
2SK3211(L), 2SK3211(S)

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

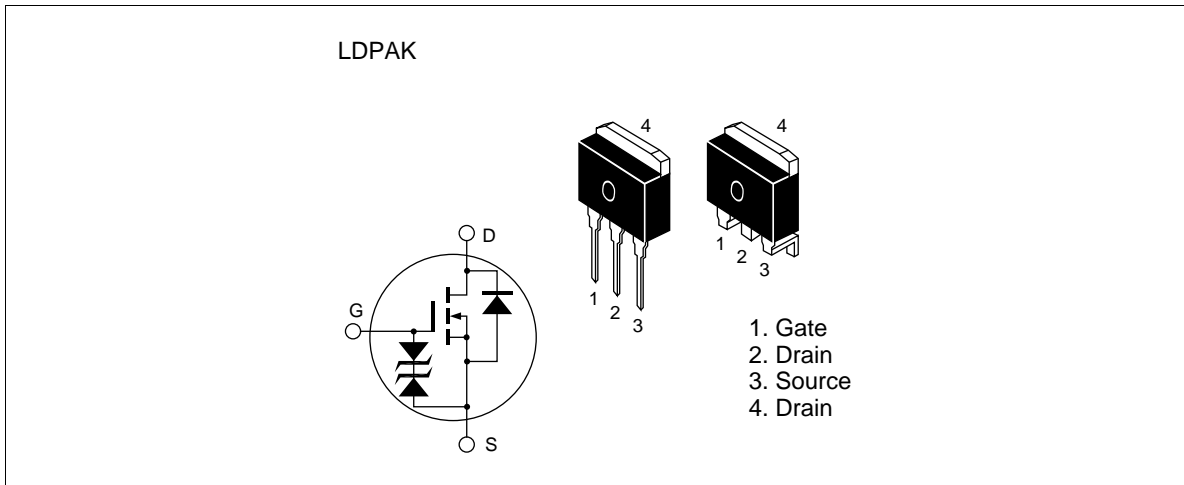
ADE-208-761A (Z)
2nd. Edition
February 1999

Features

- Low on-resistance
 $R_{DS} = 60 \text{ m}\Omega$ typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

2SK3211

Outline



Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|--|---------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 200 | V |
| Gate to source voltage | V_{GSS} | ± 20 | V |
| Drain current | I_D | 25 | A |
| Drain peak current | $I_{D(pulse)}^{*1}$ | 100 | A |
| Body-drain diode reverse drain current | I_{DR} | 25 | A |
| Avalanche current | I_{AP}^{*3} | 25 | A |
| Avalanche energy | E_{AR}^{*3} | 41 | mJ |
| Channel dissipation | P_{ch}^{*2} | 100 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | -55 to +150 | °C |

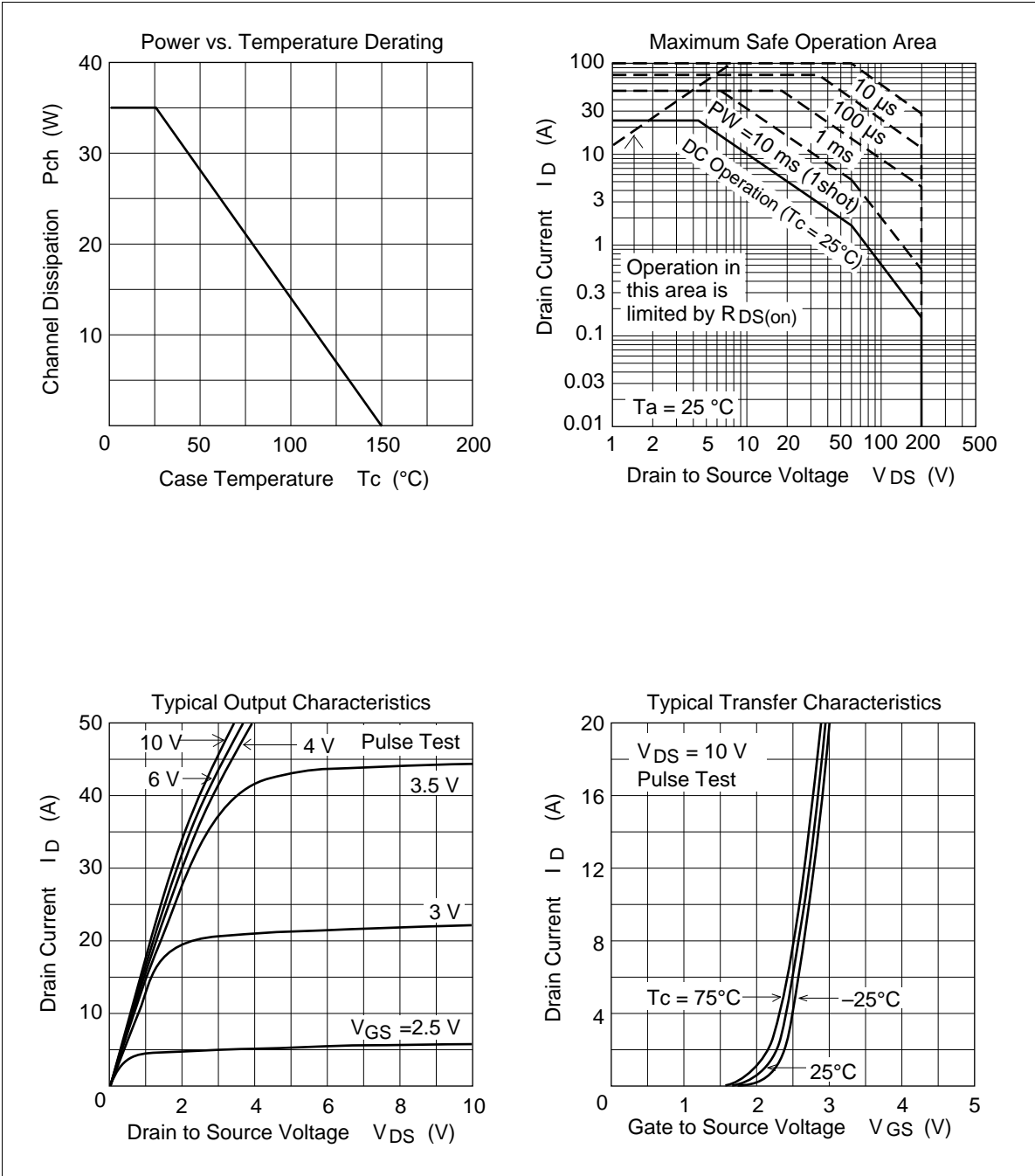
Note: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ C$
3. Value at $T_{ch} = 25^\circ C$, $R_g \geq 50 \Omega$

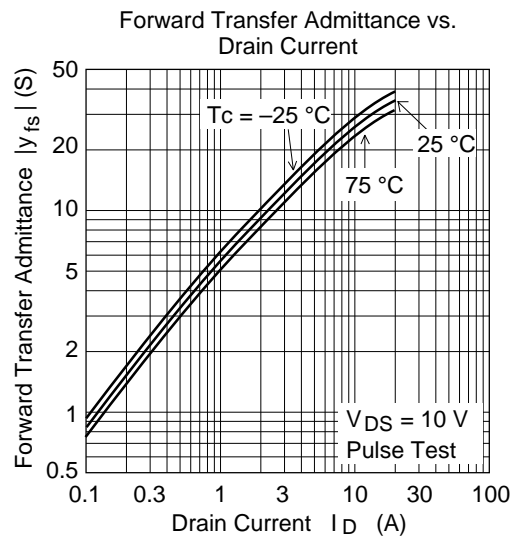
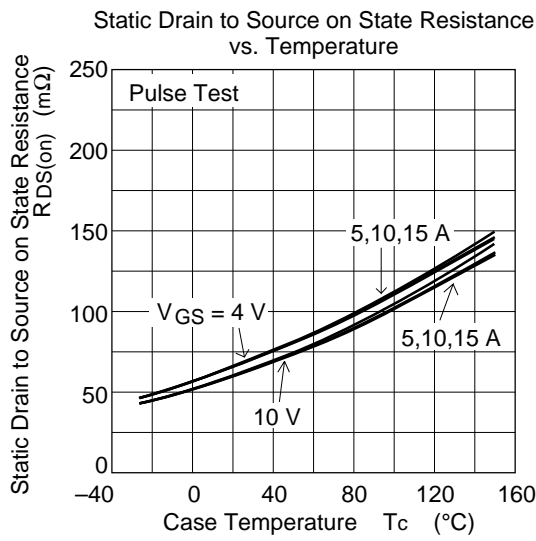
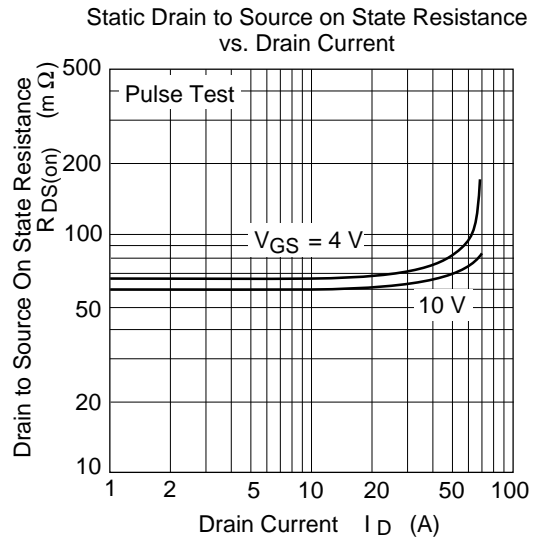
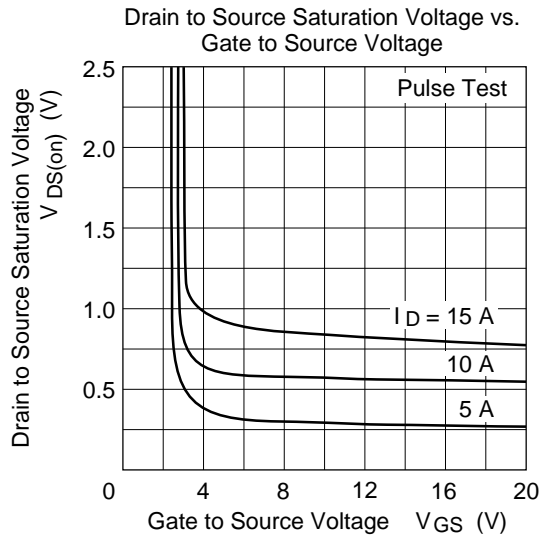
Electrical Characteristics (Ta = 25°C)

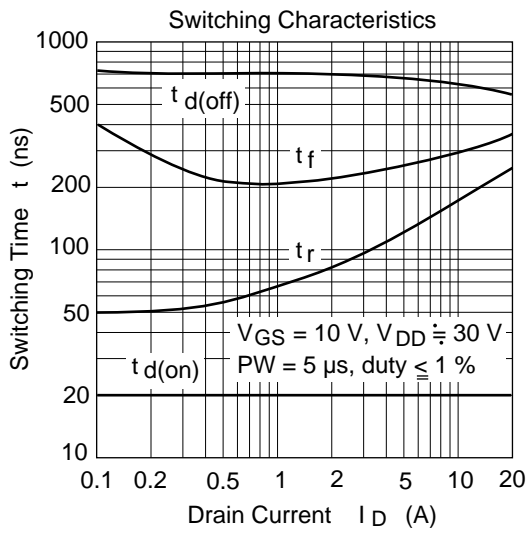
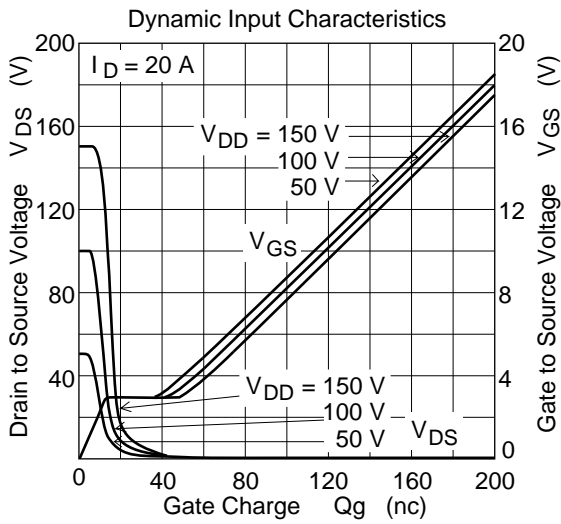
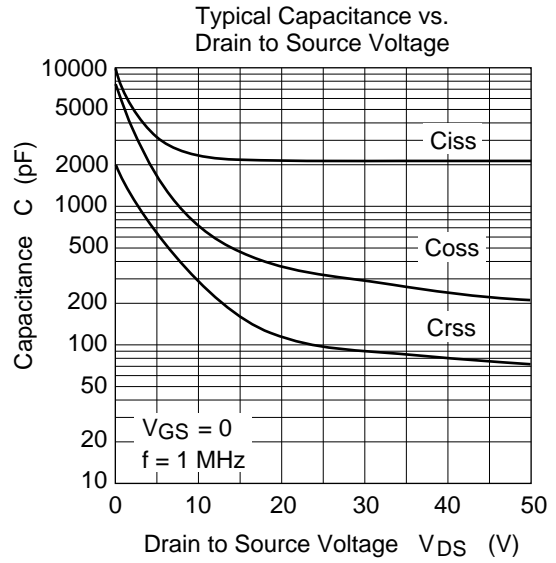
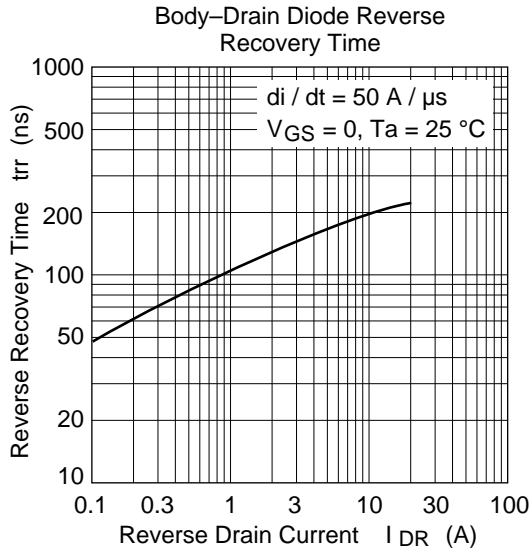
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|---------------|----------|------|----------|---------------|--|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 200 | — | — | V | $I_D = 10 \text{ mA}, V_{GS} = 0$ |
| Gate to source breakdown voltage | $V_{(BR)GSS}$ | ± 20 | — | — | V | $I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$ |
| 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 | $V_{DS} = 200 \text{ V}, V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 1.0 | — | 2.5 | V | $I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 60 | 75 | m Ω | $I_D = 15 \text{ A}, V_{GS} = 10 \text{ V}^{*4}$ |
| | $R_{DS(on)}$ | — | 65 | 85 | m Ω | $I_D = 15 \text{ A}, V_{GS} = 4 \text{ V}^{*4}$ |
| Forward transfer admittance | $ y_{fs} $ | 18 | 30 | — | S | $I_D = 15 \text{ A}, V_{DS} = 10 \text{ V}^{*4}$ |
| Input capacitance | Ciss | — | 2420 | — | pF | $V_{DS} = 10 \text{ V}$ |
| Output capacitance | Coss | — | 790 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | Crss | — | 340 | — | pF | $f = 1 \text{ MHz}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 20 | — | ns | $I_D = 15 \text{ A}, V_{GS} = 10 \text{ V}$ |
| Rise time | t_r | — | 230 | — | ns | $R_L = 2 \text{ }\Omega$ |
| Turn-off delay time | $t_{d(off)}$ | — | 590 | — | ns | |
| Fall time | t_f | — | 330 | — | 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} | — | 230 | — | ns | $I_F = 25 \text{ A}, V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu\text{s}$ |

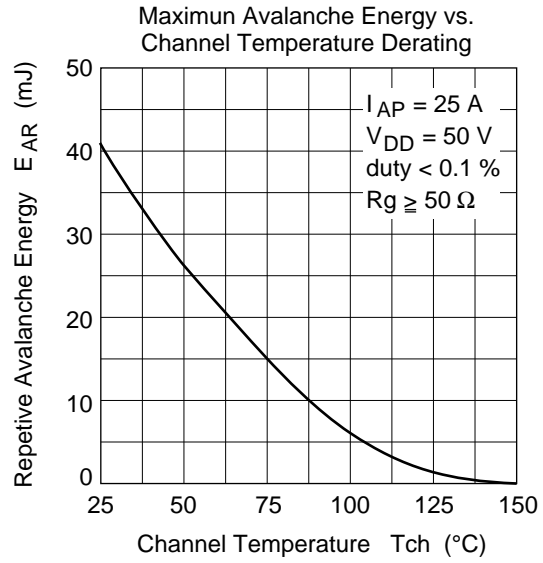
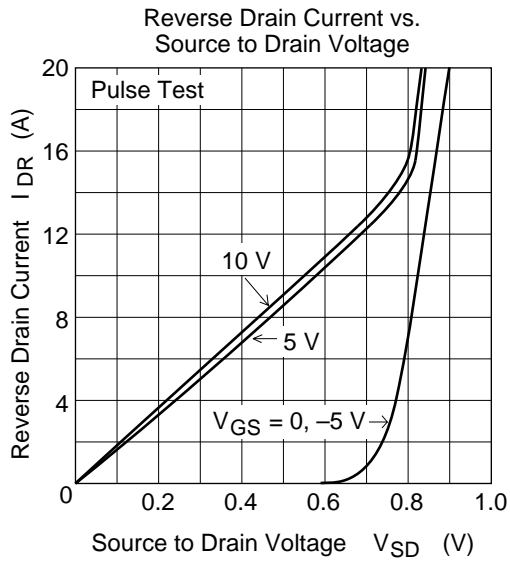
Note: 4. Pulse test

Main Characteristics

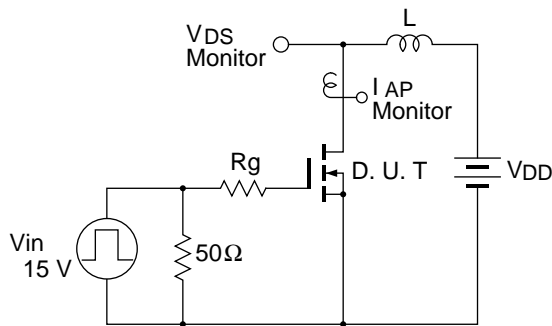




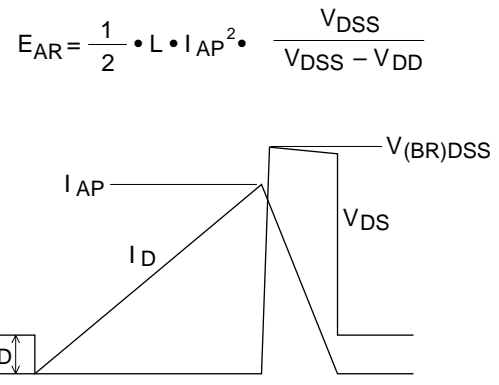


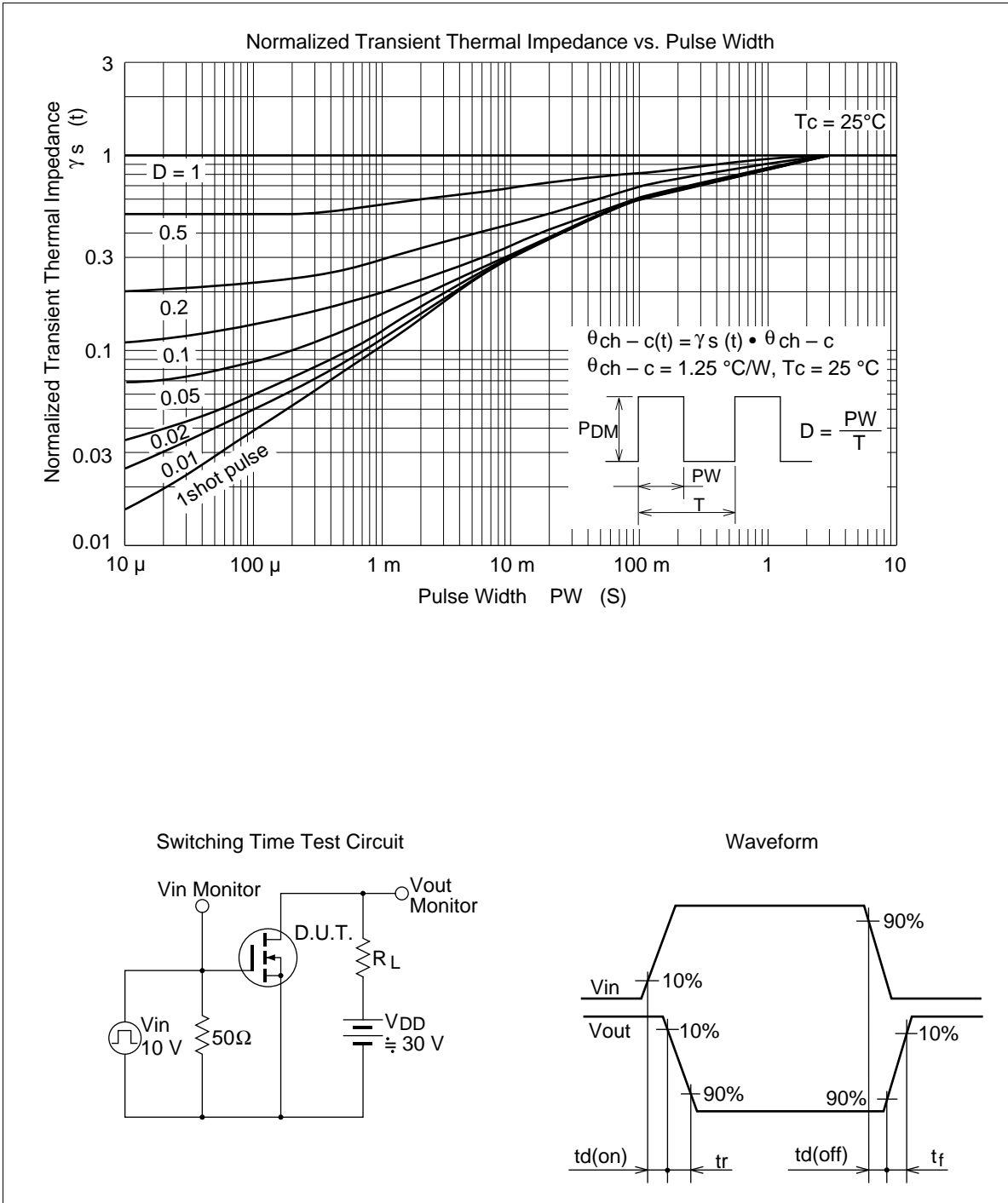


Avalanche Test Circuit



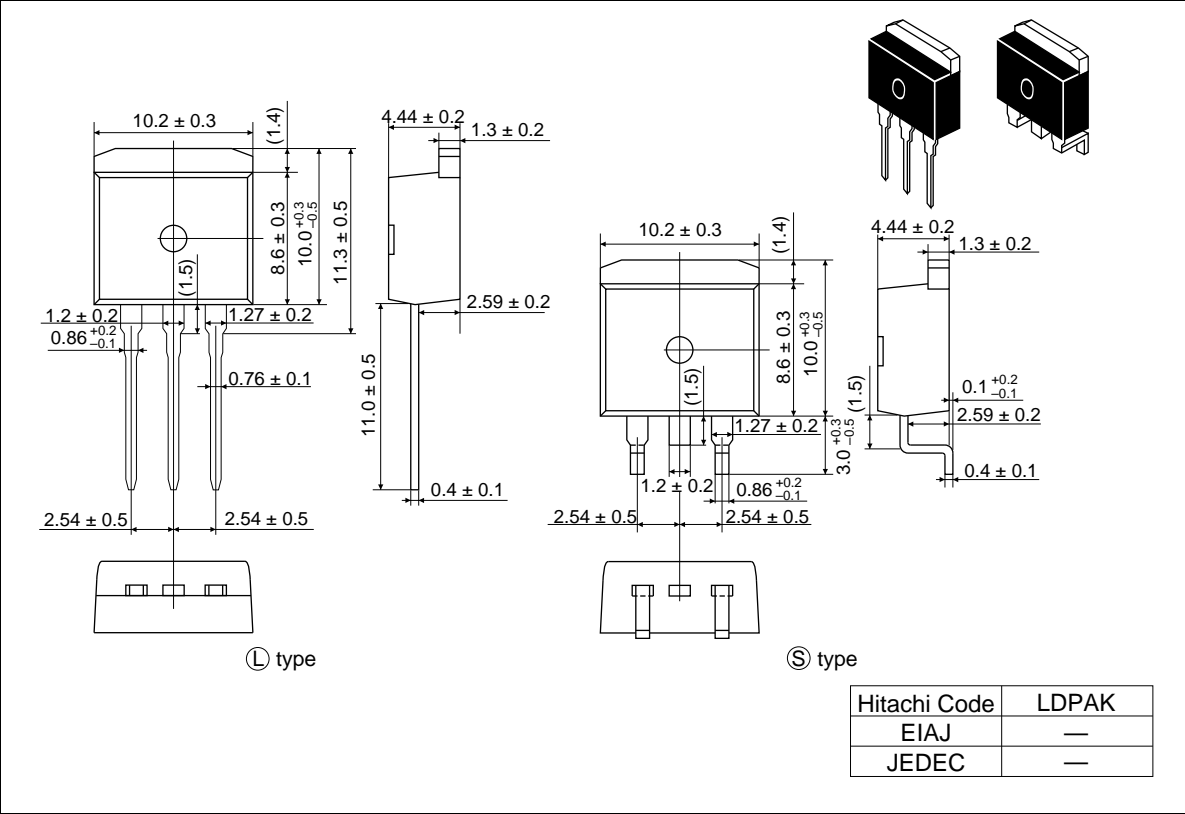
Avalanche Waveform





Package Dimensions

Unit: mm



2SK3211

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