

## 12W Single/Dual USB Charger Adapter Emulator

### DESCRIPTION

The UC2633/UC2634 is single/dual USB adapter emulators with automatic host charger identification circuitry for USB dedicated chargers.

The devices integrated automatic USB charger identification circuit allow mobile power supply, In-Car charger, USB wall adapters, travel chargers, and other dedicated chargers to identify themselves as a USB dedicated charger to USB devices, like Apple charger to Apple products, Samsung charger to Samsung Galaxy Tab & Smart Phone, and BC1.2 charger to HTC, SONY, LG, BlackBerry, Lenovo, Coolpad, ZTE, Huawei and other legacy D+/D- short detection devices.

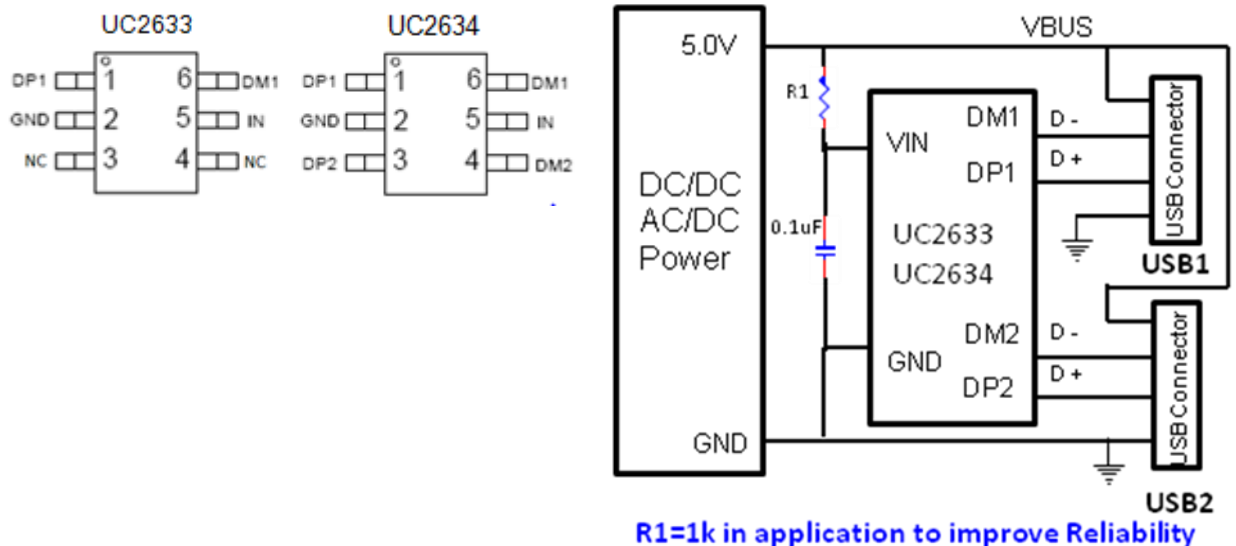
### FEATURES

- 4.5V~5.5V Single Supply Operation.
- Automatic USB charger Identification Circuit.
- UC2633/UC2634 Support Apple® Devices fast charging. (Apple® 2.4A mode)
- Support Samsung Galaxy Tab Devices fast Charging. (Samsung® 2.1A mode)
- Support BC1.2 & YD/T 1591-2009 Charging Spec. (DCP® 1.0A mode)
- Available in SOT23-6 Package.

### APPLICATIONS

Power Bank/Car Charger  
 USB Wall Adapter  
 Travel Charger

### PACKAGE AND APPLICATION





# UC2633/UC2634

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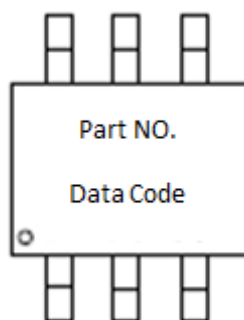
## PART NO. TABLE

Part No.	Dual/Single	Apple 12W	Apple 10W	Apple 5W	SS 10W	DCP 5W
UC2633	Single	Support			Support	Support
UC2634	Dual	Support			Support	Support

## ORDERING INFORMATION

Part Number	Package Type	Package Qty	Op Temp(°C)
UC2633	SOT23-6	3000	-40~85
UC2634	SOT23-6	3000	-40~85

## MARK INFORMATION





# UC2633/UC2634

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### ABSOLUTE MAXIMUM RATINGS <sup>(1)</sup>

Over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		MIN	MAX	UNIT
supply voltage range	IN	-0.3	6	V
Input voltage range	DP1,DM1,DP2,DM2	-0.3	5.8	
Continuous output sink current	DP1,DP2 input current, DM1,DM2 input current		35	mA
Continuous output source current	DP1,DP2 output current, DM1,DM2 output current		35	
ESD rating, Human Body Model (HBM)	IN		2	kV
	DP1,DP2,DM1,DM2		4	
ESD rating, Charging Device Model (CDM)			500	V
Operating Junction Temperature	T <sub>J</sub>	-40	125	°C
Storage Temperature Range	T <sub>stg</sub>	-65	150	

(1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

### THERMAL CHARACTERISTICS

over operating free-air temperature range (unless otherwise noted)

THERMAL METRIC			UNIT
$\theta_{JA}$	Package thermal impedance <sup>(1)</sup>	180	°C/W

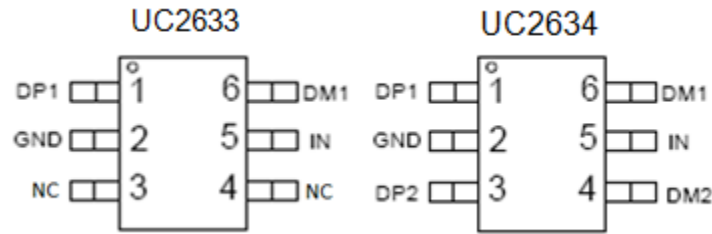
(1) The package thermal impedance is calculated in accordance with JESD 51-7.

### RECOMMENDED OPERATING CONDITIONS

PARAMETER		MIN	MAX	UNIT
V <sub>IN</sub>	Input voltage of IN	4.5	5.5	V
V <sub>DP1/DP2</sub>	D+ data line input voltage		5.5	
V <sub>DM1/DM2</sub>	D- data line input voltage		5.5	
I <sub>DP1/DP2</sub>	Continuous sink/source current		±10	mA
I <sub>DM1/DM2</sub>	Continuous sink/source current		±10	
T <sub>J</sub>	Operating Junction Temperature	-40	125	°C

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### PINOUT



### PIN FUNCTIONS

NO.	NAME	TYPE <sup>(1)</sup>	DESCRIPTION
1	DP1	O/I	DP data line to connector, output for hand-shake voltage to portable equipment, high impedance while disabled
2	GND	G	Ground connection
3	NC (UC2633)	NC	No Connection
	DP2 (UC2634)	O/I	DP data line to connector, output for hand-shake voltage to portable equipment, high impedance while disabled
4	NC (UC2633)	NC	No Connection
	DM2 (UC2634)	O/I	DM data line to connector, input for hand-shake voltage from portable equipment high impedance while disabled
5	IN	P/I	Power supply/Input voltage connected to Power Switch; connect a 1 $\mu$ F or greater ceramic capacitor from IN to GND as close to the IC as possible
6	DM1	O/I	DM data line to connector, input for hand-shake voltage from portable equipment high impedance while disabled

(1) G = Ground, I = Input, O = Output, P = Power



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### ELECTRICAL CHARACTERISTICS

Conditions are  $-40^{\circ}\text{C} \leq (T_J = T_A) \leq 125^{\circ}\text{C}$  and  $4.5\text{ V} \leq V_{IN} \leq 5.5\text{ V}$  unless otherwise noted. Typical value is at  $25^{\circ}\text{C}$ . All voltages are with respect to GND unless otherwise noted.

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>UNDERVOLTAGE LOCKOUT</b>						
$V_{UVLO}$	IN rising UVLO threshold voltage	3.9	4.1	4.3	V	
	Hysteresis		100		mV	
<b>SUPPLY CURRENT</b>						
$I_{IN}$	IN supply current		160	300	$\mu\text{A}$	
<b>BC 1.2 DCP MODE (SHORT)</b>						
$R_{DPM\_SHORT}$	DP / DM shorting resistance	$V_{D+} = 0.8\text{V}$ , $I_{D-} = 1\text{mA}$ ,	125	200	$\Omega$	
$R_{DCHG\_SHORT}$	Resistors connected DP /DM to GND after hand-shaking	$V_{D+} = 0.8\text{V}$	200	400	$\text{k}\Omega$	
$V_{DPL\_TH\_DETACH}$	DP low threshold while detaching BC1.2 devices		310	330	350	mV
$V_{DPL\_TH\_DETACH\_HYS}$	hysteresis		50		mV	
<b>IPAD MODE(UC2633/UC2634)</b>						
$V_{DP\_IPAD}$	DP1/DP2 output voltage	$V_{IN}=5.0\text{V}$	2.55	2.7	2.85	V
$V_{DM\_IPAD}$	DM1/DM2 output voltage	$V_{IN}=5.0\text{V}$	2.55	2.7	2.85	V
$R_{DP\_IPAD}$	DP1/DP2 output impedance	$V_{IN}=5.0\text{V}$ , $I_{D+} = -5\mu\text{A}$	20	30	40	$\text{k}\Omega$
$R_{DM\_IPAD}$	DM1/DM2 output impedance	$V_{IN}=5.0\text{V}$ , $I_{D-} = -5\mu\text{A}$	20	30	40	$\text{k}\Omega$
<b>Galaxy Tab MODE</b>						
$V_{DP\_GAL}$	DP1/DP2 output voltage	$V_{IN}=5.0\text{V}$	1.1	1.2	1.3	V
$V_{DM\_GAL}$	DM1/DM2 output voltage	$V_{IN}=5.0\text{V}$	1.1	1.2	1.3	
$R_{DP\_GAL}$	DP1/DP2 output impedance	$V_{IN}=5.0\text{V}$ , $I_{D+} = -5\mu\text{A}$	80	105	130	$\text{k}\Omega$
$R_{DM\_GAL}$	DM1/DM2 output impedance	$V_{IN}=5.0\text{V}$ , $I_{D-} = -5\mu\text{A}$	80	105	130	

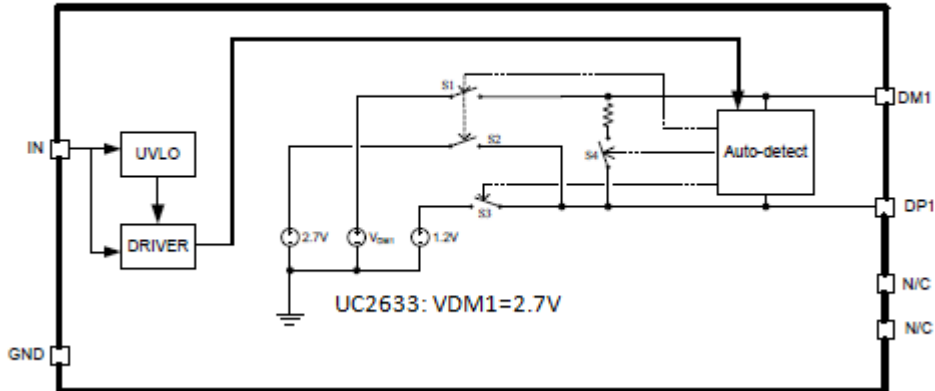


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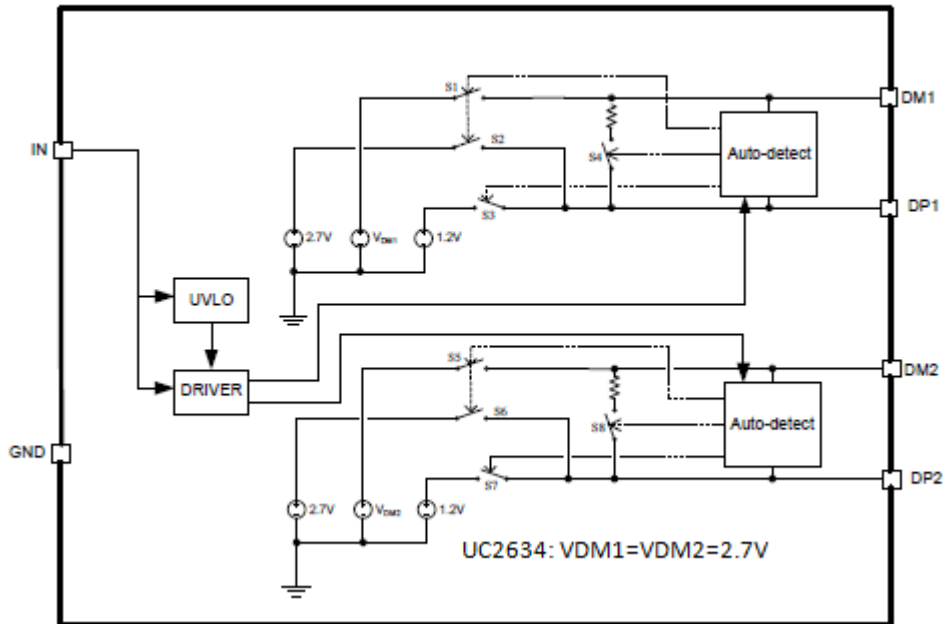
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## FUNCTIONAL BLOCK DIAGRAM

UC2633 Block Diagram



UC2634 Block Diagram



### PACKAGE INFORMATION

SOT23-6

