

2SK2934

Silicon N Channel MOS FET
High Speed Power Switching

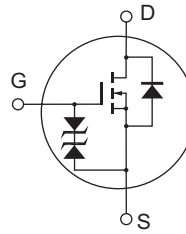
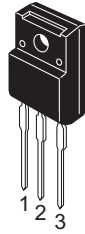
REJ03G1048-0400
(Previous: ADE-208-557B)
Rev.4.00
Sep 07, 2005

Features

- Low on-resistance
 $R_{DS} = 0.026 \Omega$ typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

Outline

RENESAS Package code: PRSS0003AE-A
(Package name: TO-220C•FM)



1. Gate
2. Drain
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|--|---------------------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 60 | V |
| Gate to source voltage | V_{GSS} | ±20 | V |
| Drain current | I_D | 25 | A |
| Drain peak current | $I_{D(pulse)}$ ^{Note1} | 100 | A |
| Body-drain diode reverse drain current | I_{DR} | 25 | A |
| Avalanche current | I_{AP} ^{Note3} | 20 | A |
| Avalanche energy | E_{AR} ^{Note3} | 34 | mJ |
| Channel dissipation | P_{ch} ^{Note2} | 25 | W |
| Channel temperature | T_{ch} | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

- Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$
 2. Value at $T_c = 25^\circ C$
 3. Value at $T_{ch} = 25^\circ C$, $R_g \geq 50 \Omega$

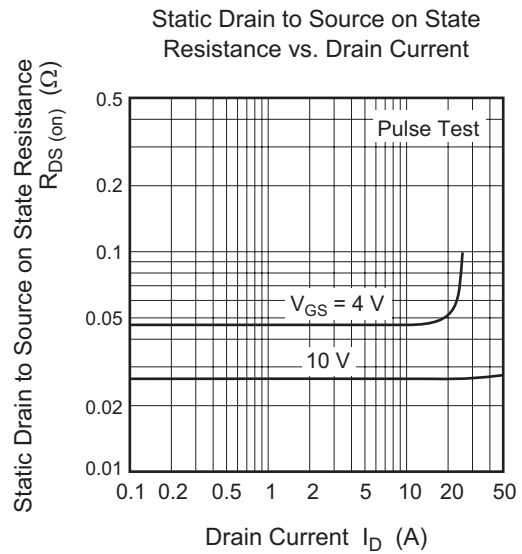
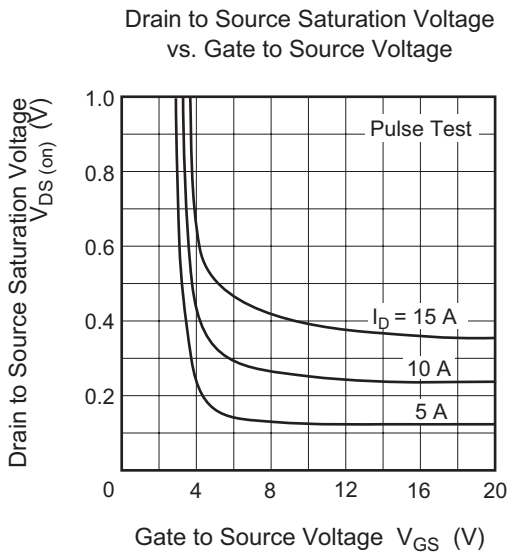
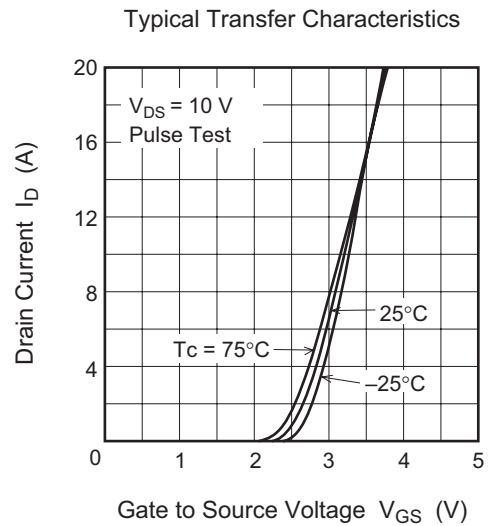
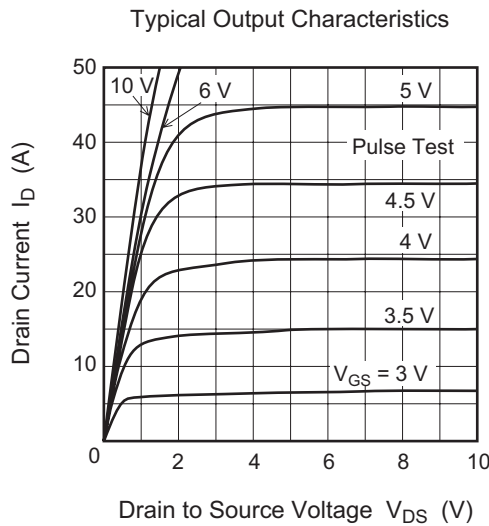
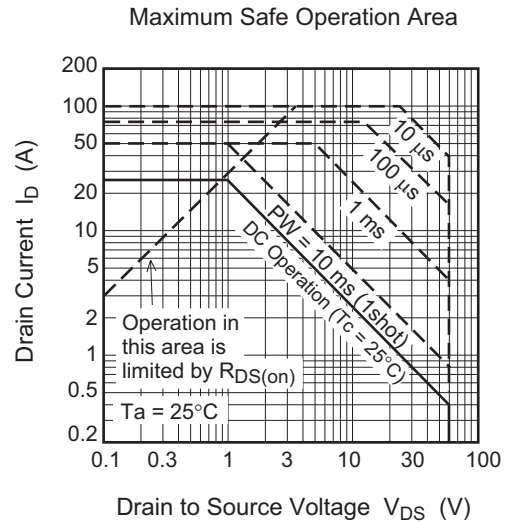
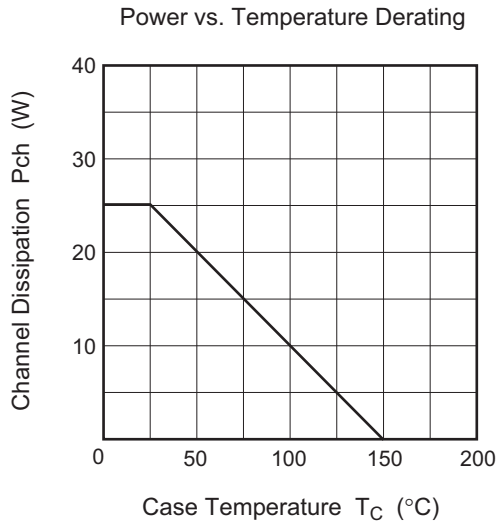
Electrical Characteristics

(Ta = 25°C)

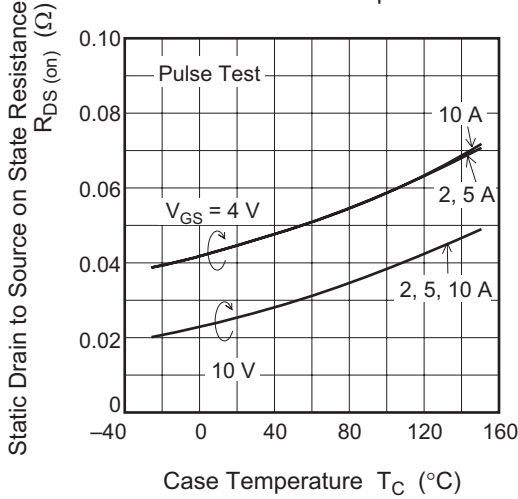
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|---------------|-----|-------|-------|------|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 60 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Gate to source breakdown voltage | $V_{(BR)GSS}$ | ±20 | — | — | V | $I_G = \pm 100 \mu A$, $V_{DS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ±10 | μA | $V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 10 | μA | $V_{DS} = 60 \text{ V}$, $V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 1.5 | — | 2.5 | V | $I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 0.026 | 0.034 | Ω | $I_D = 15 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4} |
| | $R_{DS(on)}$ | — | 0.045 | 0.07 | Ω | $I_D = 15 \text{ A}$, $V_{GS} = 4 \text{ V}$ ^{Note4} |
| Forward transfer admittance | $ y_{fs} $ | 11 | 17 | — | S | $I_D = 15 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4} |
| Input capacitance | C_{iss} | — | 740 | — | pF | $V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$ |
| Output capacitance | C_{oss} | — | 380 | — | pF | |
| Reverse transfer capacitance | C_{rss} | — | 140 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 10 | — | ns | $I_D = 15 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 2 \Omega$ |
| Rise time | t_r | — | 160 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 100 | — | ns | |
| Fall time | t_f | — | 150 | — | ns | |
| Body-drain diode forward voltage | V_{DF} | — | 0.95 | — | V | $I_F = 25 \text{ A}$, $V_{GS} = 0$ |
| Body-drain diode reverse recovery time | t_{rr} | — | 40 | — | ns | $I_F = 25 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu s$ |

- Note: 4. Pulse test

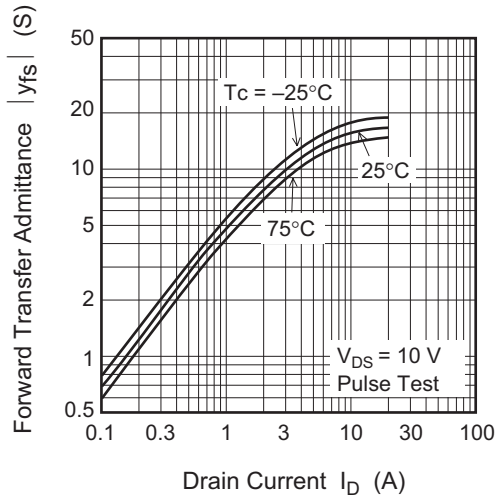
Main Characteristics



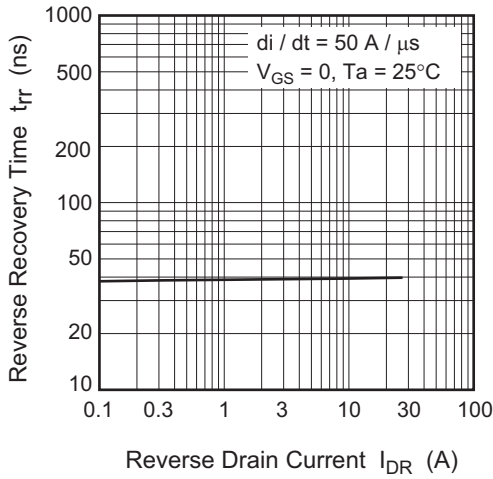
Static Drain to Source on State Resistance vs. Temperature



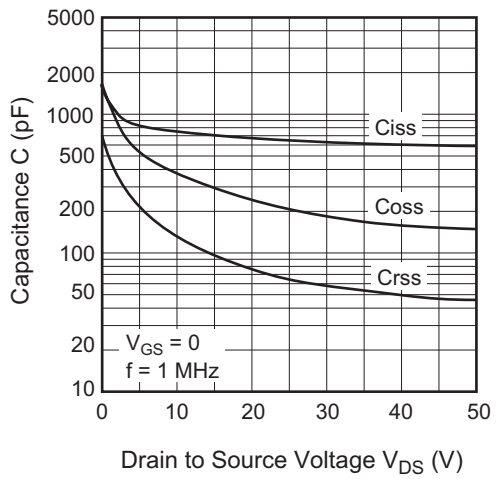
Forward Transfer Admittance vs. Drain Current



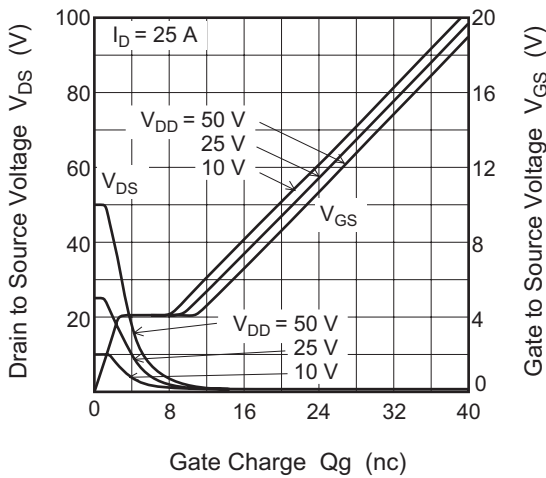
Body to Drain Diode Reverse Recovery Time



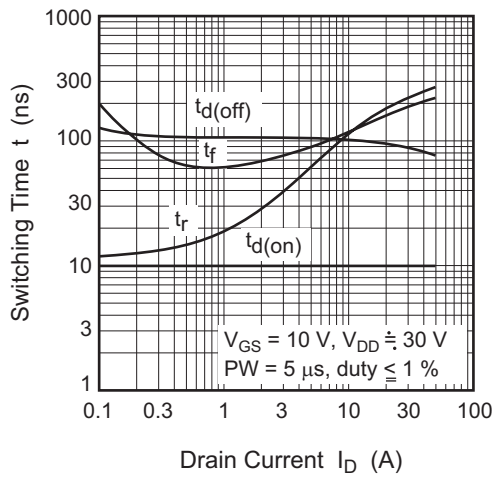
Typical Capacitance vs. Drain to Source Voltage

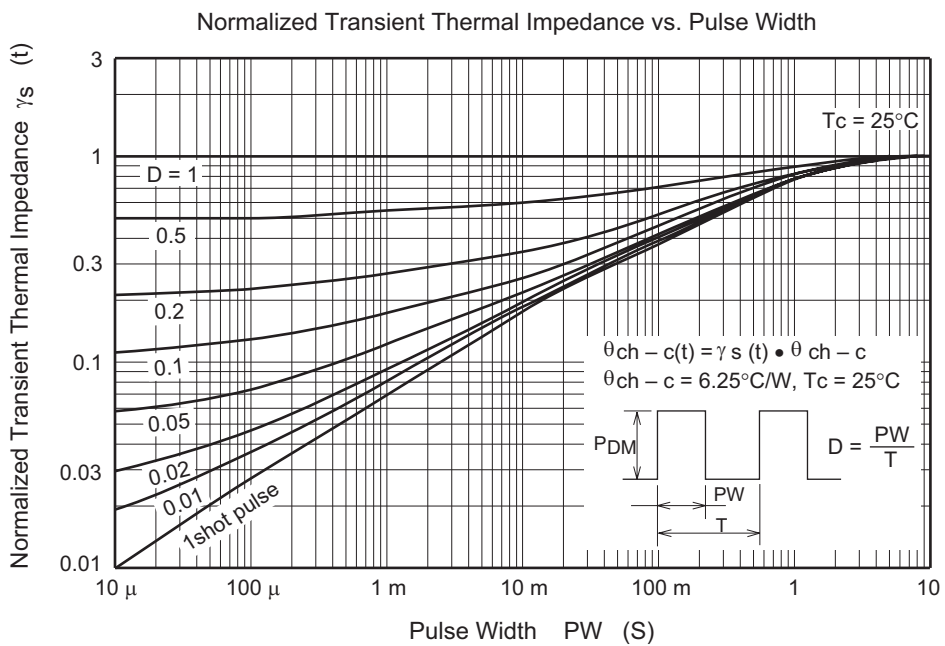
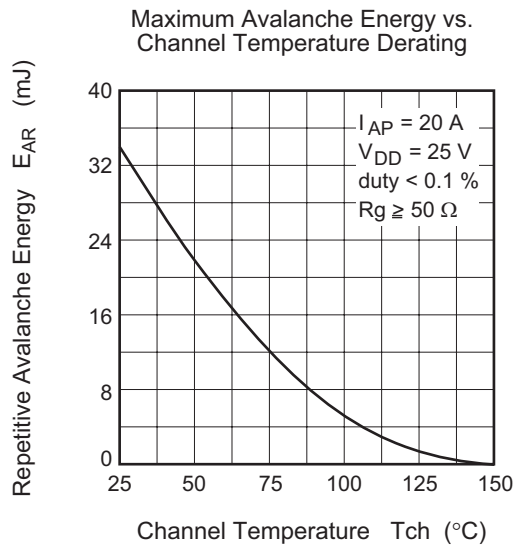
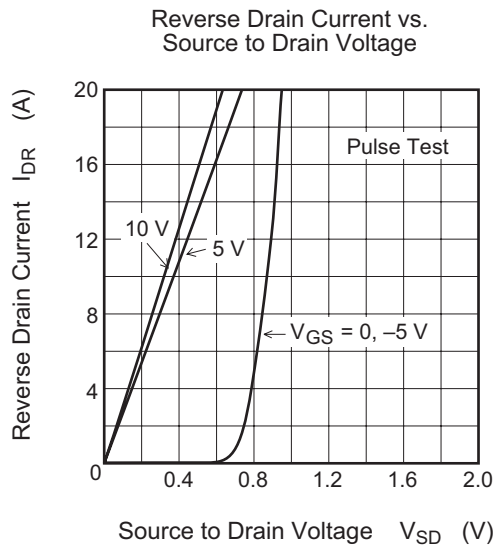


Dynamic Input Characteristics

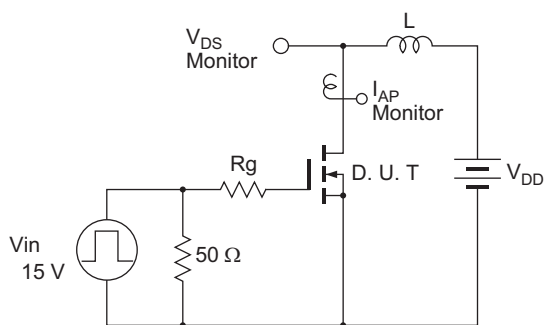


Switching Characteristics

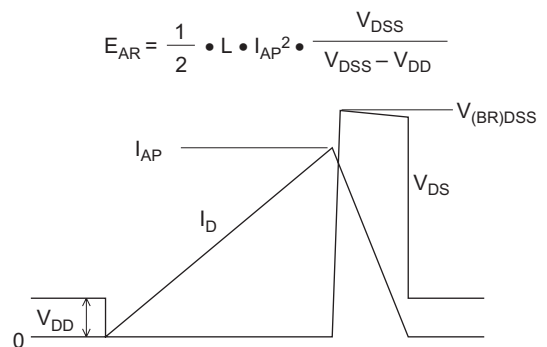


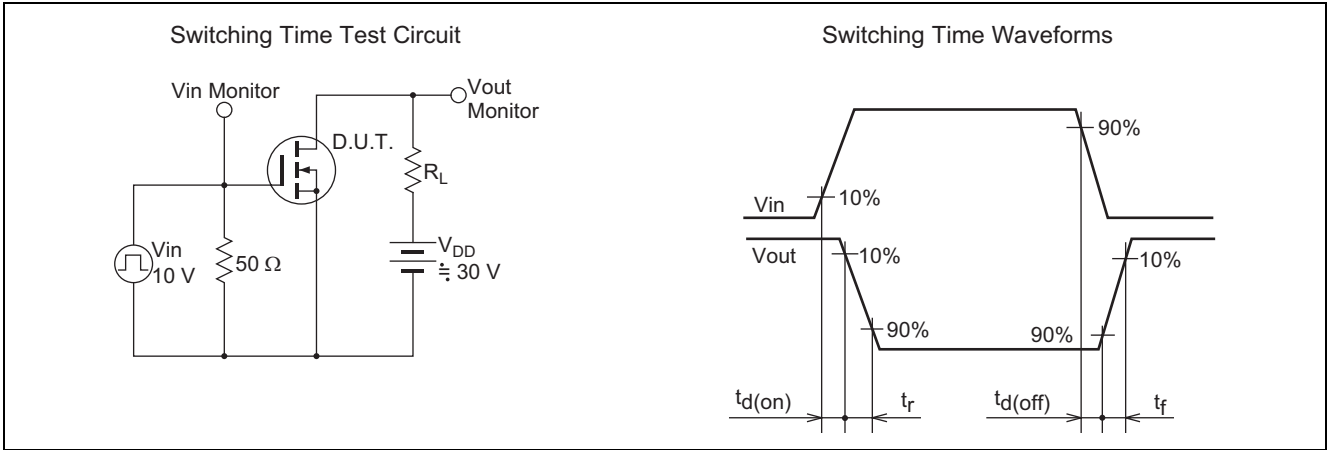


Avalanche Test Circuit

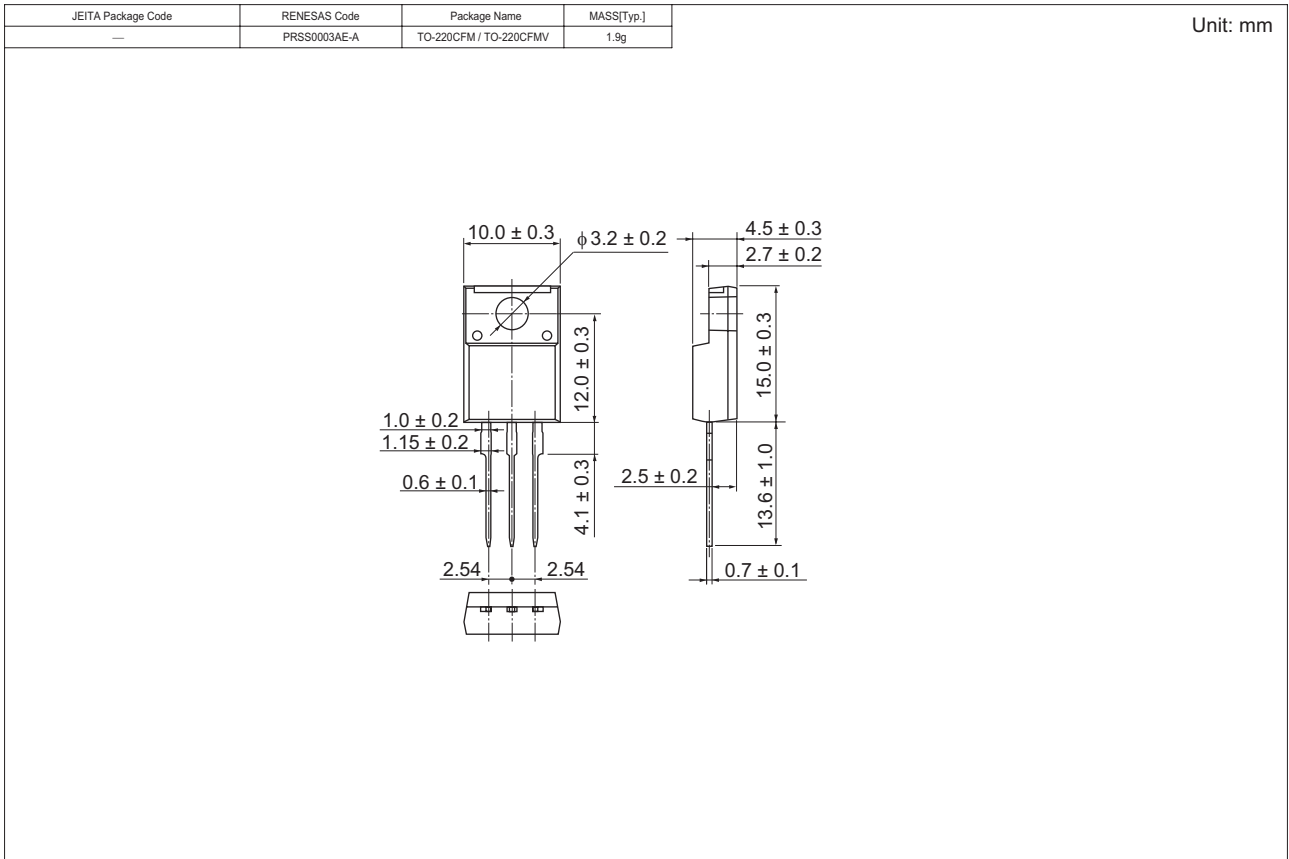


Avalanche Waveform





Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK2934-E | 600 pcs | Box (Tube) |

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