	CRCW08050000Z0EA	Vishay
R4	5.1 Ω, 1/8 W chip resistor	CRCW08055R10JNEA	Vishay
Z1	2300–2900 MHz, 90°, 3 dB PCB hybrid coupler	X3C26P1-03S	Anaren/TTM
PCB	Rogers RO4350B, 0.020″, ε_r = 3.48	D192751	MTL

Note: Component number C15 is intentionally omitted.

14 Package information

OM−780−4S4S SOT2082−1

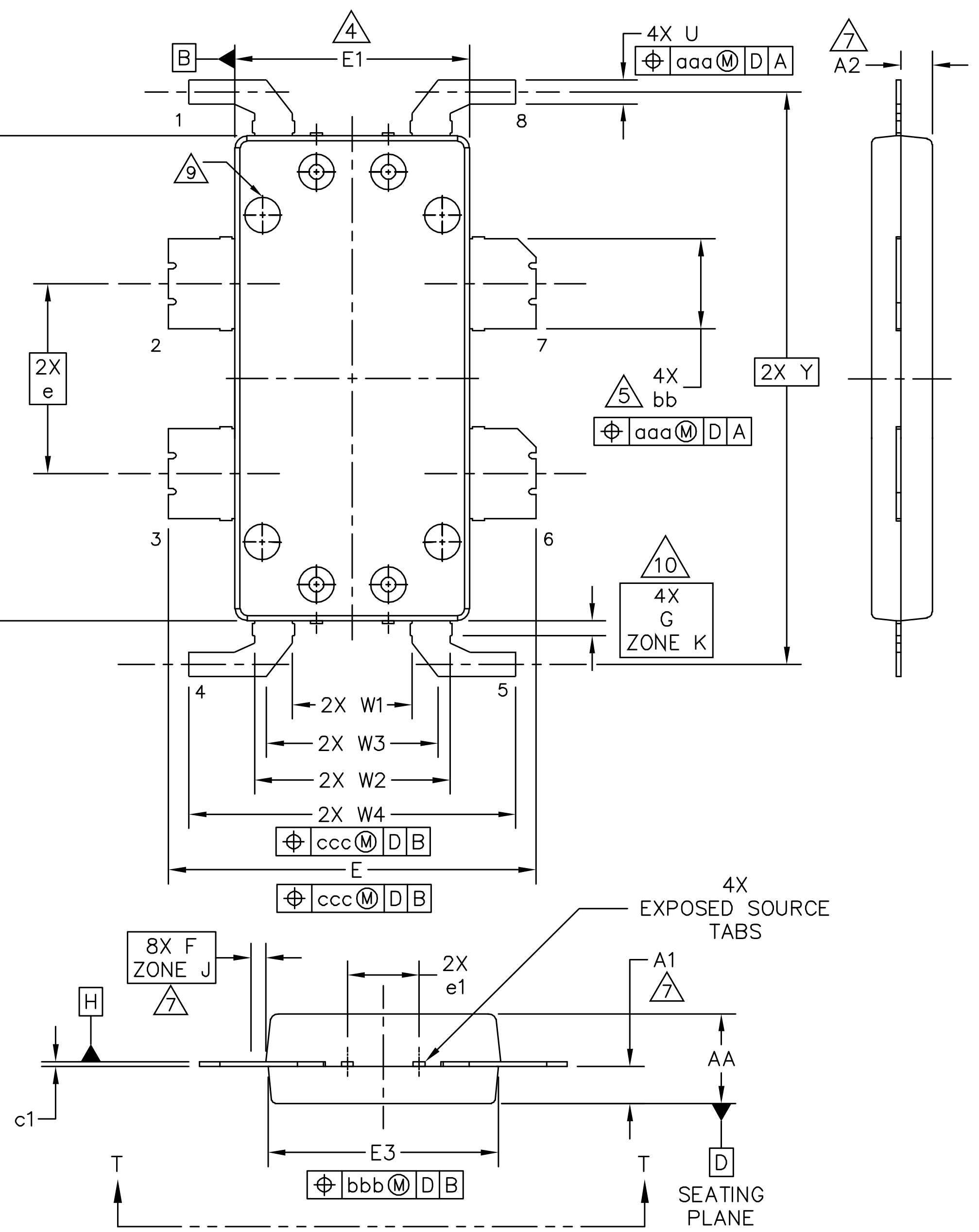


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Figure 4. Package outline (OM-780-4S4S)

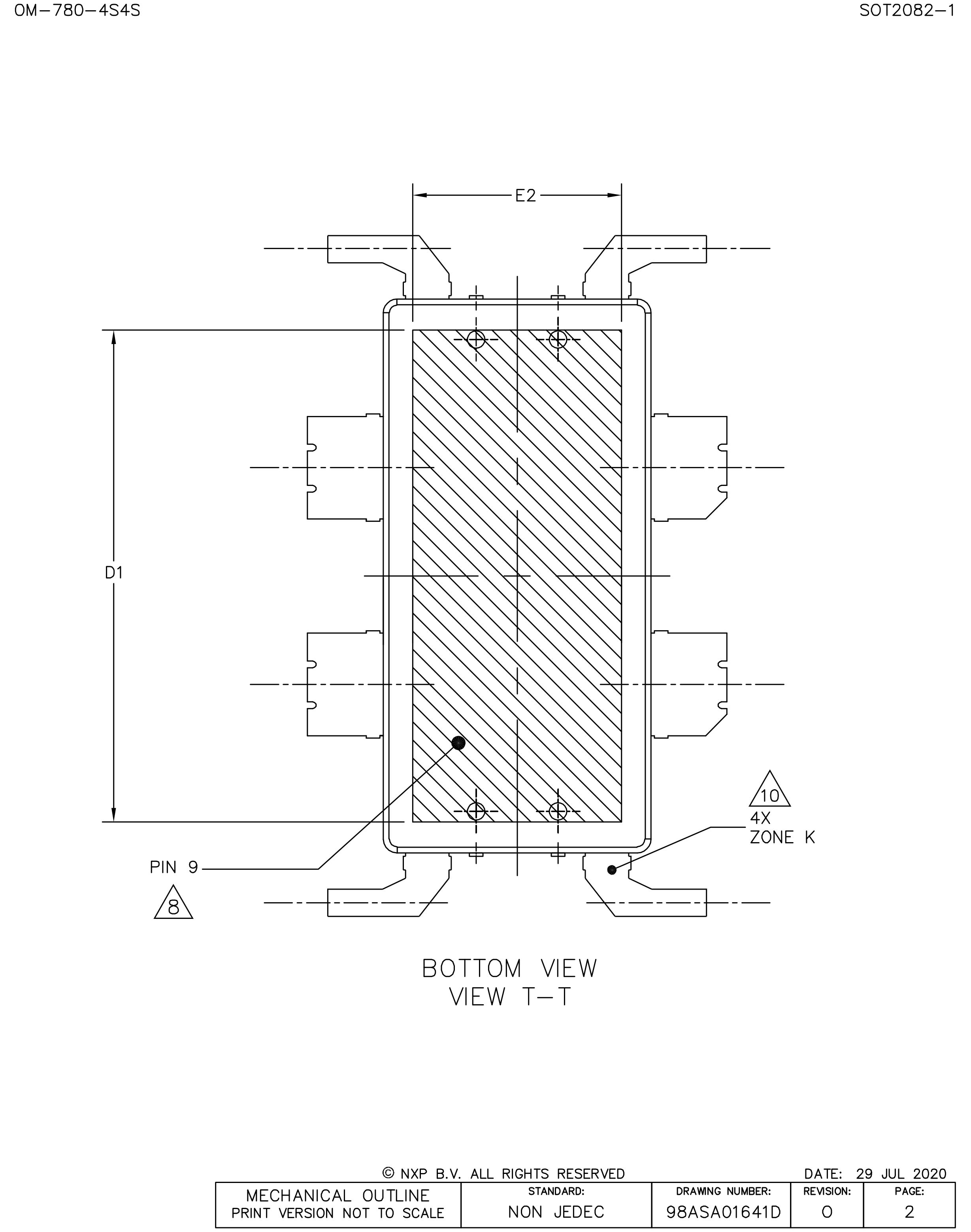

Figure 5. Package outline (OM-780-4S4S) — bottom view

OM–780–4S4S SOT2082–1

NOTES:

1. CONTROLLING DIMENSION: INCH

2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M–1994.

3. DATUM PLANE H IS LOCATED AT TOP OF LEAD AND IS COINCIDENT WITH THE LEAD WHERE THE LEAD EXITS THE PLASTIC BODY AT THE TOP OF THE PARTING LINE.

4. DIMENSIONS DD AND E1 DO NOT INCLUDE MOLD PROTRUSION. ALLOWABLE PROTRUSION IS .006 INCH (0.15 MM) PER SIDE. DIMENSIONS DD AND E1 DO INCLUDE MOLD MISMATCH AND ARE DETERMINED AT DATUM PLANE H.

5. DIMENSION bb DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE .005 INCH (0.13 MM) TOTAL IN EXCESS OF THE bb DIMENSION AT MAXIMUM MATERIAL CONDITION.

6. DATUMS A AND B TO BE DETERMINED AT DATUM PLANE H.

7. DIMENSIONS A1 AND A2 APPLIES WITHIN ZONE J ONLY. A1 APPLIES TO PINS 2, 3, 6 AND 7. A2 APPLIES TO PINS 1, 4, 5 AND 8.

8. HATCHING REPRESENTS THE EXPOSED AREA OF THE HEAT SLUG. THE DIMENSIONS D1 AND E2 REPRESENT THE VALUES BETWEEN THE TWO OPPOSITE POINTS ALONG THE EDGES OF EXPOSED AREA OF HEAT SLUG.

9. DIMPLED HOLE REPRESENTS INPUT SIDE.

10. ZONE K REPRESENTS NON–SOLDERABLE REGION WHERE MOLD FLASH AND RESIN BLEED ARE PERMITTED ON BOTH SIDES OF THE LEADS.

	INCH		MILLIMETER			INCH		MILLIMETER	
DIM	MIN	MAX	MIN	MAX	DIM	MIN	MAX	MIN	MAX
AA	.148	.152	3.76	3.86	W2	.321	.331	8.15	8.41
A1	.059	.065	1.50	1.65	W3	.281	.291	7.14	7.39
A2	.056	.068	1.42	1.73	W4	.538	.554	13.67	14.07
DD	.808	.812	20.52	20.62	U	.037	.043	0.94	1.09
D1	.720	----	18.29	----	Y	.956 BSC		24.28 BSC	
E	.610	.618	15.49	15.70	bb	.147	.153	3.73	3.89
E1	.390	.394	9.91	10.01	c1	.007	.011	0.18	0.28
E2	.306	----	7.77	----	e	.317 BSC		8.05 BSC	
E3	.383	.387	9.73	9.83	e1	.116	.124	2.95	3.15
F	.025 BSC		0.64 BSC		aaa	.004		0.10	
G	.030 BSC		0.76 BSC		bbb	.006		0.15	
W1	.195	.205	4.95	5.21	ccc	.010		0.25	

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Figure 6. Package outline (OM-780-4S4S) — notes, dimensions

15 Product documentation, software and tools

Refer to the following resources to aid your design process.

Application notes

- AN1907: Solder Reflow Attach Method for High Power RF Devices in Plastic Packages
- AN1955: Thermal Measurement Methodology of RF Power Amplifiers

Software

- .s2p file

Development tools

- Printed circuit boards

16 Revision history

The following table summarizes revisions to this document.

Table 15. Revision history

Document ID	Release date	Description
A5G26H606W19N v.2	3 Oct. 2025	• Table 11: updated P_{sat} minimum from 55.5 dBm to 55.8 dBm to match final test limit, p. 4
A5G26H606W19N v.1	9 April 2025	• Initial release of product data sheet

Legal information

Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
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