

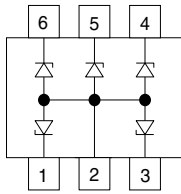


**THE DATASHEET OF  
VESD05A5-06GHG3-08**

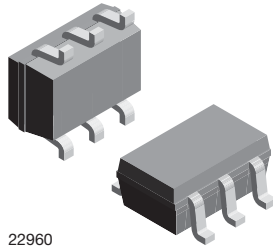




## Five-Line ESD Protection Diode Array in SOT-363

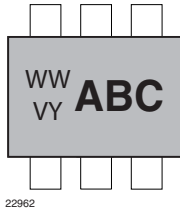


22961



22960

### MARKING (example only)



22962

Bar = cathode marking  
X = date code  
Y = type code (see table below)

### DESIGN SUPPORT TOOLS AVAILABLE



### FEATURES

- Compact SOT-363 package
- 5-line unidirectional ESD-protection
- Working range 5V to 26 V
- ESD immunity acc. IEC 61000-4-2  $\pm 20\text{kV}$  to  $\pm 30\text{ kV}$  contact discharge  $\pm 20\text{kV}$  to  $\pm 30\text{ kV}$  air discharge
- AEC-Q101 qualified available
- Lead plating: Sn (e3)
  - soldering can be checked by standard vision inspection
  - (AOI = automated optical inspection)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

ORDERING INFORMATION					
PART NUMBER (EXAMPLE)	AEC-Q101 QUALIFIED	ENVIRONMENTAL AND QUALITY CODE			ORDERING CODE (EXAMPLE)
		RoHS COMPLIANT + LEAD (Pb)-FREE TERMINATIONS	TIN PLATED	3K PER 7" REEL (8 mm TAPE)	
		GREEN		MOQ = 15K/BOX	
VESD05A5-06G	-	G	3	-08	VESD05A5-06G-G3-08
VESD05A5-06G	H	G	3	-08	VESD05A5-06GHG3-08

PACKAGE DATA						
DEVICE NAME	PACKAGE NAME	TYPE CODE	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
VESD05A5-06G	SOT-363	D05	7.22 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	Peak temperature max. 260°C
VESD12A5-06G		D12				
VESD16A5-06G		D16				
VESD26A5-06G		D26				



ABSOLUTE MAXIMUM RATINGS VESD05A5-06G				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	8.7	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	100	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		30	kV
Operating temperature	Junction temperature	T <sub>J</sub>	-55 to +150	°C
Storage temperature		T <sub>stg</sub>	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD12A5-06G				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	4.4	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	100	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		30	kV
Operating temperature	Junction temperature	T <sub>J</sub>	-55 to +150	°C
Storage temperature		T <sub>stg</sub>	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD16A5-06G				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	3.6	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	100	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		30	kV
Operating temperature	Junction temperature	T <sub>J</sub>	-55 to +150	°C
Storage temperature		T <sub>stg</sub>	-55 to +150	°C

ABSOLUTE MAXIMUM RATINGS VESD26A5-06G				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	Acc. IEC 61000-4-5, 8/20 μs/single shot	I <sub>PPM</sub>	2.1	A
Peak pulse power	Acc. IEC 61000-4-5, 8/20 μs/single shot	P <sub>PP</sub>	100	W
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V <sub>ESD</sub>	20	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		20	kV
Operating temperature	Junction temperature	T <sub>J</sub>	-55 to +150	°C
Storage temperature		T <sub>stg</sub>	-55 to +150	°C



<b>ELECTRICAL CHARACTERISTICS VESD05A5-06G</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand off voltage	Max. reverse working voltage	$V_{RWM}$	-	-	5	V
Reverse voltage	at $I_R = 1\text{ }\mu\text{A}$	$V_R$	5	-	-	V
Reverse current	at $V_R = 5\text{ V}$	$I_R$	-	0.01	0.1	$\mu\text{A}$
Reverse breakdown voltage	at $I_R = 1\text{ mA}$	$V_{BR}$	6.85	7.26	7.65	V
Reverse clamping voltage	at $I_{PP} = I_{PPM} = 8.7\text{ A}$ , $t_p = 8/20\text{ }\mu\text{s}$	$V_C$	-	10.3	11.5	V
Forward clamping voltage	at $I_{PP} = 1\text{ A}$ , $t_p = 300\text{ }\mu\text{s}$	$V_F$	0.9	1.1	1.2	V
	at $I_{PP} = I_{PPM} = 8.7\text{ A}$ , $t_p = 8/20\text{ }\mu\text{s}$	$V_F$	-	2.2	2.74	V
Dynamic resistance	$t_p = 100\text{ ns}$ (TLP; pin 2-1)	$r_{dyn}$	-	0.2	-	$\Omega$
Capacitance	at $V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$	$C_D$	53	67	81	pF

<b>ELECTRICAL CHARACTERISTICS VESD12A5-06G</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand off voltage	Max. reverse working voltage	$V_{RWM}$	-	-	12	V
Reverse voltage	at $I_R = 0.1\text{ }\mu\text{A}$	$V_R$	12	-	-	V
Reverse current	at $V_R = 12\text{ V}$	$I_R$	-	0.01	0.1	$\mu\text{A}$
Reverse breakdown voltage	at $I_R = 1\text{ mA}$	$V_{BR}$	13.9	14.7	15.5	V
Reverse clamping voltage	at $I_{PP} = I_{PPM} = 4.4\text{ A}$ , $t_p = 8/20\text{ }\mu\text{s}$	$V_C$	-	20.5	22.7	V
Forward clamping voltage	at $I_{PP} = 1\text{ A}$ , $t_p = 300\text{ }\mu\text{s}$	$V_F$	0.9	1.1	1.2	V
	at $I_{PP} = I_{PPM} = 4.4\text{ A}$ , $t_p = 8/20\text{ }\mu\text{s}$	$V_F$	-	1.6	1.88	V
Dynamic resistance	$t_p = 100\text{ ns}$ (TLP); pin 2-1	$r_{dyn}$	-	0.4	-	$\Omega$
Capacitance	at $V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$	$C_D$	26	33	40	pF

<b>ELECTRICAL CHARACTERISTICS VESD16A5-06G</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	$N_{channel}$	-	-	1	lines
Reverse stand off voltage	Max. reverse working voltage	$V_{RWM}$	-	-	16	V
Reverse voltage	at $I_R = 0.1\text{ }\mu\text{A}$	$V_R$	16	-	-	V
Reverse current	at $V_R = 16\text{ V}$	$I_R$	-	0.01	0.1	$\mu\text{A}$
Reverse breakdown voltage	at $I_R = 1\text{ mA}$	$V_{BR}$	17	17.9	18.8	V
Reverse clamping voltage	at $I_{PP} = I_{PPM} = 3.6\text{ A}$ , $t_p = 8/20\text{ }\mu\text{s}$	$V_C$	-	25.3	28	V
Forward clamping voltage	at $I_{PP} = 1\text{ A}$ , $t_p = 300\text{ }\mu\text{s}$	$V_F$	0.9	1.1	1.2	V
	at $I_{PP} = I_{PPM} = 3.6\text{ A}$ , $t_p = 8/20\text{ }\mu\text{s}$	$V_F$	-	1.5	1.72	V
Dynamic resistance	$t_p = 100\text{ ns}$ (TLP); pin 2-1	$r_{dyn}$	-	0.53	-	$\Omega$
Capacitance	at $V_R = 0\text{ V}$ ; $f = 1\text{ MHz}$	$C_D$	21	27	33	pF



<b>ELECTRICAL CHARACTERISTICS VESD26A5-06G</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITIONS/REMARKS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Protection paths	Number of lines which can be protected	N <sub>channel</sub>	-	-	1	lines
Reverse stand off voltage	Max. reverse working voltage	V <sub>RWM</sub>	-	-	26	V
Reverse voltage	at I <sub>R</sub> = 0.1 μA	V <sub>R</sub>	26	-	-	V
Reverse current	at V <sub>R</sub> = 26 V	I <sub>R</sub>	-	< 0.01	0.1	μA
Reverse breakdown voltage	at I <sub>R</sub> = 1 mA	V <sub>BR</sub>	27.6	29.1	30.6	V
Reverse clamping voltage	at I <sub>PP</sub> = I <sub>PPM</sub> = 2.1 A, t <sub>p</sub> = 8/20 μs	V <sub>C</sub>	-	43	48	V
Forward clamping voltage	at I <sub>PP</sub> = 1 A, t <sub>p</sub> = 300 μs	V <sub>F</sub>	0.9	1.1	1.2	V
	at I <sub>PP</sub> = I <sub>PPM</sub> = 2.1 A, t <sub>p</sub> = 8/20 μs	V <sub>F</sub>	-	1.3	1.42	V
Dynamic resistance	t <sub>p</sub> = 100 ns (TLP); pin 2-1	r <sub>dyn</sub>	-	1.9	-	Ω
Capacitance	at V <sub>R</sub> = 0 V; f = 1 MHz	C <sub>D</sub>	14	17.5	21	pF

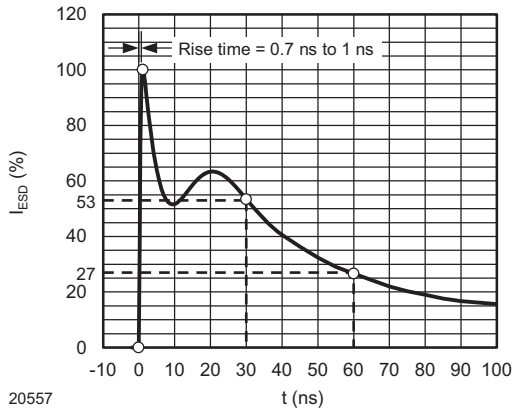


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω / 150 pF)

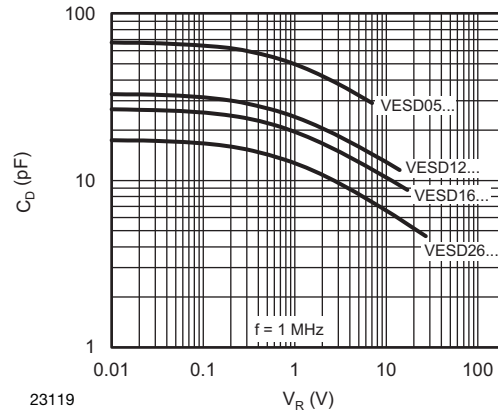


Fig. 4 - Typical Capacitance vs. Reverse Voltage

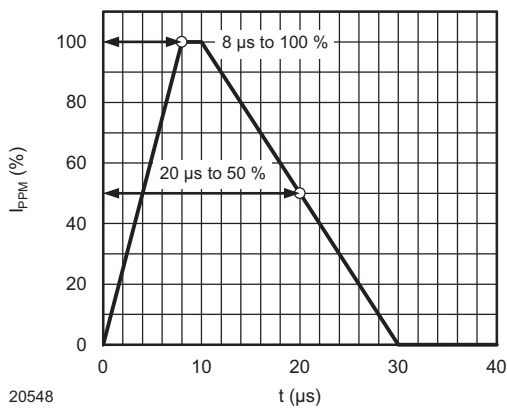


Fig. 2 - 8/20 μs Peak Pulse Current Wave Form acc. IEC 61000-4-5

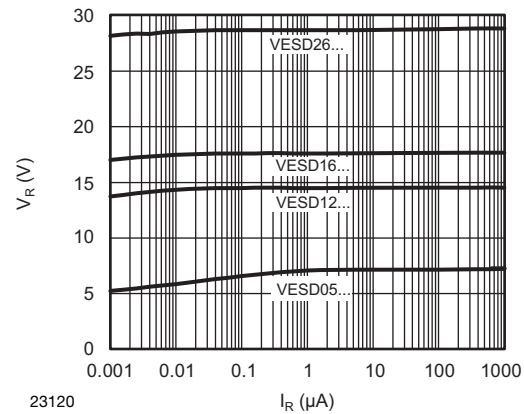


Fig. 5 - Typical Reverse Voltage vs. Reverse Current

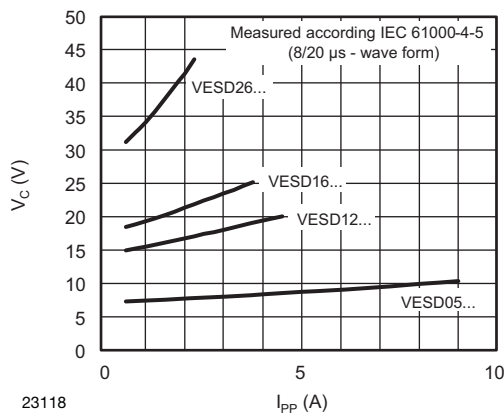


Fig. 3 - Typical Peak Clamping Voltage vs. Peak Pulse Current

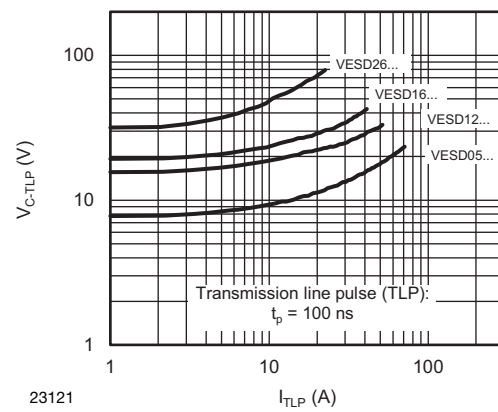
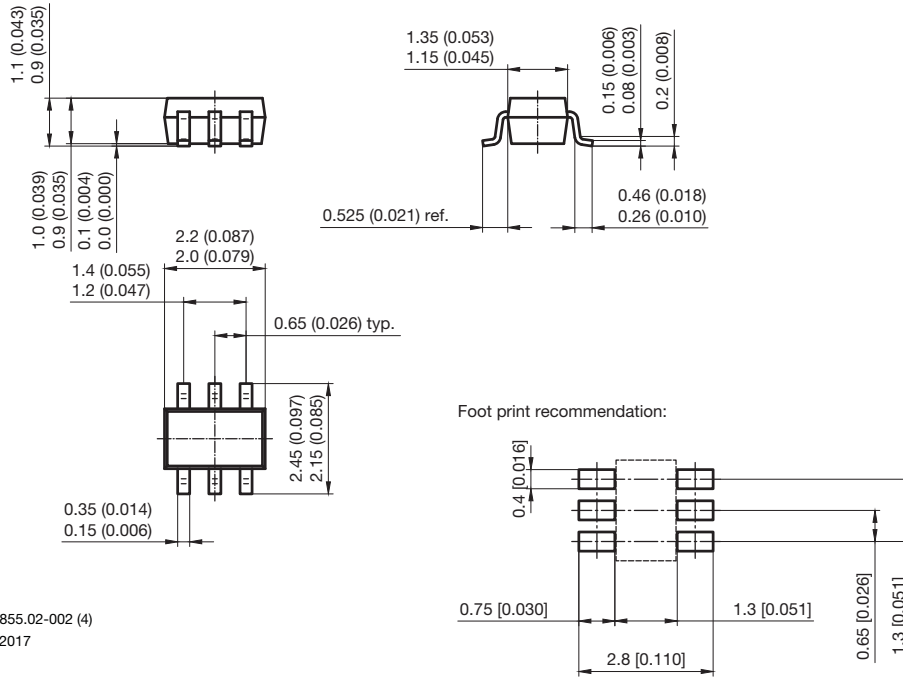


Fig. 6 - Typical Clamping Voltage vs. Peak Pulse Current

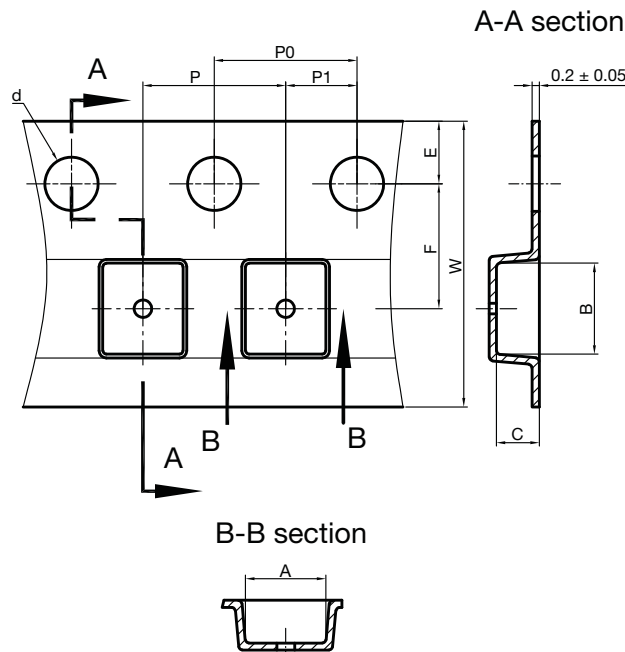


**PACKAGE DIMENSIONS** in millimeters (Inches): **SOT-363**



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 Rev.1 - Date: 23. Jun. 2017  
 23122

**CARRIER TAPE SOT-363**



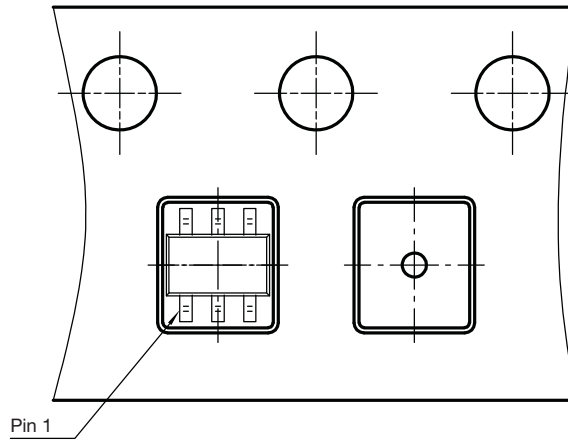
Cummulative tolerances of 10 sprocket holes is ± 0.2 mm

Dimensions in millimeters										
Packaging type	A	B	C	d	E	F	P0	P	P1	W
SOT-363	2.25	2.55	1.20	∅ 1.5	1.75	3.50	4.00	4.00	2.00	8.00
(Tolerance)	± 0.1	± 0.1	± 0.1	+0.1/-0	± 0.1	± 0.1	± 0.05	± 0.1	± 0.05	+0.3/-0.1

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 22968



**ORIENTATION IN CARRIER TAPE SOT-363**



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Created - Date: 25. April 2017



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