DESCRIPTION

AM5853 is designed for battery charging controller, which features P-channel MOSFET characteristics and a 0.12V Schottky diode for reverse current blocking. Such reverse current blocking feature cut off the current when source voltage is removed, or lower than drain voltage, no matter the gate voltage indicating the P-MOSFET on or off.

AM5853 is also suitable for high side switch in a system with multi power supplies, when isolating different power supplies becomes essential.

AM5853 can block reverse voltage as high as 10V. So it is safe enough for mobile phone system or other portable device powered by 1 cell Li-ion battery.

AM5853 make itself the smallest package available in the world.

The AM5853 is available in DFN6 and SC70-5 packages.

ORDERING INFORMATION

Package Type	Part Number	
DFN6	J6	AM5853J6R-A
		AM5853J6VR-A
		AM5853J6R-B
		AM5853J6VR-B
SC70-5	C5	AM5853C5R
		AM5853C5VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

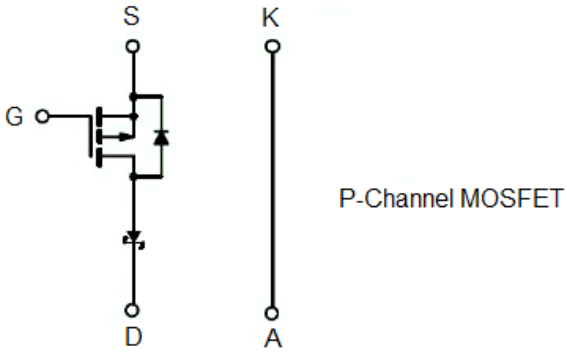
FEATURES

- PMOSFET with SBD for reverse current blocking
- 0.12V Schottky diode forward voltage
- Range of operation input voltage: Max 12V
- Charging current up to 650mA
- Environment Temperature: -20°C ~85°C
- Available in DFN6 and SC70-5 Packages

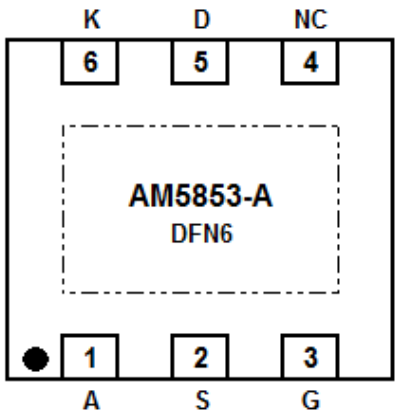
APPLICATION

- Cell phone and other portable device

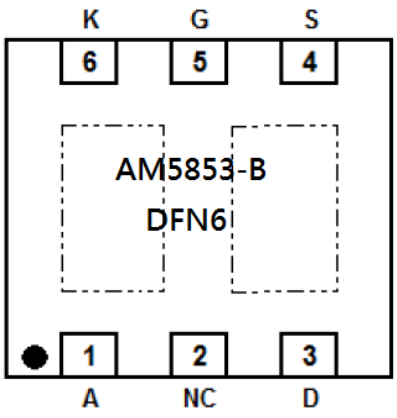
TYPICAL APPLICATION



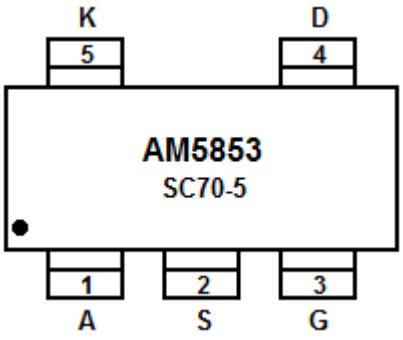
PIN DESCRIPTION



Top View



Top View



Top View

Pin #			Symbol	Function
DFN6-A Single Pad Compatible to DFN2x3 pin out	DFN6-B Dual Pad Compatible to DFN2x2 pin out	SC70-5		
1	1	1	A	Anode
2	4	2	S	Source
3	5	3	G	Gate
4	2	-	NC	No Connect
5	3	4	D	Drain
6	6	5	K	Cathode

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	5 sec	Steady State	Unit
Forward Voltage(Source-Drain)	V_{SD}	12		V
Gate-Source Voltage (MOSFET)	V_{GS}	-8~+0.3	-8~+0.3	
Continuous Drain Current	I_D	0.8	0.5	A
Pulsed Drain Current (MOSFET)	I_{DM}	1		A
Maximum Power Dissipation	P_D	2.3	1.4	W
Operating Junction Temperature Range	T_J	−20 to 125		°C
Storage Temperature Range	T_{STG}	-40 to 150		
Soldering Recommendations (Peak Temperature)		260°C, 10s		

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL RESISTANCE RATING

Parameter		Symbol	Device	Typ.	Max	Unit
junction-to-Ambient	t ≤ 5 sec	R_{thJA}	DFN6	50	60	°C/W
			SC70-5	250	280	
	Steady State		DFN6	105	120	
			SC70-5	330	400	
Junction to Case	Steady State	R_{thJC}	DFN6	20	30	
			SC70-5	150	175	

ELECTRICAL CHARACTERISTICS

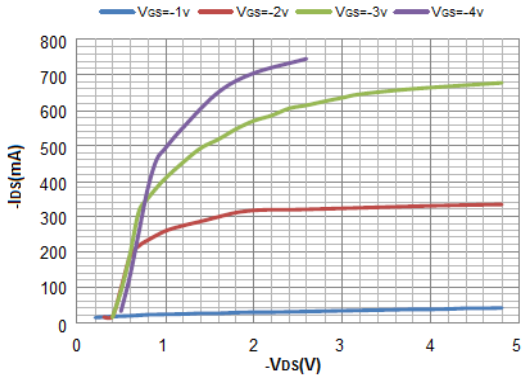
T_J=25°C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Threshold Voltage	V_{th}	I_{DS}=-10uA, V_{DS}=V_{GS}	-1.0	-0.7	-0.4	V
Gate-Source Leakage current	I_{GS}	V_{GS}=8V	0	12	20	uA
PMOS off-state leakage	I_{DSS}1	V_{GS}=0, Vs=9V, V_D=0V		0.5	5	uA
PMOS reverse block leakage	I_{DSS}2	V_G=0, Vs=0V, V_D=4.5V		2	10	uA
On –state drain current	I_{DSON}	Vs=5V, Vg=1V, V_D=4V	-800	-650	-500	mA
V_{DS}/I_{DSON}	R_{DSON}	Vs=5V, Vg=1V, V_D=4V	1.25	1.5	2	Ω
Forward voltage of schottky	V_{FSBD}	Vs=4V, V_G=0V, I_{DS}=0	0.08	0.12	0.16	V

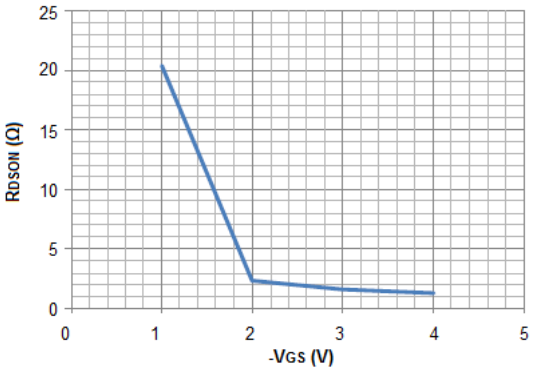
TYPICAL PERFORMANCE CHARACTERISTICS

T=25°C, unless specified

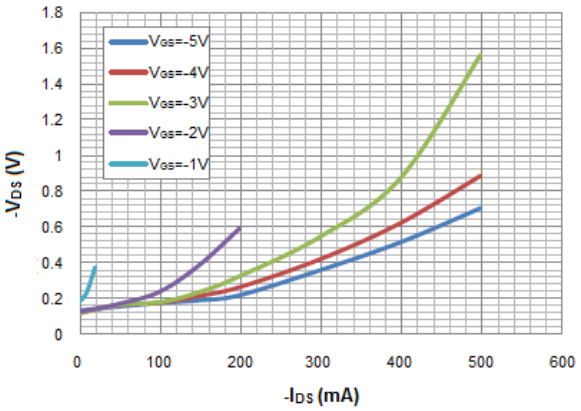
1. Output Characteristics



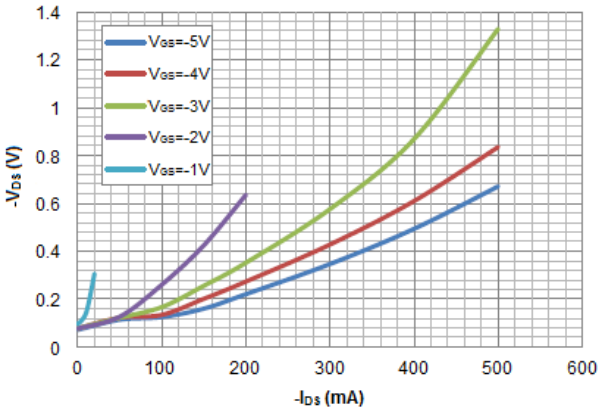
2. On Resistance Vs V_{GS}



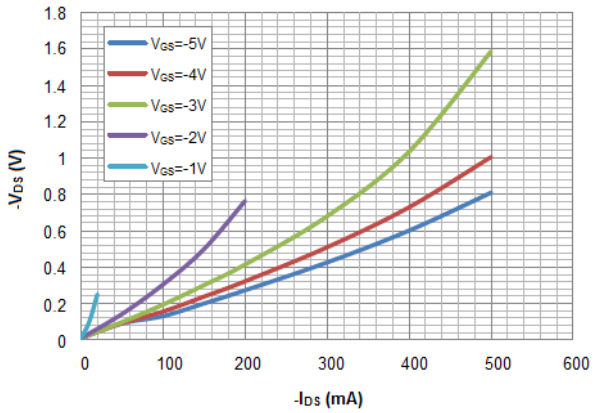
3. Dropout Voltage (V_{DS}) Vs. Charge current (I_{DS}), T = 25°C



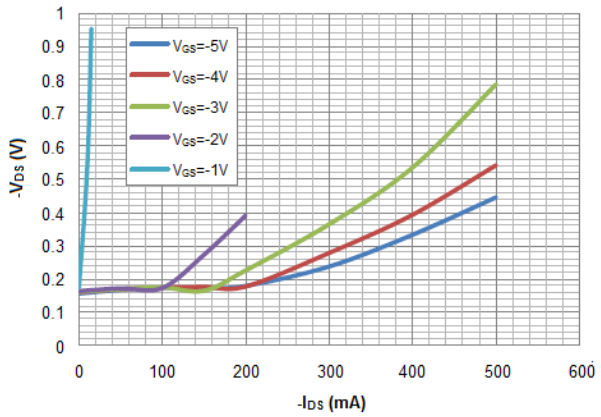
4. Dropout Voltage (V_{DS}) Vs. Charge current (I_{DS}), T = 80°C



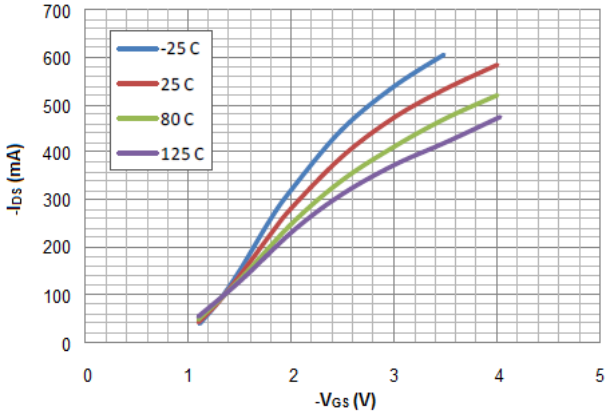
5. Dropout Voltage (V_{DS}) Vs. Charge current (I_{DS}), T = 125°C



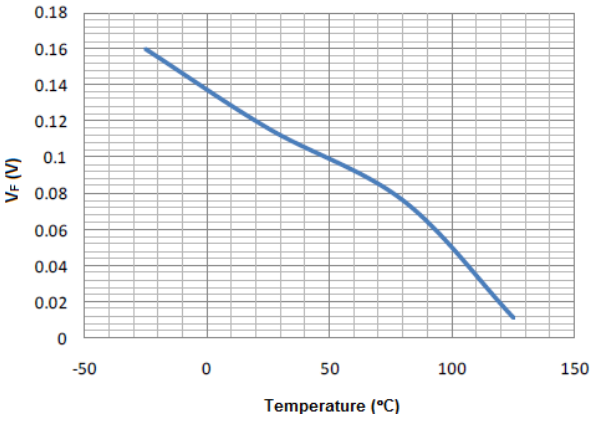
6. Dropout Voltage (V_{DS}) Vs. Charge current (I_{DS}), T = -25°C



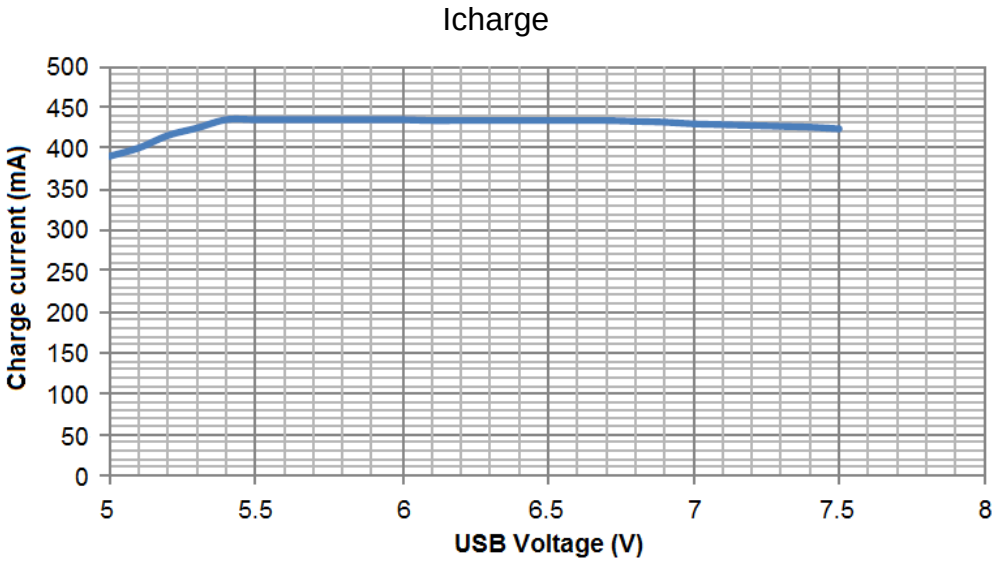
7. Charge Current (I_{DS}) Vs. Gate Voltage



8. Schottky Diode Forward Voltage

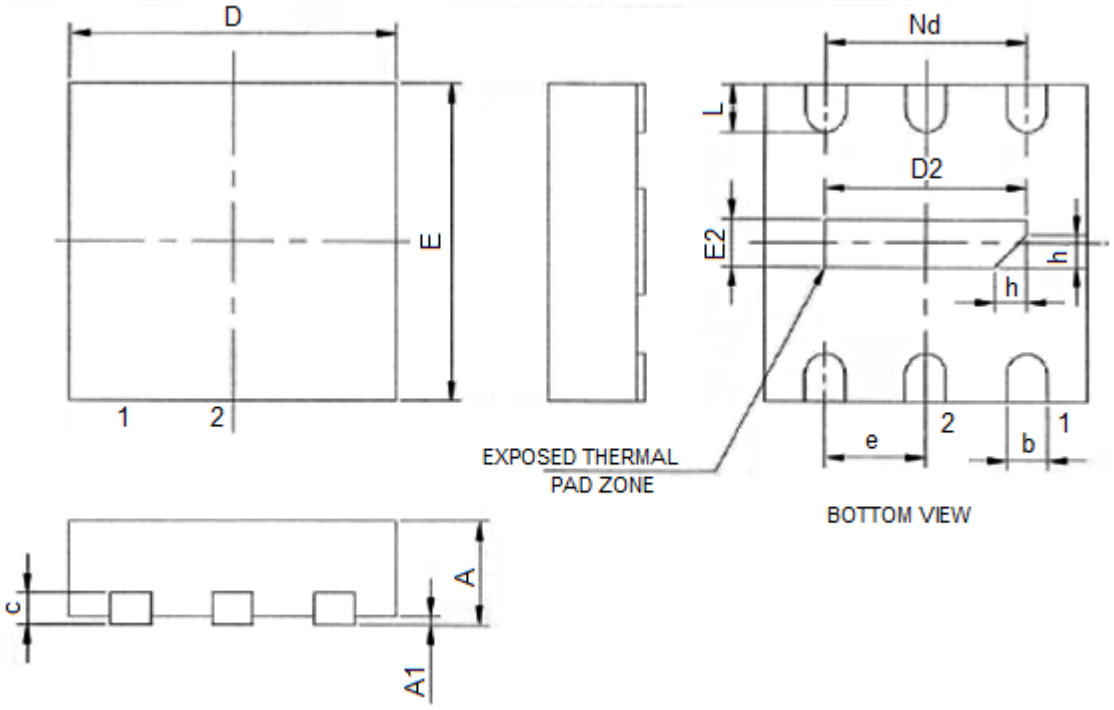


9. Charge current Vs USB voltage tested on actual cell phone powered by MTK chipset



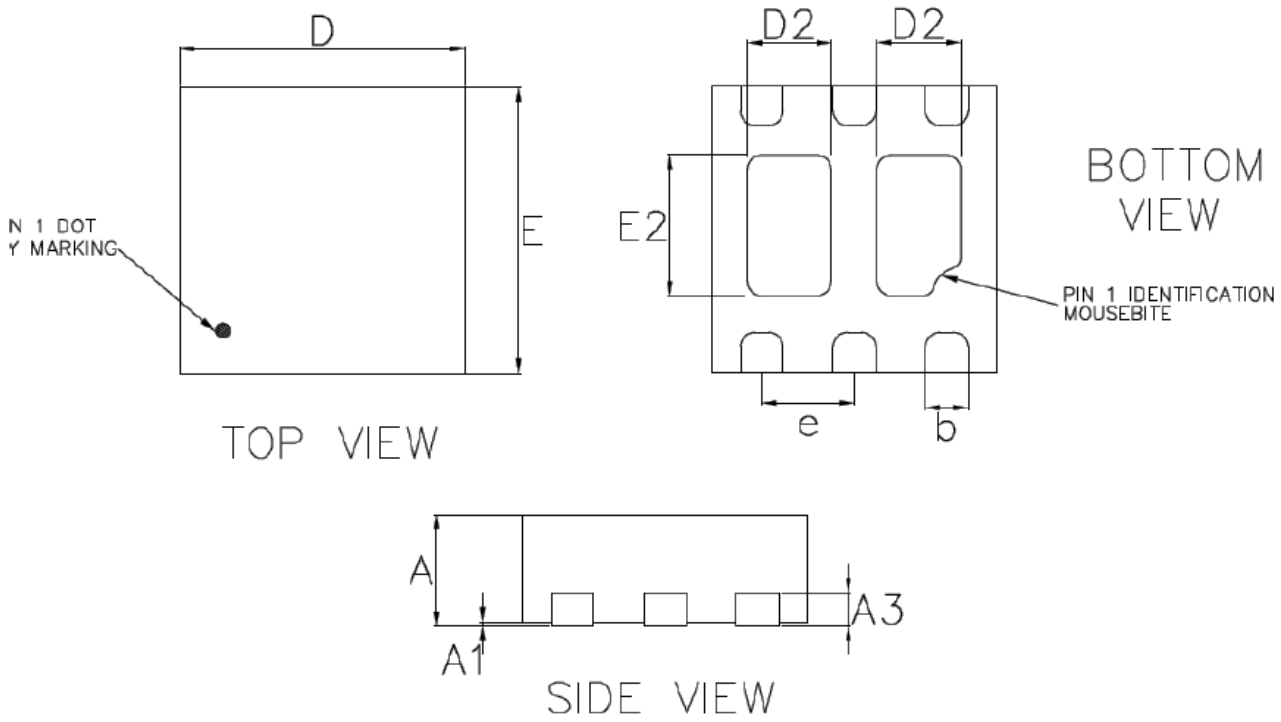
PACKAGE INFORMATION

Dimension in DFN6 Single Pad (Unit: mm)



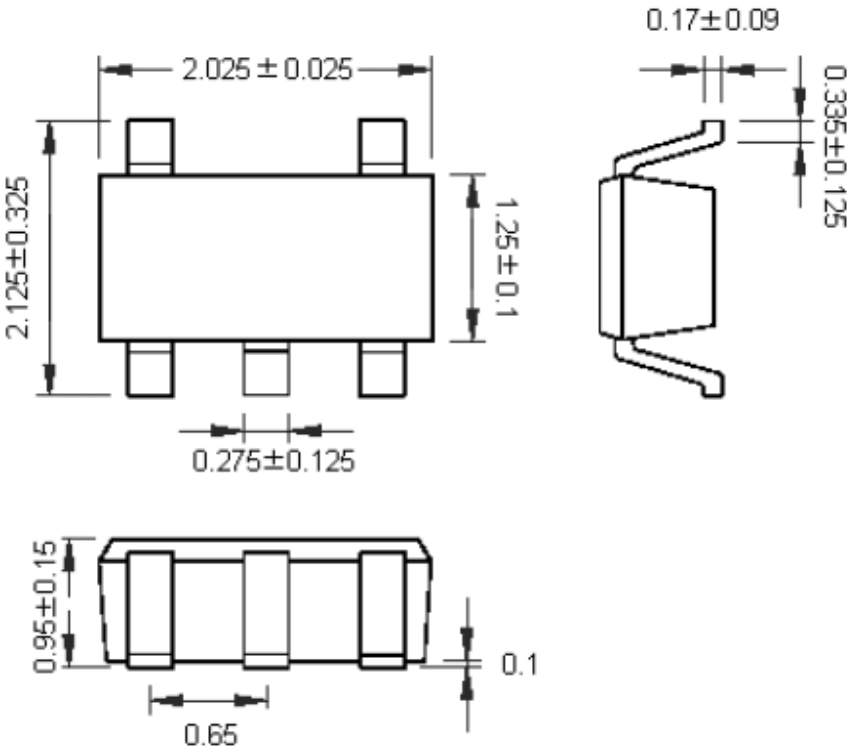
Symbol	Min	Max
A	0.700	0.800
A1	-	0.050
b	0.25	0.35
c	0.18	0.25
D	1.95	2.05
D2	1.00	1.45
e	0.65BSC	
Nd	1.30BSC	
E	1.95	2.05
E2	0.20	0.40
L	0.25	0.40
h	0.15	0.25

Dimension in DFN6 Dual Pad (Unit: mm)



Symbol	Min	Max
A	0.700	0.800
A1	0.000	0.050
A3	0.200 REF.	
D	1.950	2.050
E	1.950	2.050
D2	0.440	0.690
E2	0.840	1.090
b	0.250	0.350
L	0.175	0.375
e	0.650 BSC.	

Dimension in SC70-5 (Unit: mm)



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