

## DESCRIPTION

The UC2631/UC2632 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.
- UC2631/UC2632 Support Apple® Devices fast charging. (Apple® 2.1A / 1.0A 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.

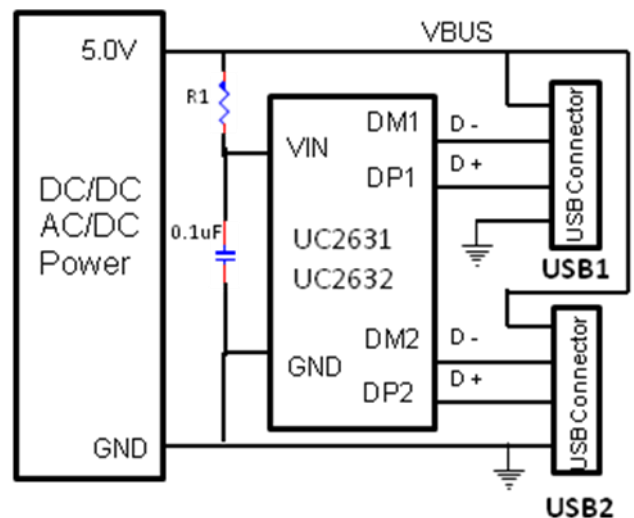
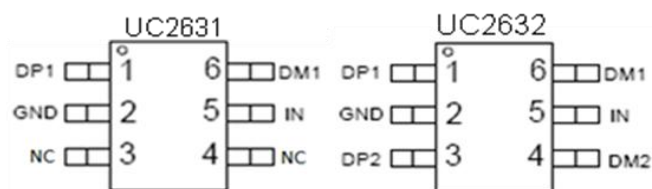
## APPLICATIONS

Power Bank/Car Charger

USB Wall Adapter

Travel Charger

## PACKAGE AND APPLICATION



R1=1k in application to improve Reliability

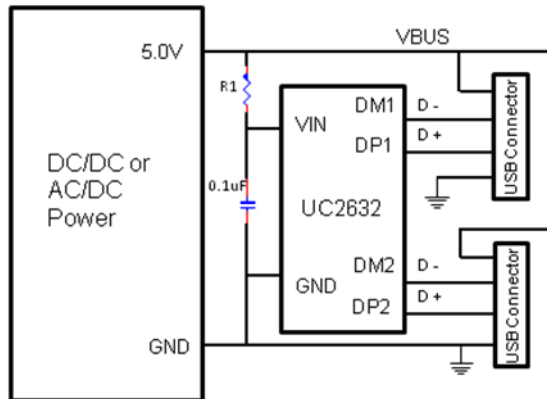
## PART NO. TABLE

Part No.	Dual/Single	Apple 12W	Apple 10W	Apple 5W	SS 10W	DCP 5W
UC2631	Single		Support	Support	Support	Support
UC2632	Dual		Support	Support	Support	Support

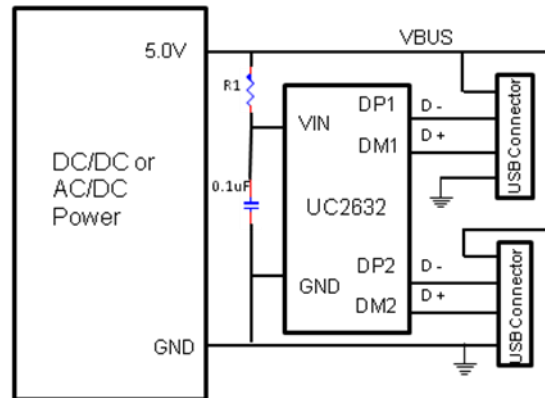
## ORDING INFORMATION

Part Number	Package Type	Package Qty	Op Temp(°C)
UC2631	SOT23-6	3000	-40~85
UC2632	SOT23-6	3000	-40~85

## APPLICATION SCHEMATIC



2×10W Application



2×5W Application

**Dual/Single USB Charger Adapter  
Emulator**

**UC2631/UC2632**

**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

**Dual/Single USB Charger Adapter  
Emulator**

**UC2631/UC2632**

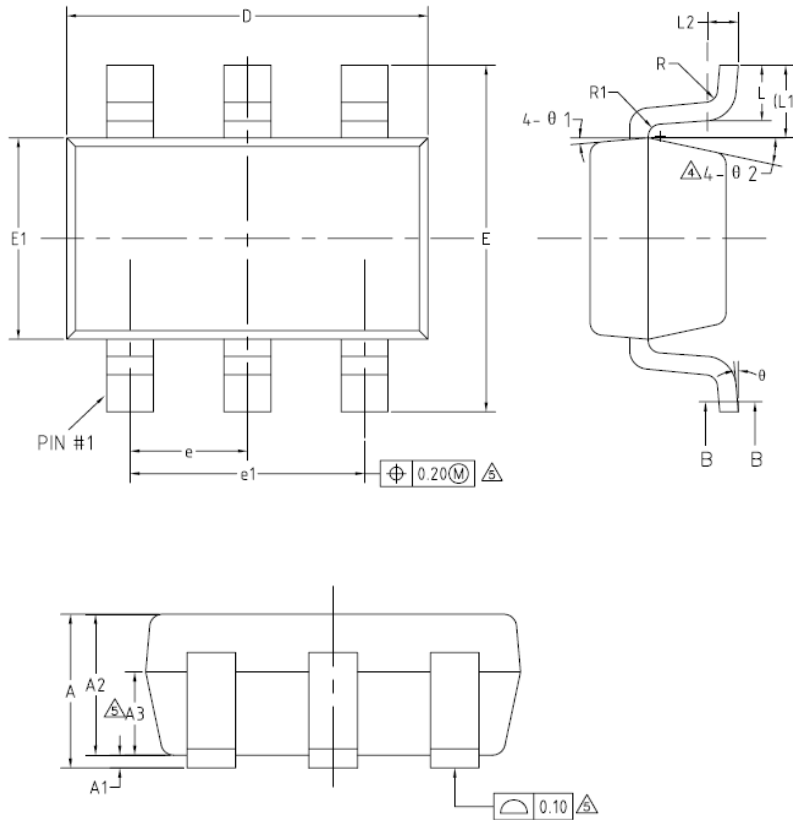
**ELECTRICAL CHARACTERISTICS**

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	250	$\mu\text{A}$
<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(UC2631/UC2632)</b>						
$V_{DP\_IPAD}$	DP1/DP2 output voltage		2.55	2.7	2.85	V
$V_{DM\_IPAD}$	DM1/DM2 output voltage		1.9	2.0	2.1	V
$R_{DP\_IPAD}$	DP1/DP2 output impedance	$I_{D+} = -5\mu\text{A}$	20	30	40	$\text{k}\Omega$
$R_{DM\_IPAD}$	DM1/DM2 output impedance	$I_{D-} = -5\mu\text{A}$	20	30	40	$\text{k}\Omega$
<b>Galaxy Tab MODE</b>						
$V_{DP\_GAL}$	DP1/DP2 output voltage		1.10	1.2	1.30	V
$V_{DM\_GAL}$	DM1/DM2 output voltage		1.10	1.2	1.30	
$R_{DP\_GAL}$	DP1/DP2 output impedance	$I_{D+} = -5\mu\text{A}$	80	105	130	$\text{k}\Omega$
$R_{DM\_GAL}$	DM1/DM2 output impedance	$I_{D-} = -5\mu\text{A}$	80	105	130	

## PACKAGE INFORMATION

SOT23-6



COMMON DIMENSIONS  
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	—	—	1.25
A1	0	—	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
b	0.36	—	0.50
b1	0.36	0.38	0.45
c	0.14	—	0.20
c1	0.14	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
R	0.10	—	—
R1	0.10	—	0.20
θ	0°	—	8°
θ 1	3°	5°	7°
θ 2	6°	—	14°