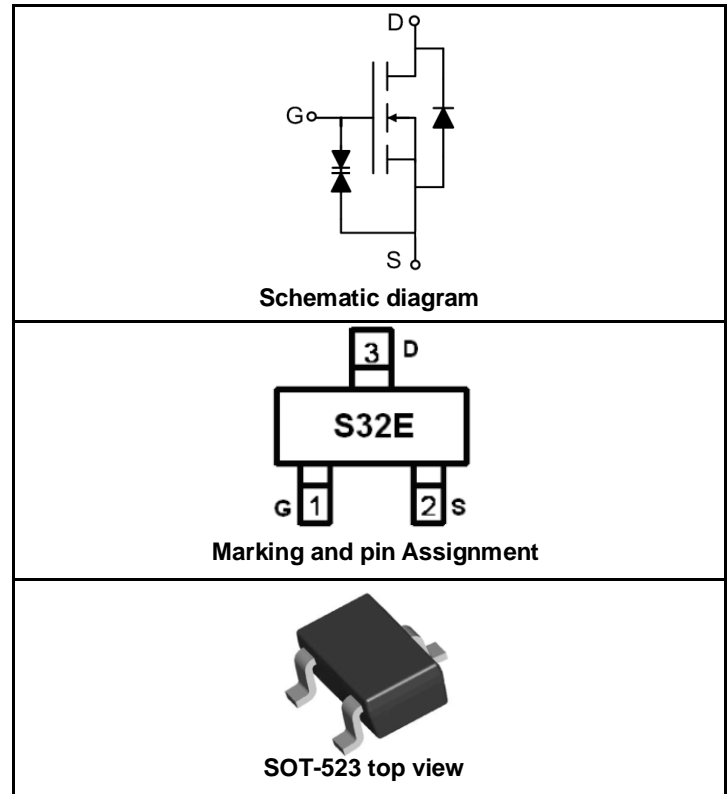


GENERAL FEATURES

- $V_{DS} = 30V, I_D = 0.1A$
- $R_{DS(ON)} < 8\Omega @ V_{GS}=4V$
 $R_{DS(ON)} < 13\Omega @ V_{GS}=2.5V$
- ESD Rating: 1000V HBM
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

APPLICATION

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers, Display, Memories, Transistors, etc.
- Battery Operated Systems
- Solid-State Relays



PACKAGE MARKING AND ORDERING INFORMATION

| Device Marking | Device | Device Package | Reel Size | Tape width | Quantity |
|----------------|----------|----------------|-----------|------------|------------|
| S32E | SSF32E0E | SOT-523 | Ø180mm | 8 mm | 3000 units |

ABSOLUTE MAXIMUM RATINGS (TA=25°C unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|---|-------------------|------------|------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ±20 | V |
| Drain Current-Continuous@ Current-Pulsed (Note 1) | I_D | 0.1 | A |
| | $I_D(70^\circ C)$ | 0.07 | |
| | I_{DM} | 0.4 | A |
| Maximum Power Dissipation | P_D | 0.2 | W |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 To 150 | °C |

THERMAL CHARACTERISTICS

| | | | |
|--|-----------------|-----|------|
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 400 | °C/W |
|--|-----------------|-----|------|

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|--------------------------------|------------|---------------------------|-----|-----|-----|------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 30 | | | V |

| | | | | | | |
|---|--------------|---|------------|-------------------------------|----------|----------|
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | | | 1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 5V, V_{DS}=0V$ | | | 100 | nA |
| | | $V_{GS}=\pm 10V, V_{DS}=0V$ | | | 150 | nA |
| | | $V_{GS}=\pm 20V, V_{DS}=0V$ | | | 10 | μA |
| | | Gate-Source Breakdown Voltage | BV_{GSO} | $V_{DS}=0V, I_G=\pm 250\mu A$ | ± 20 | |
| ON CHARACTERISTICS (Note 3) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.8 | | 1.5 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}=4V, I_D=0.01A$ | | 5 | 8 | Ω |
| | | $V_{GS}=2.5V, I_D=0.001A$ | | 7 | 13 | |
| Forward Transconductance | g_{FS} | $V_{DS}=3V, I_D=0.01A$ | 0.02 | | | S |
| DYNAMIC CHARACTERISTICS (Note4) | | | | | | |
| Input Capacitance | C_{ISS} | $V_{DS}=5V, V_{GS}=0V,$ $F=1.0MHz$ | | 45 | | PF |
| Output Capacitance | C_{OSS} | | | 12 | | PF |
| Reverse Transfer Capacitance | C_{rSS} | | | 7 | | PF |
| SWITCHING CHARACTERISTICS (Note 4) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}=5V, V_{GS}=5V,$ $R_{GEN}=10\Omega, R_L=500\Omega$ $I_D=0.01A$ | | 15 | | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 75 | | nS |
| DRAIN-SOURCE DIODE CHARACTERISTICS | | | | | | |
| Diode Forward Voltage (Note 3) | V_{SD} | $V_{GS}=0V, I_S=0.01A$ | | | 1.3 | V |

NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

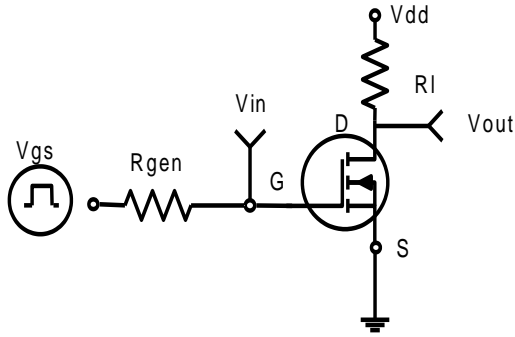


Figure 1: Switching Test Circuit

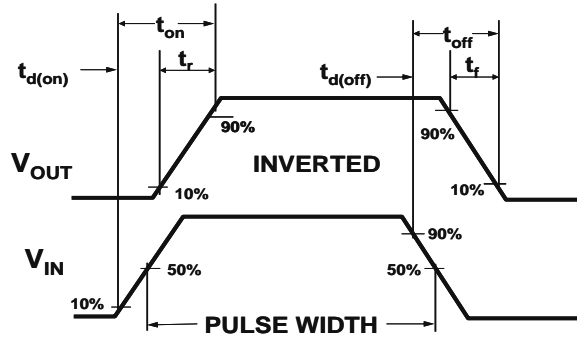


Figure 2: Switching Waveforms

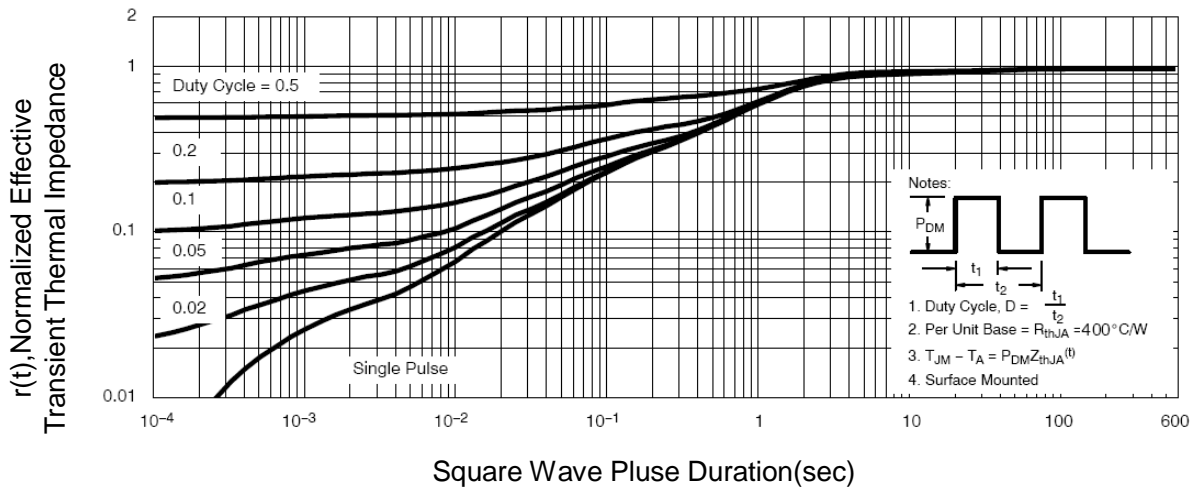
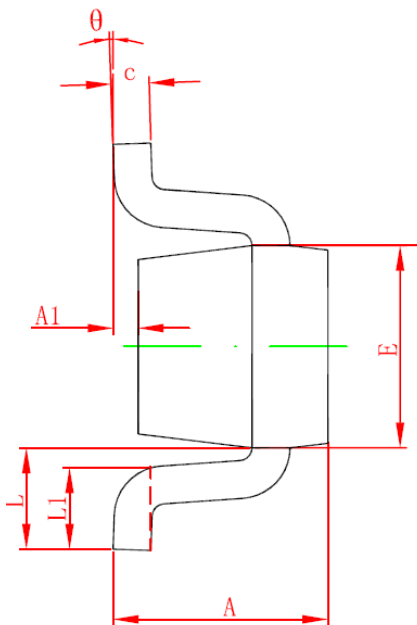
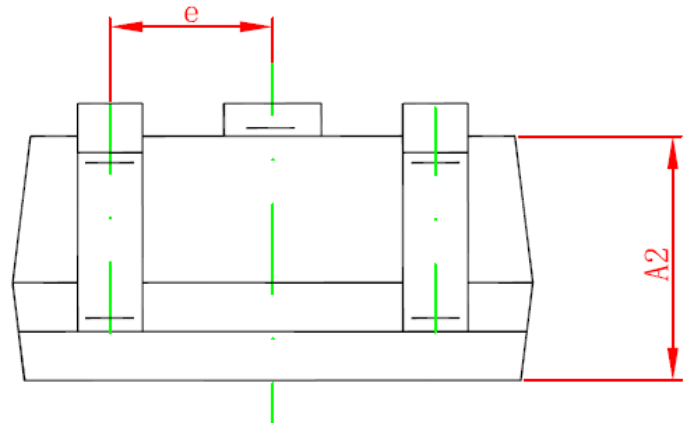
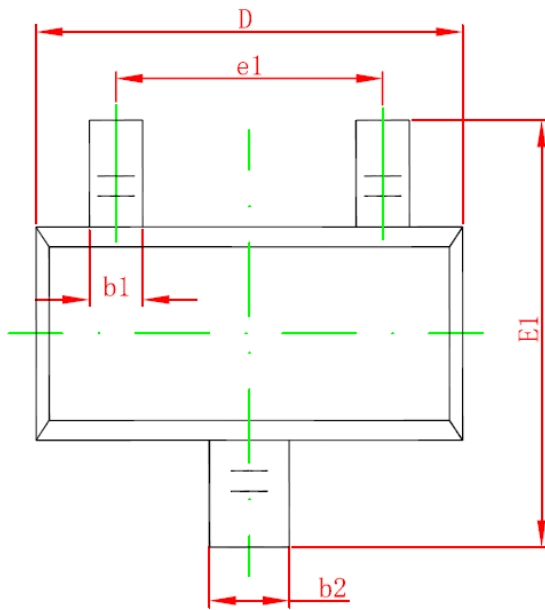


Figure 3 Normalized Maximum Transient Thermal Impedance

SOT-523 PACKAGE INFORMATION

Dimensions in Millimeters (UNIT:mm)



| Symbol | Dimensions in Millimeters | |
|----------|---------------------------|-------|
| | MIN. | MAX. |
| A | 0.700 | 0.900 |
| A1 | 0.000 | 0.100 |
| A2 | 0.700 | 0.800 |
| b1 | 0.150 | 0.250 |
| b2 | 0.250 | 0.350 |
| c | 0.100 | 0.200 |
| D | 1.500 | 1.700 |
| E | 0.700 | 0.900 |
| E1 | 1.450 | 1.750 |
| e | 0.500TYP | |
| e1 | 0.900 | 1.100 |
| L | 0.400REF | |
| L1 | 0.260 | 0.460 |
| θ | 0° | 8° |

NOTES

1. All dimensions are in millimeters.
2. Tolerance $\pm 0.10\text{mm}$ (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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