



UESD4CUSB30

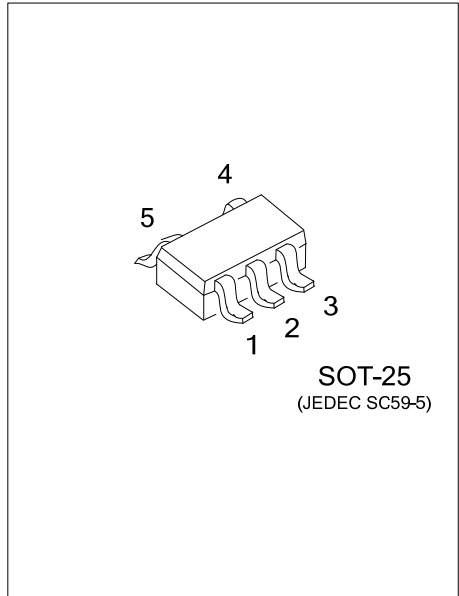
Preliminary

TVS DIODE

4-CHANNEL ESD PROTECTION FOR SUPER-SPEED USB 3.0 INTERFACE

DESCRIPTION

The UTC **UESD4CUSB30** is 4 channel Transient Voltage Suppressor (TVS) based Electrostatic Discharge (ESD) protection diode arrays. The UTC **UESD4CUSB30** device is rated to dissipate ESD strikes at the maximum level specified in the IEC 61000-4-2 international standard (Contact). These devices also offer 5A (8/20µs) peak pulse current ratings per IEC 61000-4-5 (Surge) specification.



SOT-25
(JEDEC SC59-5)

FEATURES

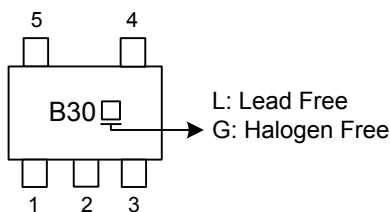
- * Supports USB 3.0 Data Rates (5 Gbps)
- * Low Capacitance
- * IEC 61000-4-2 ESD Protection (Level 4 Contact)
- * IEC 61000-4-5 Surge Protection -5A (8/20µs)
- * Dynamic Resistance: 0.6Ω (Typ)
- * Flow-Through Pin Mapping

ORDERING INFORMATION

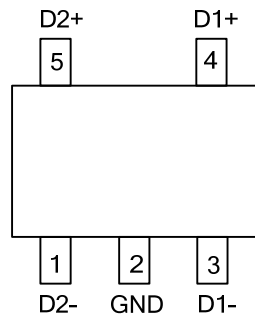
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UESD4CUSB30L-AF5-R	UESD4CUSB30G-AF5-R	SOT-25	Tape Reel

<p>TPD4EUSB30G-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



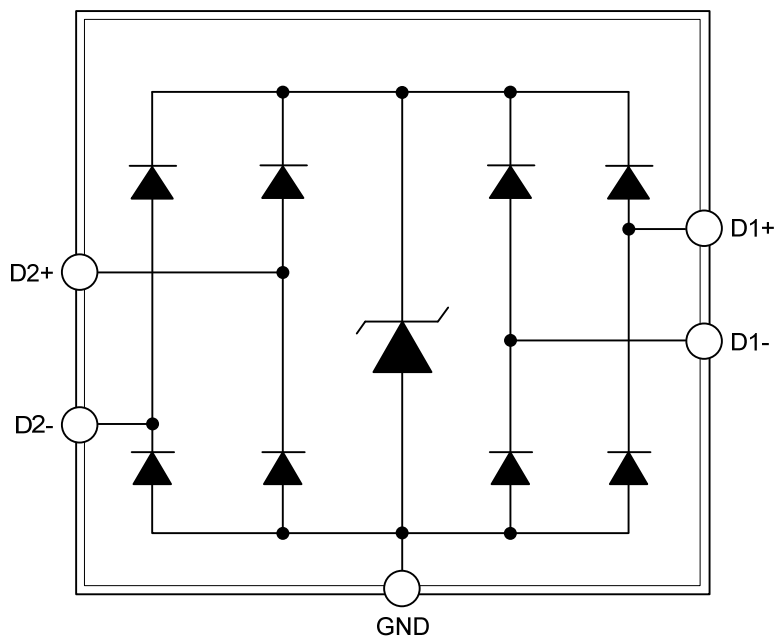
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	D2-	High-speed ESD clamp, provides ESD protection to the high-speed differential data lines
2	GND	Ground
3	D1-	High-speed ESD clamp, provides ESD protection to the high-speed differential data lines
4	D1+	High-speed ESD clamp, provides ESD protection to the high-speed differential data lines
5	D2+	High-speed ESD clamp, provides ESD protection to the high-speed differential data lines

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING over operating free-air temperature range (unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT
IO Voltage (D+ and D- Pins)			0~6	V
EC 61000-4-5 Surge Current ($t_p=8/20\mu s$)	D+, D- Pins		5	A
IEC 61000-4-5 Surge Peak Power ($t_p=8/20\mu s$)	D+, D- Pins		45	W
Operating Free-Air Temperature Range		T_A	-40~85	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ HANDLING RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT	
Storage Temperature Range		T_{STG}	-65~125	°C	
Electrostatic Discharge	Human Body Model (HBM), Per ANSI/ESDA/JEDEC JS-001, All Pins (Note 1)	$V_{(ESD)}$	-2.5~2.5	kV	
	Charged Device Model (CDM), per JEDEC Specification JESD22-C101, All Pins (Note 2)		-1.5~1.5	kV	
	IEC 61000-4-2 Contact Discharge		D+, D- Pins	-8~8	kV
	IEC 61000-4-2 Air-Gap Discharge		D+, D- Pins	-9~9	kV

Notes: 1. JEDEC document JEP155 states that 500-V HBM allows safe manufacturing with a standard ESD control process.

2. JEDEC document JEP157 states that 250-V CDM allows safe manufacturing with a standard ESD control process.

■ RECOMMENDED OPERATING CONDITIONS

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

PARAMETER	SYMBOL	RATINGS	UNIT
Operating Free-Air Temperature Range	T_A	-40 ~ 85	°C
Operating Voltage		0 ~ 5.5	V

■ ELECTRICAL CHARACTERISTICS

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Reverse Stand-Off Voltage (D+ and D- Pins)	V_{RWM}				5.5	V
Clamp Voltage	V_{clamp}	D+,D- Pins to Ground, $I_{IO}=1A$			8	V
Current from IO Port to Supply Pins	I_{IO}	$V_{IO}=2.5V$, $I_D=8mA$		0.01	0.1	μA
Diode Forward Voltage	V_D	D+,D- Pins, $V_{IO}=2.5V$, Lower Clamp Diode, $I_D=8mA$	0.6	0.8	0.95	V
Dynamic Resistance	R_{dyn}	D+,D- Pins $I=1A$		0.6		Ω
Capacitance IO to IO	C_{IO-IO}	D+,D- Pins $V_{IO}=2.5V$		0.05		pF
Capacitance IO to GND	C_{IO-GND}	D+,D- Pins $V_{IO}=2.5V$		0.7		pF
Break-Down Voltage	V_{BR}	$I_{IO}=1mA$	7			V

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