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# 2SK3211(L), 2SK3211(S)

Silicon N Channel MOS FET  
High Speed Power Switching

## HITACHI

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

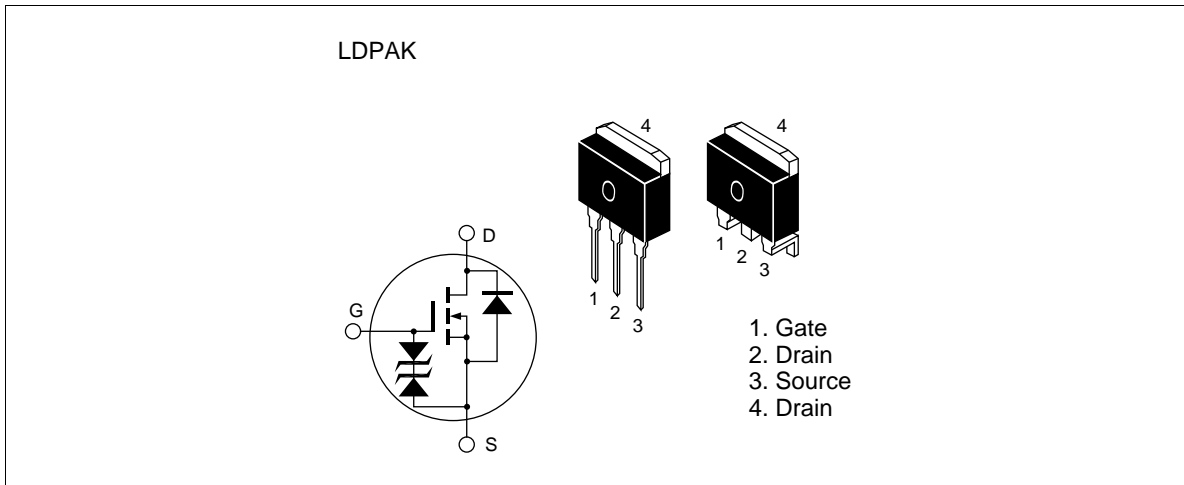
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### Features

- 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	$V_{GSS}$	$\pm 20$	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

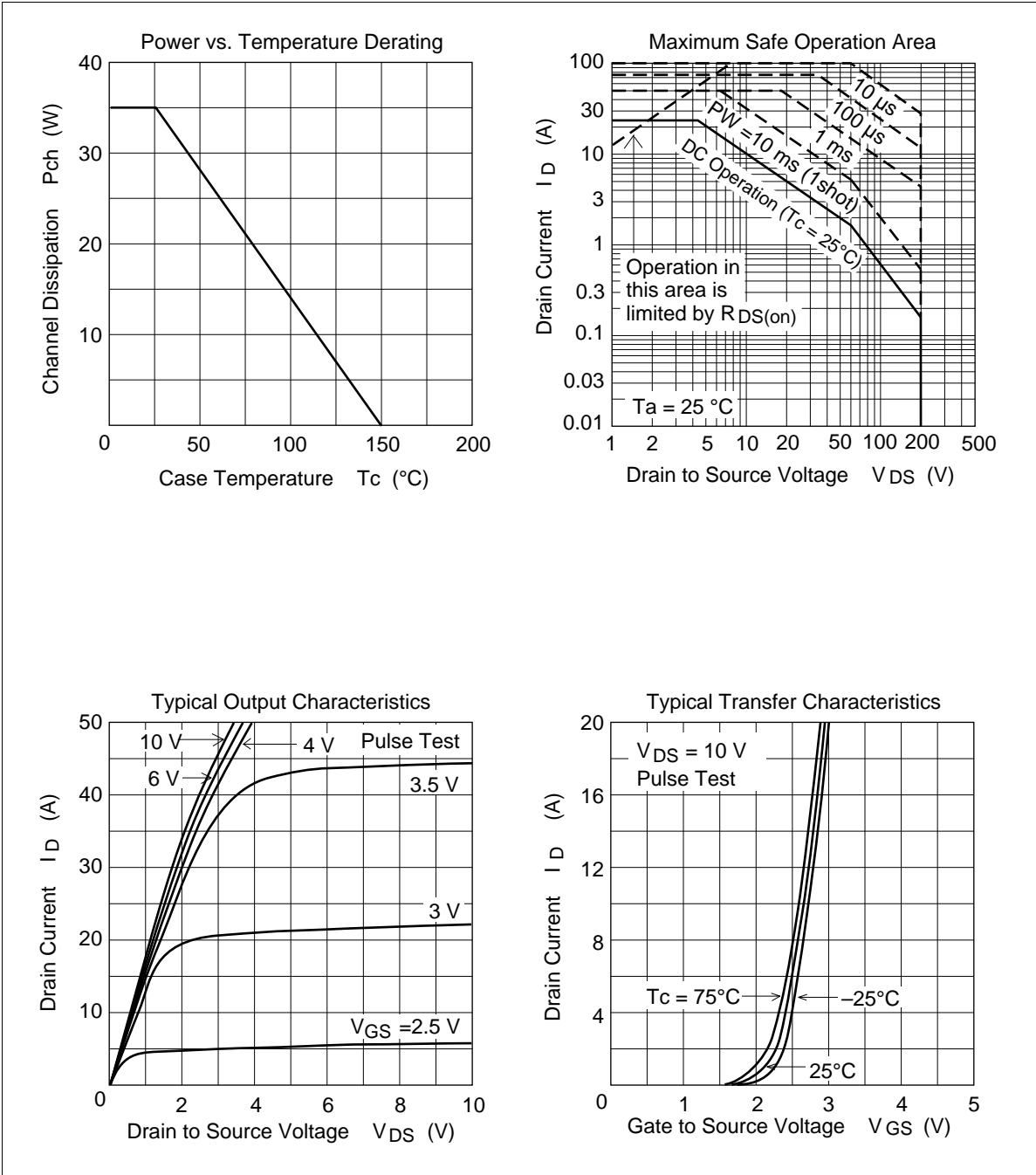
Note: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$   
2. Value at  $T_c = 25^\circ C$   
3. Value at  $T_{ch} = 25^\circ C$ ,  $R_g \geq 50 \Omega$

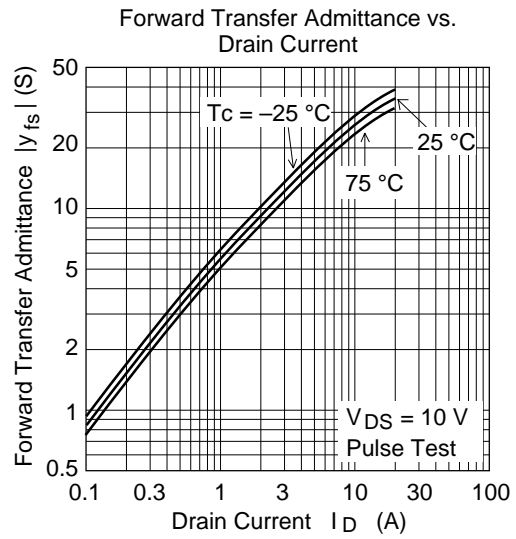
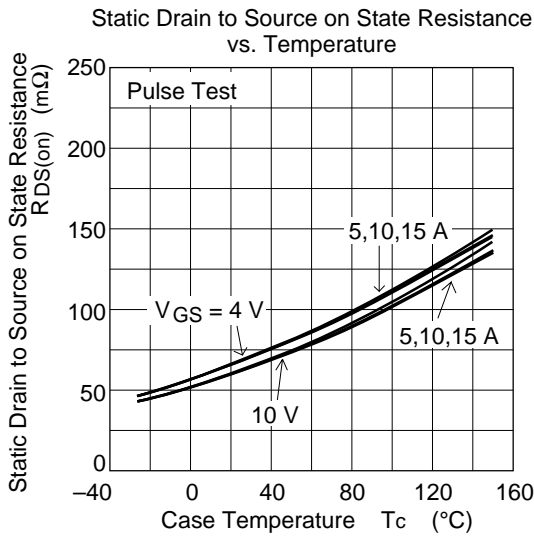
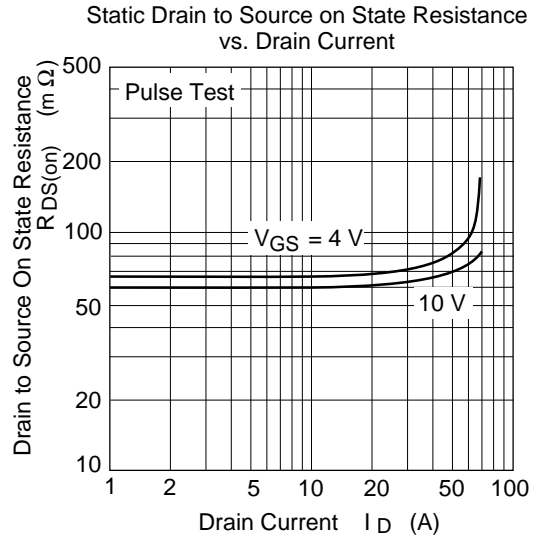
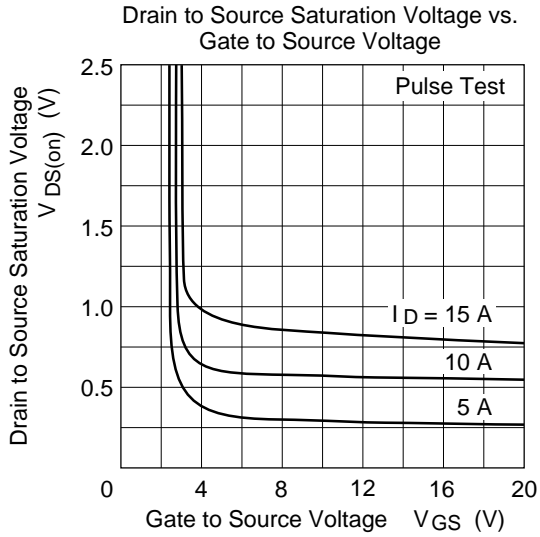
## Electrical Characteristics (Ta = 25°C)

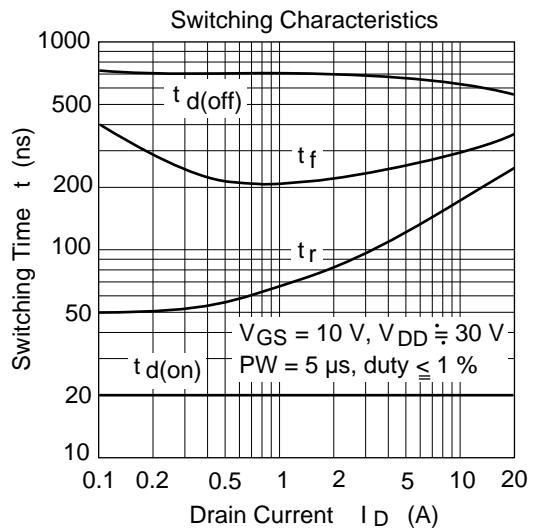
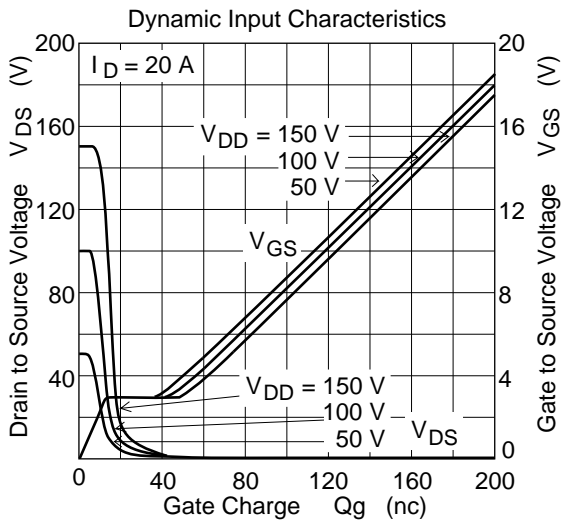
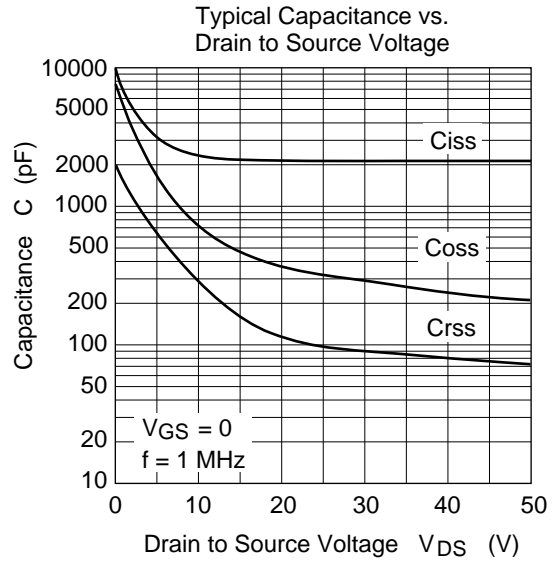
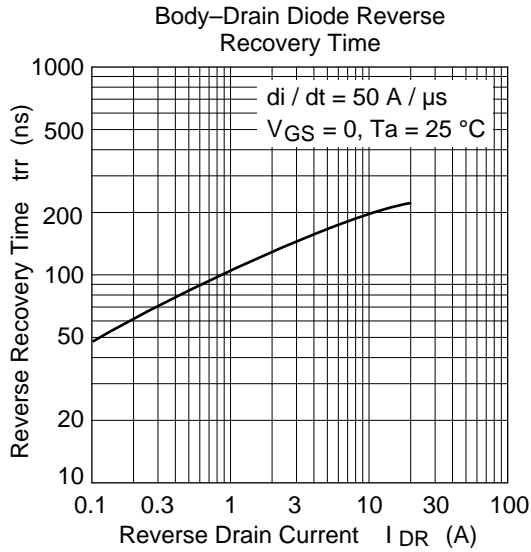
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu\text{A}$	$V_{DS} = 200 \text{ V}, V_{GS} = 0$
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 $\Omega$	$I_D = 15 \text{ A}, V_{GS} = 10 \text{ V}^{*4}$
	$R_{DS(on)}$	—	65	85	m $\Omega$	$I_D = 15 \text{ A}, V_{GS} = 4 \text{ V}^{*4}$
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	$I_F = 25 \text{ A}, V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu\text{s}$

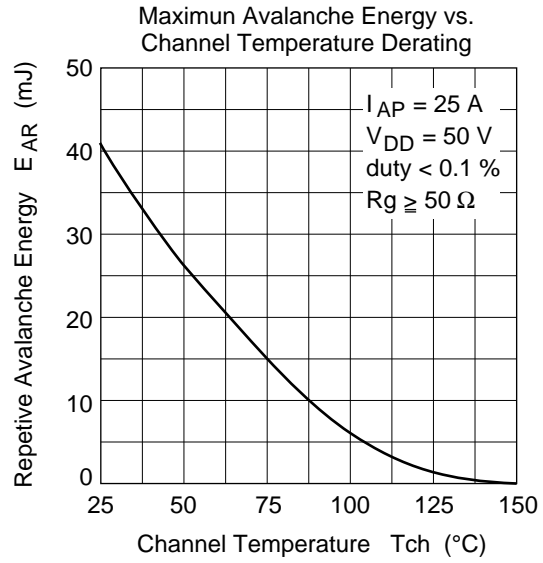
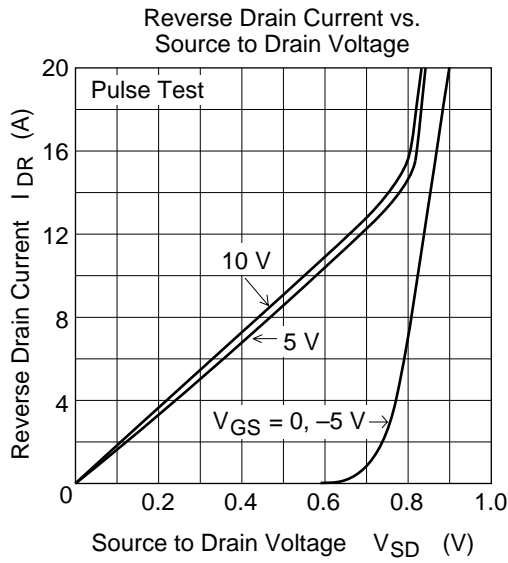
Note: 4. Pulse test

Main Characteristics

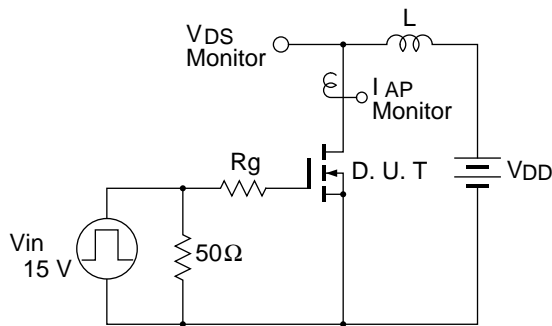




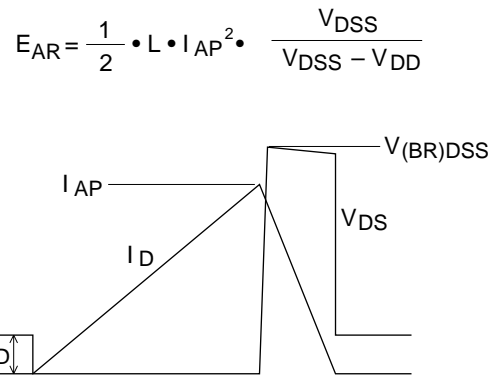


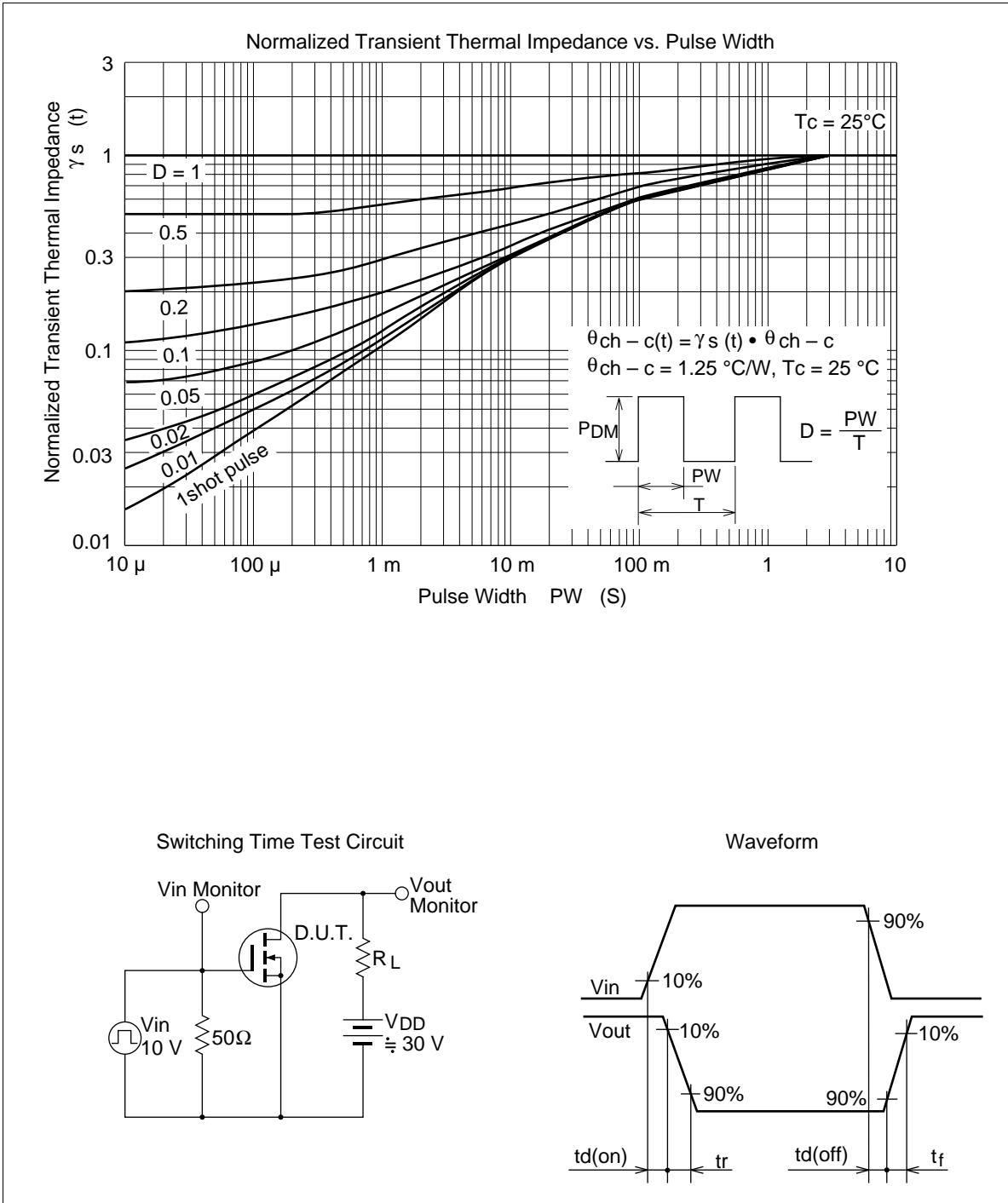


Avalanche Test Circuit



Avalanche Waveform

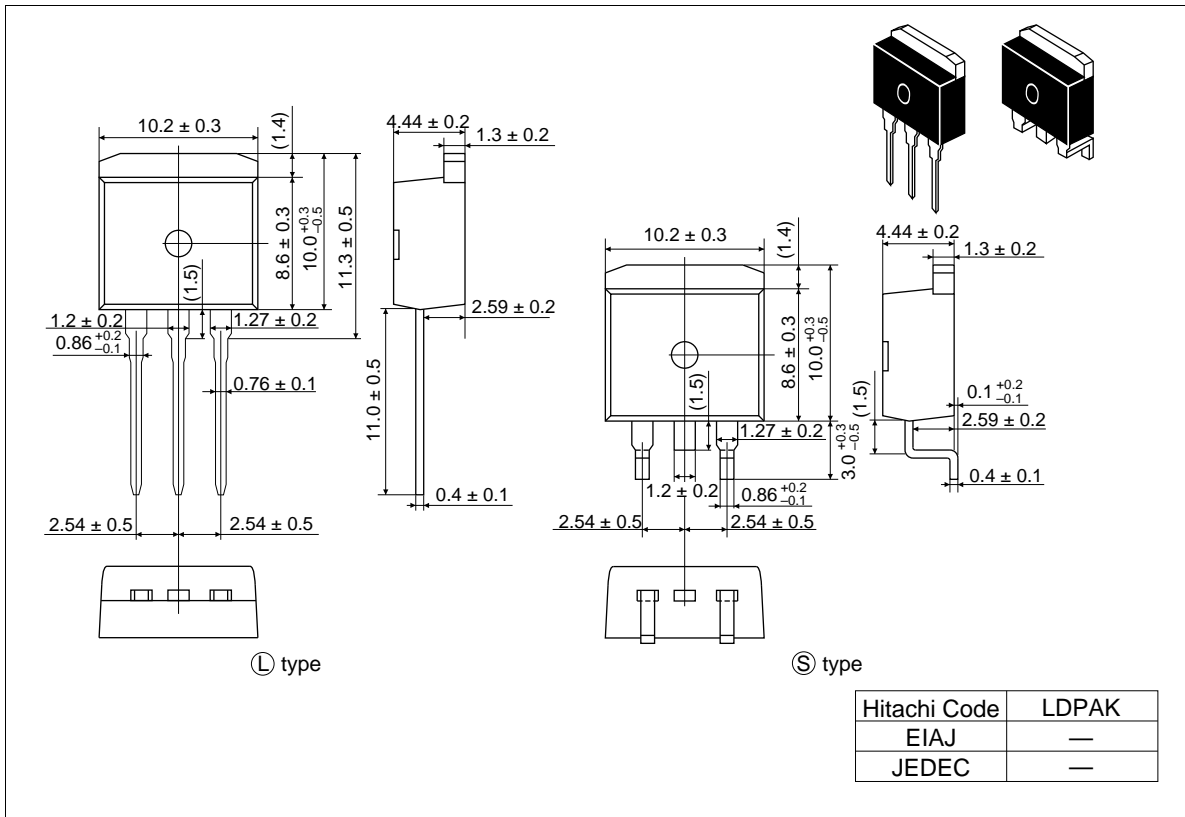






Package Dimensions

Unit: mm



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## 2SK3211

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