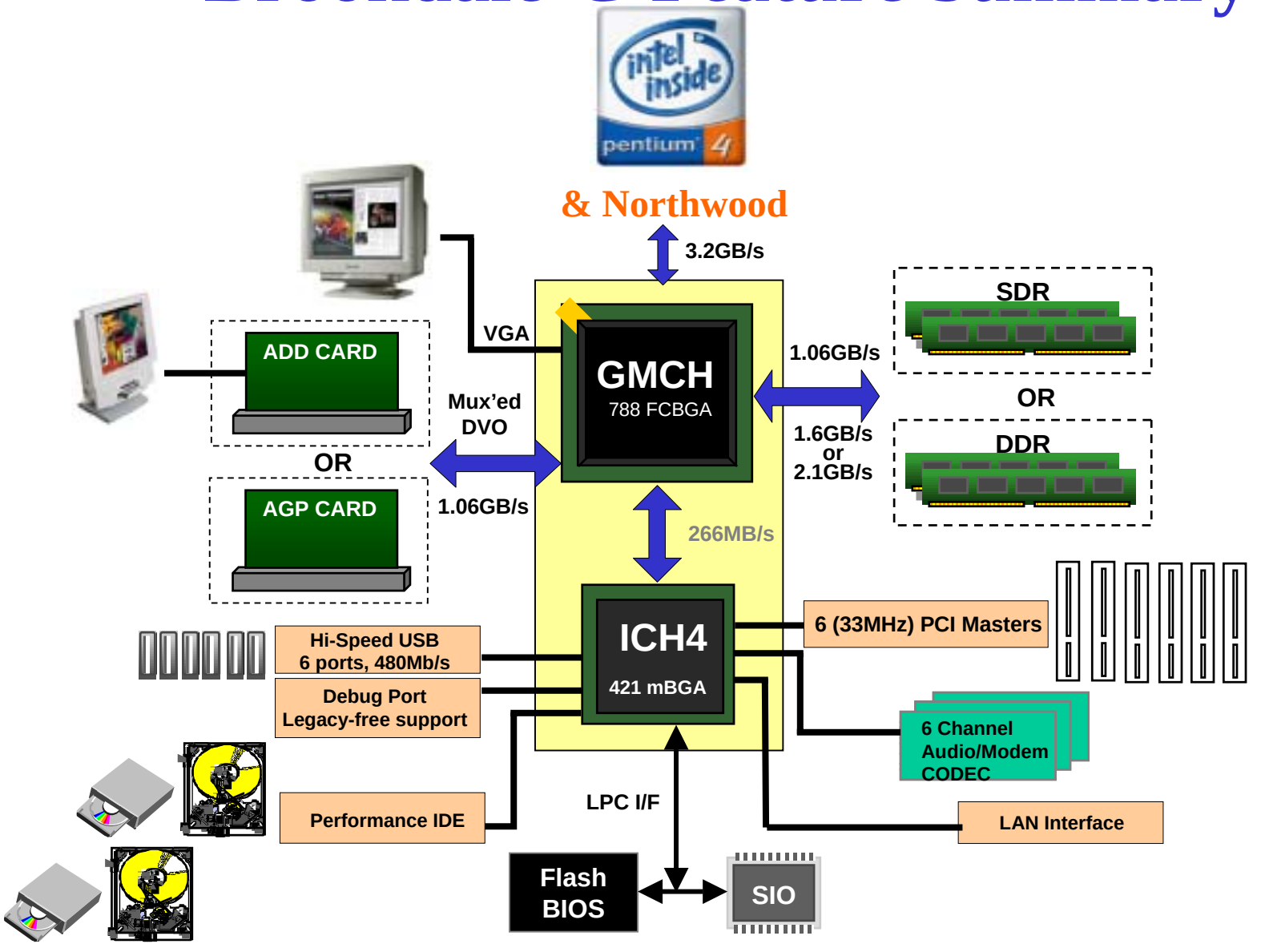
ALPHA & OMEGA
SEMICONDUCTOR, INC.

AOS for Mother Board Solutions

May 2003

Brookdale-G Feature Summary



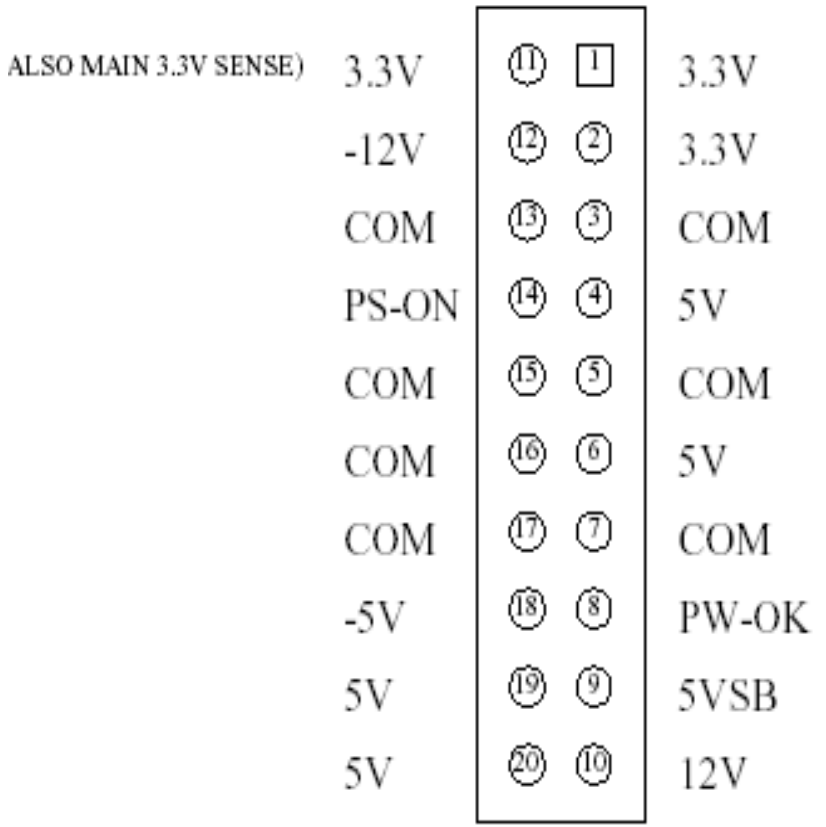
ALPHA & OMEGA SEMICONDUCTOR, INC.

ATX POWER CONNECTOR & Voltage Tolerances

Table 3. DC Output Voltage Regulation

Output	Range	Min.	Nom.	Max.	Unit
+12VDC [1]	±5%	+11.40	+12.00	+12.60	Volts
+5VDC	±5%	+4.75	+5.00	+5.25	Volts
+3.3VDC	±5%	+3.14	+3.30	+3.47	Volts
-5VDC	±10%	-4.50	-5.00	-5.50	Volts
-12VDC	±10%	-10.80	-12.00	-13.20	Volts
+5VSB	±5%	+4.75	+5.00	+5.25	Volts

[1] At +12 VDC peak loading, regulation at the +12 VDC output can go to ± 10%.

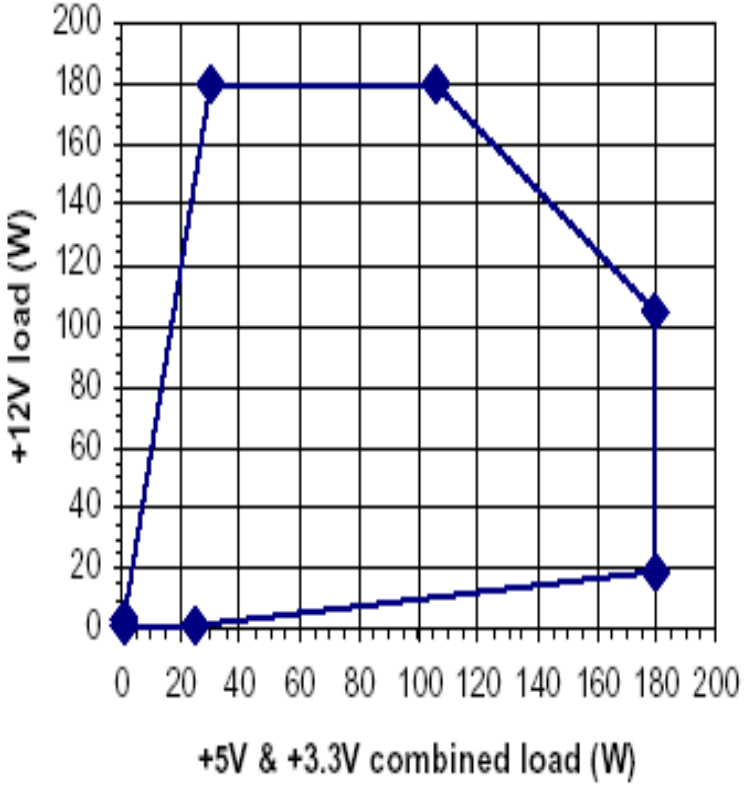


ATX Power Disspation

Table 10. Typical Power Distribution for a 300 W ATX12V Configuration

Output	Min. Current (amps)	Max. Current (amps)	Peak Current (amps)
+12 VDC	0.0	15.0	18.0
+5 VDC	0.3	30.0	
+3.3 VDC	0.3	28.0	
-12 VDC	0.0	0.8	
+5 VSB	0.0	2.0	2.5

See graph at right for power sharing.



Timing of Power ON, Power OK

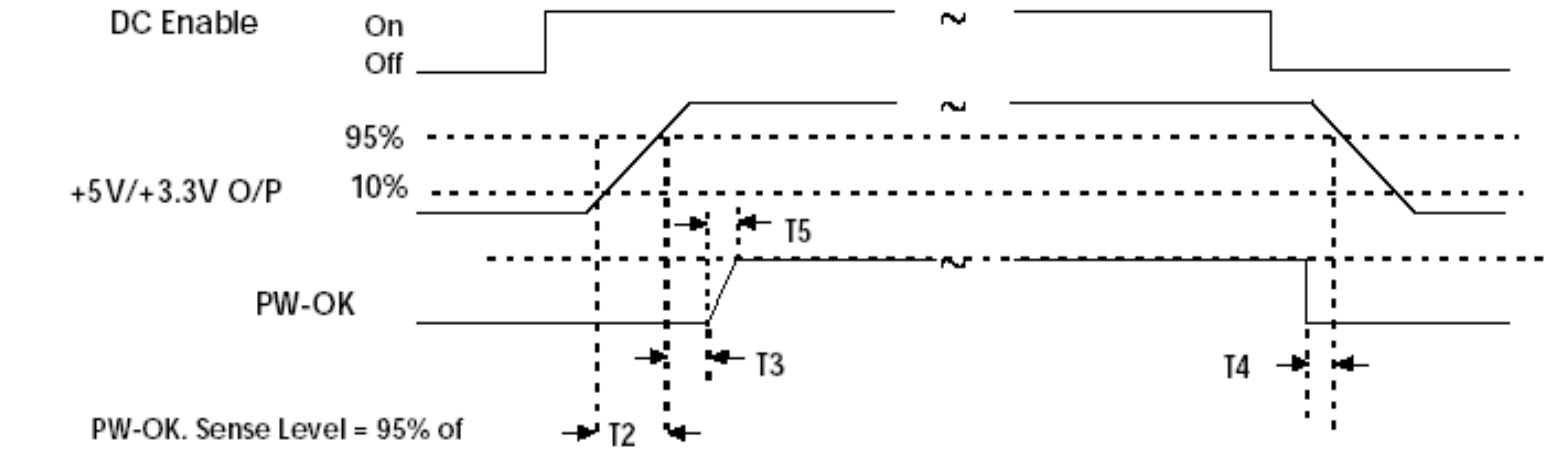


Figure 12: Timing of PS-ON, PW-OK, and Germane Voltage Rails

Although there is no requirement to meet specific timing parameters, the following signal timings are recommended:

$2ms \le T_2 \le 20$ ms

100 ms $< T_3 < 2000$ ms

$T_4 > 1$ ms

$T_5 \le 10$ms

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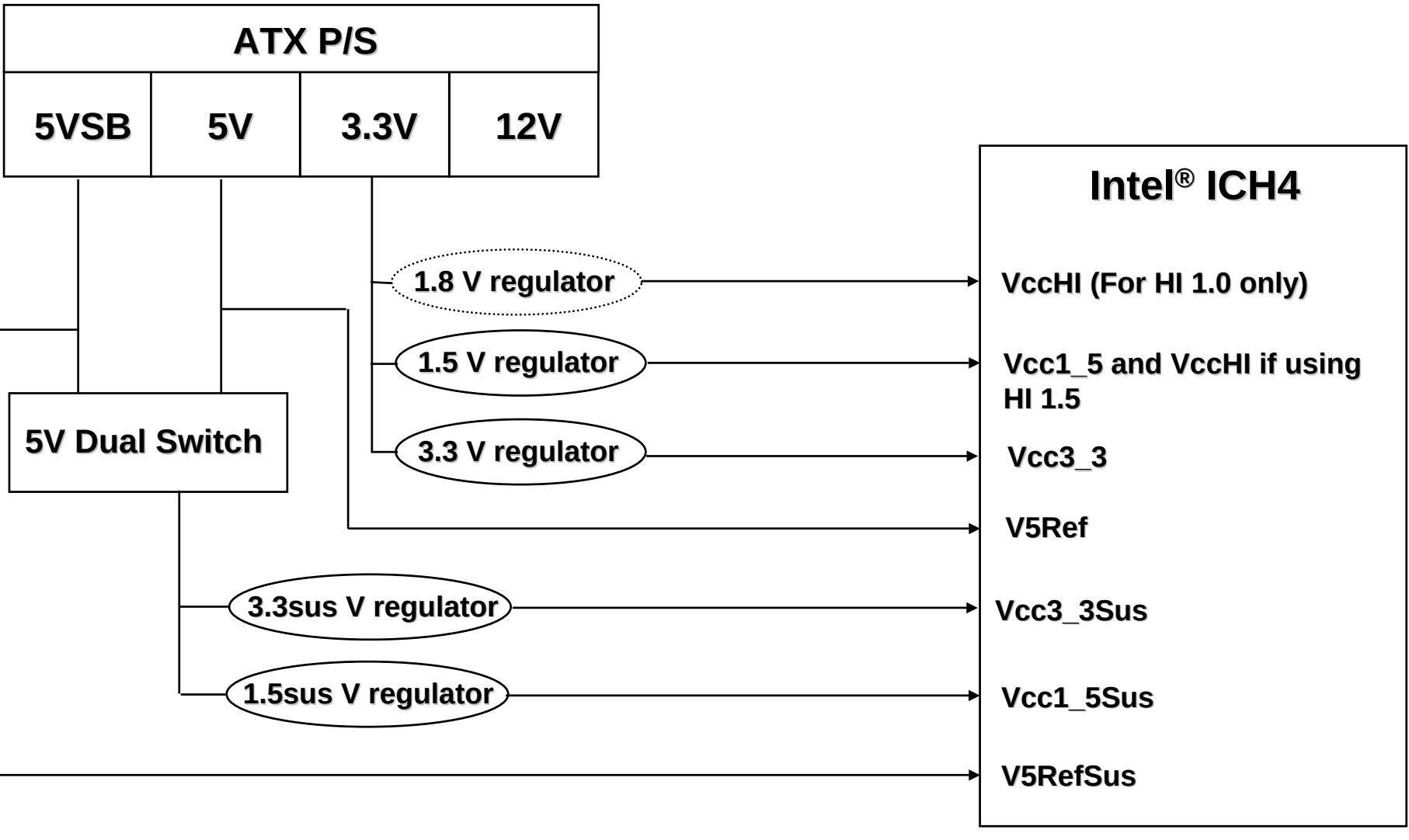
Power Distribution



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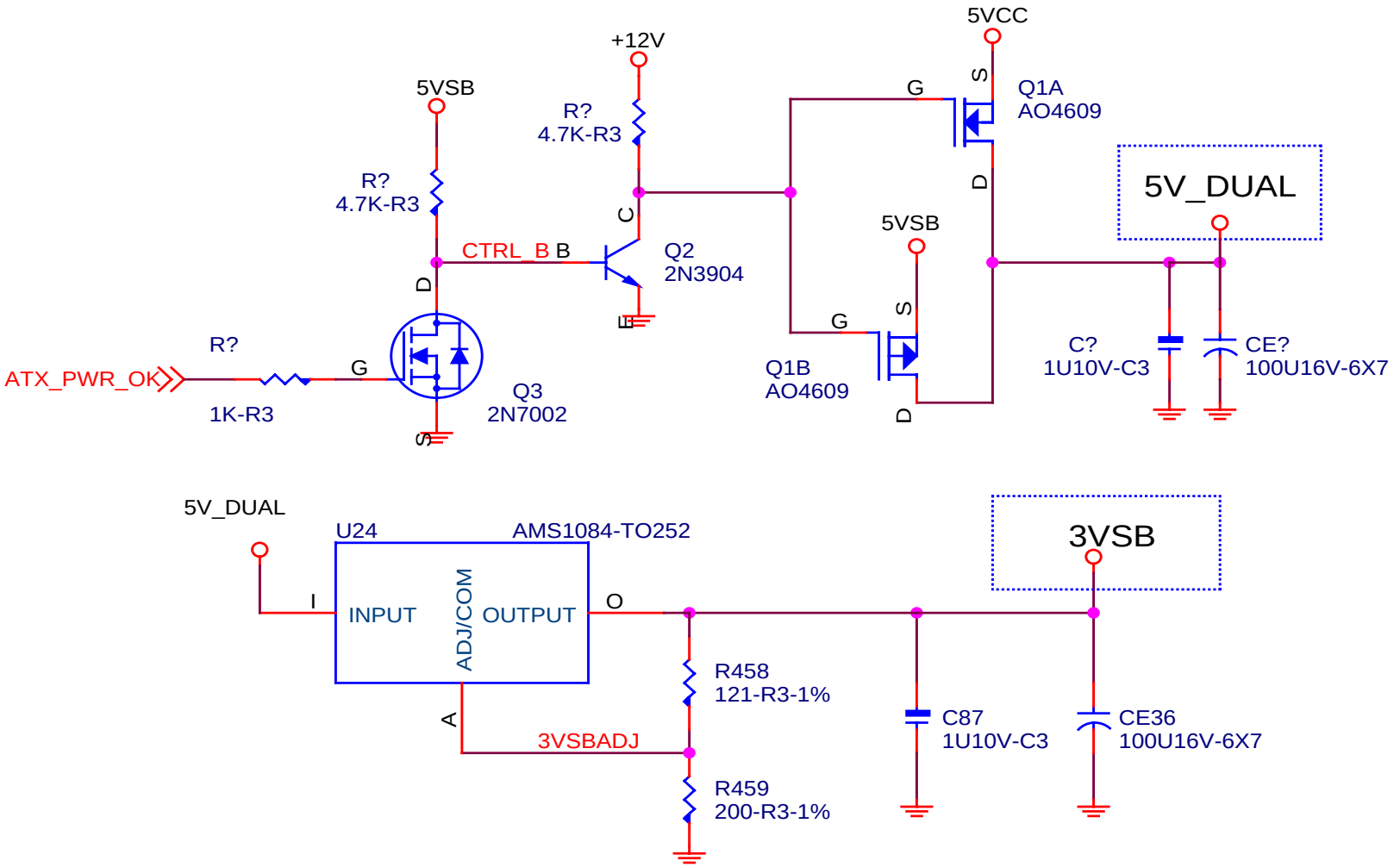
Application For 8 Channel USB & Support LAN wake up



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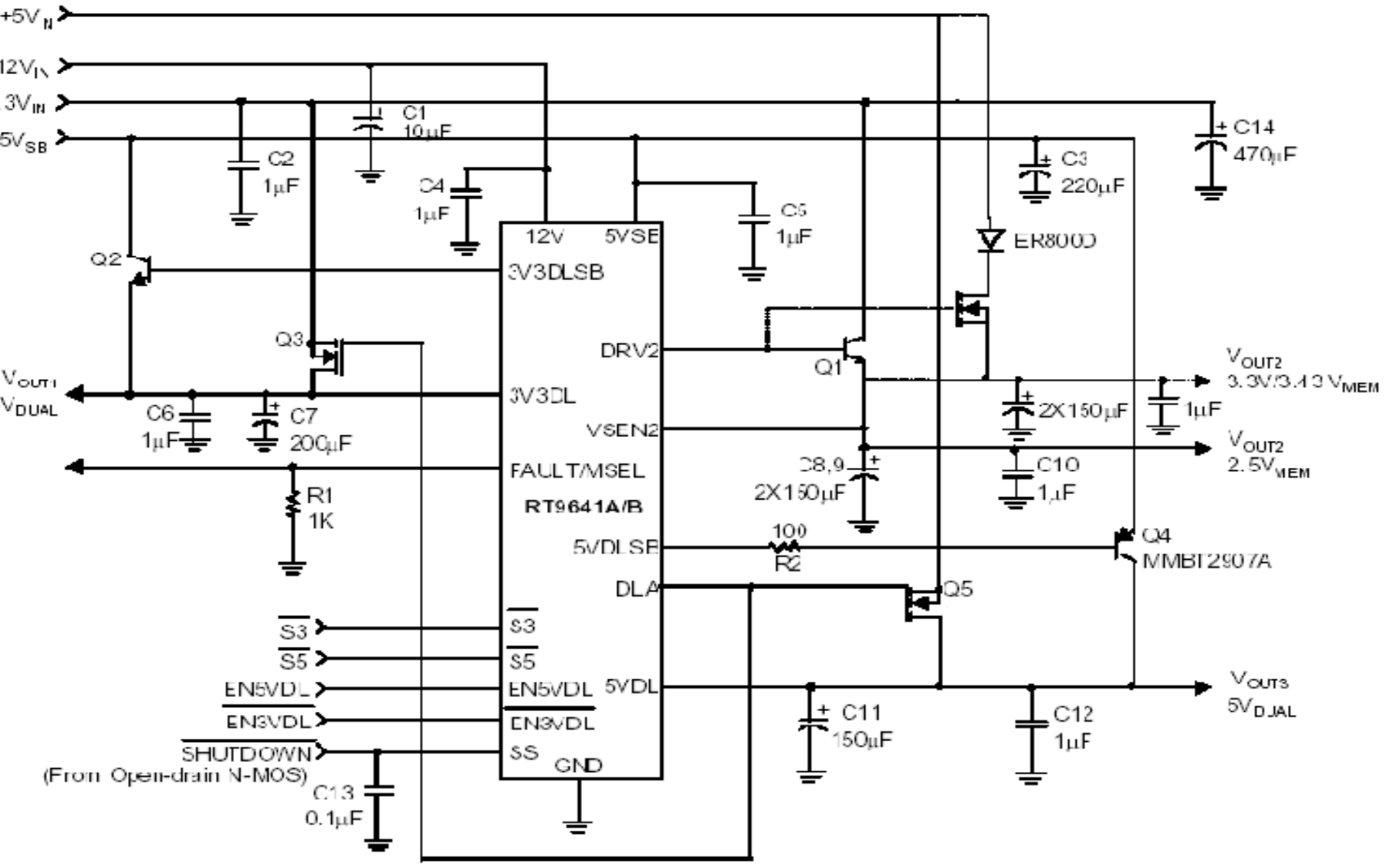
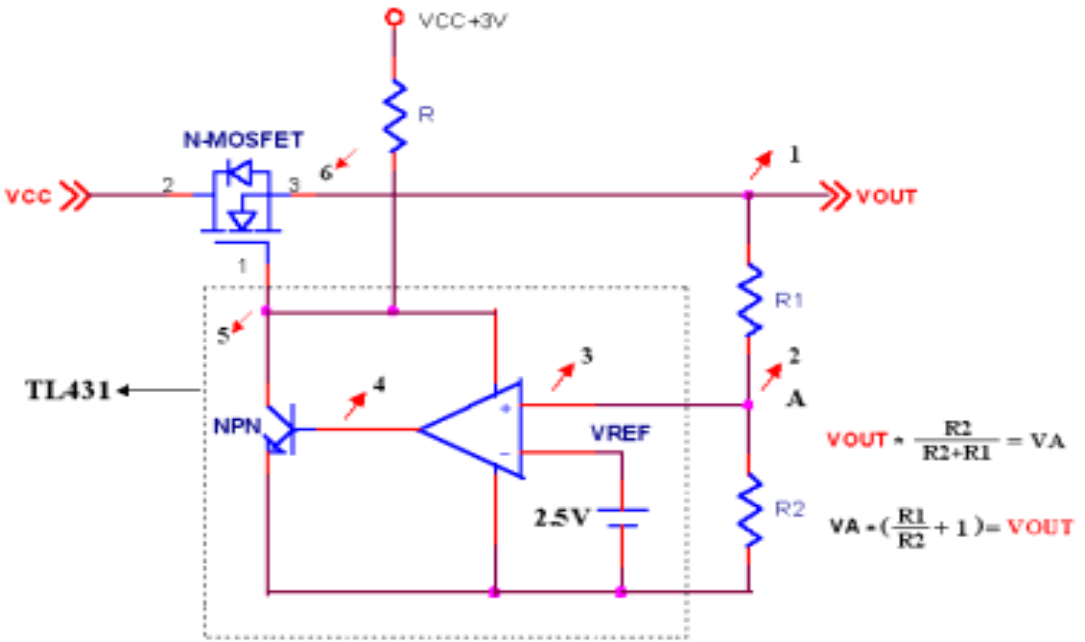
ACPI Power Circuit



普遍的線性電路 (TL- 431 +3055)



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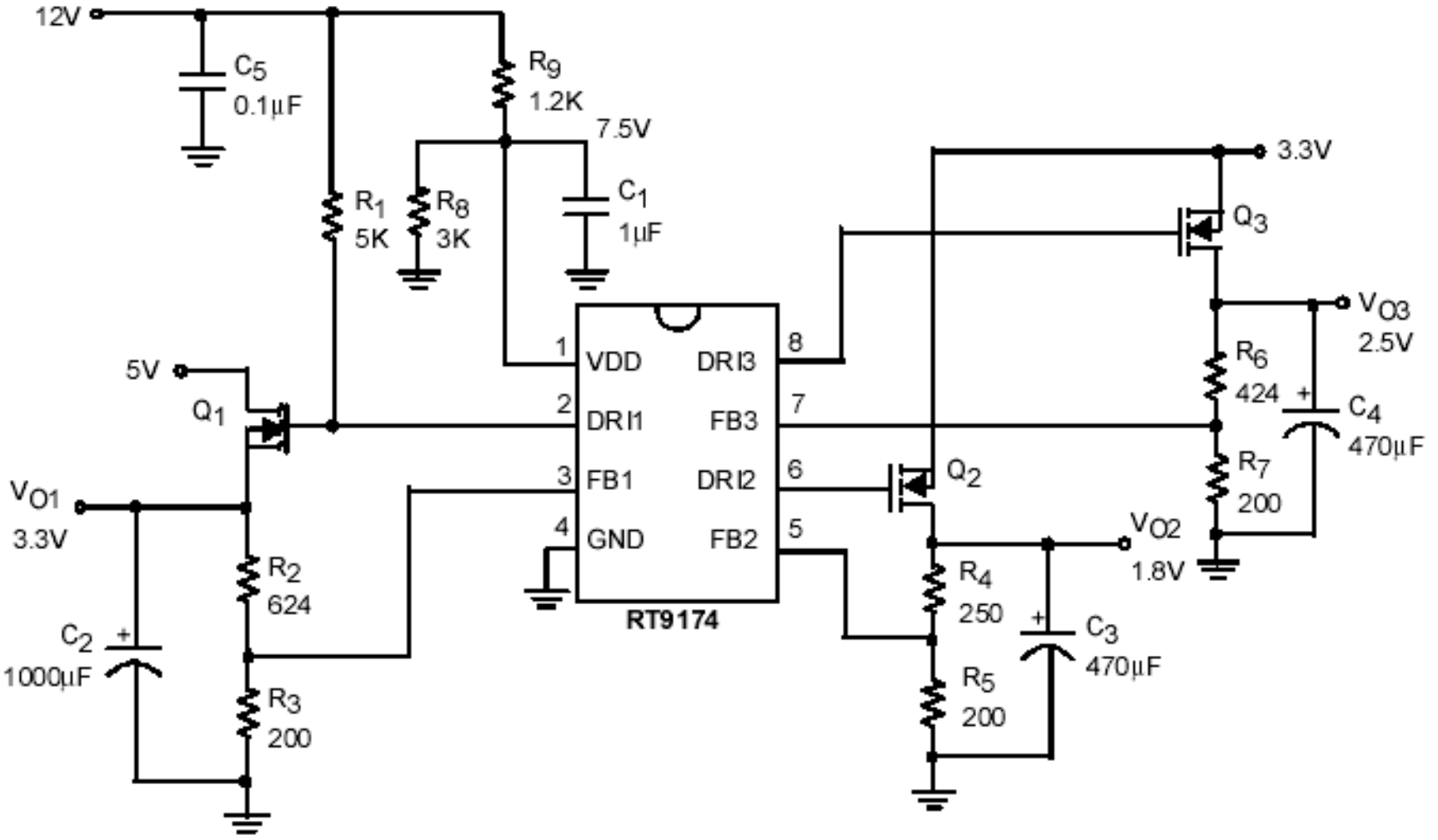
Triple LDOs Driving MOS Application



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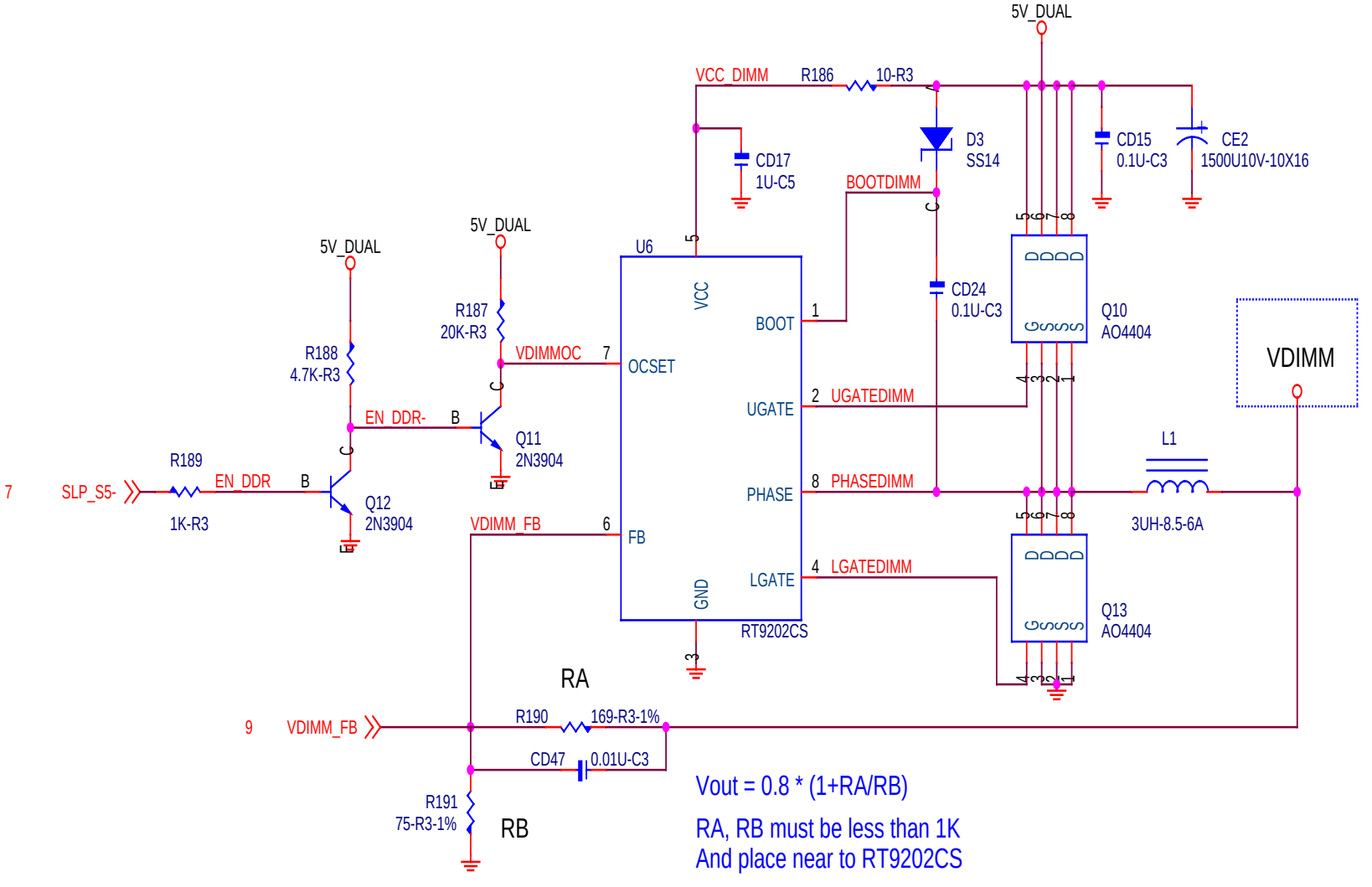
DDR Voltage or VGA VDDQ For PWM Solution



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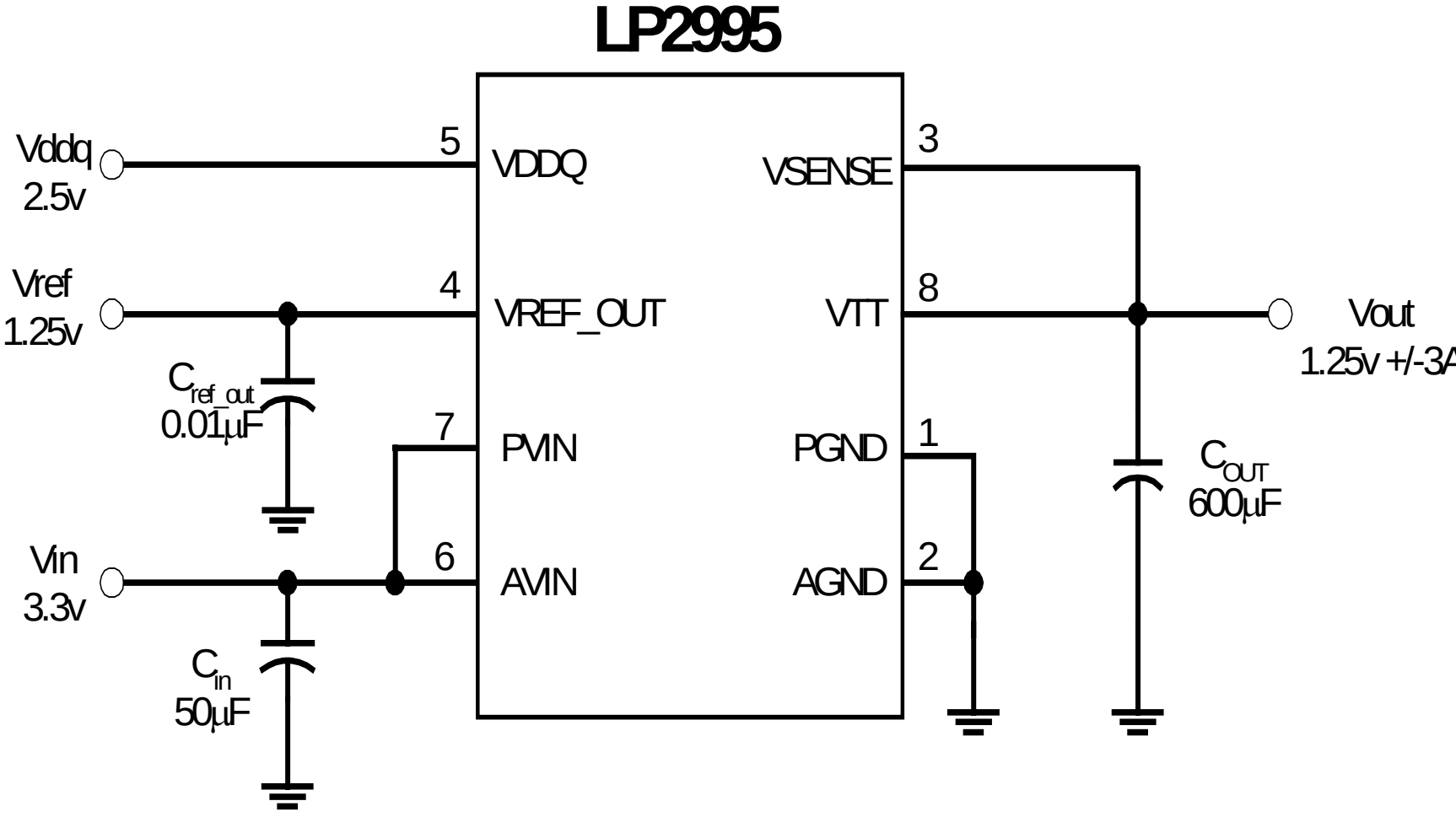
DDR Termination Voltage



AGP Power supply limit

Table 4-14: Add-in Card Power Supply Limits

Symbol	Parameter	Condition	Min	Max	Units	Notes
Vddq1.5	I/O Supply Voltage	I_{MAX} = 8.0 A	1.425	1.575	V	1
Vddq3.3	I/O Supply Voltage	I_{MAX} = 8.0 A	3.15	3.45	V	1
VCC3.3	3.3 V Power Supply	I_{MAX} = 6.0 A	3.15	3.45	V	
VCC5	5 V Power Supply	I_{MAX} = 2.0 A	4.75	5.25	V	
VCC12	12 V Power Supply	I_{MAX} = 1.0 A	11.4	12.6	V	

Note:

1. The Vddq current is due mostly to the AC switching transients of the A.G.P. I/O buffers. The maximum current listed will not be seen in practice, but represents the current carrying capability of the connector. Actual average currents will be less than 2.0 A.

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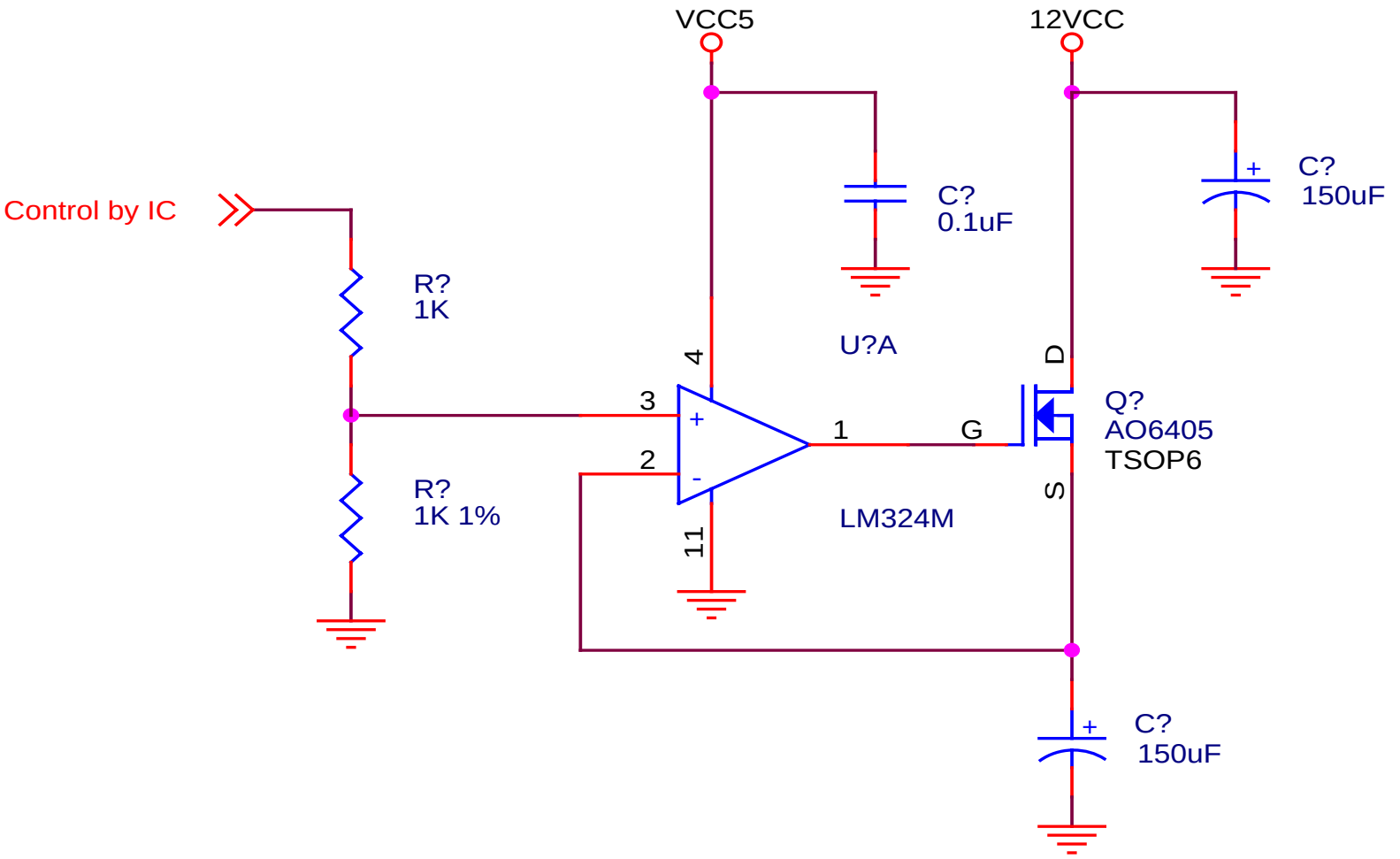
Fan Control Circuit



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TO-252 Efficiency Report 1

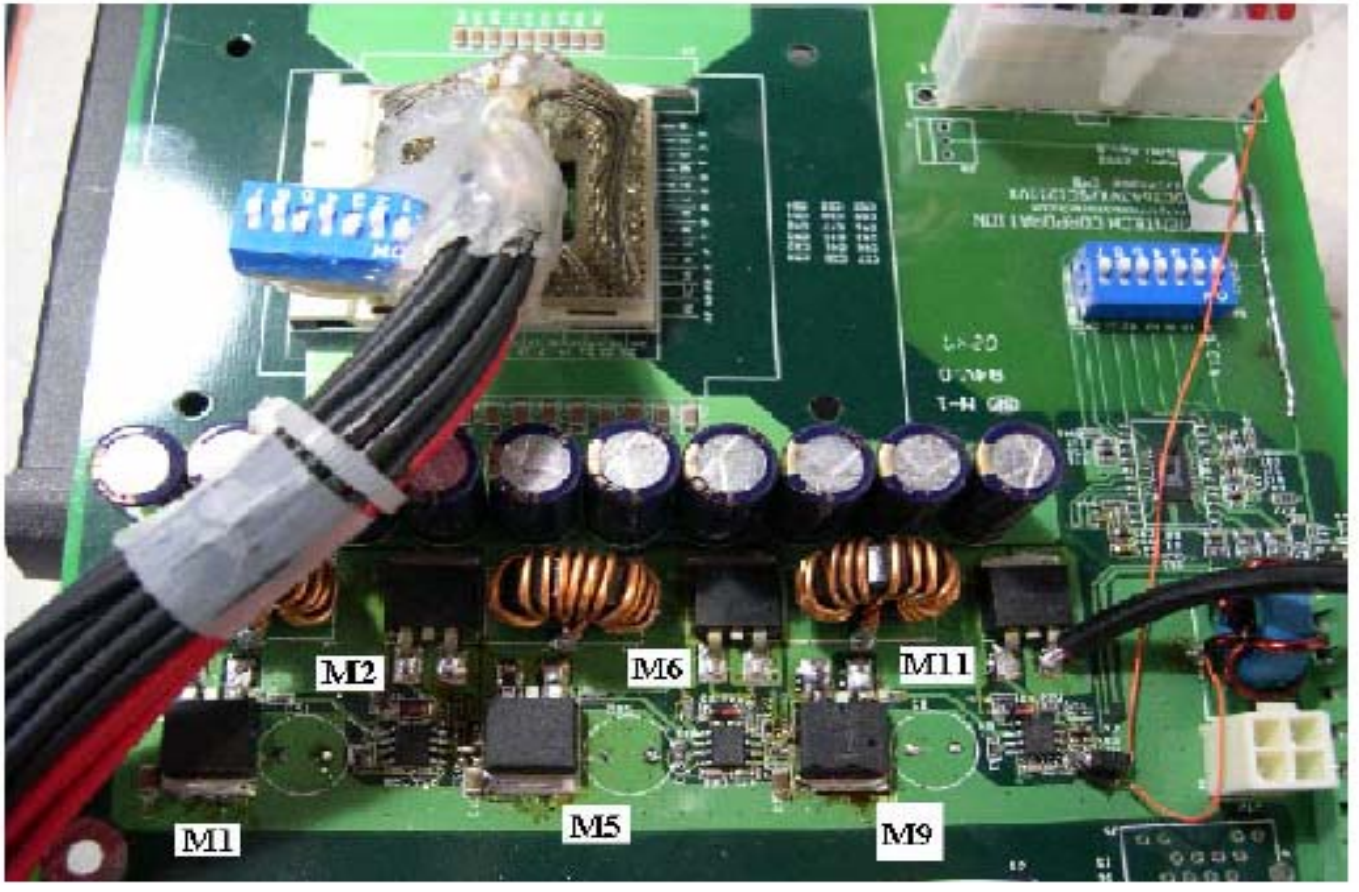

Fig1. Controller sc2643, Driver=sc1211. Three phase solution of SEMTECH.

TO-252 Efficiency Report 2

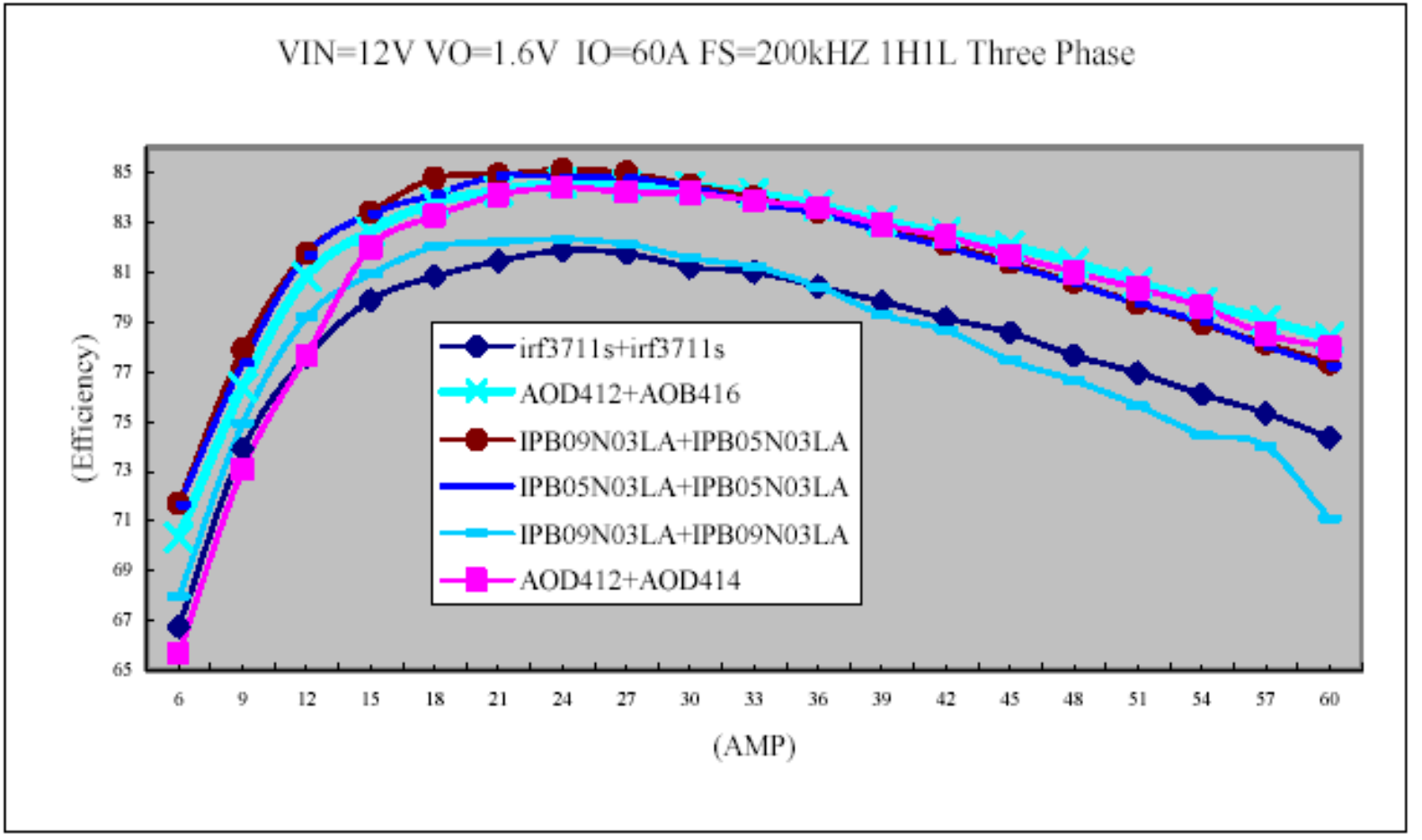

Fig2. Efficiency comparison

ALPHA & OMEGA SEMICONDUCTOR, INC.

TO-252 Efficiency Report 3

V_{IN}=12V	M9 HS	M11 LS	M5 HS	M6 LS	M1 HS	M2 LS
irf3711s+irf3711s	116.8℃	99℃	129.3℃	135℃	97.3℃	129.3℃
AOD412+AOB416	102.9℃	89.7℃	112.7℃	102℃	89℃	96.1℃
AOD412+AOD414	106.3℃	102.1℃	111.5℃	121.1℃	87.9℃	113.6℃
IPB09N03LA+IPB05N03LA	103.8℃	91℃	112.2℃	108.2℃	92.5℃	103.5℃
IPB09N03LA+IPB09N03LA	116℃	115.6℃	124.5℃	132.6℃	103.2℃	136.6℃
IPB05N03LA+IPB05N03LA	100℃	93.9℃	114.2℃	113.1℃	92.6℃	104.5℃

Table1. Io=60A (20A/per phase), T_A=25℃

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AOS MOSFET SELECTION GUIDE

Part number	Package	Description	VDS	Vgs	Ids		Pd		Rds(on)/max				Vgs(th) / max	Ciss /pF	Crss /pf	Qg / nC	Qgd / nC	Td(on) / Ns	Td(off) / nS
				(+/-)	25'C	70'C	25'C	70'C	10V	4.5V	2.5V	1.8V							
TO-252																			
AOD402	TO252	Single-N	30	25	18	12	60	30	18	44			3	769	131	15.9	4.92	6.2	16
AOD404	TO252	Single-N	30	12	85	65	100	50	7	8			2	2100	165	19.7	7.9	5.9	36.2
AOD406	TO252	Single-N	30	12	85	75	100	50	5	5.7			1.5	9130	387	72.4	16.8	14.7	105.5
AOD408	TO252	Single-N	30	20	20	18	60	30	16	26			3	1040	110	19.8	3.5	4.5	17.5
AOD410	TO252	Single-N	30	20	8	6	4.2	2.6	65	100			3	288	39	6.72	1.78	3.7	15.6
AOD412	TO252	Single-N	30	20	85	65	100	50	7	10			2.5	1320	154	26	6.6	7.2	22
AOD414	TO252	Single-N	30	20	85	65	100	50	5.2	7			2.4	6060	355	96.4	15.6	15.7	55.5
AOD420	TO252	Single-N	30	20	10	8	60	30	25	35			3	710	72	14.4	2.7	5.6	15.6
AOD422	TO252	Single-N	20	8	10	8	50	20		22	26	34	1	1160	146	16	3.8	6.2	51.7

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Product Nomination

AO — Device Family

XXXX — Device Number

T1 — Packing Option

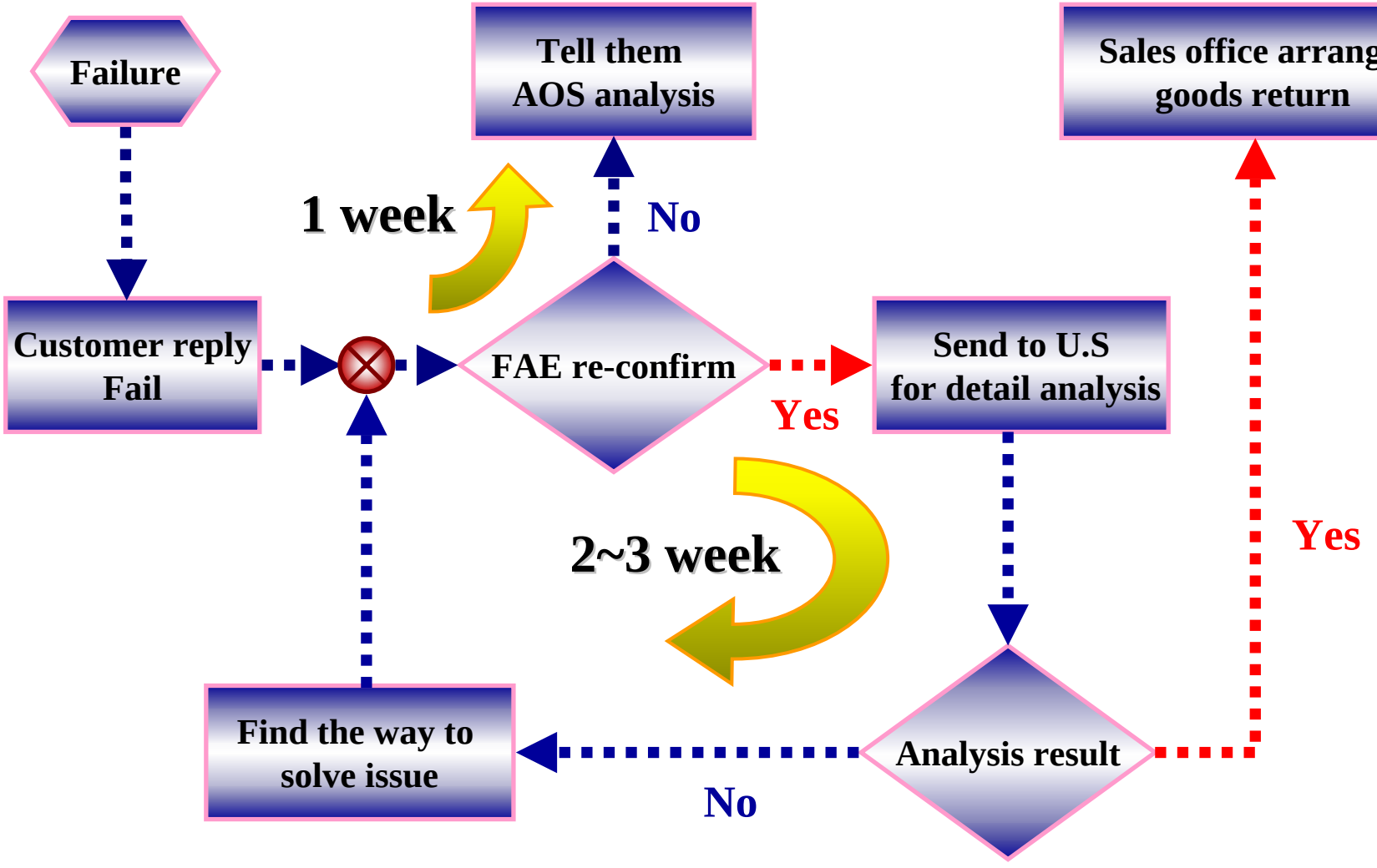
1ST Digit	
4	SO8
8	TSSOP8
6	TSOP6
3	SOT23
7	SC70
2	CSP
5	ChipFET
B	D2PAK
D	DPAK
P	TO220
Y	Power SO

2ND Digit	
4	Single
6	Complemently
8	Dual
9	Three in one
7	With Schottky

3,4 Digit

even N Channel

odd P Channel


Failure
Tell them
AOS analysis
Sales office arrange
goods return
1 week
No
Customer reply
Fail
FAE re-confirm
Send to U.S
for detail analysis
Yes
2~3 week
Yes
Find the way to
solve issue
Analysis result
No

ALPHA & OMEGA SEMICONDUCTOR, INC.

Q & A FLOW

Q & A

Company

SEP 2000Y Established
Capital, USD $13.5M
Founder
UMC, USI
漢陽,富邦
AOS
吋 foudry/ 6~7 layer mask
PACKING
SOT23,TSOP6/ 凱虹
SO8/ ALPHATEK
TSSOP8/ALPHATEK
CAPABILITY
SOT23/ Over 20 M per month
TSOP6/ Over 10 M per Month
SO8/TSOP8/ Over 20M per Month
Customer Base
VGA/NB/DSC..MSI, GIGABYTE,CLEVO,UNIWILL,COMPAL,FIC,ECS...
LCM, PROVIEW.AOC, SAMPO, SUMIDA, TDK,TAUTANG, MTP
MB/ BP, POWERLINK,TRANS, MONTEK, SONY, BENQ, SAMPLO,GLW
DISTRIBUTOR
PROMATE
AENN
EPOC/ KONNECT

Quality Flow

- 240 DEGREE C
  IR reflow
- Higher yeial rate
- 100% testing
- Optimise for market needed
- Excellent Packing partner and good reputation
  ALPHATECK
  凱虹
- 1000 Hrs, temperture cycling
- Internal vision
  Cross-section
  X-ray
- Bond Integrity
  150 degree C, 250Hr/ 500Hr
- Solderability/ 230 degree , 5sec

Specification

- DEVICE Road Map
- Outstanding Device
  AO4406/AO4906/AO4900
  AO4600/AOP600/AO3400
  AO3401/ AO6601/ AO7400
- AO4409/ AO4407/ AO4411
  AO4403/AO4405/AO3411
  AO8800/AO8802/A03407
- Completmarly DEVICE offer
- High power and Small Package Provide
- Lowest Rdson for P and N channel
  8mOHM, 4 Mohm
- High Qgd value
  reduce power consumption
- Lowest Vth
  It is suitable on one battery cell
- Current Rating
  Depend on Package and Specification

Application

- Boost Topology
- Buck topology
- Flyback Topology
- Charger Circuit
- Flash light circuit
- INVERTER
- Load Switch

Market

- Total TAM
  USD 400M/ TWN
- Key Supplier
  INTERSIL/ FDS
  PHILIPS/ IR/ JAPAN
  CET/ SILICONIX
- Key Competitor
  SOT23 / FDS, SIL, ROHM
  TSOP6/ IR, ANPC
  SO8/TSSOP8/ FDS, SIL,IR, ROHM
- Major market
  VGA/ NB/DSC..SOT 23/ TSSOP8 /
  LCM/IV/BP..TSSOP8/ SO8
  MB/OTHERS..TSOP6/ SOT23
- AOS Achievement
  2001/ USD 0.5 M
  2002/ USD 6M
  USD 45M for 2003 YEAR.

ALPHA & OMEGA
SEMICONDUCTOR, INC.

Q & A

BYE BYE!!