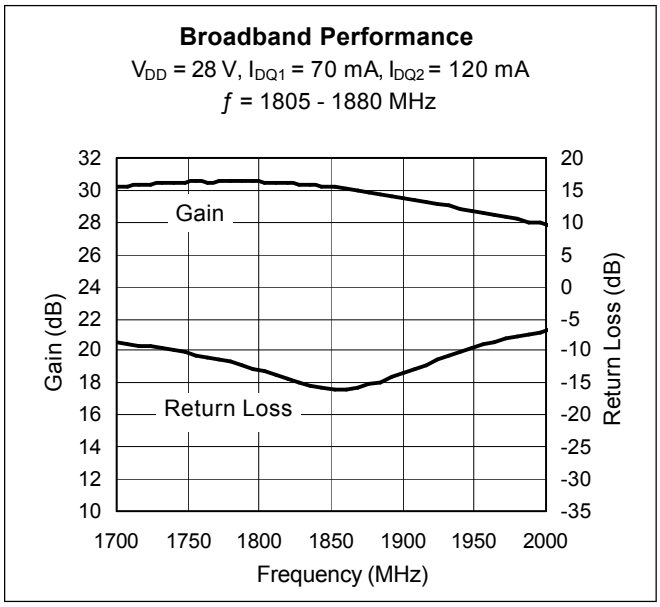
Wideband RF LDMOS Integrated Power Amplifier 15 W, 1800 – 2000 MHz

PTMA180152M*
Package DSO-20-63

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.



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 V, I_{DQ1} = 70 mA, I_{DQ2} = 150 mA, f = 1805 – 1880 MHz, P_{OUT} = 7 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°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 V, I_{DQ1} = 70 mA, I_{DQ2} = 150 mA, f = 1805 – 1880 MHz, P_{OUT} = 7 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 V, I_{DS} = 10 mA	$V_{(BR)DSS}$	65	—	—	V
Drain Leakage Current		V_{DS} = 28 V, V_{GS} = 0 V	I_{DSS}	—	—	1.0	µA
		V_{DS} = 63 V, V_{GS} = 0 V	I_{DSS}	—	—	10.0	µA
On-State Resistance	Stage 1	V_{GS} = 10 V, V_{DS} = 0.1 V	$R_{DS(on)}$	—	0.6	—	Ω
	Stage 2	V_{GS} = 10 V, V_{DS} = 0.1 V	$R_{DS(on)}$	—	3.5	—	Ω
Operating Gate Voltage		V_{DS} = 28 V	V_{GS}	2	2.5	3	V
Gate Leakage Current		V_{GS} = 10 V, V_{DS} = 0 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	°C
Input Power		P_{IN}	15	W
Total Device Dissipation		P_D	91	W
Above 25°C derate by			0.52	W/°C
Storage Temperature Range		T_{STG}	–40 to +150	°C
Thermal Resistance (T_{CASE} = 70°C, 15 W CW)	Stage 1	$R_{\theta JC}$	TBD	°C/W
	Stage 2	$R_{\theta JC}$	TBD	°C/W

Ordering Information

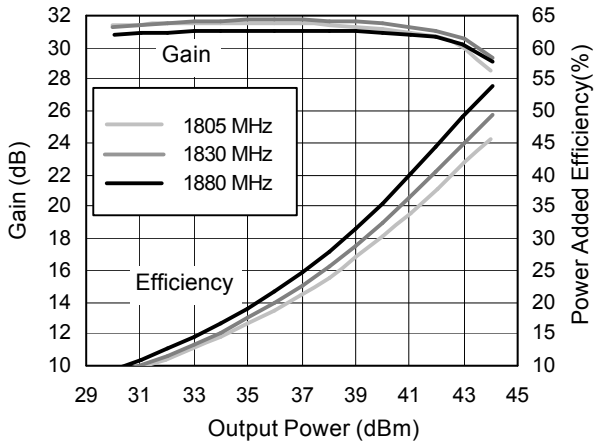
Type and Version	Package Outline	Package Description	Shipping	Marking
PTMA180152M V1	PG-DSO-20-63	Thermally-enhanced surface-mount	Tape	PTMA180152M

Typical Performance (data taken in a production test fixture)

CW Performance

V_{DD} = 28 V, I_{DQ1} = 70 mA, I_{DQ2} = 120 mA

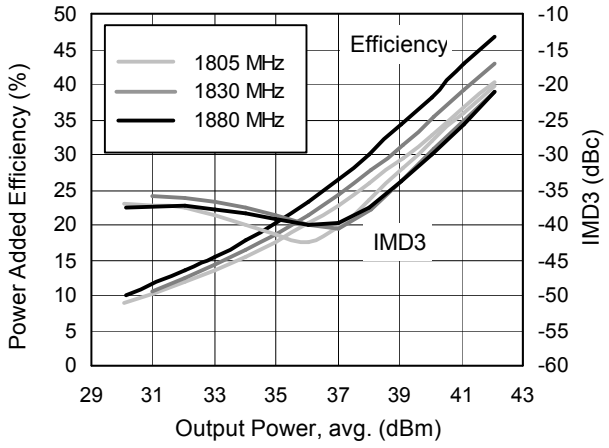
f = 1805, 1830, 1880 MHz



Two-tone Drive-up

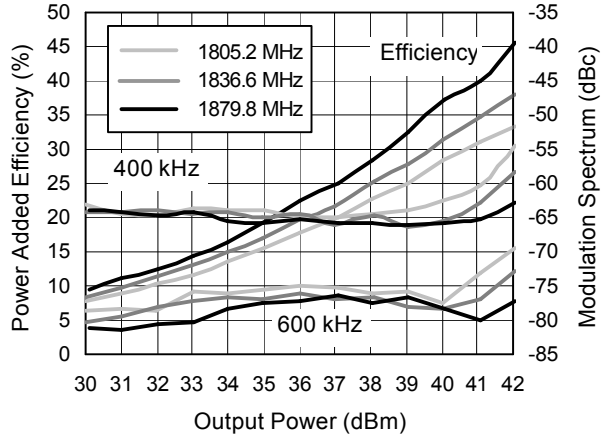
V_{DD} = 28 V, I_{DQ1} = 70 mA, I_{DQ2} = 120 mA

f = 1805, 1830, 1880 MHz



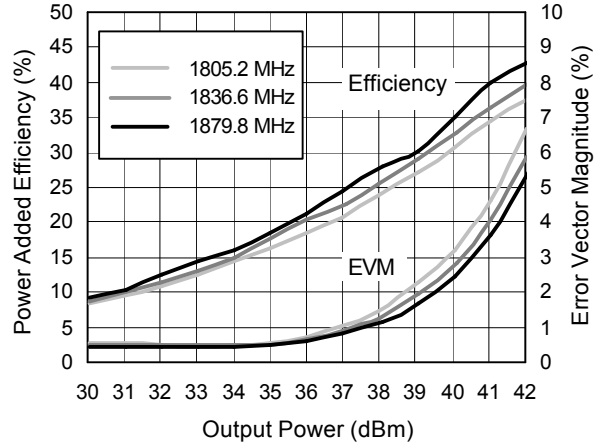
Edge Modulation Spectrum Performance

V_{DD} = 28 V, I_{DQ1} = 70 mA, I_{DQ2} = 150 mA,
series are at selected frequencies



Edge - EVM

V_{DD} = 28 V, I_{DQ1} = 70 mA, I_{DQ2} = 150 mA,
series are at selected frequencies



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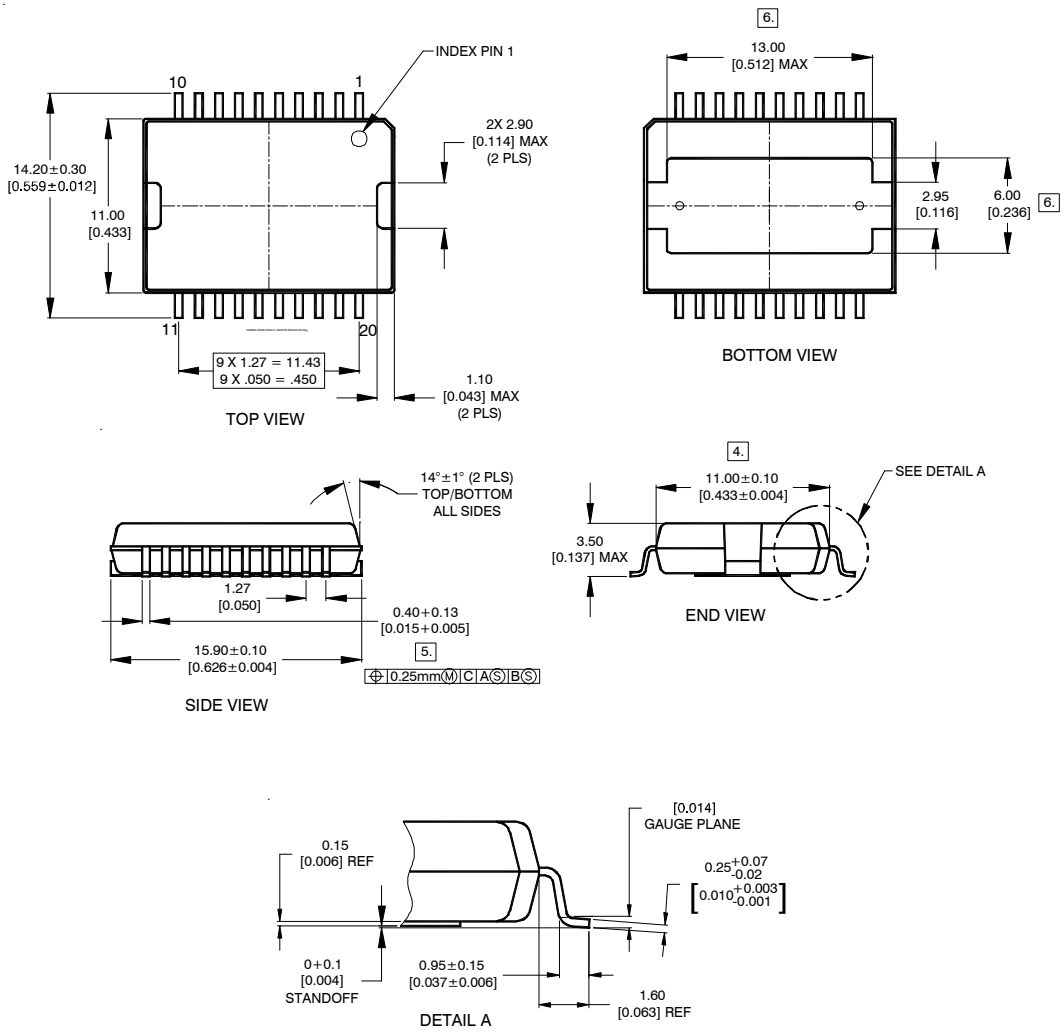
Package Outline Specifications

Package PG-DSO-20-63 Outline



Notes: Unless otherwise specified

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

Revision History:	**2009-03-03**	Preliminary Data Sheet
Previous Version:	None	

Page	Subjects (major changes since last revision)

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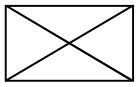

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