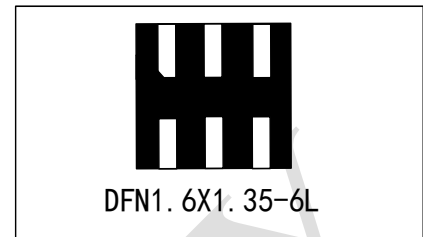


### Features

- One Differential Channel Common-Mode EMI Filter with Integrated ESD Protection
- Large Differential Mode Bandwidth with Cutoff Frequency:4 GHz
- High Common Mode Stop Band Attenuation
- Provides ESD Protection to IEC61000-4-2 Level 4,  $\pm 15$  kV Contact Discharge
- Low Channel Input Capacitance Provides Superior Impedance Matching Performance
- Low Channel Resistance:  $6.0\Omega$



### IEC COMPATIBILITY (EN61000-4)

- IEC 61000-4-2 (ESD)  $\pm 20$  kV (air),  $\pm 15$  kV (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 4A (8/20 $\mu$ s)

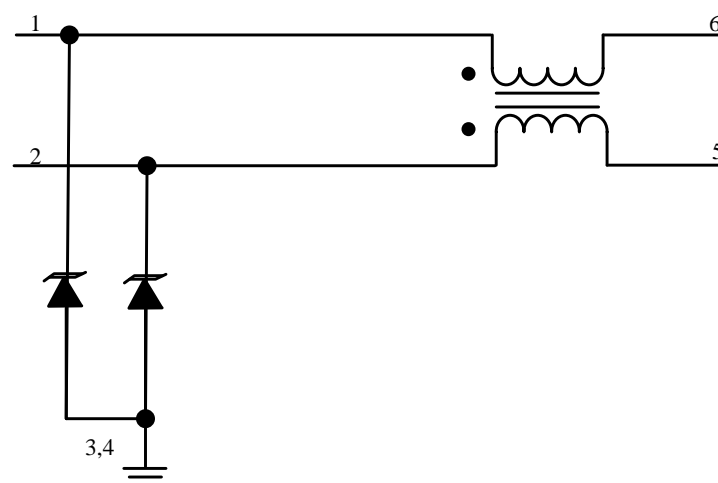
### Mechanical Characteristics

- 1.6 mm x 1.35 mm DFN-6L package
- Pb-Free Package
- Marking : Marking Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

### Applications

- USB 3.0
- HDMI 1.3/1.4/2.0 /DVI Display
- MIPI D-PHY/M-PHY
- eSATA, MHL

### Schematic & PIN Configuration



Electrical Schematic

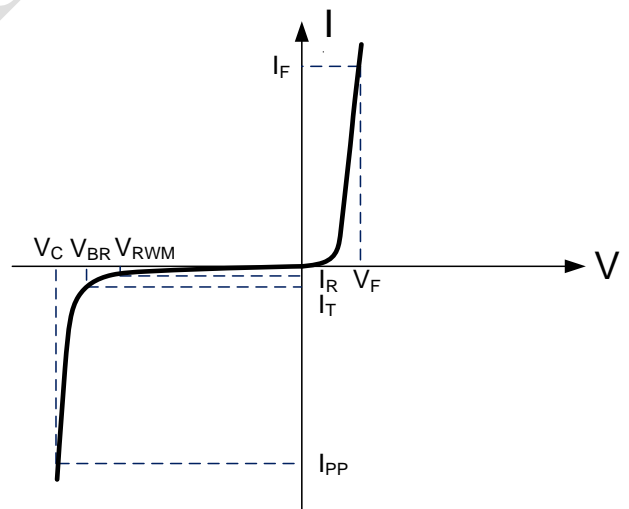
PIN number	Description	PIN number	Description
1	In_1+ (to Connector)	6	Out_1+ (to IC)
2	In_1- (to Connector)	5	Out_1- (to IC)
3	GND	4	GND

### Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ( $t_p = 8/20\mu s$ )	$P_{PP}$	60	Watts
Peak Pulse Current( $t_p = 8/20\mu s$ )	$I_{PP}$	4	A
DC Current per Line	$I_{LINE}$	100	mA
Operating Temperature	$T_J$	-55 to + 85	°C
Storage Temperature	$T_{STG}$	-55 to +150	°C

### Electrical Parameters (T=25°C )

Symbol	Parameter
$I_{PP}$	Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Reverse Stand-Off Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



## Electrical Characteristics

WECM5212Q						
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Reverse Stand-Off Voltage	$V_{RWM}$				5	V
Reverse Breakdown Voltage	$V_{BR}$	$I_T=1mA$	5.6		9	V
Reverse Leakage Current	$I_R$	$V_{RWM}=5V, T=25^{\circ}C$			500	nA
Forward Voltage	$V_F$	$I_F=10mA$	0.5		1.5	V
Channel Input Capacitance to Ground (Pins 1, 2 to Pins 3, 4)	$C_{IN}$	$V_R=0V, f=1MHz$		0.8	1.0	pF
Clamping Voltage	$V_C$	$I_{PP}=1A, t_p=8/20\mu s$		10	15	V
ESD Clamping Voltage <sup>1</sup>	$V_C$	$I_{PP}=4A$ $t_p=0.2/100ns$		9.5		V
ESD Clamping Voltage <sup>1</sup>	$V_C$	$I_{PP}=16A$ $t_p=0.2/100ns$		15.5		V
Dynamic Resistance <sup>1,2</sup>	$R_{DYN}$	$TLP=0.2/100ns$ I/O to Gnd		0.5		$\Omega$
Channel Resistance(Pins 1-6, 2-5)	$R_{CH}$			6.0		$\Omega$
Differential Mode Cut-off Frequency	$f_{3dB}$	50 $\Omega$ Source and Load Termination		4.0		GHz
Common Mode Stop Band Attenuation	$F_{atten}$	@ 1GHz		23		dB

**Note:**

1. TLP Setting :  $t_p=100ns, t_r=0.2ns, I_{TLP}$  and  $V_{TLP}$  sample window:  $t_1=70ns$  to  $t_2=90ns$ .
2. Dynamic resistance calculated from  $I_{PP}=4A$  to  $I_{PP}=16A$  using "Best Fit"

Typical Characteristics

Figure 1: Differential attenuation versus frequency ( $Z_{0\text{ diff}} = 100 \Omega$ )

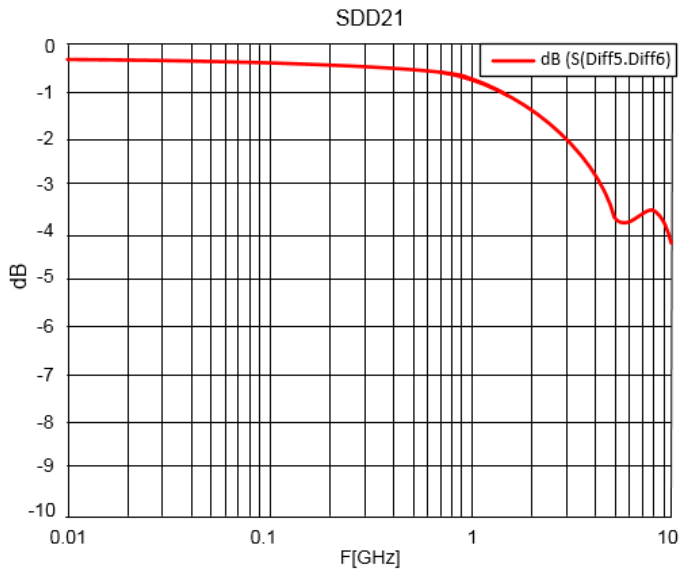


Figure 2: Common mode attenuation versus frequency ( $Z_{0\text{ com}} = 50 \Omega$ )

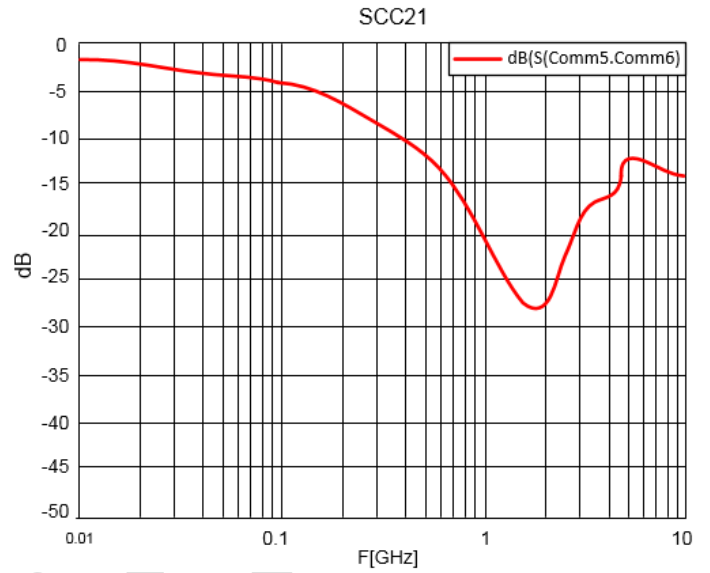


Figure 3: USB 3.0 Eye Diagram Test for 5Gbps Data Rate

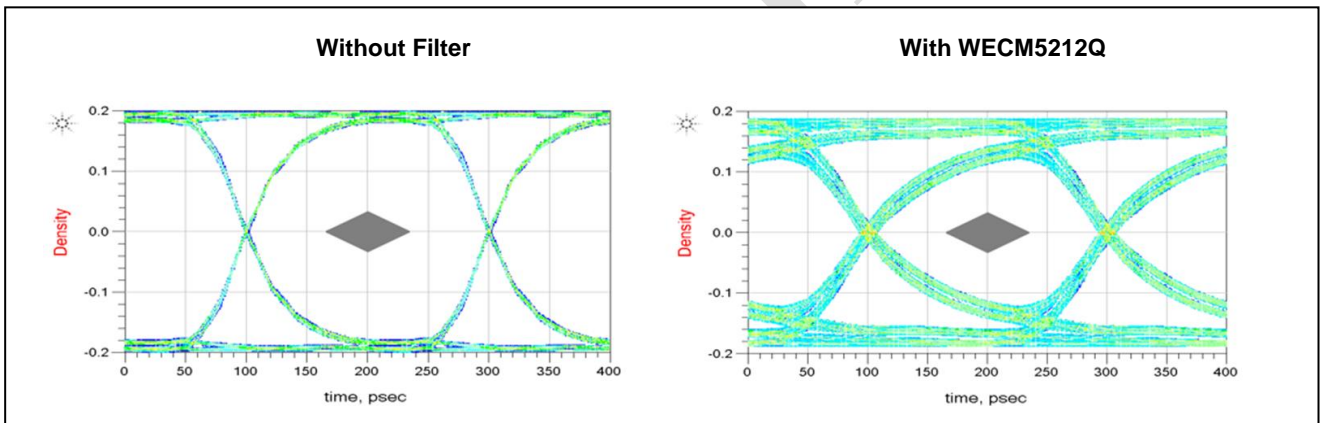


Figure 4: HDMI 2.0 Eye Diagram Test for 6Gbps Data Rate

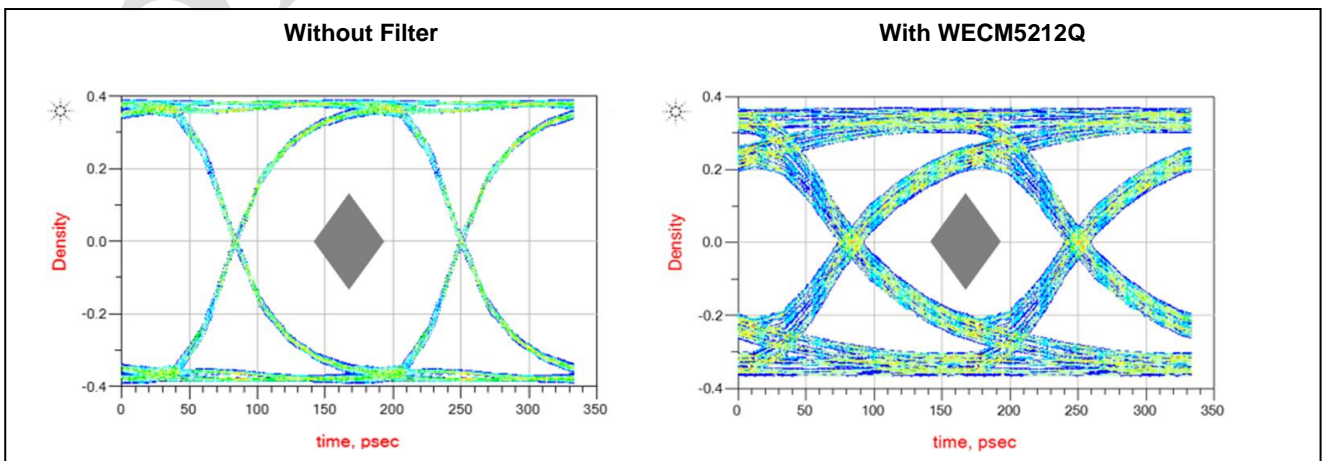


Figure 5: Peak Pulse Power vs. Pulse Time

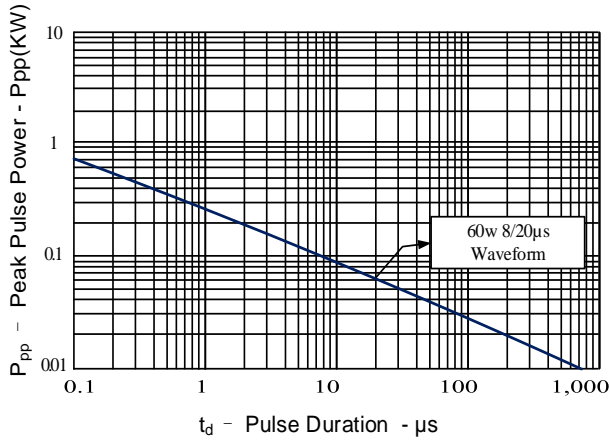


Figure 6: Power Derating Curve

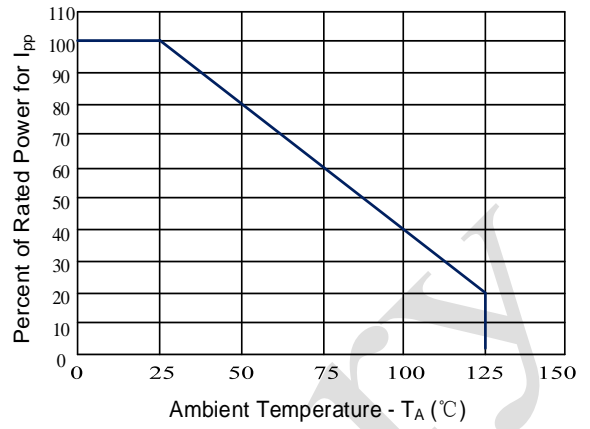


Figure 7: Pulse Waveform

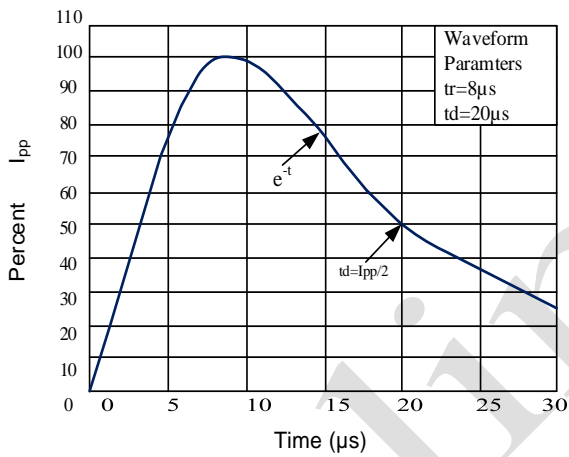


Figure 8: Clamping Voltage vs. Peak Pulse Current

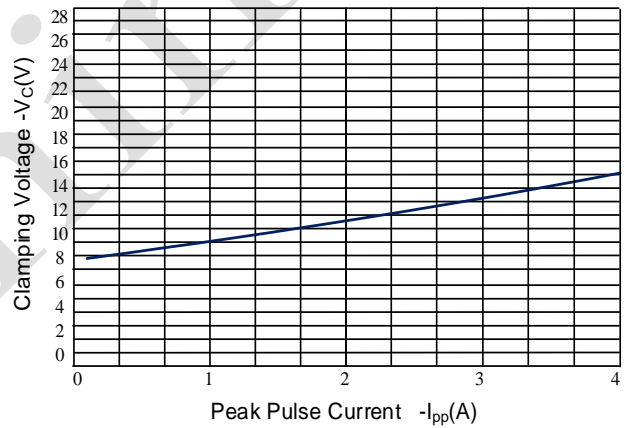


Figure 9: Capacitance vs. Reverse Voltage

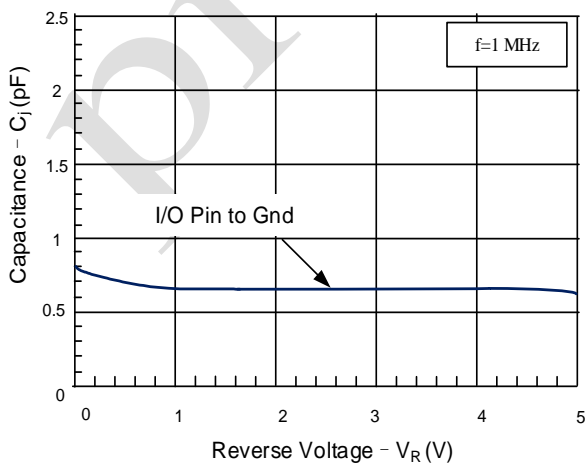
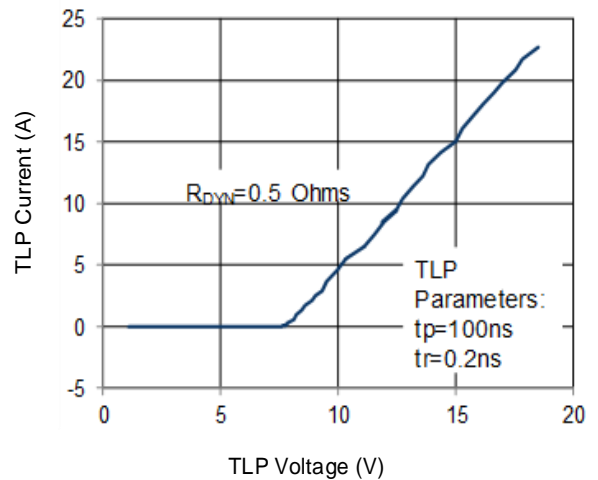
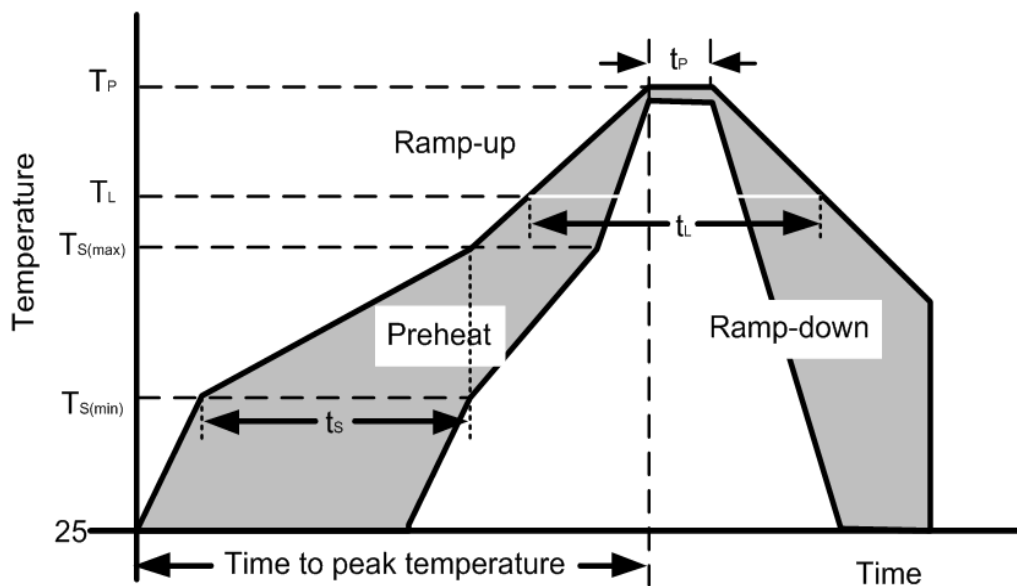


Figure 10: TLP I-V Curve



Soldering Parameters

Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min ( $T_{S(min)}$ )	150°C
	Temperature Max ( $T_{S(max)}$ )	200°C
	Time (min to max) ( $t_s$ )	60 – 190 secs
Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak		5°C/second max
$T_{S(max)}$ to $T_L$ —Ramp-up Rate		5°C/second max
Reflow	Temperature ( $T_L$ ) (Liquidus)	217°C
	Temperature ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_P$ )		260+0/-5 °C
Time within actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes Max.
Do not exceed		280°C



Outline Drawing –DFN-6L

NOTES:  
1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).

SYMBOL	MILLIMETERS		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
b	0.15	0.20	0.25
D	1.50	1.60	1.70
E	1.25	1.35	1.45
e	0.40 BSC		
L	0.40	0.50	0.60

Footprint (dimensions in mm)

NOTES:  
1. CONTROLLING DIMENSIONS ARE IN MILLIMETERS (ANGLES IN DEGREES).  
2. THIS LAND PATTERN IS FOR REFERENCE PURPOSES ONLY.  
CONSULT YOUR MANUFACTURING TO ENSURE YOUR COMPANY'S MANUFACTURING GUIDELINES ARE MET.

Marking Codes

Part Number	WECM5212Q
Marking Code	<div style="border: 1px solid black; display: inline-block; padding: 5px; text-align: center;">                 C M 2                  X X X                  ●             </div> <div style="margin-left: 20px;">                 CM2=Specific Device Code                  XXX= Lot Code             </div>

Package Information

Qty: 3k/Reel

CONTACT INFORMATION

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 WAYON website: <http://www.way-on.com>  
 For additional information, please contact your local Sales Representative.

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Specifications are subject to change without notice.  
 The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.  
 Users should verify actual device performance in their specific applications.