

Features

- Normal capacitance: $C_{1,2\text{ to }3}=75\text{pF}(\text{Max.})$
- Protects two -7V to +12V lines
- Low leakage current
- IEC 61000-4-2 (ESD Air): $\pm 30\text{kV}$
- IEC 61000-4-2 (ESD Contact): $\pm 30\text{kV}$
- IEC 61000-4-5 (Lightning 8/20 μs): 12A

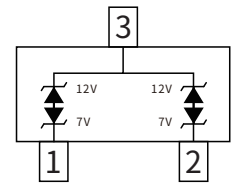
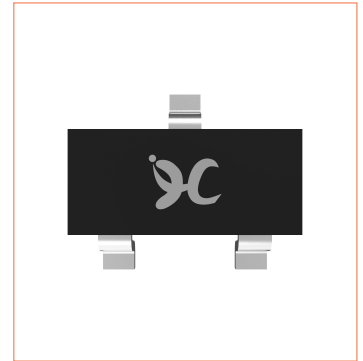
Applications

- Protection of RS-485 transceivers with extended common-mode range
- Security systems
- Automatic teller machines
- HFC systems
- Net works

Maximum Ratings (Ta=25°C Unless otherwise specified)

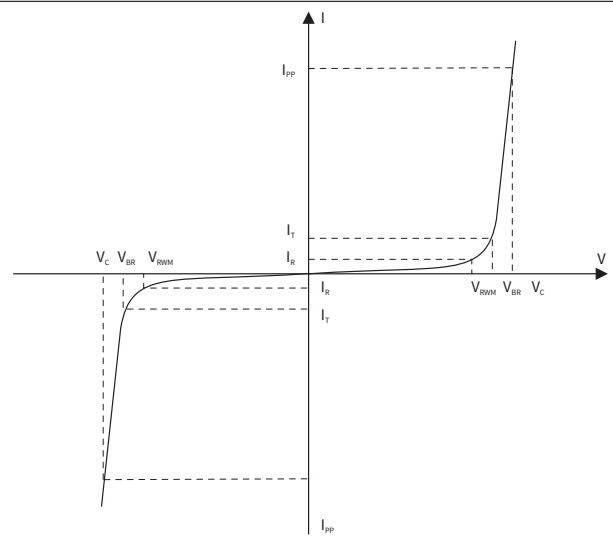
| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|------------------|--------------------------------------|--------------------------------|-------------|------|
| V_{ESD} | Electrostatic Discharge Voltage | ESD per IEC 61000-4-2(Air) | ± 30 | KV |
| | | ESD per IEC 61000-4-2(Contact) | ± 30 | KV |
| P_{PP} | Peak Pulse Power | $t_p = 8/20 \mu\text{s}$ | 300 | W |
| I_{PP} | Rated Peak Pulse Current | $t_p = 8/20 \mu\text{s}$ | 12 | A |
| T_J | Operating Junction Temperature Range | — | -55 to +125 | °C |
| T_{STG} | Storage Temperature Range | — | -55 to +150 | °C |

SOT-23



Electrical Parameter

| SYMBOL | PARAMETER |
|------------------|---|
| V_C | Clamping Voltage @ I_{PP} |
| V_{BR} | Breakdown Voltage @ I_T |
| I_{PP} | Peak Pulse Current |
| I_T | Test Current |
| I_R | Reverse Leakage Current @ V_{RWM} |
| V_{RWM} | Peak Reverse Working Voltage |
| P_{PP} | Peak Pulse Power Dissipation |
| C_J | Junction Capacitance @ $V_R=0\text{V}, f=1\text{MHz}$ |

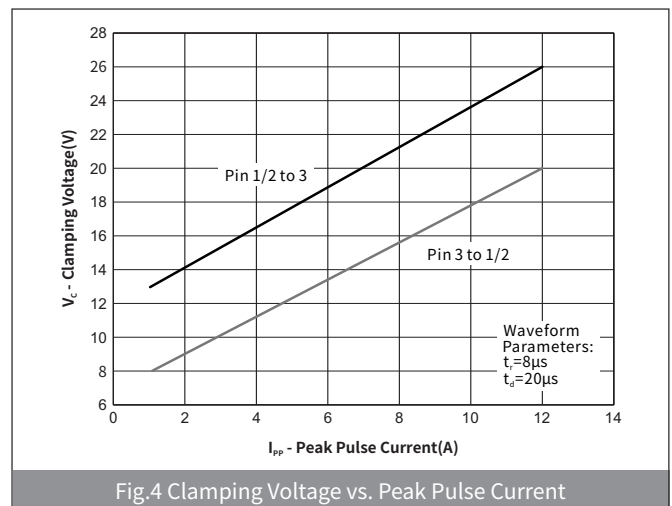
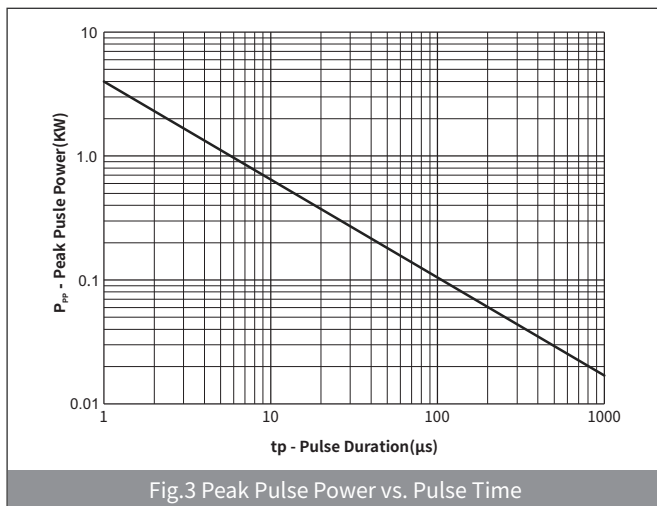
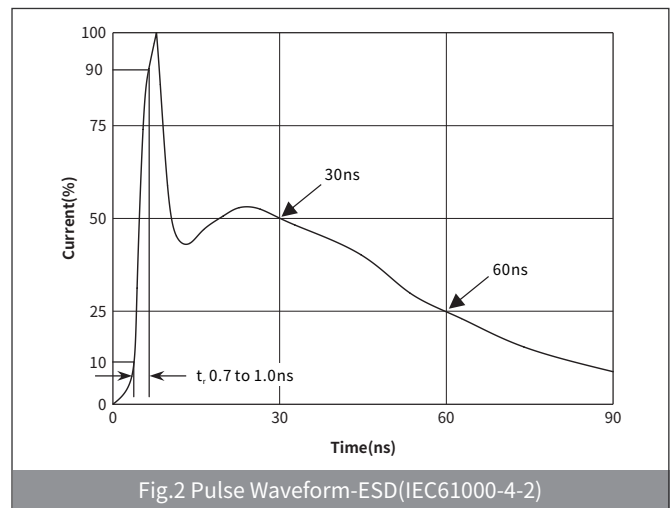
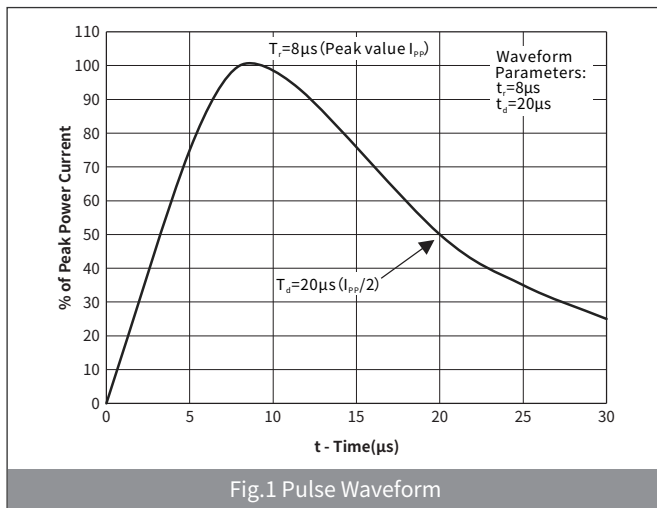


► Electrical Characteristics (Ta=25°C Unless otherwise specified)

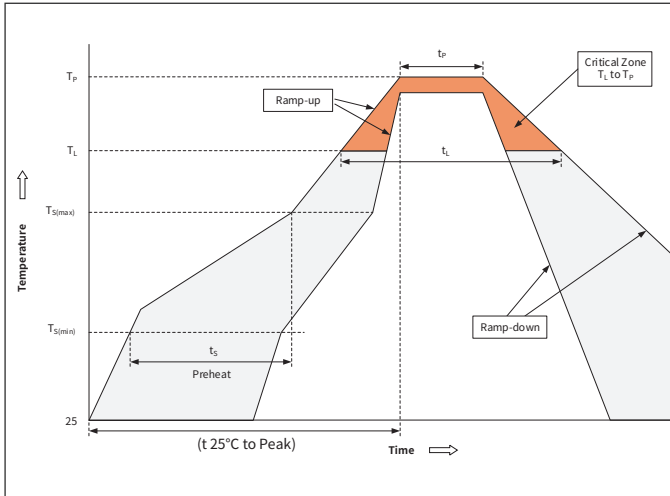
| PARAMETER | SYMBOL | CONDITION | Pins 1/2 to 3 (12V) | | | Pins 3 to 1/2 (7V) | | | UNIT |
|------------------------------|-----------|--|---------------------|-----|-----|--------------------|-----|-----|---------------|
| | | | Min | Typ | Max | Min | Typ | Max | |
| Peak Reverse Working Voltage | V_{RWM} | $T_a=25^\circ\text{C}$ | - | - | 12 | - | - | 7 | V |
| Breakdown Voltage | V_{BR} | $I_T=1\text{mA}, T_a=25^\circ\text{C}$ | 13.3 | - | - | 7.5 | - | - | V |
| Reverse Leakage Current | I_R | $V_R=V_{RWM}, T_a=25^\circ\text{C}$ | - | - | 1.0 | - | - | 1.0 | μA |
| Clamping Voltage | V_C | $I_{pp}=1.0\text{A}, t_p=8/20\mu\text{s}$ | - | - | 15 | - | - | 8 | V |
| | | $I_{pp}=12.0\text{A}, t_p=8/20\mu\text{s}$ | - | 23 | 26 | - | 15 | 18 | V |
| Junction Capacitance | C_J | $V_R=0\text{V}, f=1\text{MHz}$ | - | - | 75 | - | - | 75 | pF |
| | | $V_R=V_{RWM}, f=1\text{MHz}$ | - | 45 | - | - | 45 | - | pF |

► Ordering Information

| PREFERRED P/N | PACKAGE | SIZE(mm) | DELIVERY MODE | MPQ(PCS) |
|---------------|---------|-----------------|---------------|----------|
| SM712 | SOT-23 | 2.90×2.40×1.025 | 7" REEL | 3000 |

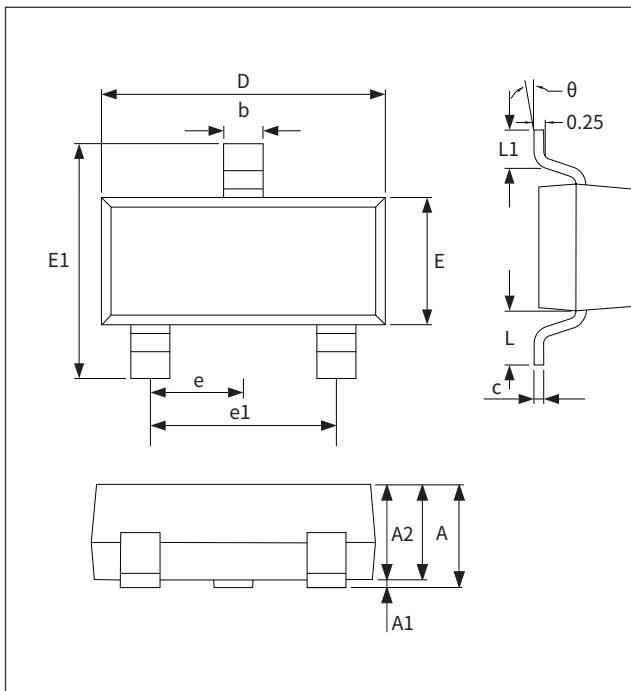
► Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)


► Recommended Soldering Conditions



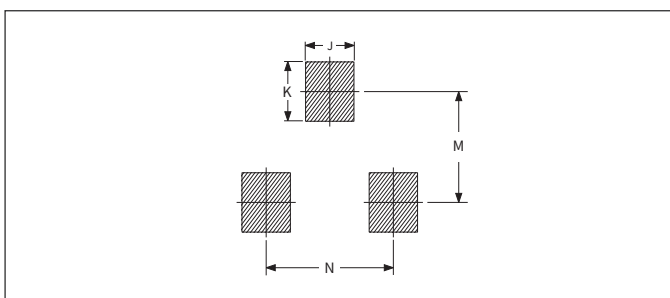
| Profile Feature | | Pb-Free Assembly |
|---|-----------------------------------|------------------|
| Pre-heat | Temperature Min ($T_{S(min)}$) | +150°C |
| | Temperature Max ($T_{S(max)}$) | +200°C |
| | Time (Min to Max) (t_s) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp (T_L) to peak) | | 3°C /sec. Max |
| $T_{S(max)}$ to T_L - Ramp-up Rate | | 3°C /sec. Max |
| Reflow | Temperature (T_L) (Liquid us) | +217°C |
| | Temperature (t_L) | 60-150 secs. |
| Peak Temp (T_P) | | +260(+0/-5)°C |
| Time within 5°C of actual Peak Temp (t_p) | | 30 secs. Max |
| Ramp-down Rate | | 6°C /sec. Max |
| Time 25°C to Peak Temp (T_P) | | 8 min. Max |
| Do not exceed | | +260°C |

► Package Outline Dimensions (SOT-23)



| Symbol | Dimensions | | | |
|----------|-------------|------|----------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 0.90 | 1.15 | 0.035 | 0.045 |
| A1 | - | 0.10 | - | 0.004 |
| A2 | 0.90 | 1.05 | 0.035 | 0.041 |
| b | 0.30 | 0.50 | 0.012 | 0.020 |
| c | 0.10 | 0.20 | 0.004 | 0.008 |
| 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 | 0.950TYP | | 0.037TYP | |
| e1 | 1.80 | 2.00 | 0.071 | 0.079 |
| L | 0.550REF | | 0.022REF | |
| L1 | 0.30 | 0.50 | 0.012 | 0.020 |
| θ | - | 8° | - | 8° |

► Suggested Pad Layout



| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| J | 0.80 | - | 0.031 | - |
| K | - | 0.90 | - | 0.035 |
| M | 2.00 | - | 0.078 | - |
| N | - | 1.90 | - | 0.074 |

Note :

This soldering footprint is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

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[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)