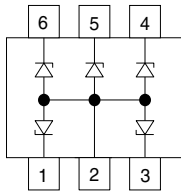
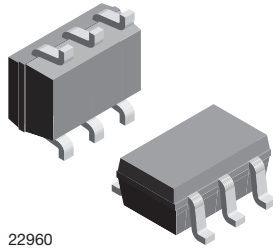




## Five-Line ESD Protection Diode Array in SOT-363



22961



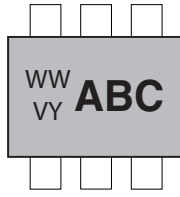
22960

### 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)



### MARKING (example only)



22962

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

### DESIGN SUPPORT TOOLS AVAILABLE



| 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><br>( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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><br>( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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><br>( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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><br>(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    |

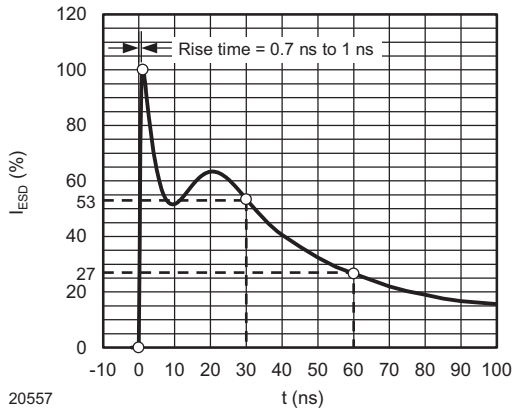


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω / 150 pF)

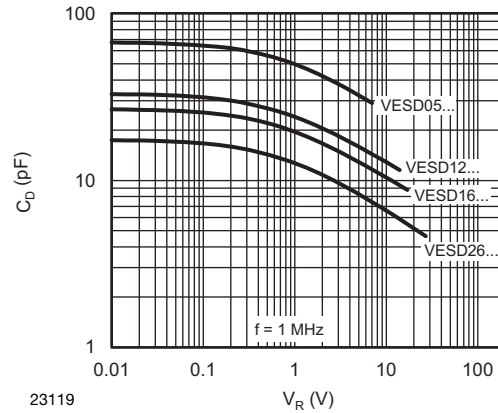


Fig. 4 - Typical Capacitance vs. Reverse Voltage

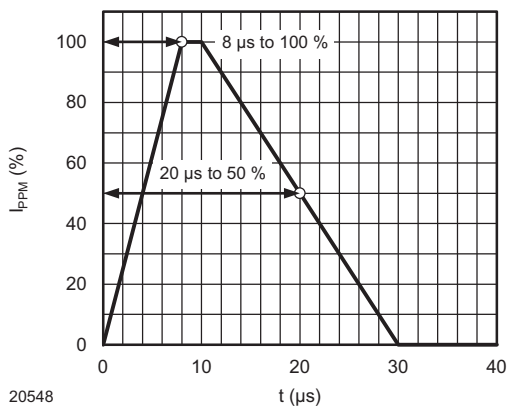


Fig. 2 - 8/20 μs Peak Pulse Current Wave Form acc. IEC 61000-4-5

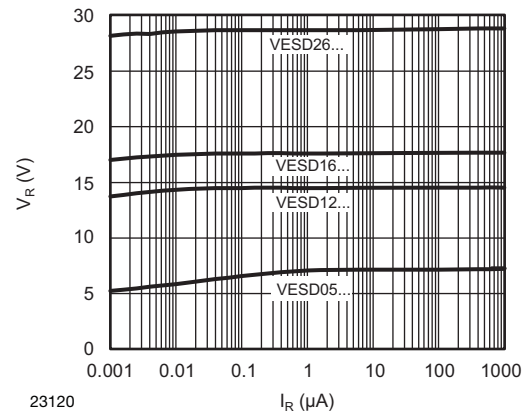


Fig. 5 - Typical Reverse Voltage vs. Reverse Current

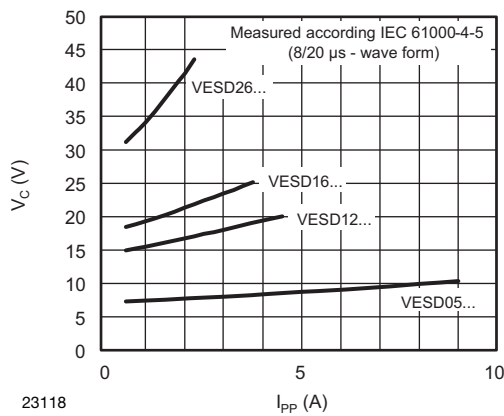


Fig. 3 - Typical Peak Clamping Voltage vs. Peak Pulse Current

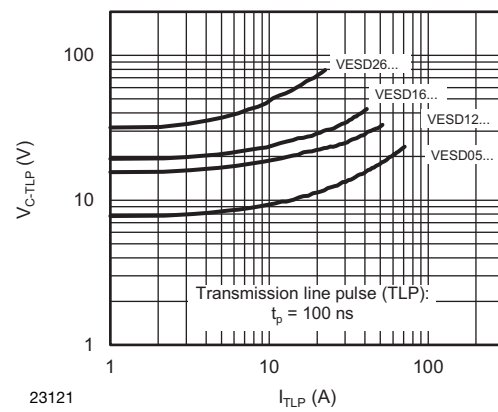
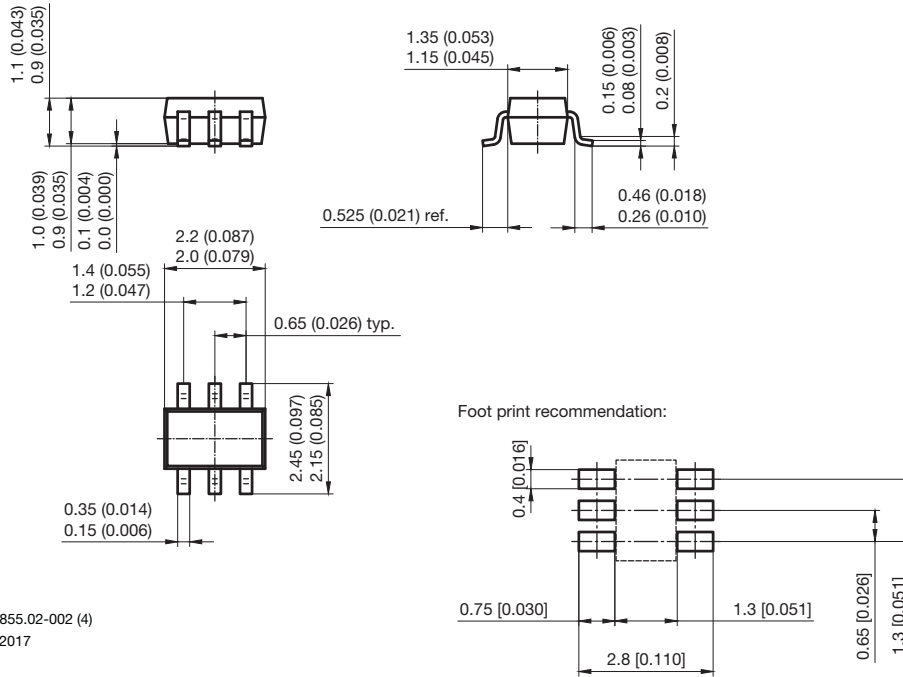


Fig. 6 - Typical Clamping Voltage vs. Peak Pulse Current

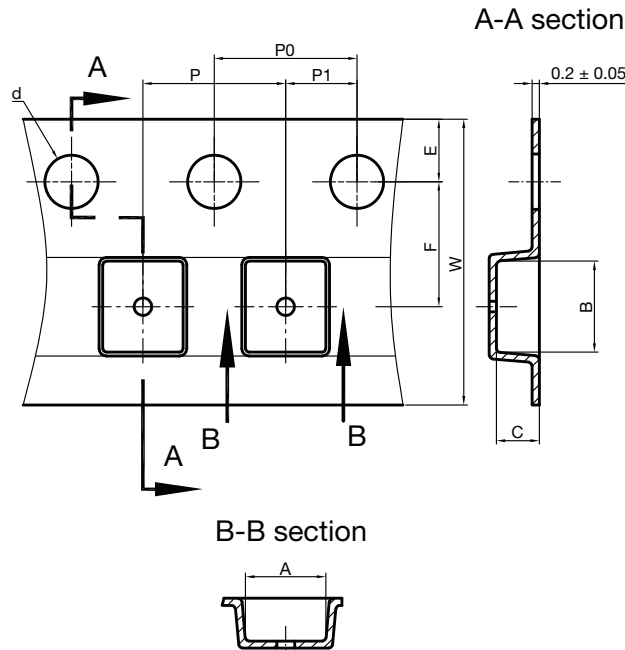


**PACKAGE DIMENSIONS** in millimeters (Inches): **SOT-363**



Document no.: SB-V-3855.02-002 (4)  
 Rev.1 - Date: 23. Jun. 2017  
 23122

**CARRIER TAPE SOT-363**



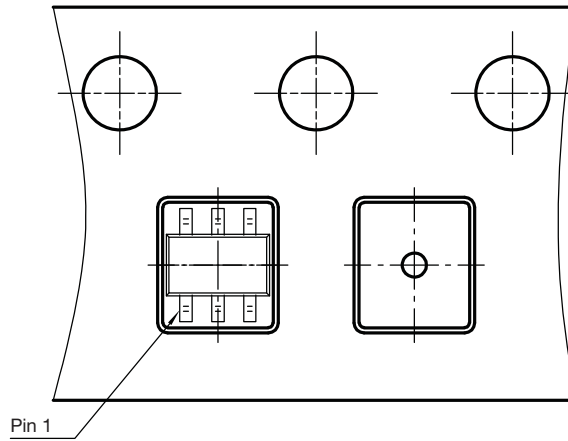
Cummulative tolerances of 10 sprocket holes is ± 0.2 mm

| 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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 Created - Date: 25. April. 2017  
 22968



**ORIENTATION IN CARRIER TAPE SOT-363**



Document no. S8-V-3855.02-004 (4)  
Created - Date: 25. April 2017



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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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