

2SK3210(L), 2SK3210(S)

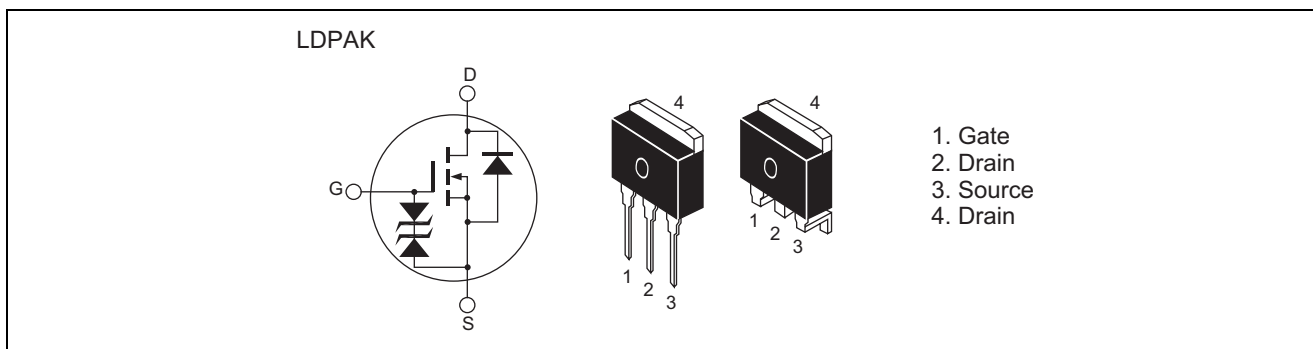
Silicon N Channel MOS FET
High Speed Power Switching

REJ03G0414-0300
(Previous ADE-208-760A (Z))
Rev.3.00
Sep. 30, 2004

Features

- Low on-resistance
 $R_{DS} = 40 \text{ m}\Omega$ typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

Outline



Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	150	V
Gate to source voltage	V_{GS}	± 20	V
Drain current	I_D	30	A
Drain peak current	I_D (pulse) ^{Note1}	120	A
Body-drain diode reverse drain current	I_{DR}	30	A
Avalanche current	I_{AP} ^{Note3}	30	A
Avalanche energy	E_{AR} ^{Note3}	67	mJ
Channel dissipation	P_{ch} ^{Note2}	100	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

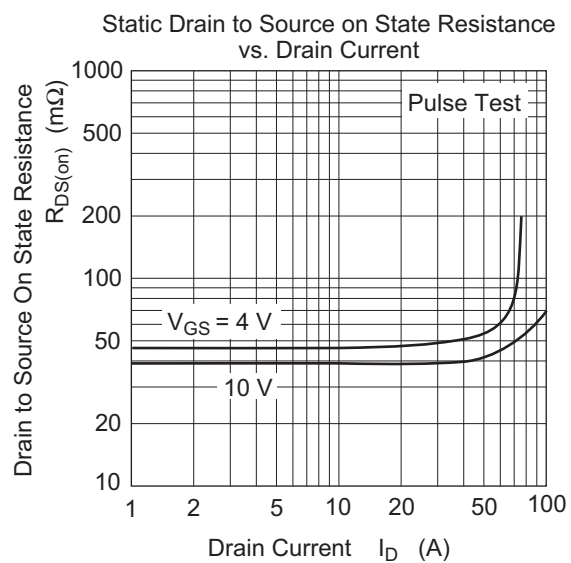
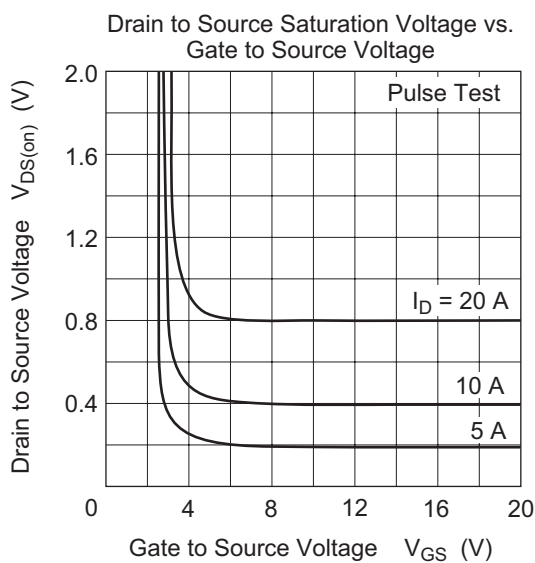
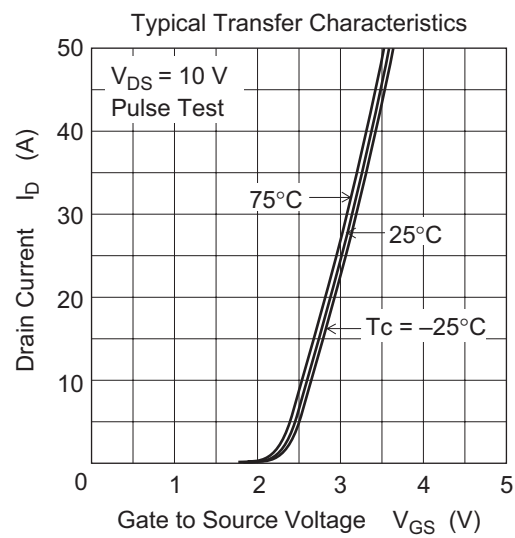
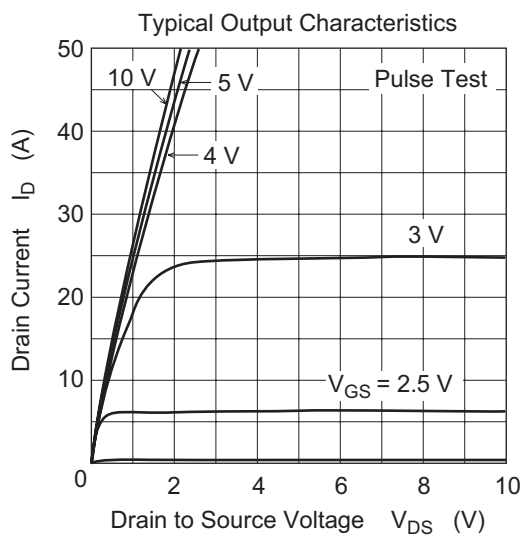
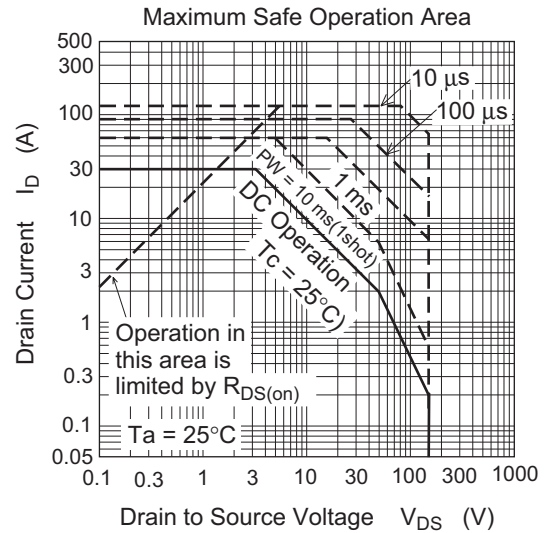
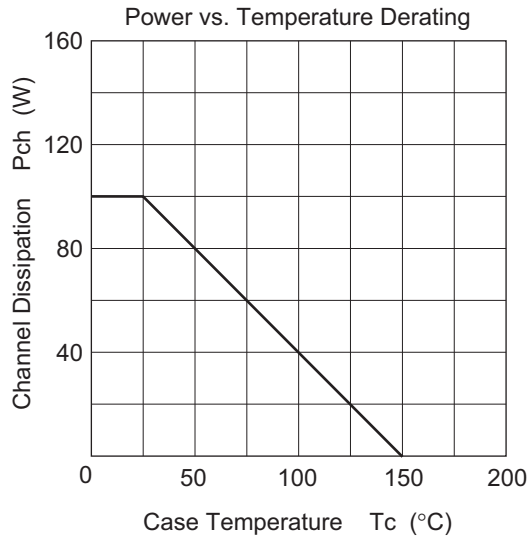
Electrical Characteristics

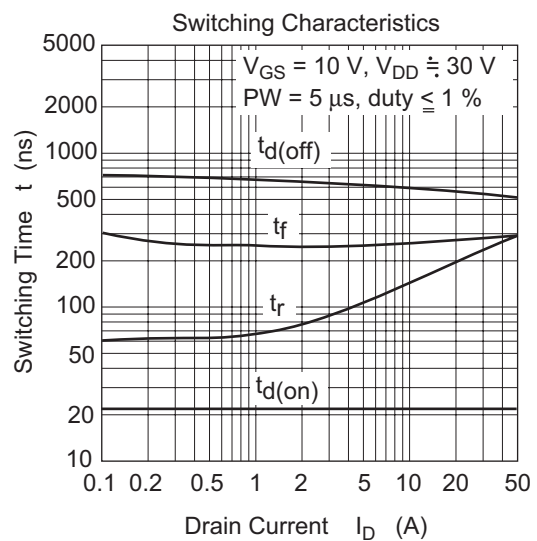
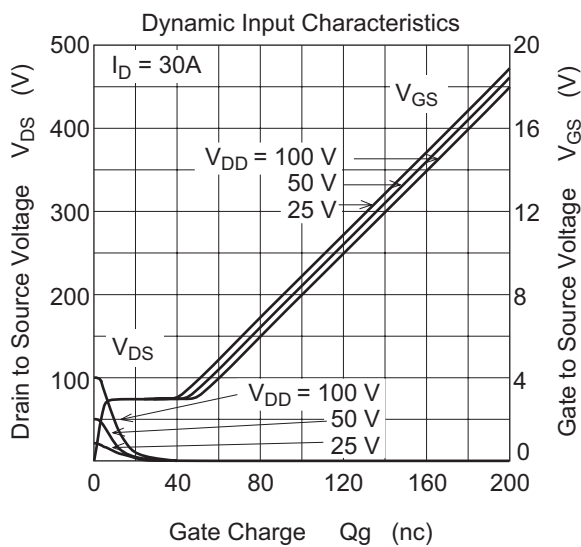
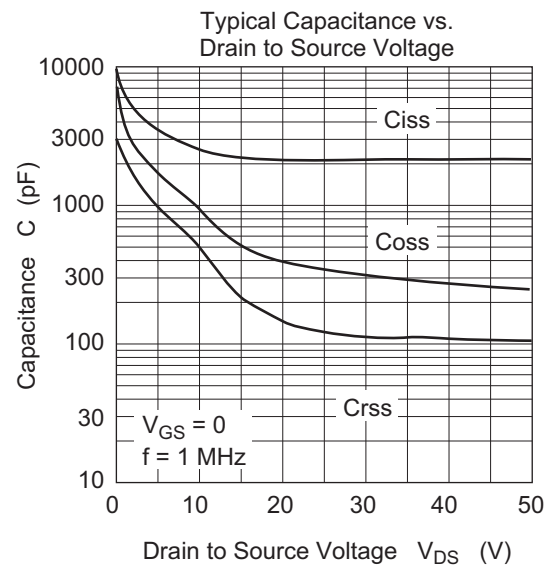
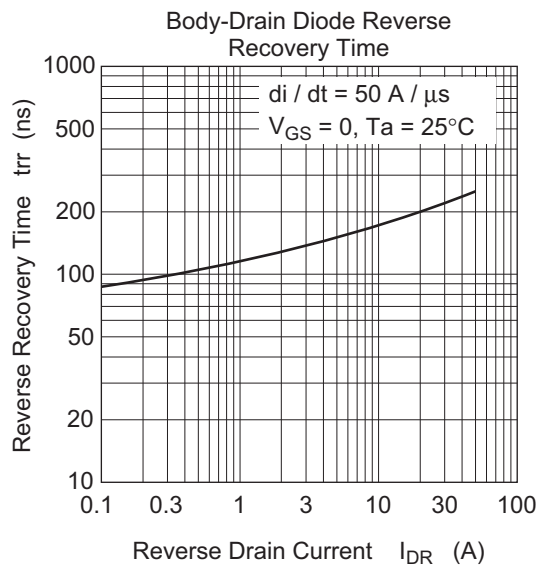
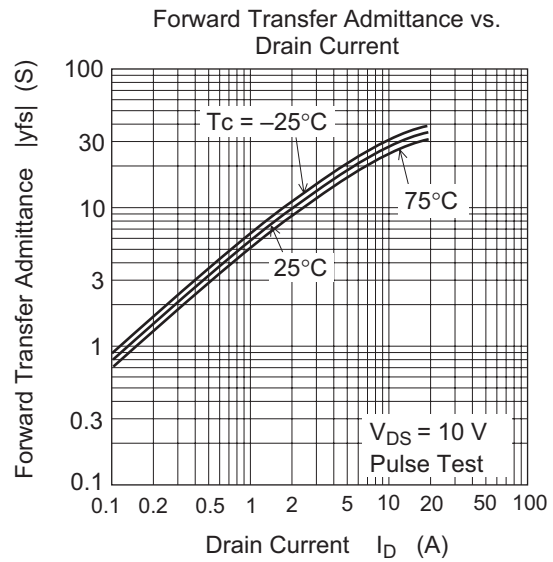
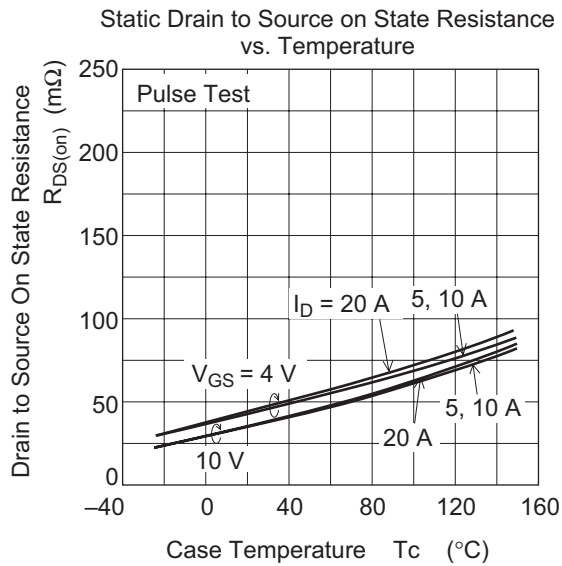
(Ta = 25°C)

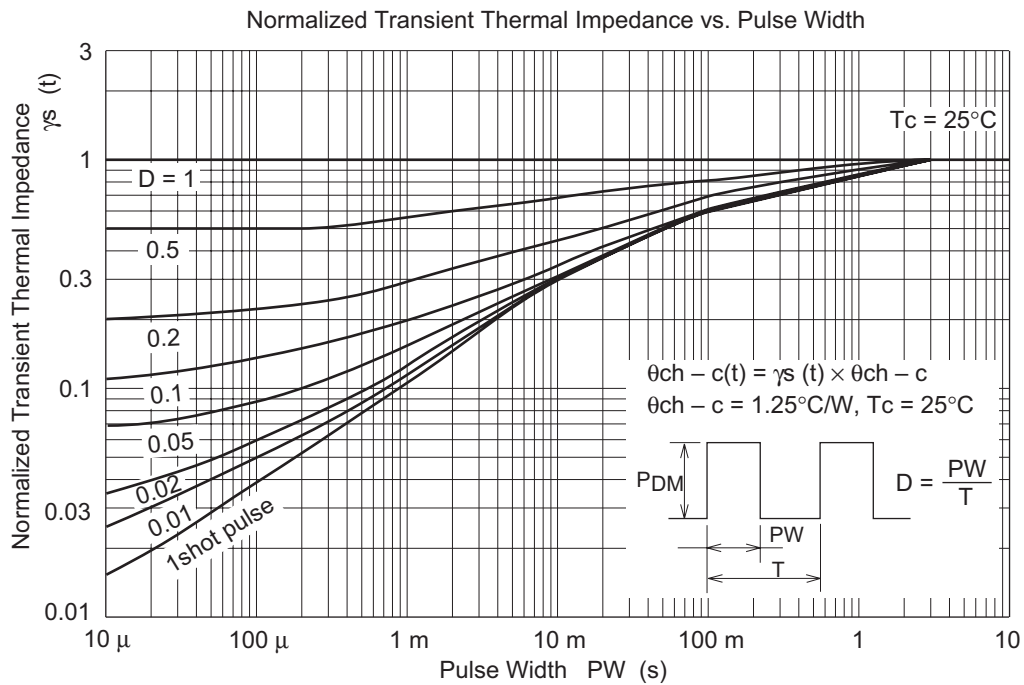
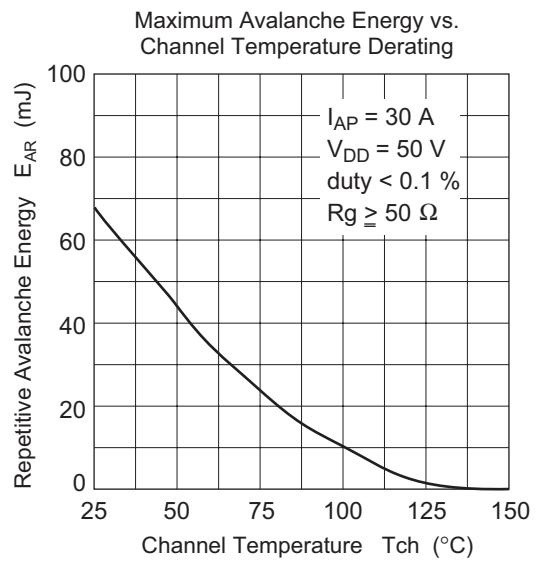
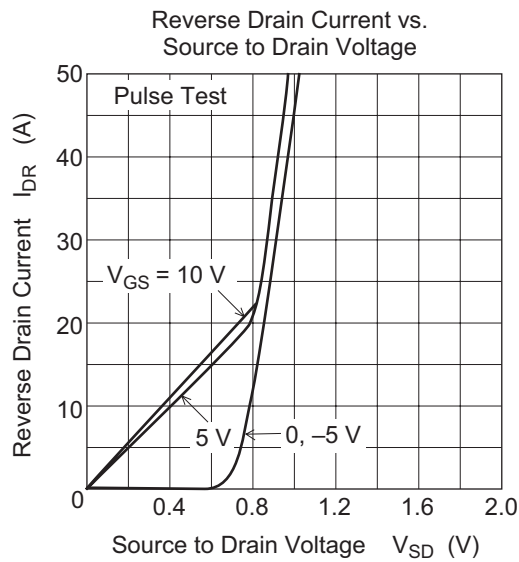
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 150 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	40	45	$\text{m}\Omega$	$I_D = 15 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	45	63	$\text{m}\Omega$	$I_D = 15 \text{ A}$, $V_{GS} = 4 \text{ V}$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	18	30	—	S	$I_D = 15 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	2600	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	820	—	pF	
Reverse transfer capacitance	C_{rss}	—	350	—	pF	$V_{GS} = 10 \text{ V}$, $I_D = 15 \text{ A}$ $R_L = 2 \text{ }\Omega$
Turn-on delay time	$t_{d(on)}$	—	25	—	ns	
Rise time	t_r	—	180	—	ns	
Turn-off delay time	$t_{d(off)}$	—	600	—	ns	
Fall time	t_f	—	280	—	ns	$I_F = 30 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu\text{s}$
Body-drain diode forward voltage	V_{DF}	—	0.91	—	V	
Body-drain diode reverse recovery time	t_{rr}	—	110	—	ns	

Notes: 4. Pulse test

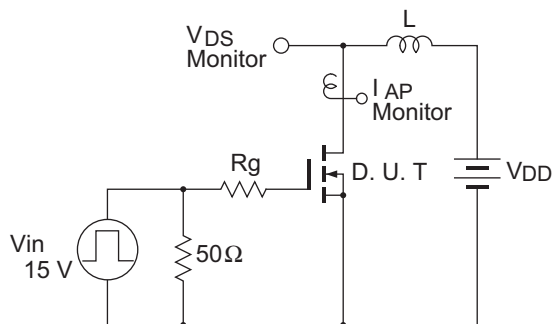
Main Characteristics





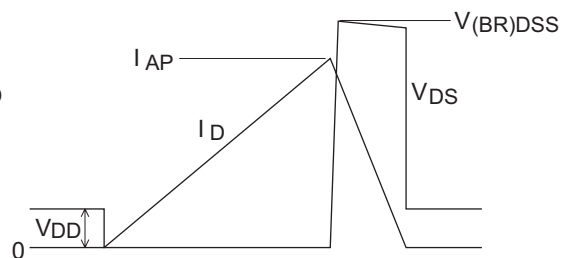


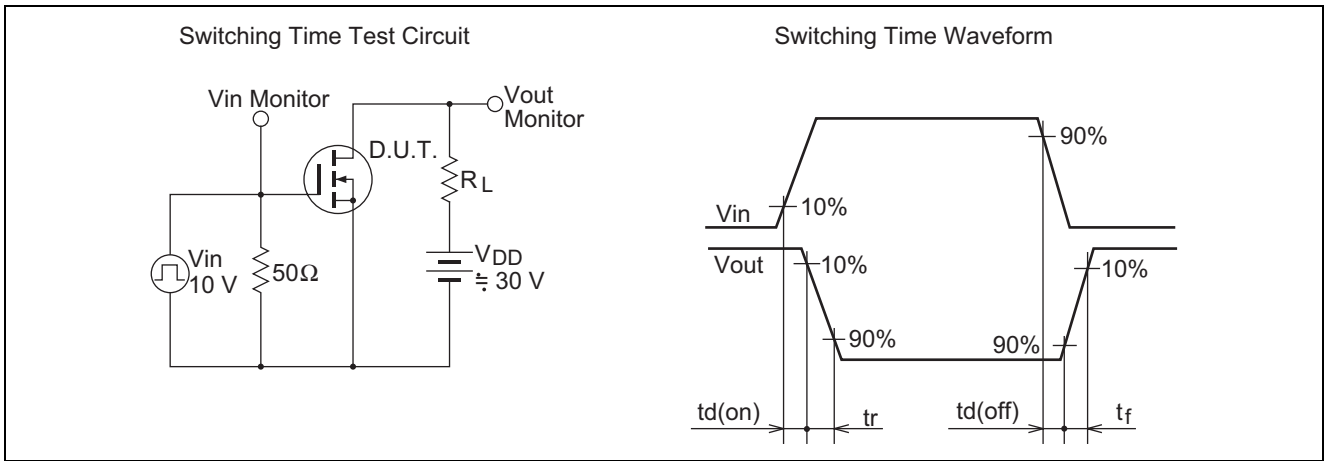
Avalanche Test Circuit



Avalanche Waveform

$$E_{AR} = \frac{1}{2} \times L \times I_{AP}^2 \times \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



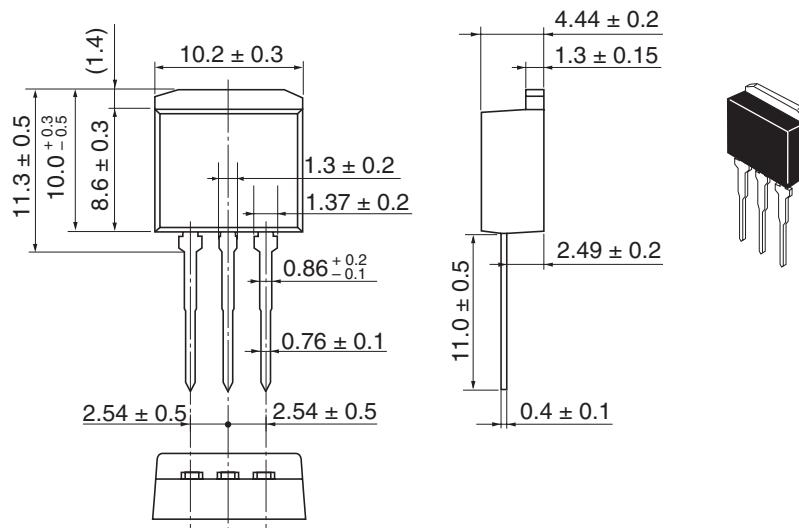


Package Dimensions

• 2SK3210(L)

As of January, 2003

Unit: mm

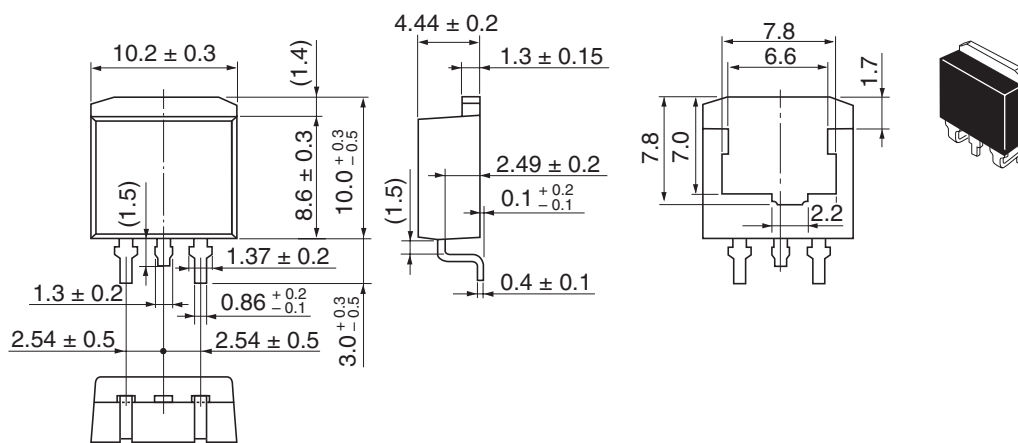


Package Code	LDBAK (L)
JEDEC	—
JEITA	—
Mass (reference value)	1.40 g

• 2SK3210(S)

As of January, 2003

Unit: mm



Package Code	LDBAK (S)-(1)
JEDEC	—
JEITA	—
Mass (reference value)	1.30 g

Ordering Information

Part Name	Quantity	Shipping Container
2SK3210L	50 pcs.	Loose packing
2SK3210STL	1000 pcs.	Taping

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