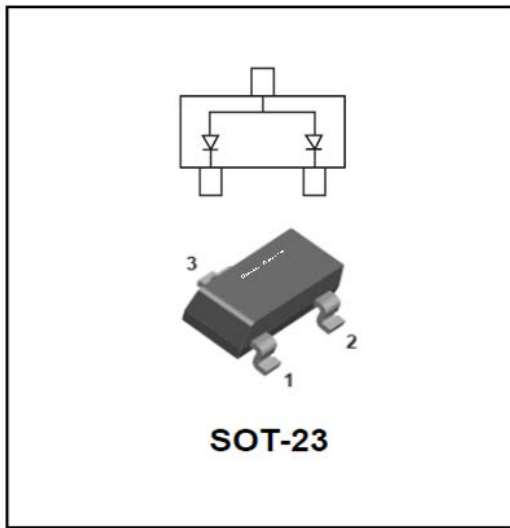
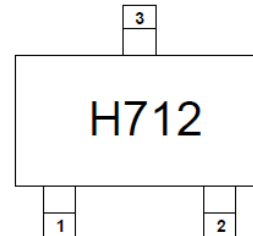


## ESD Protection Diode



### Features

- Low clamping voltage
- Low leakage
- Operating voltage: 7V or 12V
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking: H712



### ■Maximum Ratings

| PARAMETER                | SYMBOL          | VALUE               |    | UNIT |
|--------------------------|-----------------|---------------------|----|------|
| Operating Junction       | $T_J$           | -55 to +125         |    | °C   |
| Storage Temperature      | $T_{STG}$       | -55 to +150         |    | °C   |
| IEC61000-4-2(ESD)Air     | $V_{ESD}^{(1)}$ | ±30                 |    | KV   |
| IEC61000-4-2(ESD)Contact |                 | ±30                 |    | KV   |
| Peak Pulse Power         | $P_{PP}^{(2)}$  | 600-1000            |    | W    |
| Peak Pulse Current       | $I_{PP}^{(2)}$  | Pin 1 or 2 to Pin 3 | 30 | A    |
|                          |                 | Pin 3 to Pin 1 or 2 | 38 |      |

(1).Device stressed with ten non-repetitive ESD pulses.

(2).Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.

## ■Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                | SYMBOL                          | UNIT | CONDITIONS                       |                                     | MIN  | TYP | MAX |
|--------------------------|---------------------------------|------|----------------------------------|-------------------------------------|------|-----|-----|
| Reverse Standoff Voltage | V <sub>RWM</sub> <sup>(1)</sup> | V    | Pin 1 to Pin 3 and Pin2 to Pin 3 |                                     |      |     | 12  |
|                          |                                 |      | Pin 3 to Pin 1 and Pin3 to Pin 2 |                                     |      |     | 7   |
| Reverse Leakage Current  | I <sub>R</sub>                  | uA   | Pin 1 to Pin 3 and Pin2 to Pin 3 | VR = V <sub>RWM</sub>               |      |     | 0.5 |
|                          |                                 |      | Pin 3 to Pin 1 and Pin3 to Pin 2 | VR = V <sub>RWM</sub>               |      |     | 0.5 |
| Breakdown Voltage        | V <sub>(BR)</sub>               | V    | Pin 1 to Pin 3 and Pin2 to Pin 3 | IT = 1mA                            | 13.3 |     |     |
|                          |                                 |      | Pin 3 to Pin 1 and Pin3 to Pin 2 | IT = 1mA                            | 7.5  |     |     |
| Clamping Voltage         | V <sub>C</sub> <sup>(2)</sup>   | V    | Pin 1 to Pin 3 and Pin2 to Pin 3 | I <sub>PP</sub> = 1A(8/20μs pulse)  |      |     | 19  |
|                          |                                 |      | Pin 3 to Pin 1 and Pin3 to Pin 2 | I <sub>PP</sub> = 1A(8/20μs pulse)  |      |     | 11  |
| Clamping Voltage         | V <sub>C</sub> <sup>(2)</sup>   | V    | Pin 1 to Pin 3 and Pin2 to Pin 3 | I <sub>PP</sub> = 30A(8/20μs pulse) |      |     | 25  |
| Clamping Voltage         | V <sub>C</sub> <sup>(2)</sup>   | V    | Pin 3 to Pin 1 and Pin3 to Pin 2 | I <sub>PP</sub> = 38A(8/20μs pulse) |      |     | 17  |
| Junction Capacitance     | C <sub>J</sub>                  | pF   | Pin 1 to Pin 3 and Pin2 to Pin 3 | VR = 0V, f = 1MHz                   |      |     | 75  |
|                          |                                 |      | Pin 3 to Pin 1 and Pin3 to Pin 2 | VR = 0V, f = 1MHz                   |      |     | 75  |
| Junction Capacitance     | C <sub>J</sub>                  | pF   | Pin 1 to Pin 3 and Pin2 to Pin 3 | VR = V <sub>RWM</sub> , f = 1MHz    |      |     | 38  |
|                          |                                 |      | Pin 3 to Pin 1 and Pin3 to Pin 2 | VR = V <sub>RWM</sub> , f = 1MHz    |      |     | 55  |

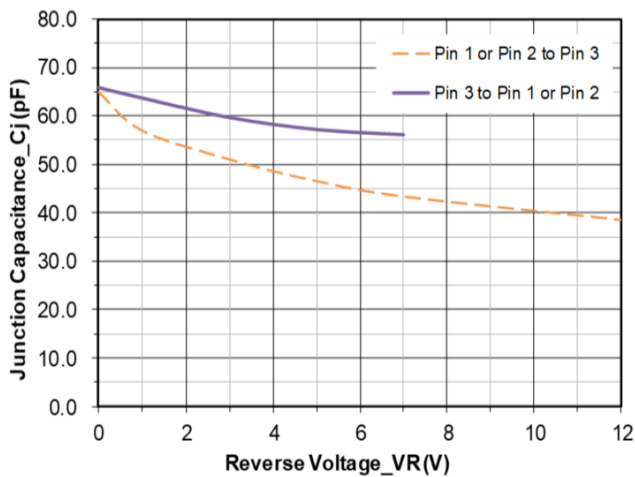
(1).Other voltages available upon request.

(2).Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5

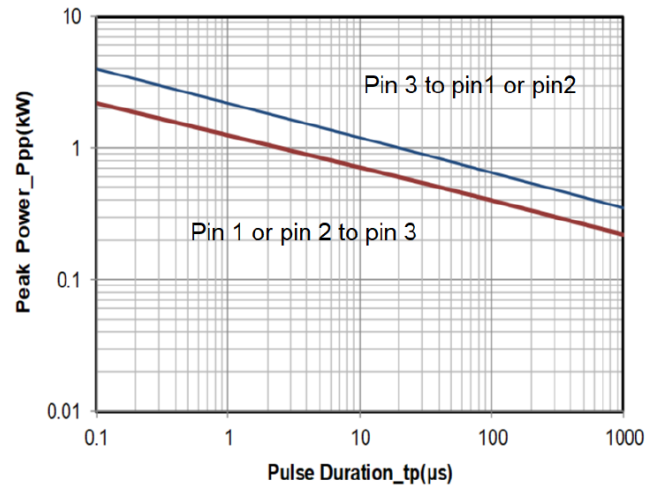
## ■Thermal Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                   | SYMBOL            | UNIT | ASM712H |
|-----------------------------|-------------------|------|---------|
| Thermal Resistance(Typical) | R <sub>θJ-A</sub> | °C/W | 357     |
|                             | R <sub>θJ-C</sub> | °C/W | 143     |

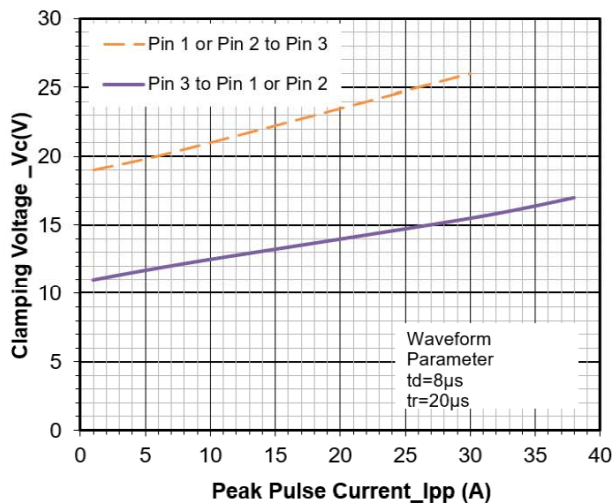
## ■ Characteristics (Typical)



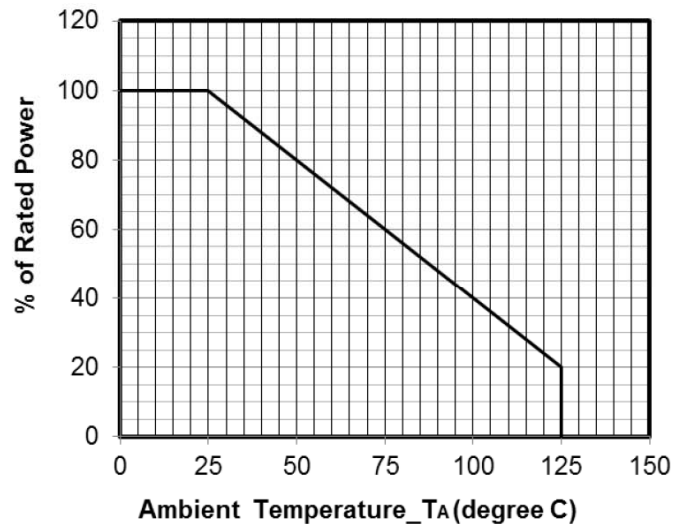
Junction Capacitance vs. Reverse Voltage



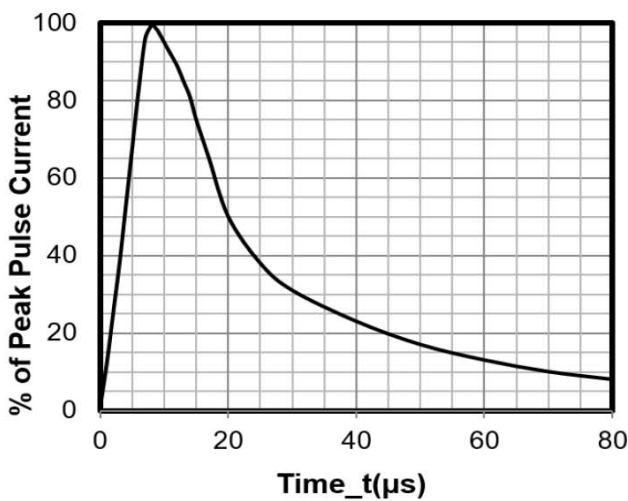
Peak Pulse Power vs. Pulse Time



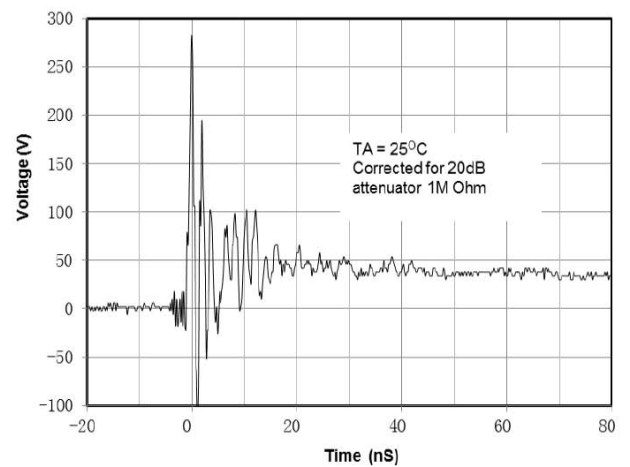
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve

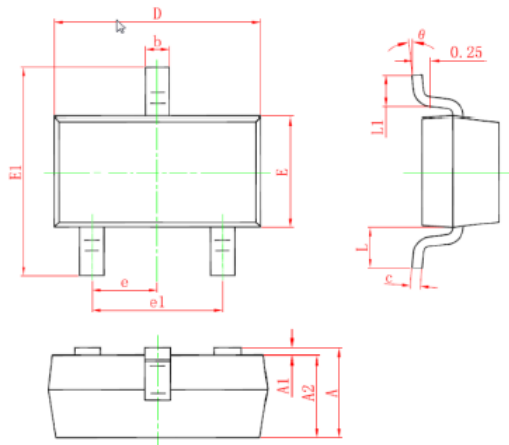


8 X 20  $\mu$ s Pulse Waveform



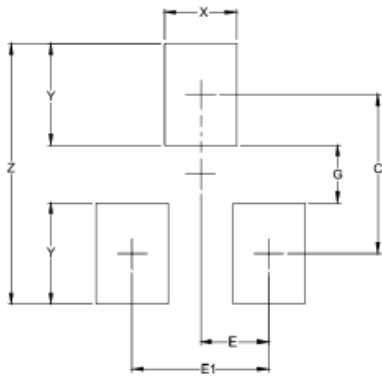
ESD Clamping Voltage  
8 kV Contact per IEC61000-4-2

## ■ Outline Dimensions



| SYM | DIMENSIONS  |     |      |          |     |       |
|-----|-------------|-----|------|----------|-----|-------|
|     | MILLIMETERS |     |      | INCHES   |     |       |
|     | MIN         | NOM | MAX  | MIN      | NOM | MAX   |
| A   | 0.90        | --  | 1.15 | 0.035    | --  | 0.045 |
| A1  | 0.00        | --  | 0.10 | 0.000    | --  | 0.004 |
| A2  | 0.90        | --  | 1.05 | 0.035    | --  | 0.041 |
| b   | 0.30        | --  | 0.50 | 0.012    | --  | 0.020 |
| c   | 0.08        | --  | 0.15 | 0.003    | --  | 0.006 |
| D   | 2.80        | --  | 3.00 | 0.110    | --  | 0.118 |
| E   | 1.20        | --  | 1.40 | 0.047    | --  | 0.055 |
| E1  | 2.25        | --  | 2.55 | 0.089    | --  | 0.100 |
| e   | 0.95TYP     |     |      | 0.037TYP |     |       |
| e1  | 1.80        | --  | 2.00 | 0.071    | --  | 0.079 |
| L   | 0.55REF     |     |      | 0.022REF |     |       |
| L1  | 0.30        | --  | 0.50 | 0.012    | --  | 0.020 |
| θ   | 0°          | --  | 8°   | 0°       | --  | 8°    |

## ■ Soldering Footprint



| SYM | DIMENSIONS |             |
|-----|------------|-------------|
|     | INCHES     | MILLIMETERS |
| C   | (.087)     | (2.20)      |
| E   | .037       | 0.95        |
| E1  | .075       | 1.90        |
| G   | .031       | 0.80        |
| X   | .039       | 1.00        |
| Y   | .055       | 1.40        |
| Z   | .141       | 3.60        |

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