Features
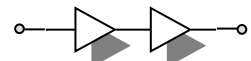
- S_{21} = 35.3 dB @ 1840 MHz
       = 34.7 dB @ 1870 MHz
- NF of 1.8 dB over Frequency
- Unconditionally Stable
- Single 5V Supply
- High OIP3 @ Low Current

Description

The plerow™ APM-Series is an internally matched amplifier mini-module for such application band in SMD package with the output P1dB of 29 dBm. It is compactly designed for low current consumption and high OIP3. Integrating all the components for biasing and matching within the module enhances production yield and throughput as well. It passes through the stringent DC, RF, and reliability tests. Not sample test but 100% quality control test is made before packing.

RoHS-compliant

2-stage Single Type

More Information

Website: www.asb.co.kr
E-mail: sales@asb.co.kr

Tel: (82) 42-528-7223
Fax: (82) 42-528-7222

Specifications (in Production)

Typ. @ T = 25°C, V_s = 5 V, Freq. = 1855 MHz, $Z_{o.sys}$ = 50 ohm

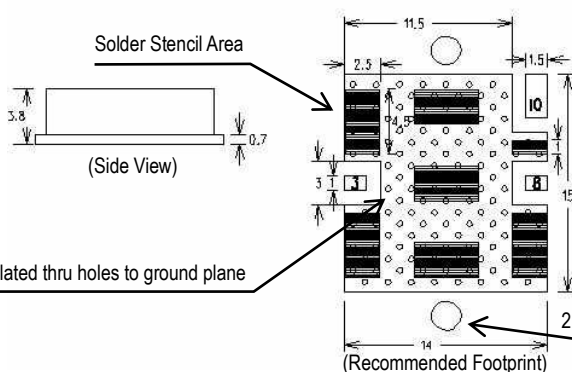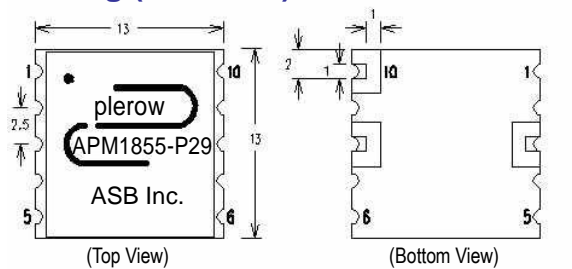| Parameter	Unit	Specifications		
		Min	Typ	Max
Frequency Range	MHz	1840		1870
Gain	dB	34	35	
Gain Flatness	dB		± 0.3	± 0.4
Noise Figure	dB		1.8	2.0
Output IP3 [1]	dBm	44	47	
S11 / S22 [2]	dB			-18 / -10
Output P1dB	dBm	28	29	
Switching Time [3]	μsec		-	
Supply Current	mA		460	500
Supply Voltage	V		5	
Impedance	Ω		50	
Max. RF Input Power	dBm	C.W 23 ~ 25 (before fail)		
Package Type & Size	mm	Surface Mount Type, 13Wx13Lx3.8H		

Operating temperature is -40°C to +85°C.
1) OIP3 is measured with two tones at an output power of 15 dBm / tone separated by 1 MHz.
2) S11/S22 (max) is the worst value within the frequency band.
3) Switching time means the time that takes for output power to get stabilized to its final level after switching DC voltage from 0 V to V_s.

Outline Drawing (Unit: mm)

plerow
APM1855-P29
ASB Inc.
(Top View)

(Bottom View)

(Side View)

Solder Stencil Area

Ø0.3 plated thru holes to ground plane

2 x Ø2.0 plated thru holes to screw on heat sinker

(Recommended Footprint)

Pin Number	Function
3	RF In
8	RF Out
10	+Vcc
Others	Ground

Note: 1. The number and size of ground via holes in a circuit board is critical for thermal RF grounding considerations.
2. We recommend that the ground via holes be placed on the bottom of all ground pins for better RF and thermal performance, as shown in the drawing at the left side.
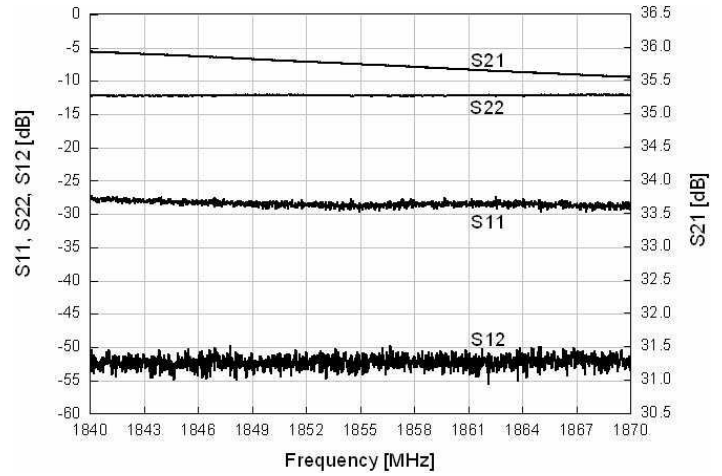
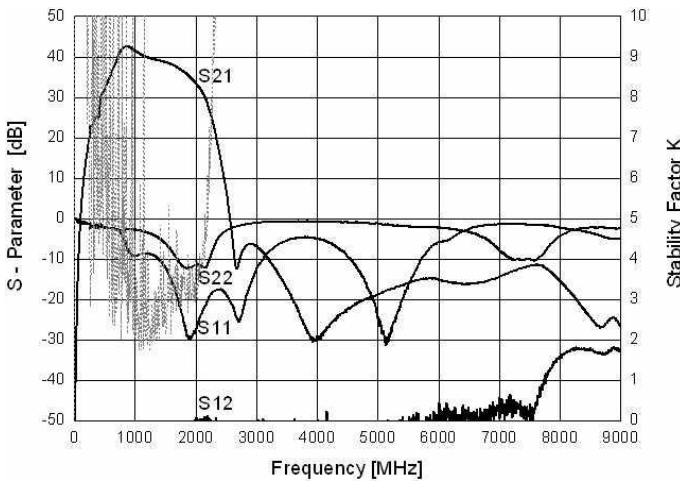## S-parameters

Typical Performance
(Measured)

PCS Tx

1840~1870 MHz

+5 V

Stability Factor (K)

Noise Figure

Mkr1	1.8355 GHz	1.633 dB	35.864 dB
Mkr2	1.855 GHz	1.648 dB	35.789 dB
Mkr3	1.8743 GHz	1.673 dB	35.866 dB

Center 1.85500 GHz · BW 4 MHz · Points 51 · Span 60.00 MHz
Tcold 305.65 K · Avgs 10 · Att 5/-- dB · Loss Off · Corr

OIP3

TOI (Worst Case)	1.856 GHz	47.51 dBm
TOI lower	1.853 GHz	49.28 dBm
TOI upper	1.856 GHz	47.51 dBm

P1dB

Marker
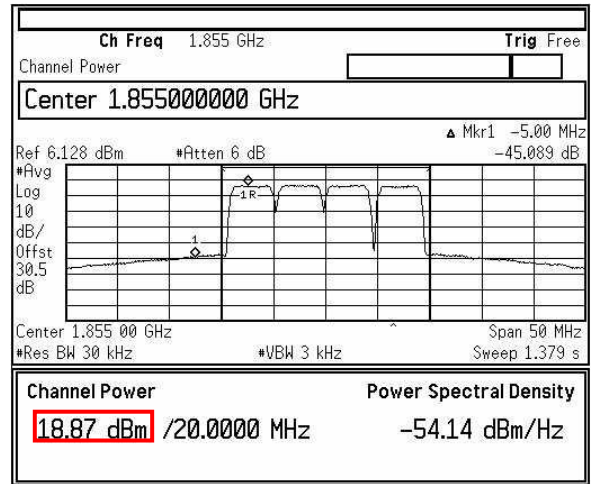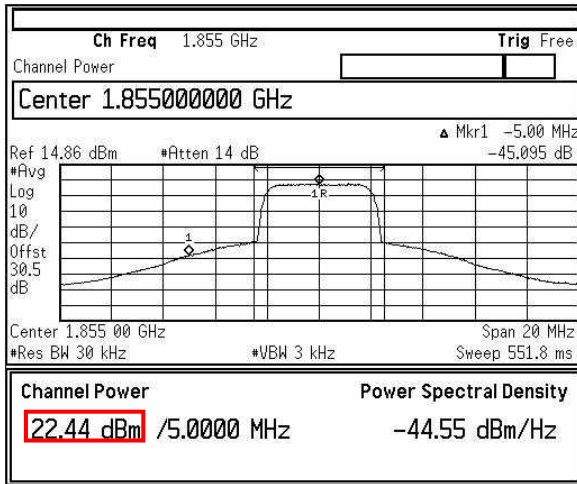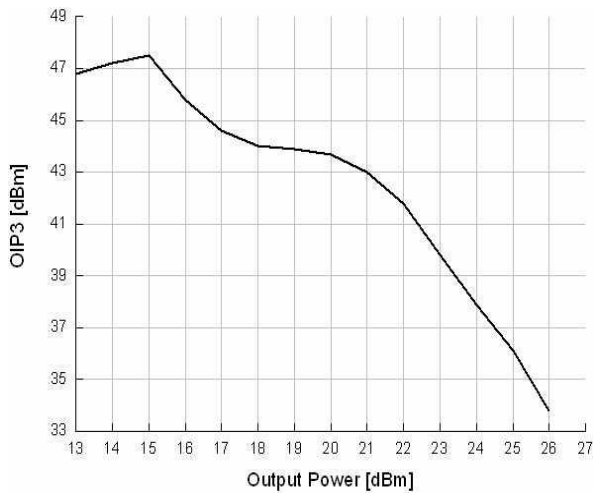1.855000000 GHz
30.11 dBm
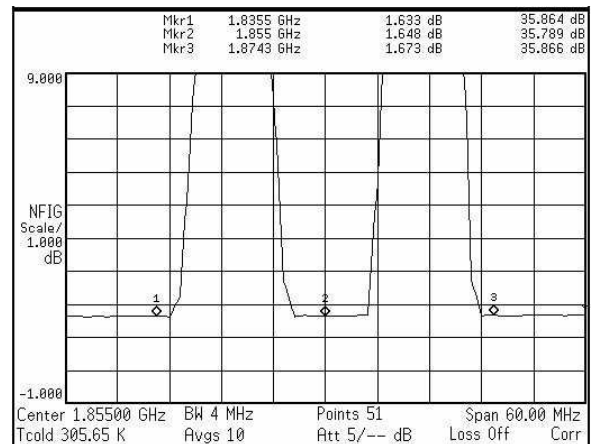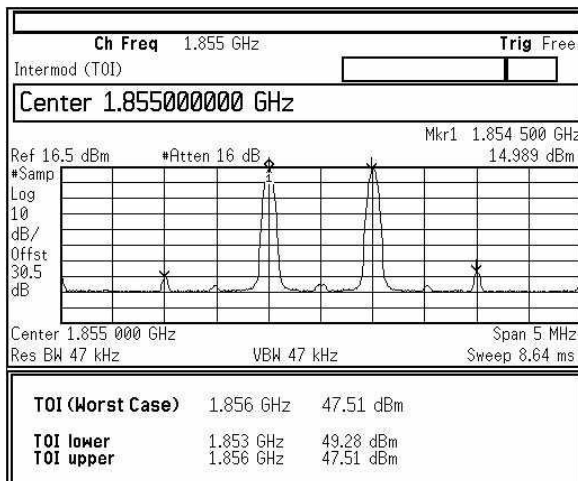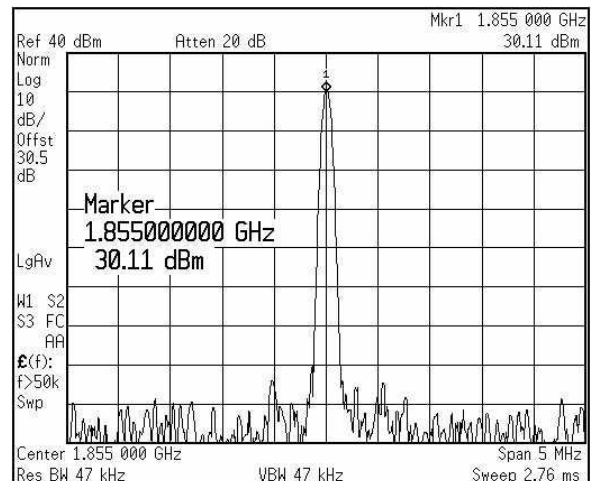
Output Channel Power
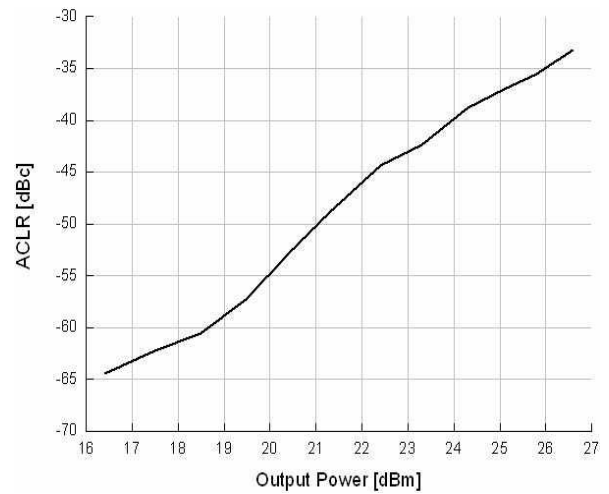### (@ ACLR=-45dBc, +/-5MHz Offset)

OIP3 vs Output Power
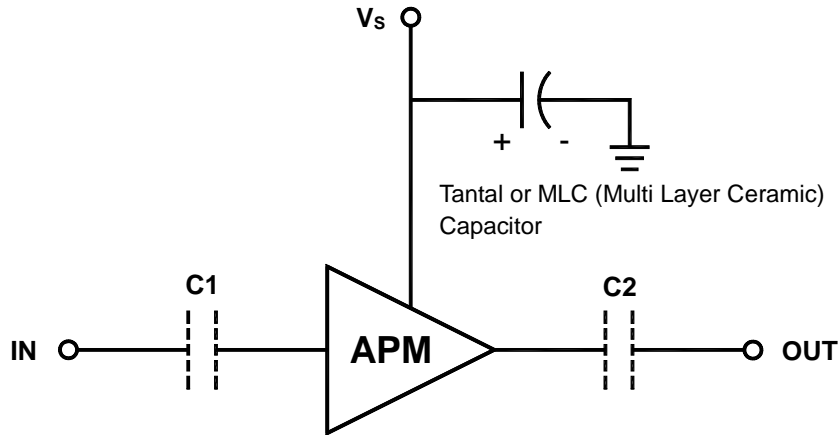### (@ 1MHz offset, 1-tone power)

ACLR vs Channel Power



** Test Source : Agilent E4433B (3GPP W-CDMA Test Model-1 64DPCH)

Application Circuit

Vs

+ -

Tantal or MLC (Multi Layer Ceramic)
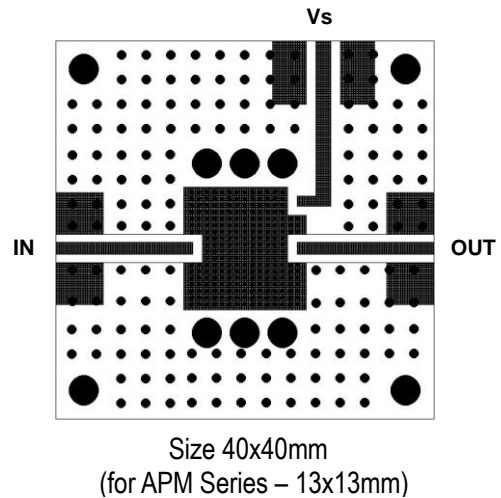Capacitor

C1   C2

IN   APM   OUT

1) The tantal or MLC (Multi Layer Ceramic) capacitor is optional and for bypassing the AC noise introduced from the DC supply. The capacitance value may be determined by customer's DC supply status. The capacitor should be placed as close as possible to V_s pin and be connected directly to the ground plane for the best electrical performance.

2) DC blocking capacitors are always necessarily placed at the input and output port for allowing only the RF signal to pass and blocking the DC component in the signal. The DC blocking capacitors are included inside the APM module. Therefore, C1 & C2 capacitors may not be necessary, but can be added just in case that the customer wants. The value of C1 & C2 is determined by considering the application frequency.
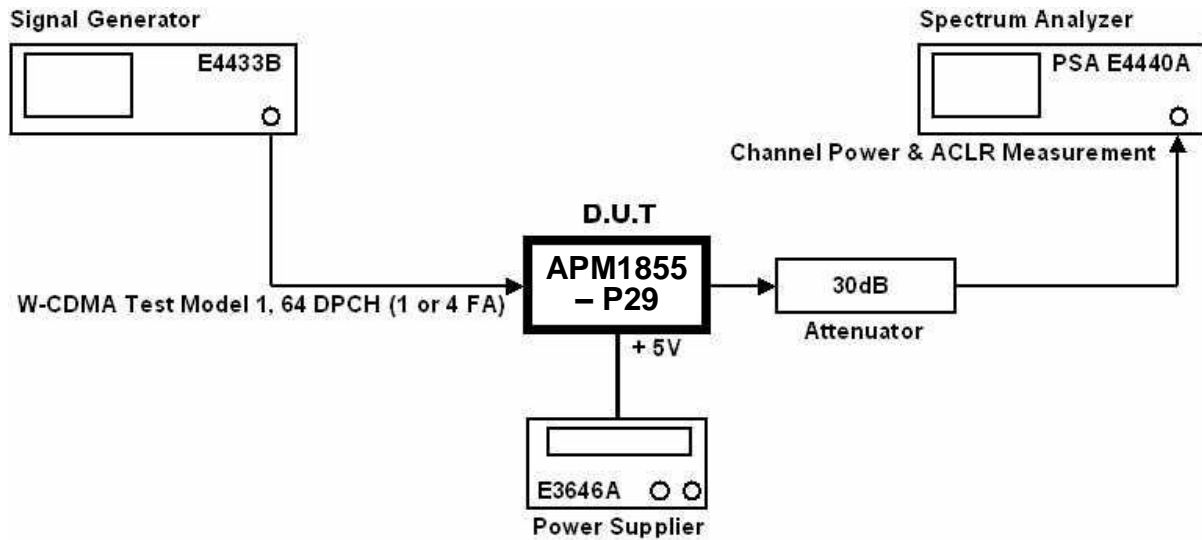
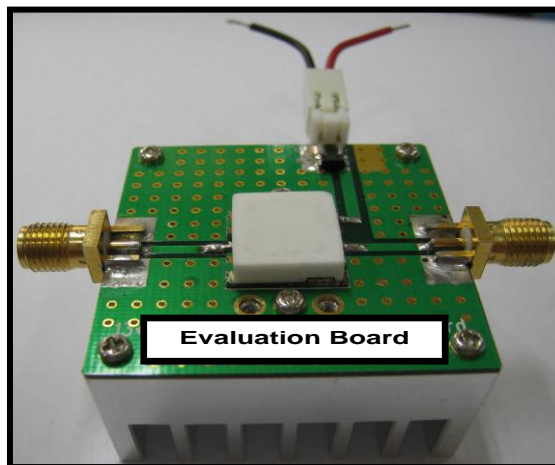## Recommended Soldering Reflow Process

260°C

20~40 sec

Ramp-up
(3°C/sec)

Ramp-down
(6°C/sec)

200°C

150°C

60~180 sec
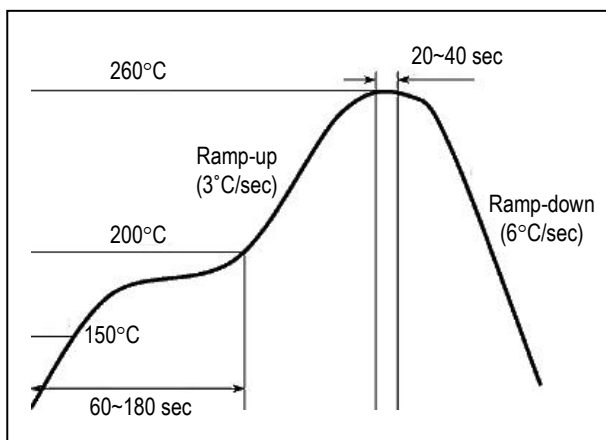
Evaluation Board Layout

Vs

IN   OUT

Size 40x40mm
(for APM Series – 13x13mm)

Channel Power vs. ACLR Test Configuration

Evaluation Board attached with Heat Sink

Evaluation Board

* In order to prevent damage of D.U.T (APM-Series) from heating, you must to use a properly sized heat sink for testing a module.