

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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Keep safety first in your circuit designs!

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Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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# 2SK1637, 2SK2422

Silicon N-Channel MOS FET

**RENESAS**

ADE-208-1305 (Z)  
1st. Edition  
Mar. 2001

## Application

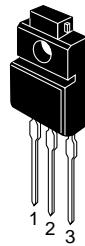
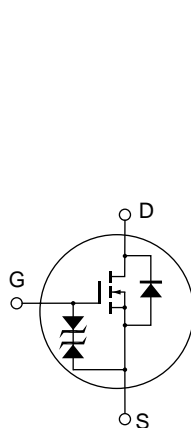
High speed power switching

## Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC-DC converter

## Outline

TO-220FM



1. Gate
2. Drain
3. Source

## 2SK1637, 2SK2422

### Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1637	$V_{DSS}$	600	V
	2SK2422		650	
Gate to source voltage		$V_{GSS}$	±30	V
Drain current		$I_D$	4	A
Drain peak current		$I_{D(pulse)}^{*1}$	16	A
Body to drain diode reverse drain current		$I_{DR}$	4	A
Channel dissipation		$Pch^{*2}$	35	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	-55 to +150	°C

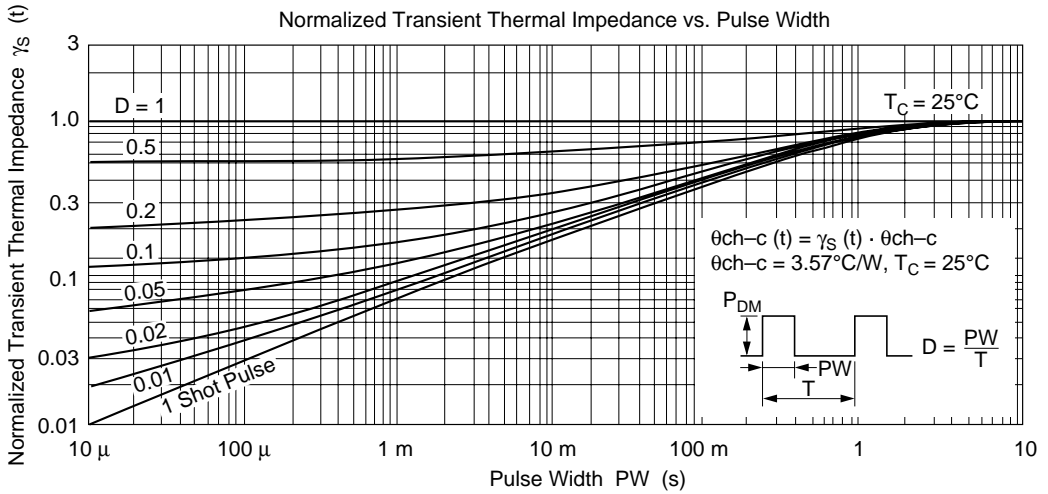
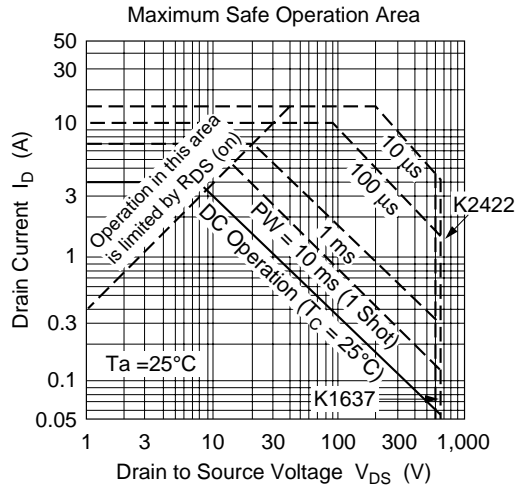
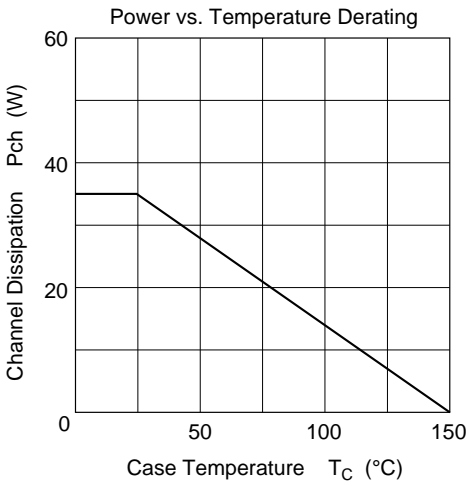
- Note 1. PW 10 μs, duty cycle 1%  
2. Value at T<sub>C</sub> = 25°C

## Electrical Characteristics (Ta = 25°C)

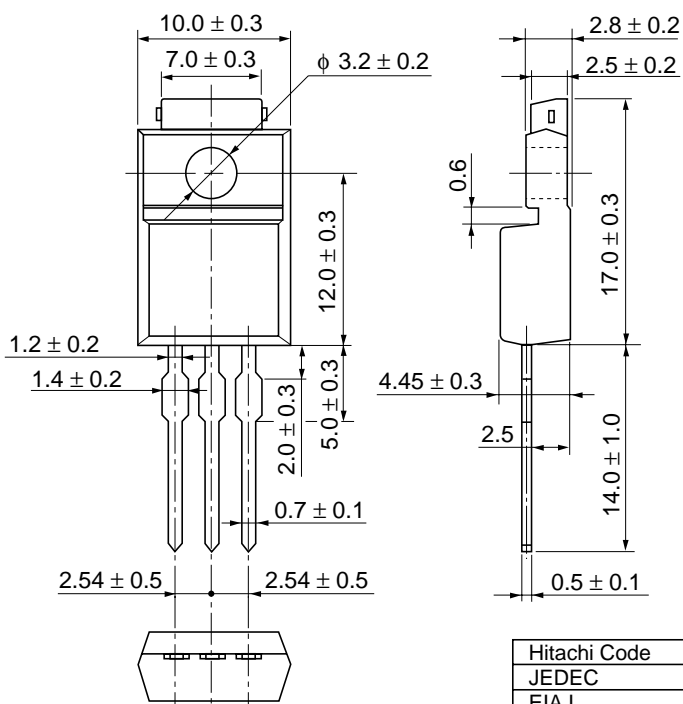
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1637 $V_{(BR)DSS}$ 2SK2422	600 650	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 30$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	2SK1637 $I_{DSS}$ 2SK2422	—	—	250	$\mu\text{A}$	$V_{DS} = 500 \text{ V}$ , $V_{GS} = 0$ $V_{DS} = 550 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Static Drain to source on state resistance	2SK1637 $R_{DS(on)}$ 2SK2422	— —	1.8 2.0	2.4 2.6		$I_D = 2 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	2.2	3.5	—	S	$I_D = 2 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	$C_{iss}$	—	600	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ ,
Output capacitance	$C_{oss}$	—	140	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	$C_{rss}$	—	25	—	pF	
Turn-on delay time	$t_{d(on)}$	—	8	—	ns	$I_D = 2 \text{ A}$ , $V_{GS} = 10 \text{ V}$ ,
Rise time	$t_r$	—	30	—	ns	$R_L = 15$
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	
Fall time	$t_f$	—	35	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	0.9	—	V	$I_F = 4 \text{ A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	300	—	ns	$I_F = 4 \text{ A}$ , $V_{GS} = 0$ , $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note 1. Pulse test

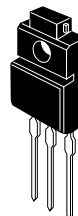
See characteristics curves of 2SK1402, 2SK1402A.



Package Dimensions



As of January, 2001  
Unit: mm



Hitachi Code	TO-220FM
JEDEC	—
EIAJ	Conforms
Mass (reference value)	1.8 g

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