

■ General Description

OCP1203A is a low dropout, low power linear regulator which operates from 1.5V to 5.5V input voltage. OCP1203A provides high power supply rejection ratio (PSRR) and delivers up to 300mA output current. OCP1203A also offers low current consumption for battery operated applications.

The device is a RoHS compliant DFN10x10-4L package.

■ Applications

- Smart phones, Cell phone, PDAs
- Bluetooth, Wireless handsets
- Portable equipment

■ Features

- Input Voltage Range: 1.5V to 5.5V
- Output Voltage Range: 0.9V to 3.6V
- Output Current: 300mA
- Low Quiescent Current: 40μA(TYP)
- Shut Down Current: <1μA
- Auto-Discharge function
- Available in DFN10x10-4L package
- -40°C to +85°C Operating Temperature Range

■ Pin Configuration

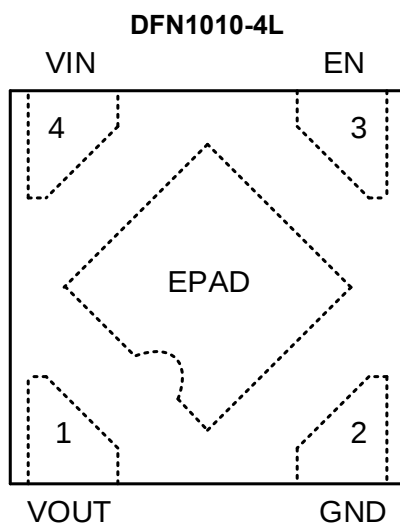


Figure 1, Pin Assignments of OCP1203A (Top View)

Pin No.	Pin Name	Pin Function
1	VOUT	Regulator Output Pin. Bypass a 1μF capacitor to ground
2	GND	Ground
3	EN	Enable control pin, active high. When EN pin is floating, it will be shutdown mode.
4	VIN	Regulator Input Pin. 1μF decouple capacitor is needed.
Exposed PAD	-	The exposed pad should be connected to a large ground plane to maximize thermal performance.



■ Typical Application Circuit

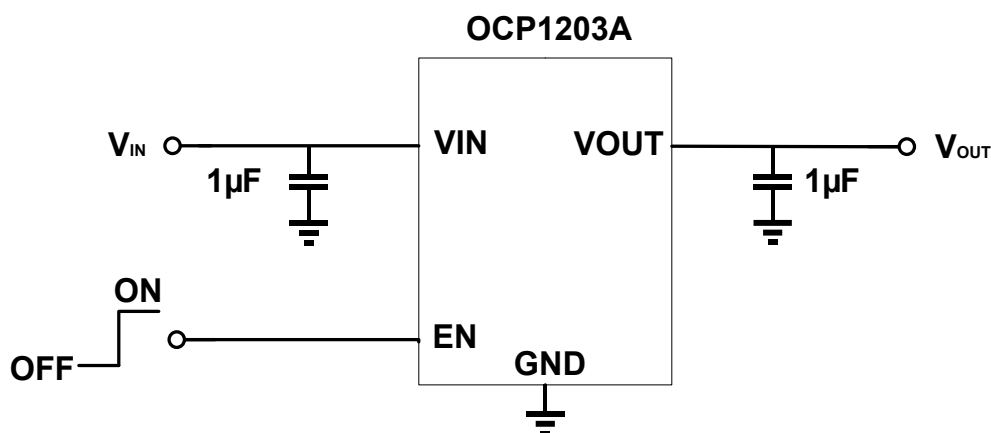


Figure 2, Typical Application Block diagram of OCP1203A

■ Ordering Information

Part Number	V _{OUT} (V)	Marking	Package Type	Package Qty	Temperature	Eco Plan	Lead
OCP1203AV11AD	1.1	XK	DFN1010-4L	10000pcs	-40~85℃	Green and RoHS	Sn
OCP1203AV12AD	1.2	XA	DFN1010-4L	10000pcs	-40~85℃	Green and RoHS	Sn
OCP1203AV15AD	1.5	XB	DFN1010-4L	10000pcs	-40~85℃	Green and RoHS	Sn
OCP1203AV18AD	1.8	XC	DFN1010-4L	10000pcs	-40~85℃	Green and RoHS	Sn
OCP1203AV25AD	2.5	XD	DFN1010-4L	10000pcs	-40~85℃	Green and RoHS	Sn
OCP1203AV28AD	2.8	XE	DFN1010-4L	10000pcs	-40~85℃	Green and RoHS	Sn
OCP1203AV30AD	3.0	XF	DFN1010-4L	10000pcs	-40~85℃	Green and RoHS	Sn
OCP1203AV33AD	3.3	XG	DFN1010-4L	10000pcs	-40~85℃	Green and RoHS	Sn

■ Block Diagram

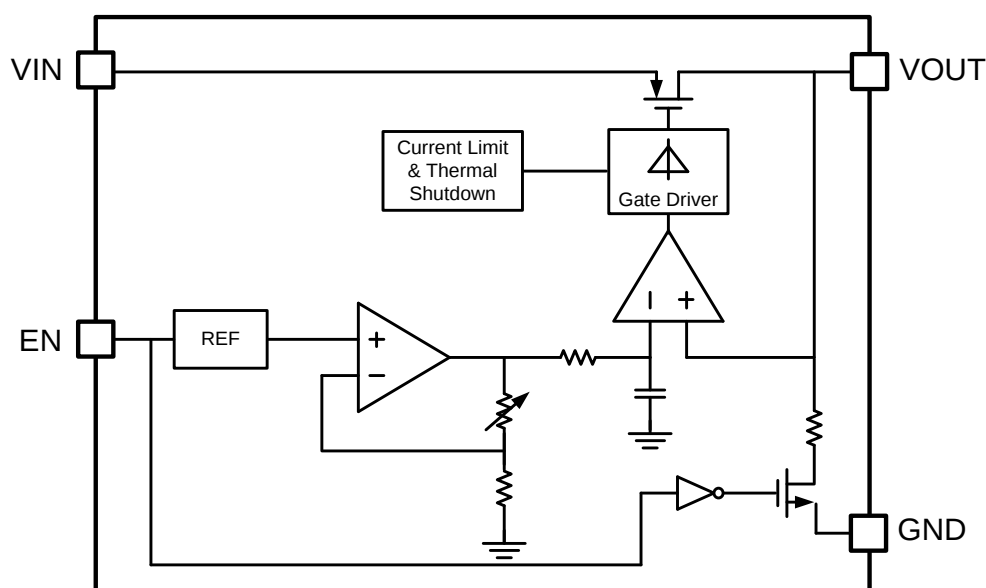


Figure 3, Block diagram of OCP1203A



■ Absolute Maximum Ratings¹ (T_A=25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Input Voltage Range	V _{IN}	-0.3 to 6.5	V
Output Voltage Range	V _{OUT}	-0.3 to V _{IN}	V
Enable Input Voltage Range	V _{EN}	-0.3 to V _{IN}	V
Maximum Load Current	I _{OUT}	400	mA
Human Body Model	HBM	7	kV
Charged Device Model	CDM	2	kV
Storage Temperature Range	T _S	-55 to +150	°C
Maximum Operating Junction Temperature Range	T _J	-40 to 125	°C

Notes: 1) Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

■ Recommended Operating Conditions² (T_A=25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Input Voltage	V _{IN}	1.5 ~ 5.5	V
Ambient Operating Temperature	T _A	-40 to 85	°C
Thermal Resistance	R _{θJA}	179	°C/W

Notes: 2) The device is not guaranteed to function outside of its operating conditions.

■ Electrical Characteristics

(Unless otherwise noted, typical values are at T_A=25°C, V_{IN}=V_{OUT} + 1V, C_{IN}=C_{OUT}=1μF)

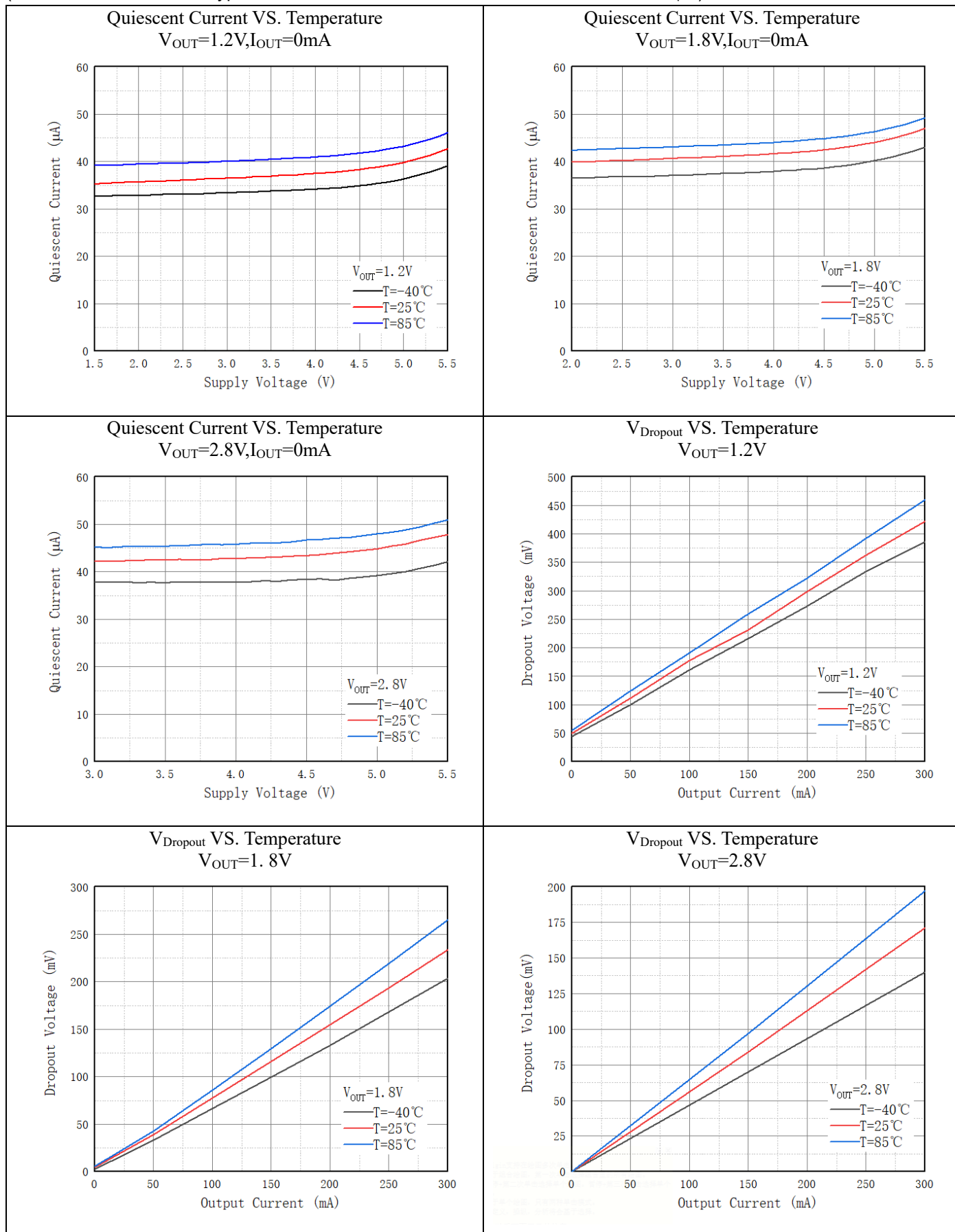
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _{OUT}	Output Voltage	I _{OUT} =1mA	0.98* V _{OUT}	V _{OUT}	1.02* V _{OUT}	V
I _{LIM}	Current Limit		350			mA
V _{Dropout}	Dropout Voltage	V _{OUT} =3.3V, I _{OUT} =300mA		150	230	mV
		V _{OUT} =3.0V, I _{OUT} =300mA		160	250	
		V _{OUT} =2.8V, I _{OUT} =300mA		170	290	
		V _{OUT} =2.5V, I _{OUT} =300mA		200	340	
		V _{OUT} =1.8V, I _{OUT} =300mA		260	420	
		V _{OUT} =1.5V, I _{OUT} =300mA		310	490	
		V _{OUT} =1.2V, I _{OUT} =300mA		430	580	
		V _{OUT} =1.1V, I _{OUT} =300mA		500	650	
Reg- _{LINE}	Line Regulation	V _{IN} =1.9V~5.5V, I _{OUT} =1mA		0.03	0.2	%/V
		V _{IN} =1.9V~5.5V, I _{OUT} =100mA		7	20	mV
Reg- _{LOAD}	Load Regulation	V _{OUT} =2.8V, I _{OUT} =1~300mA		10	30	mV
I _{SHDN}	Shut-down Current	V _{EN} =0V			1	μA
I _Q	Quiescent Current	V _{OUT} =2.8V, I _{OUT} =0mA		40	60	μA
I _{SHORT}	Short Current Limit	V _{OUT} =0V		240		mA
PSRR	Power Supply Rejection Rate	V _{IN} =(V _{OUT} +1V)DC+0.5Vp-p, F=217Hz, I _{OUT} =10mA, V _{OUT} =2.8V, C _{OUT} =1μF		89		dB
		V _{IN} =(V _{OUT} +1V)DC+0.5Vp-p, F=1kHz, I _{OUT} =10mA, V _{OUT} =2.8V, C _{OUT} =1μF		92		
		V _{IN} =(V _{OUT} +1V)DC+0.5Vp-p, F=100kHz, I _{OUT} =10mA, V _{OUT} =2.8V, C _{OUT} =1μF		54		
		V _{IN} =(V _{OUT} +1V)DC+0.5Vp-p, F=1MHz, I _{OUT} =10mA, V _{OUT} =2.8V, C _{OUT} =1μF		46		
E _{no}	Output Voltage Noise	10Hz to 100kHz, I _{OUT} =10mA, C _{OUT} =1μF		18		μV _{RMS}

V _{IH}	EN Input Logic High		0.9			V
V _{IL}	EN Input Logic Low				0.4	V
R _{PD}	EN pull-down resistance			1.2		MΩ
R _{DIS}	RON of Discharge path	V _{IN} =4V,V _{EN} =0V		130		Ω
T _{SHDN}	Thermal-Shutdown Temperature			160		°C
T _{SDH}	Thermal Shutdown Hysteresis			30		°C



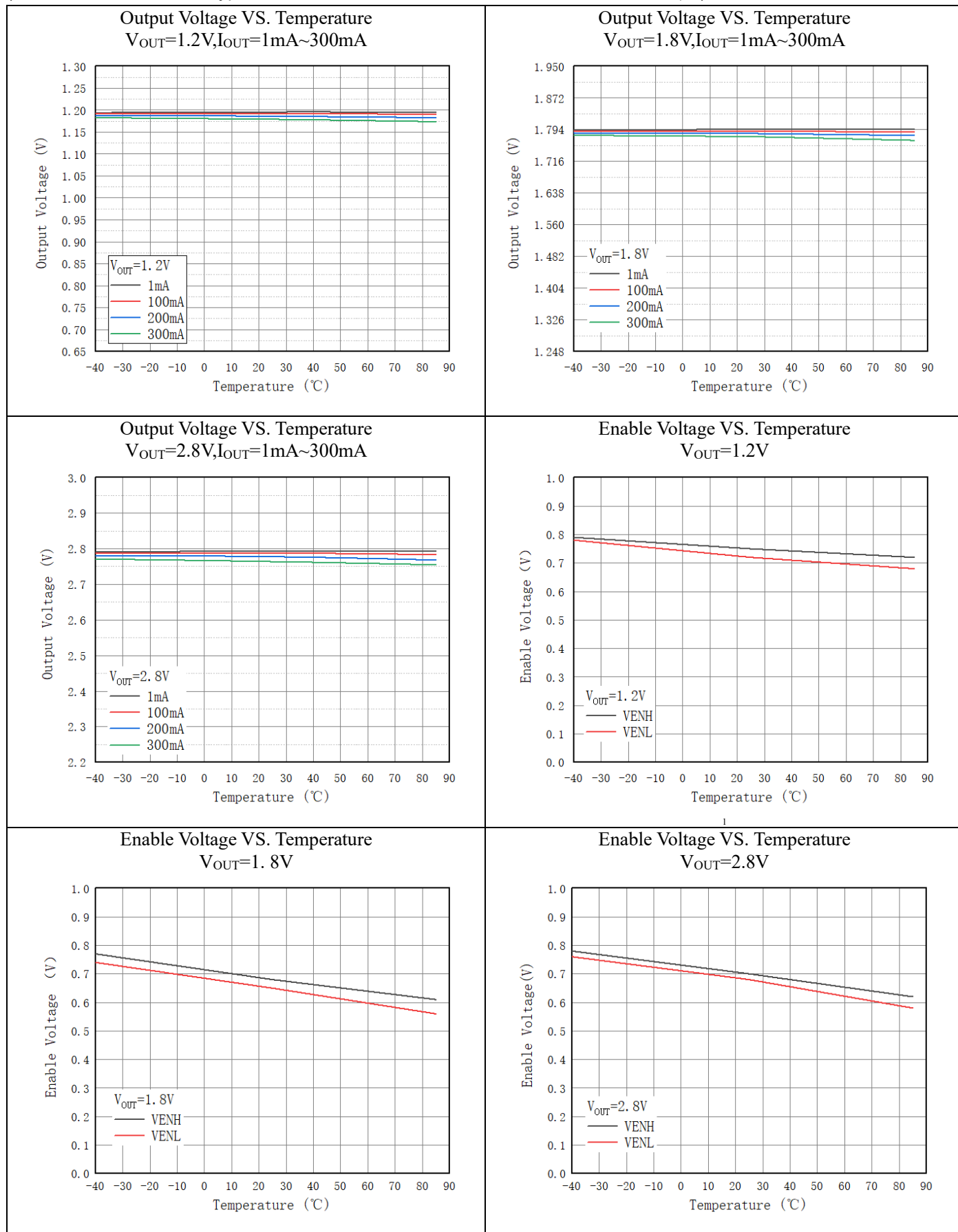
■ Electrical Characteristics

(Unless otherwise noted, typical values are at $T_A=25^\circ\text{C}$, $V_{IN}=V_{OUT} + 1\text{V}$, $C_{IN}=C_{OUT}=1\mu\text{F}$)

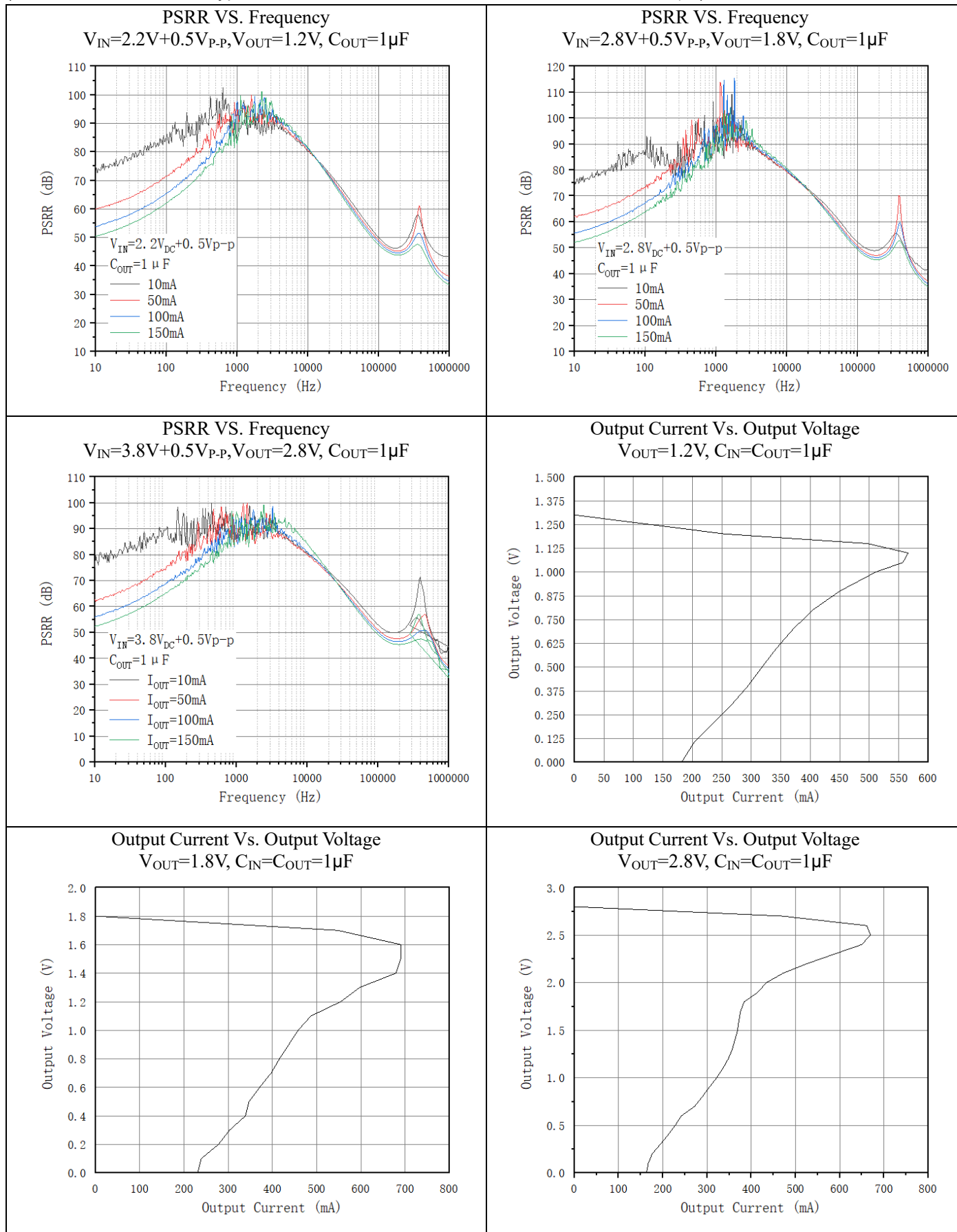


■ Electrical Characteristics (Continued)

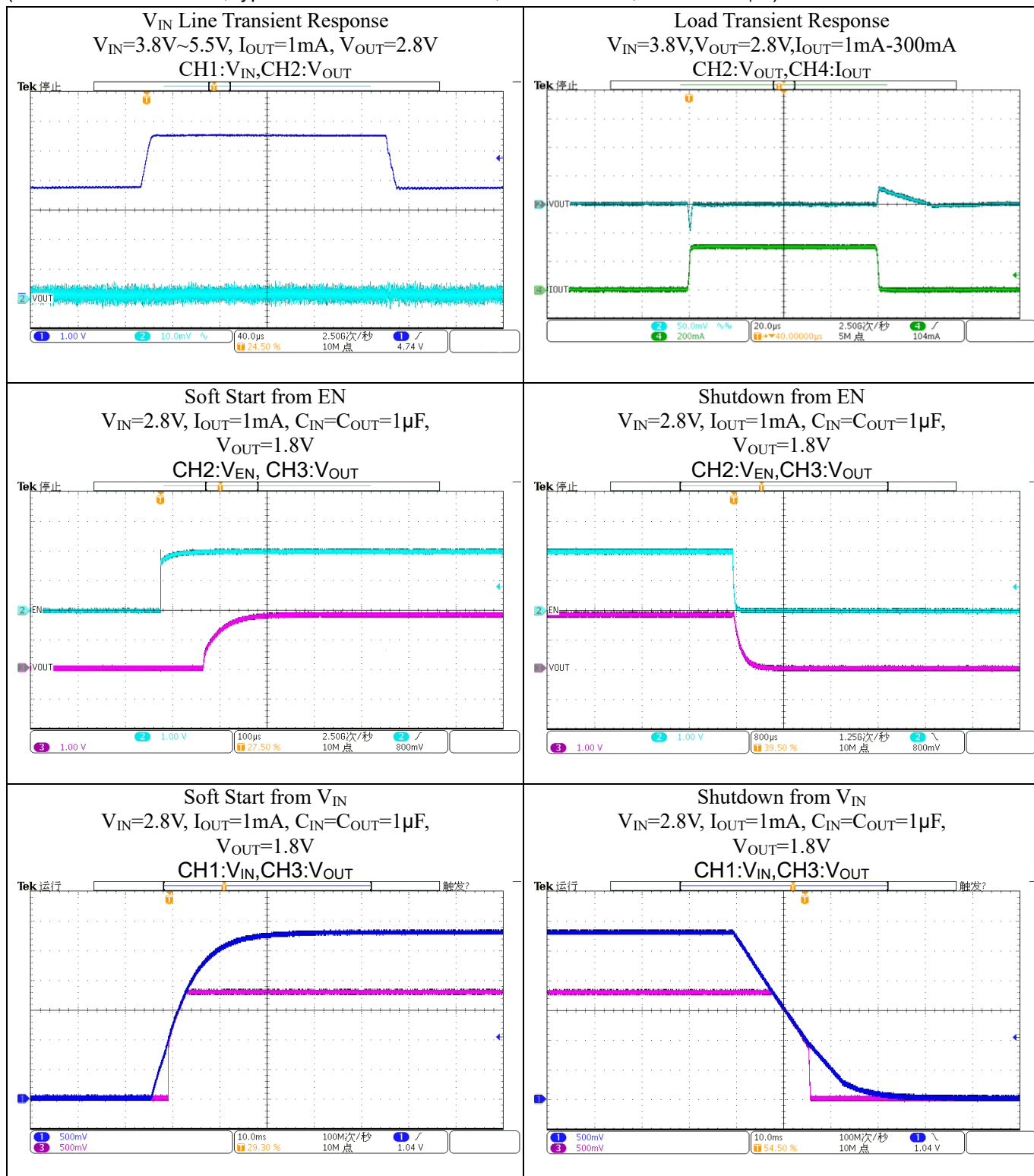
(Unless otherwise noted, typical values are at $T_A=25^{\circ}\text{C}$, $V_{IN}=V_{OUT} + 1\text{V}$, $C_{IN}=C_{OUT}=1\mu\text{F}$)



■ Electrical Characteristics (Continued)

(Unless otherwise noted, typical values are at $T_A=25^{\circ}\text{C}$, $V_{\text{IN}}=V_{\text{OUT}}+1\text{V}$, $C_{\text{IN}}=C_{\text{OUT}}=1\mu\text{F}$)

■ Electrical Characteristics (Continued)

(Unless otherwise noted, typical values are at $T_A=25^{\circ}\text{C}$, $V_{\text{IN}}=V_{\text{OUT}}+1\text{V}$, $C_{\text{IN}}=C_{\text{OUT}}=1\mu\text{F}$)

■ Application Information

Input Capacitor:

A 1 μ F ceramic capacitor is recommended to connect V_{IN} pin as close as possible which is used to provide low impedance path to unwanted signal or noise. Larger input capacitor may be necessary if fast and large load transients are encountered in the application. For PCB layout, a wide copper trace is required for both V_{IN} and GND.

Output Capacitor:

The output capacitor is required for the LDO stability. The recommended output capacitance is from 1 μ F to 4.7 μ F. Place output capacitor as close as possible to V_{OUT} pin. Equivalent Series Resistance (ESR) is from 5m Ω to 100m Ω , and temperature characteristics are X7R or X5R. Place output capacitor as close as possible to V_{OUT} and GND pins.

ON/OFF Input Operation

The OCP1203A is turned on by setting the EN pin high, and is turned off by pulling it low or floating. If this feature is not used, the EN pin should be tied to V_{IN} pin to keep the regulator output on at all time.

Recommended PCB Layout

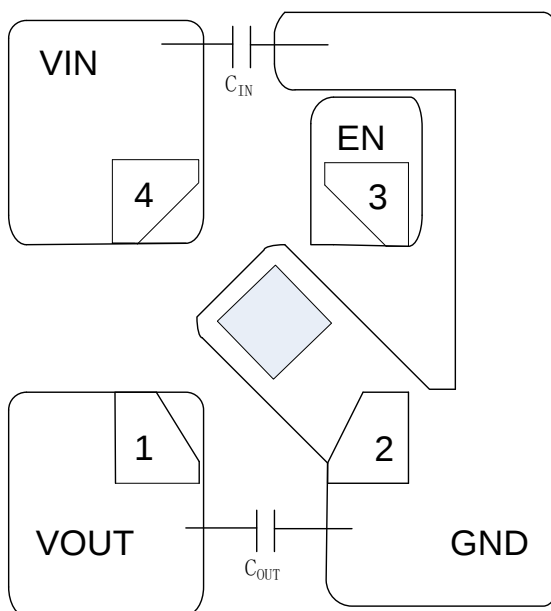
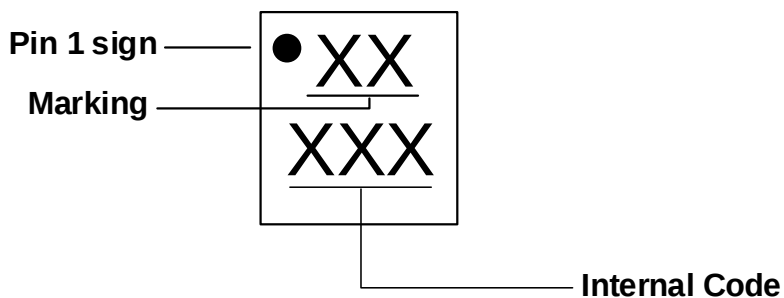


Figure 4, Land Pattern Example of OCP1203A



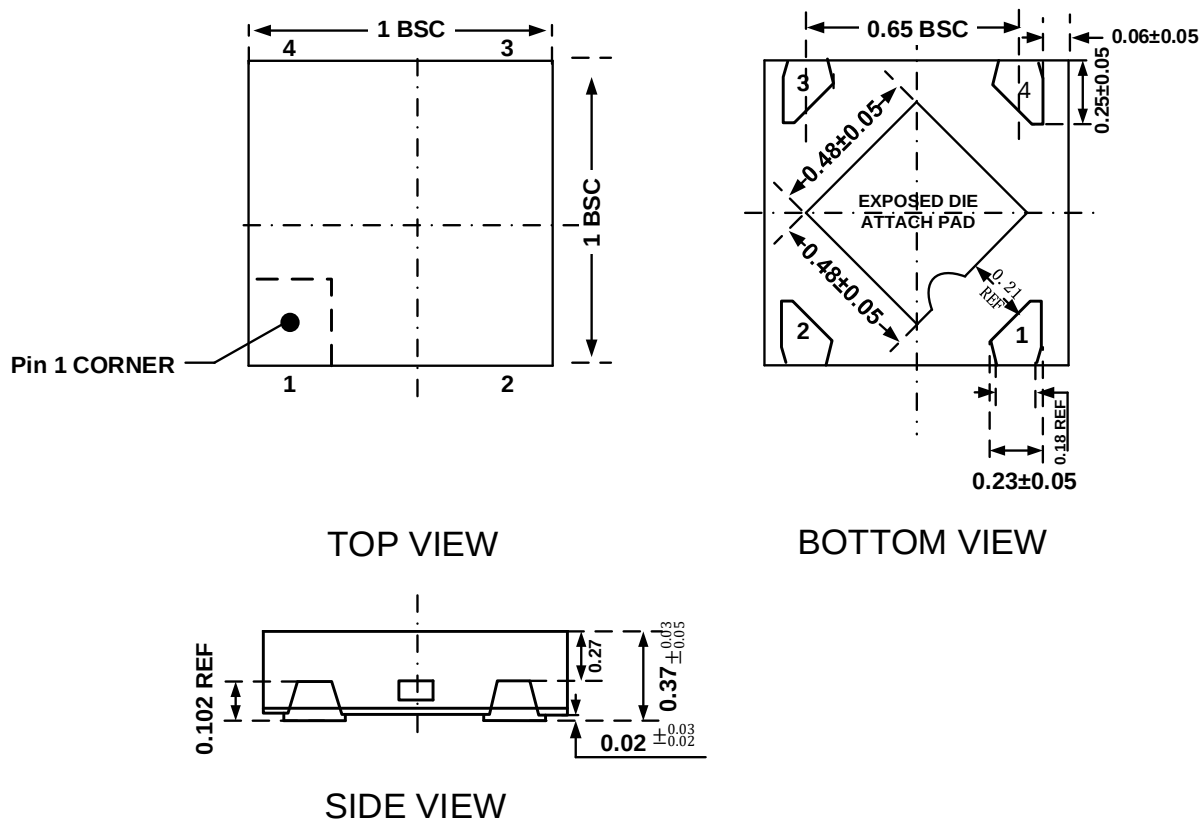
■ Marking Information

DFN1010-4L



■ Package Information

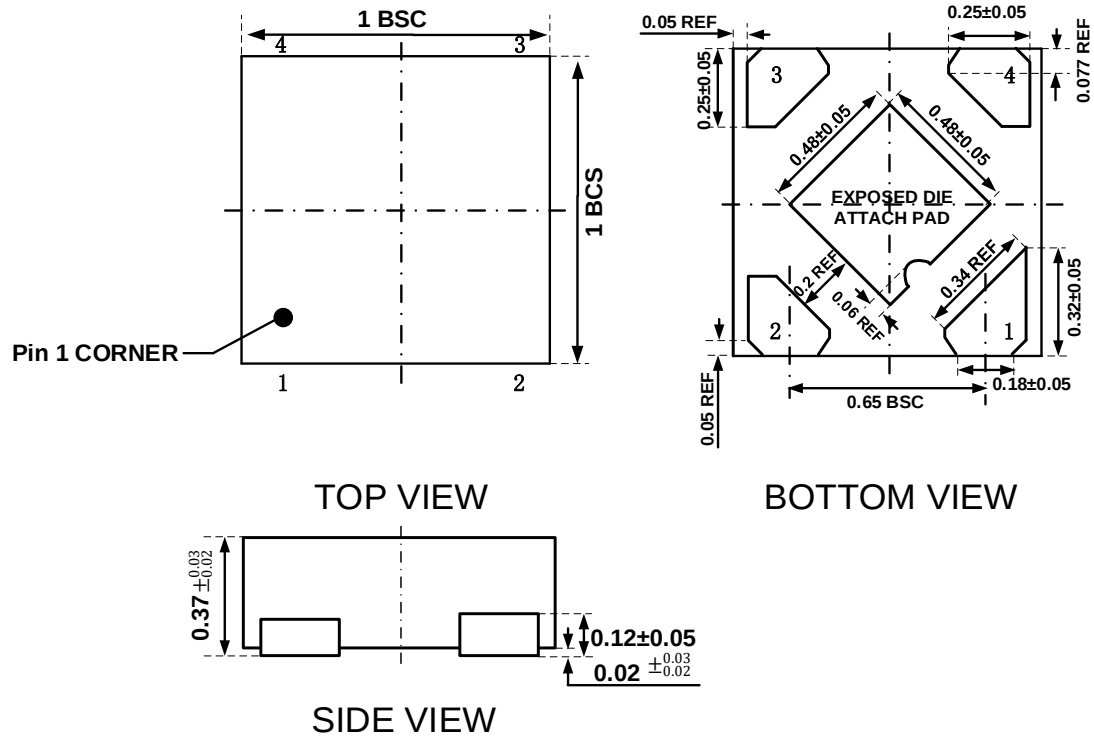
DFN1010-4L(I)



NOTE: All dimensions are in millimeters(mm).



DFN1010-4L(II)

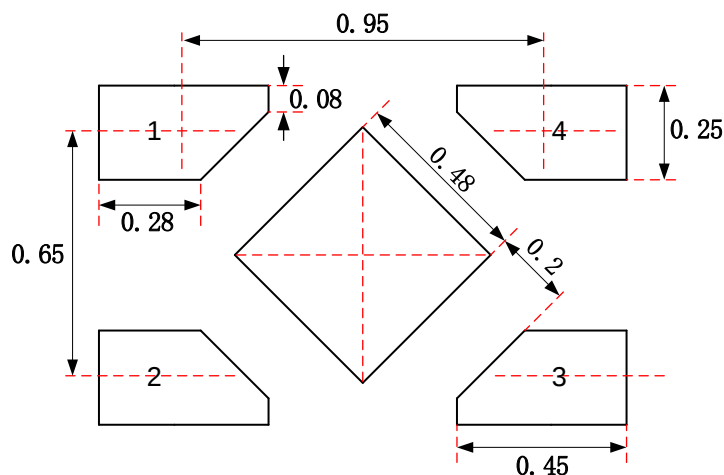


NOTE: All dimensions are in millimeters(mm).



Land Pattern Data

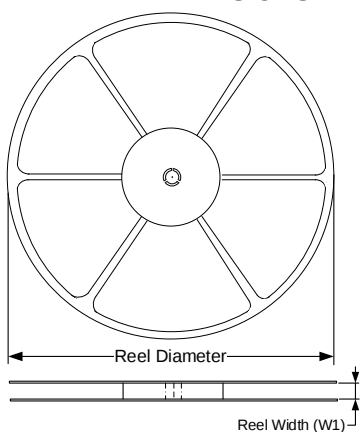
DFN1010-4L



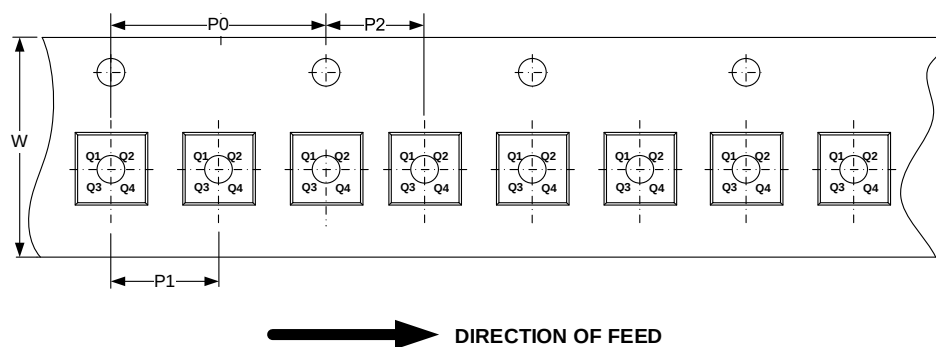
NOTE: All dimensions are in millimeters(mm).

Packing Information

REEL DIMENSIONS



TAPE DIMENSIONS



Package Type	SPQ	Reel Diameter (mm)	Reel Width W1(mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	PIN 1 Quadrant	MSL
DFN1010-4L	10000	180.0	9.5	4.0	2.0	2.0	8.0	Q1	Level-1-260℃

Note: Carrier Tape Dimension, Reel Size and Packing Minimum



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