

Wideband RF LDMOS Integrated Power Amplifier 15 W, 1800 – 2000 MHz

Description

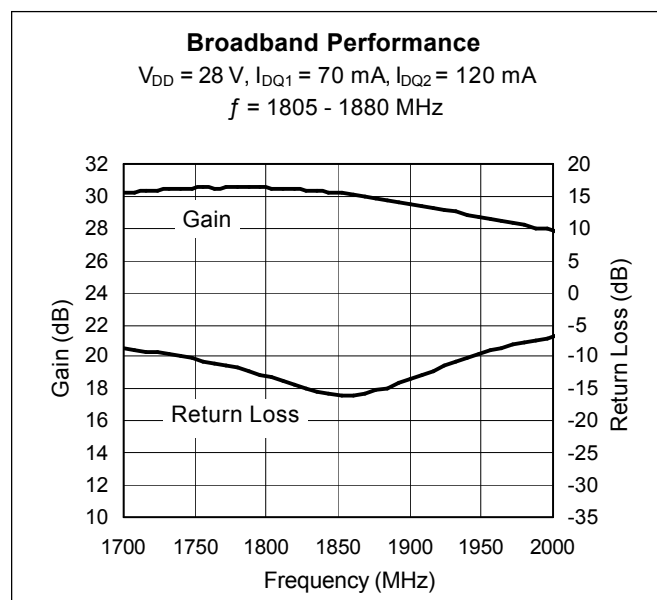
The PTMA180152M is a wideband, matched, 15-watt, 2-stage LDMOS integrated amplifier intended for wideband driver applications in the 1800 to 2000 MHz band. This device is offered in a 20-lead thermally-enhanced overmolded package for cool and reliable operation.

PTMA180152M*
Package DSO-20-63



Features

- Designed for wide RF bandwidth and low memory effects
- Broadband on-chip matching, 50-ohm input and >10-ohm output
- Typical GSM/EDGE performance at 1805 – 1880 MHz, 28 V, 7 W
 - Gain = 30 dB
 - Efficiency = 30 %
 - EVM @ 2 W = 1.5%
 - ACPR at 400 KHz = -63 dBc
 - ACPR at 600 KHz = -70 dBc
- Typical CW performance, 1800 MHz, 28 V
 - Output power at P-1dB > 20 W
 - Efficiency > 49%
- Integrated ESD protection: Meets HBM Class 1B (minimum), per JESD22-A114F
- Capable of handling 3:1 VSWR @ 28 V, 15 W (CW) output power
- Thermally-enhanced RoHS-compliant package



RF Characteristics

GSM/EDGE Measurements (not subject to production test—verified by design/characterization in Infineon test fixture)

$V_{DS} = 28 \text{ V}$, $I_{DQ1} = 70 \text{ mA}$, $I_{DQ2} = 150 \text{ mA}$, $f = 1805 - 1880 \text{ MHz}$, $P_{OUT} = 7 \text{ W}$ average

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	—	30	—	dB
Power Added Efficiency	η	—	30	—	%
Input Return Loss	IRL	—	—	-10	dB
Error Vector Magnitude	EVM (RMS)	—	1.5	—	%
Adjacent Channel Power Ratio	ACPR1	—	-63	—	dBc
	ACPR2	—	-70	—	dBc

table continued next page

All published data at $T_{CASE} = 25^\circ\text{C}$ unless otherwise indicated

*See Infineon distributor for future availability.

ESD: Electrostatic discharge sensitive device—observe handling precautions!

RF Characteristics (cont.)

GSM/EDGE Measurements (cont.)

 $V_{DS} = 28\text{ V}$, $I_{DQ1} = 70\text{ mA}$, $I_{DQ2} = 150\text{ mA}$, $f = 1805 - 1880\text{ MHz}$, $P_{OUT} = 7\text{ W}$ average

Characteristic	Symbol	Min	Typ	Max	Unit
Intermodulation Distortion	IMD3	—	−37	—	dBc
Spurs Load 3:1	—	—	−60	—	dBc
Gain Flatness	ΔG	—	0.2	—	dB

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}$, $I_{DS} = 10\text{ mA}$	$V_{(BR)DSS}$	65	—	—	V
Drain Leakage Current	$V_{DS} = 28\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	1.0	μA
	$V_{DS} = 63\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	10.0	μA
On-State Resistance	Stage 1 $V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.6	—	Ω
	Stage 2 $V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	3.5	—	Ω
Operating Gate Voltage	$V_{DS} = 28\text{ V}$	V_{GS}	2	2.5	3	V
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1.0	μA

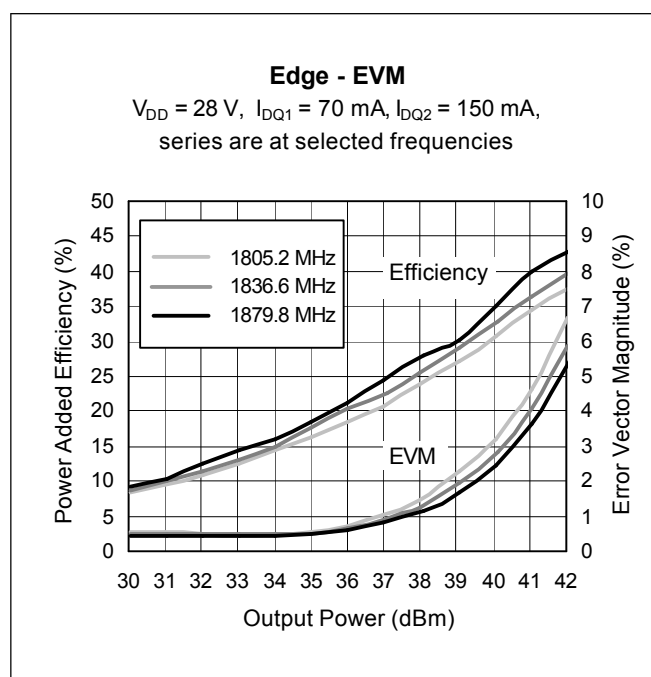
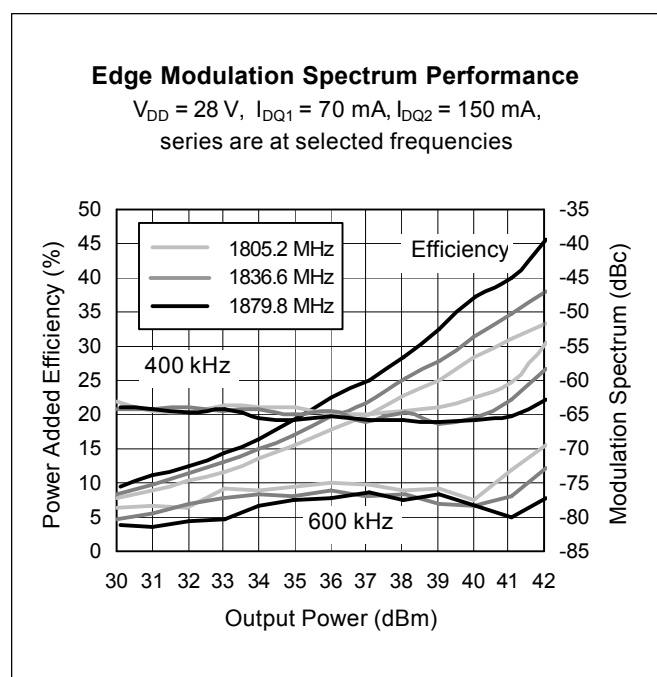
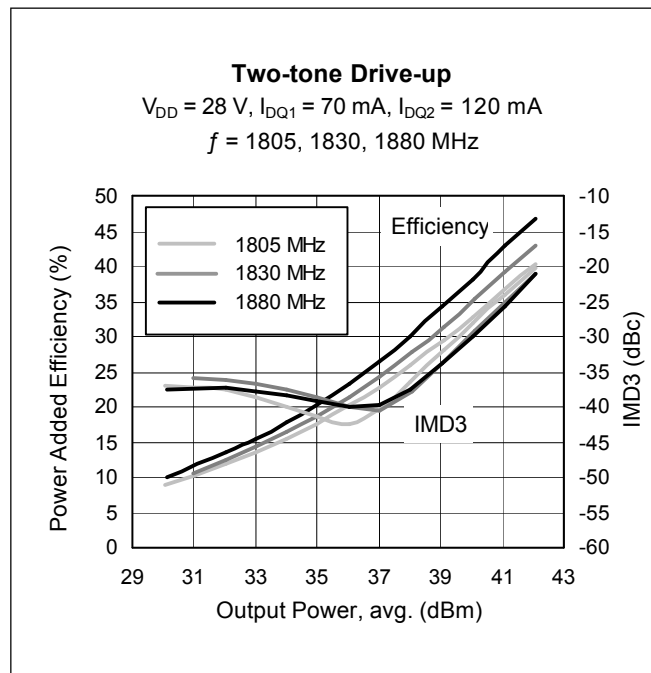
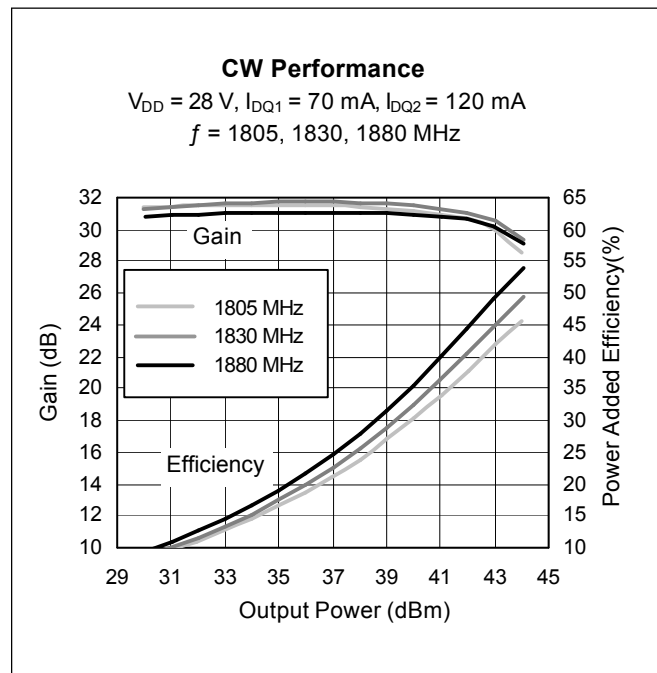
Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	V
Gate-Source Voltage	V_{GS}	−0.5 to +12	V
Junction Temperature	T_J	200	$^{\circ}\text{C}$
Input Power	P_{IN}	15	W
Total Device Dissipation	P_D	91	W
Above 25 $^{\circ}\text{C}$ derate by		0.52	W/ $^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	−40 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}$, 15 W CW)	Stage 1 $R_{\theta JC}$	TBD	$^{\circ}\text{C/W}$
	Stage 2 $R_{\theta JC}$	TBD	$^{\circ}\text{C/W}$

Ordering Information

Type and Version	Package Outline	Package Description	Shipping	Marking
PTMA180152M V1	PG-DSO-20-63	Thermally-enhanced surface-mount	Tape	PTMA180152M

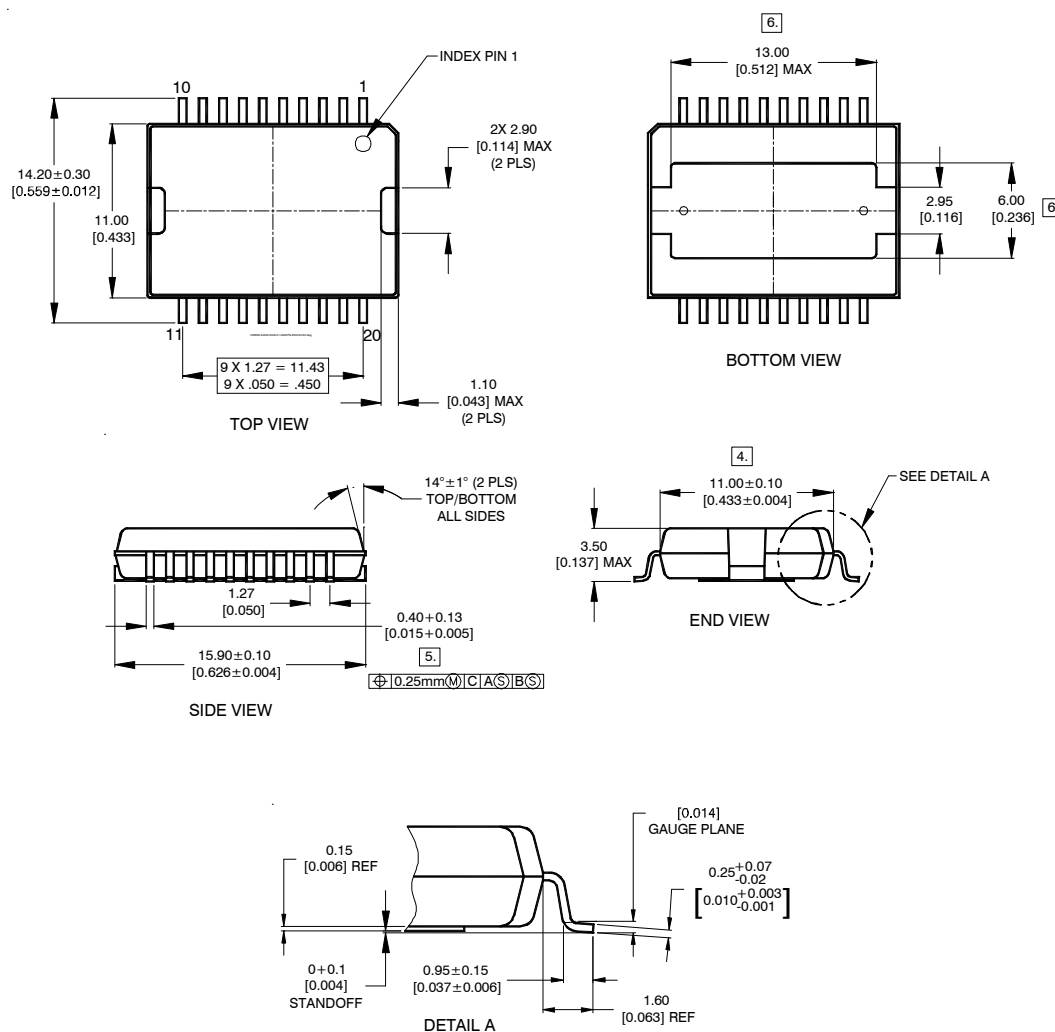
Typical Performance (data taken in a production test fixture)



*See Infineon distributor for future availability.

Package Outline Specifications

Package PG-DSO-20-63 Outline



Notes: Unless otherwise specified

- Interpret dimensions and tolerances per ASME Y14.5M-1994.
- Package dimensions: 11.0 mm by 15.9 mm by 3.35 mm.
- JEDEC drawing number: MO-166.
- Does not include plastic or metal protrusion of 0.15 mm max per side.
- Does not include dambar protrusion; maximum allowable dambar protrusion shall be 0.08 mm.
- Bottom metallization.

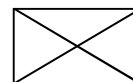
Page	Subjects (major changes since last revision)

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