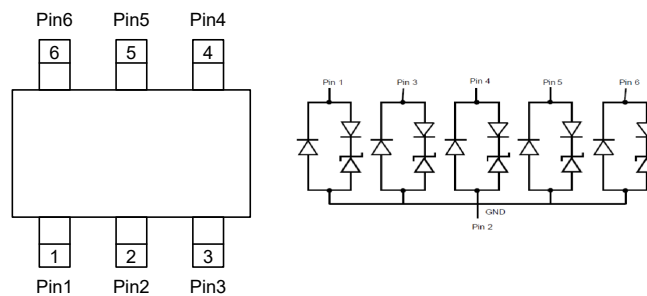


1.Feature

- ESD/transient protection of high speed data lines exceeding:
 - IEC61000-4-2 (ESD): ± 25 kV (air/contact)
 - IEC61000-4-4 (EFT): ± 2.5 kV/ ± 50 A (5/50 ns)
 - IEC61000-4-5 (Surge): ± 6 A (8/20 μ s)
- Maximum working voltage: $V_{RWM}=5.5V$
- Protection of V_{BUS} with one line freely selectable
- Extremely low capacitance: $C_L=0.45$ pF I/O to GND (typical)
- Very low dynamic resistance: $R_{DYN}=0.2\Omega$ (typical) I/O to GND
- Very low reverse clamping voltage: $V_{CL}=9V$ (typical) at $I_{PP}=16A$

2.Pinning information



SOT23-6



3. Absolute Maximum Ratings $T_A = 25^\circ\text{C}$

Parameter	Note or test condition	Symbol	Maximum	Units
ESD contact discharge 1)		V_{ESD}	± 25	kV
Peak pulse current 2)	$t_p = 8/20\mu\text{s}$	I_{PP}	± 6	A
Temperature Range		T_{OP}	-40 to 125	$^\circ\text{C}$
Storage temperature		T_{STG}	-65 to 150	$^\circ\text{C}$

Attention :

Stresses above the maximum values listed here may cause permanent damage to the device.

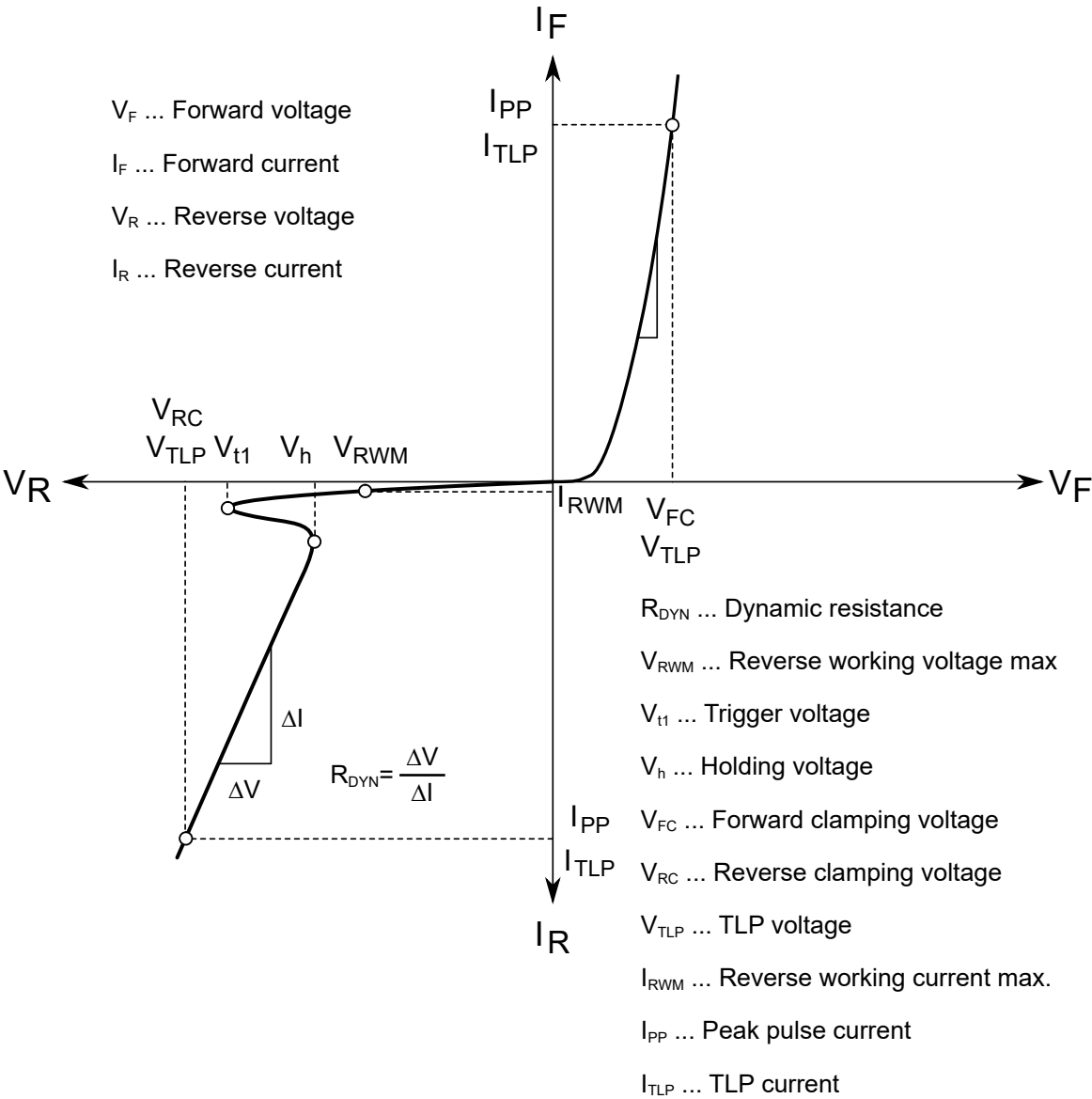
Exposure to absolute maximum rating conditions for extended periods may affect device

reliability. Maximum ratings are absolute ratings. Exceeding only one of these values may cause irreversible damage to the component.



4.DC Characteristics

Parameter	Symbol	Typ	Max	Units	Note or test condition
Reverse working voltage	V_{RWM}		5.5	V	I/O to GND
Reverse current	I_R	<1	100	nA	$V_R=5.5V$, I/O to GND





5. Electrical Characteristic ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Line capacitance	C_L	$V_R=0\text{V}$, $f=1\text{MHz}$, I/O to GND		0.45	1	pF
		$V_R=0\text{V}$, $f=1\text{MHz}$, I/O to I/O		0.23	0.5	pF
Line capacitance	C_L	$V_R=0\text{V}$, $f=825\text{MHz}$, I/O to GND		0.25		pF
		$V_R=0\text{V}$, $f=825\text{MHz}$, I/O to I/O		0.13		pF
Capacitance variation between I/O and GND	$\Delta C_{i/o-GND}$	$V_R=0\text{V}$, $f=1\text{MHz}$, I/O to GND		0.02		pF
Capacitance variation between I/O	$\Delta C_{i/o-i/o}$	$V_R=0\text{V}$, $f=1\text{MHz}$, I/O to I/O		0.01		pF
Reverse clamping voltage ¹⁾	V_{CL}	$I_{PP}=1\text{A}$, $t_p=8/20\mu\text{s}$, I/O pin to GND		9		V
		$I_{PP}=3\text{A}$, $t_p=8/20\mu\text{s}$, I/O pin to GND		12		V
Reverse clamping voltage ²⁾	V_{CL}	$I_{TLP}=16\text{A}$, $t_p=100\text{ns}$, I/O pin to GND		8.9		V
		$I_{TLP}=30\text{A}$, $t_p=100\text{ns}$, I/O pin to GND		11.5		V
Forward clamping voltage ¹⁾	V_{FC}	$I_{PP}=1\text{A}$, $t_p=8/20\mu\text{s}$, GND pin to I/O		1.75		V
		$I_{PP}=3\text{A}$, $t_p=8/20\mu\text{s}$, GND pin to I/O		2.5		V
Forward clamping voltage ²⁾	V_{FC}	$I_{TLP}=16\text{A}$, $t_p=100\text{ns}$, GND pin to I/O		5.4		V
		$I_{TLP}=30\text{A}$, $t_p=100\text{ns}$, GND pin to I/O		9.2		V
Dynamic resistance ²⁾	R_{DYN}	I/O to GND		0.2		Ω
Dynamic resistance ²⁾	R_{DYN}	GND to I/O		0.3		Ω



6.1 Typical characteristic

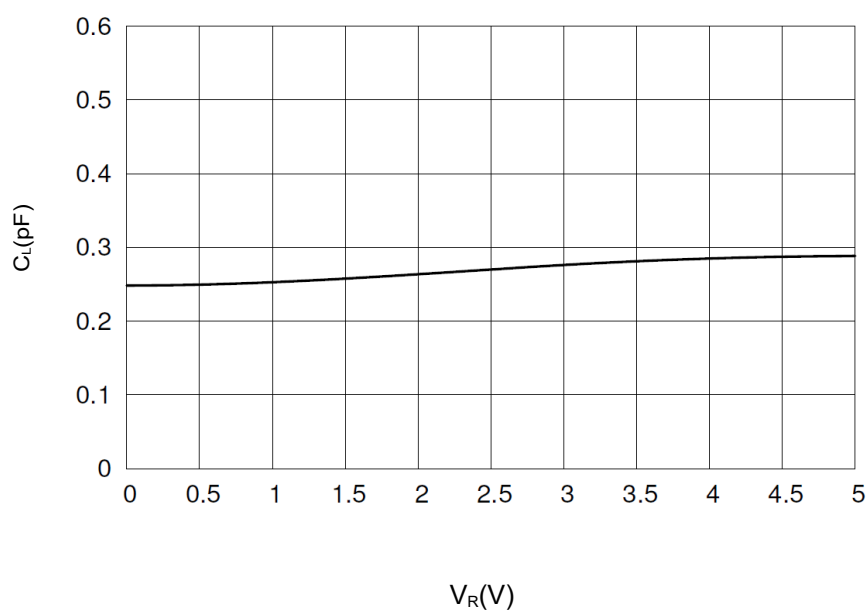


Figure 1: Line capacitance $C_L = f(V_R)$ at $f = 825$ MHz

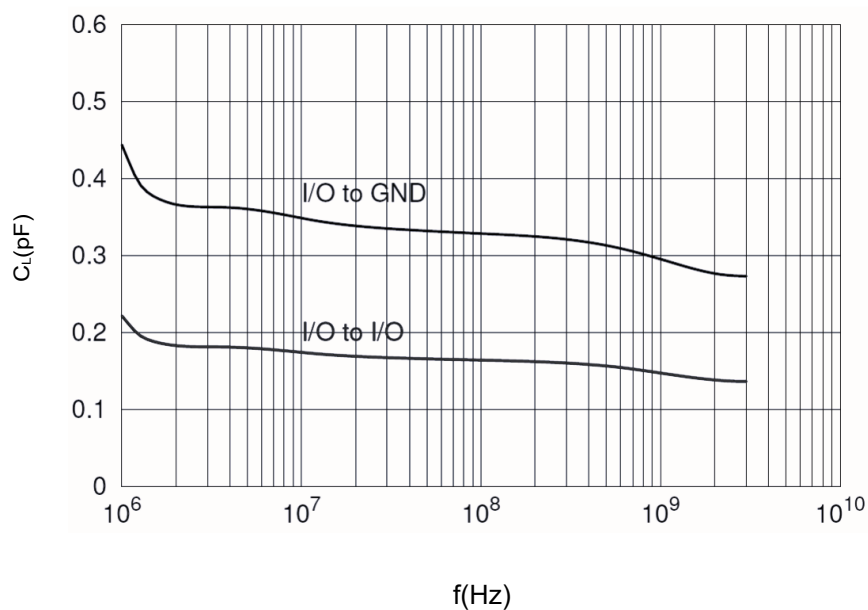


Figure 2: Line capacitance $C_L = f(f)$, $V_R = 0$ V



6.2 Typical characteristic

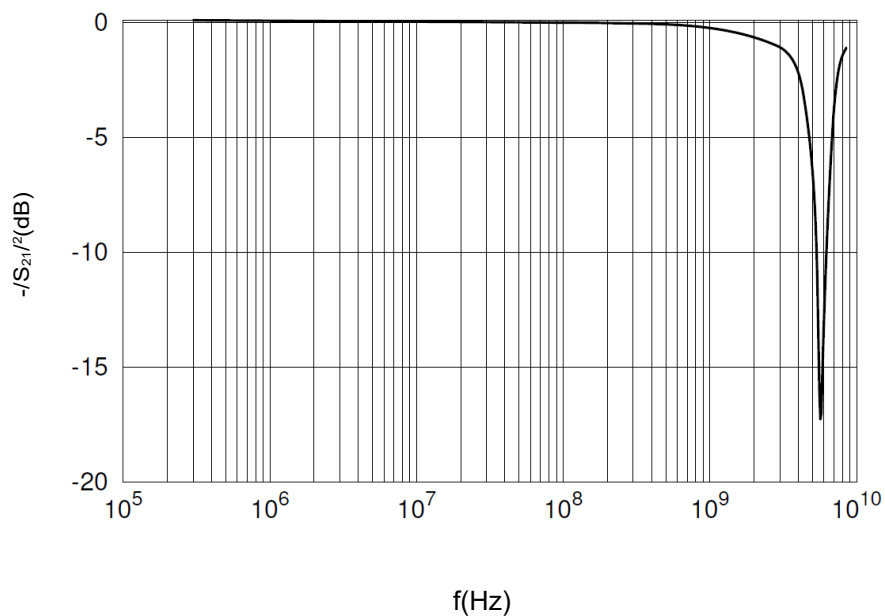


Figure 3: Insertion loss $I_L=f(f)$, $V_R=0$ V

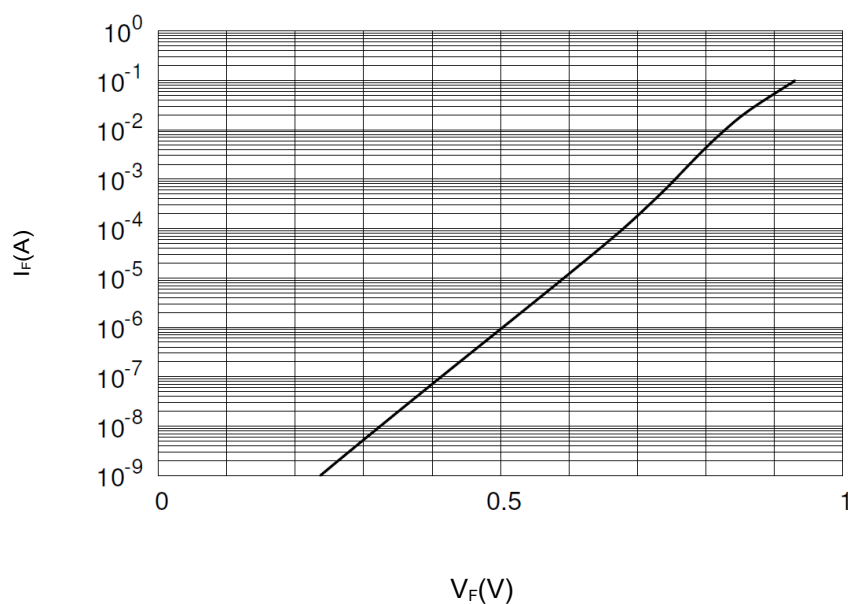


Figure 4: Forward characteristic, $I_F=f(V_F)$, current forced



6.3 Typical characteristic

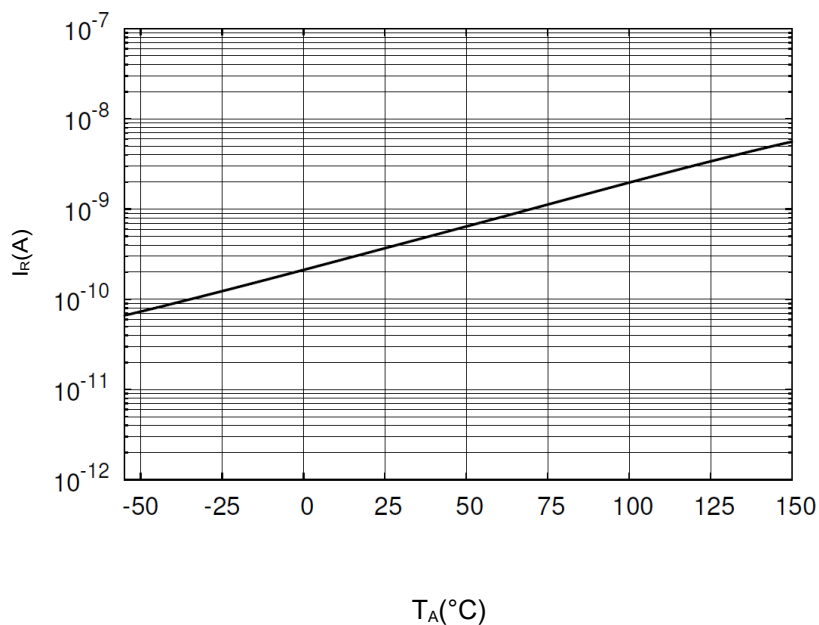


Figure 5: Reverse current $I_R=f(T_A)$, $V_R=5.5V$ (typical)

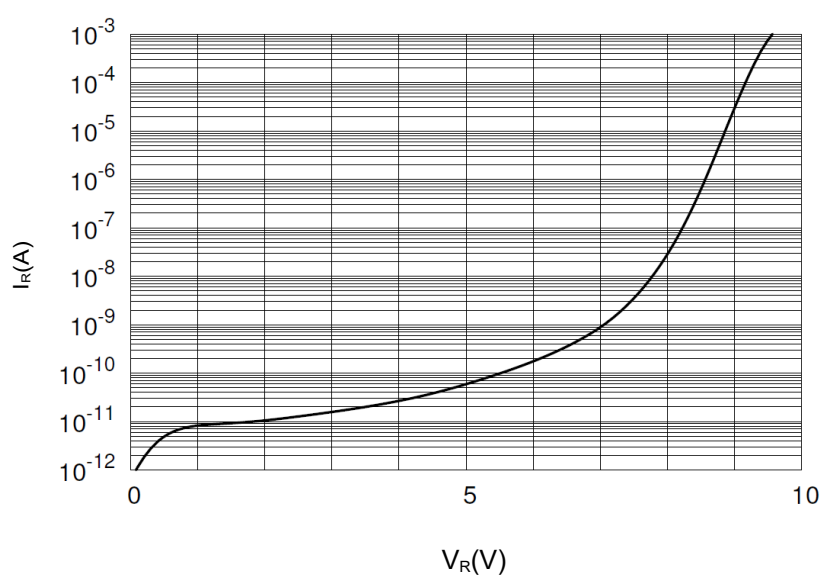


Figure 6: Reverse characteristic, $I_R=(V_R)$, voltage forced



6.4Typical characteristic

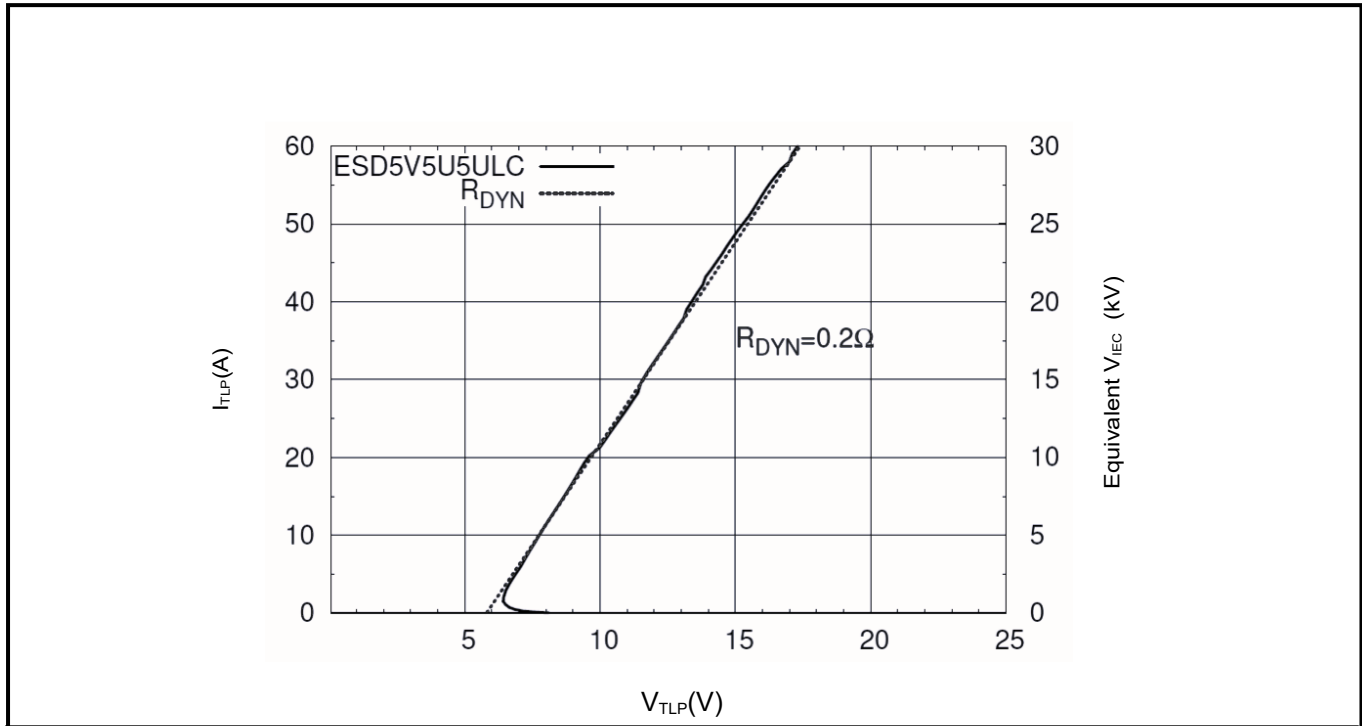


Figure 7: TLP characteristic I/O to GND¹⁾ [1]

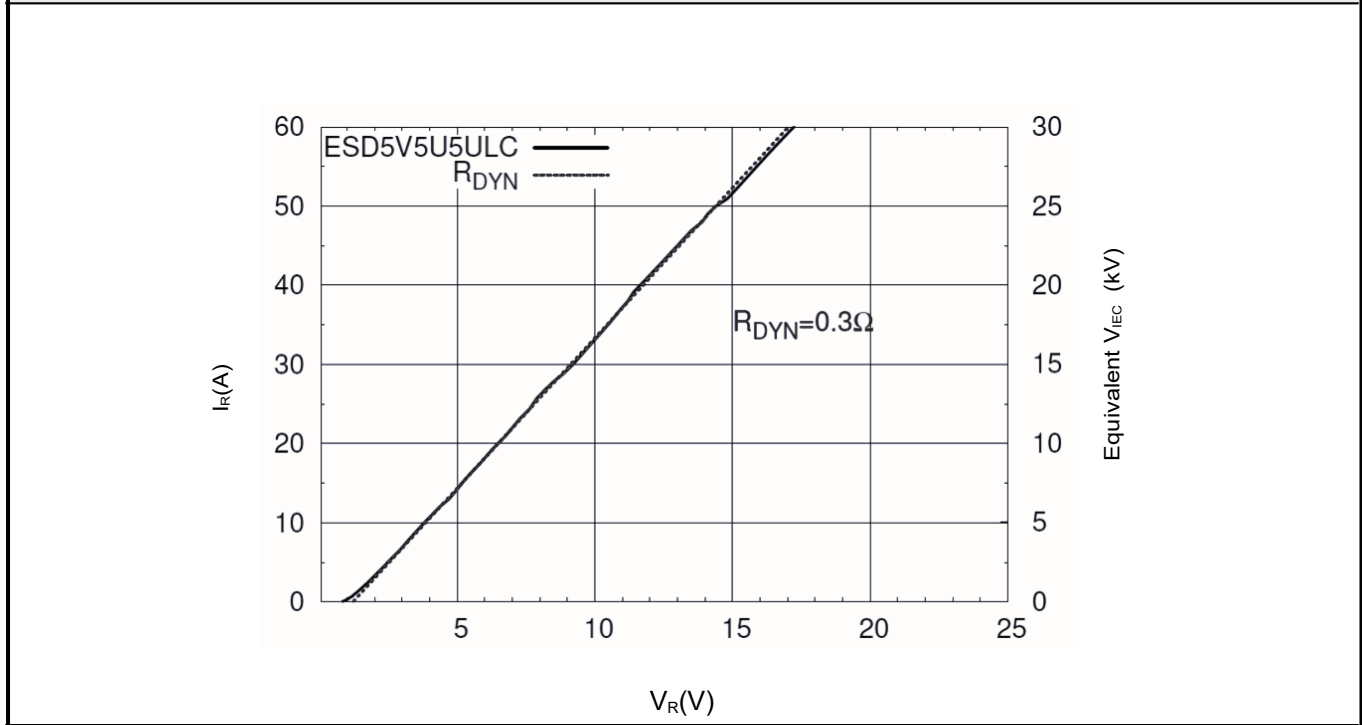
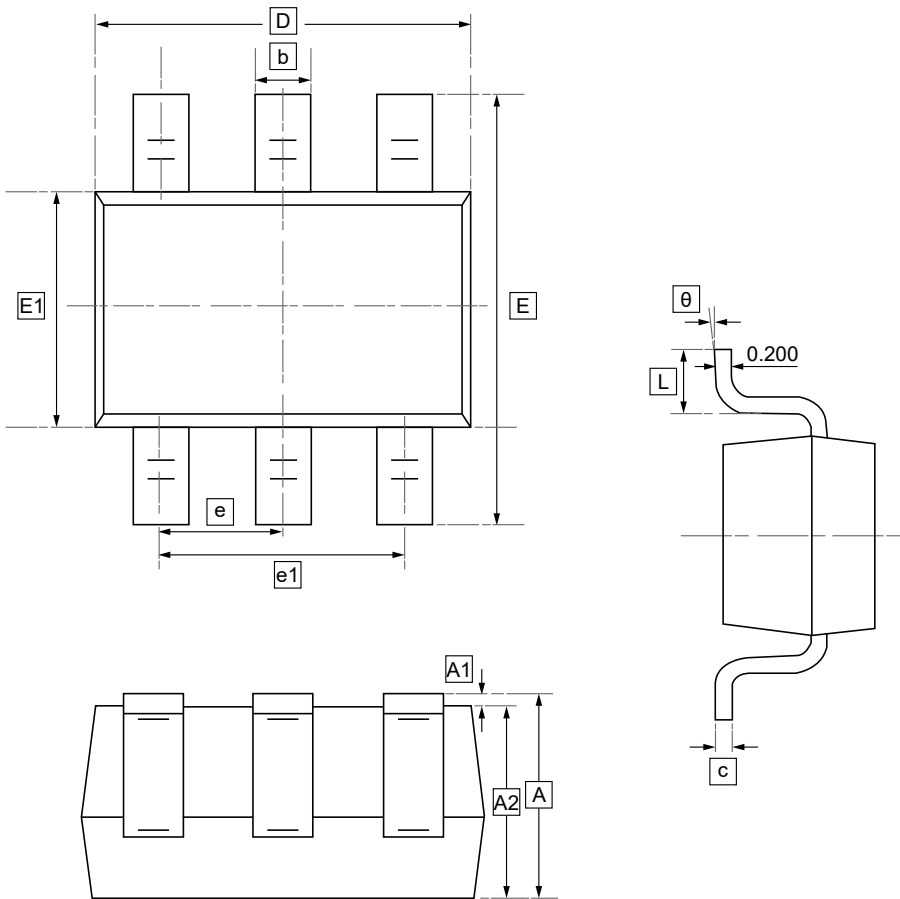


Figure 8: TLP characteristic GND to I/O¹⁾ [1]



7.SOT-23-6 Package Outline Dimensions

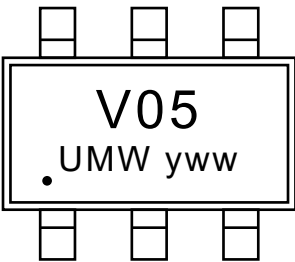


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E1	E	e	e1	L	θ
Min	1.050	0.000	1.050	0.300	0.100	2.820	1.500	2.650	0.950	1.800	0.300	0°
Max	1.250	0.100	1.150	0.500	0.200	3.020	1.700	2.950	BSC	2.000	0.600	8°



8.Ordering information



yww: Batch Code

Order Code	Package	Base QTY	Delivery Mode
UMW ESD5V5U5ULC	SOT23-6	3000	Tape and reel



9.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

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