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# 2SK1667

Silicon N-Channel MOS FET

# HITACHI

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## Application

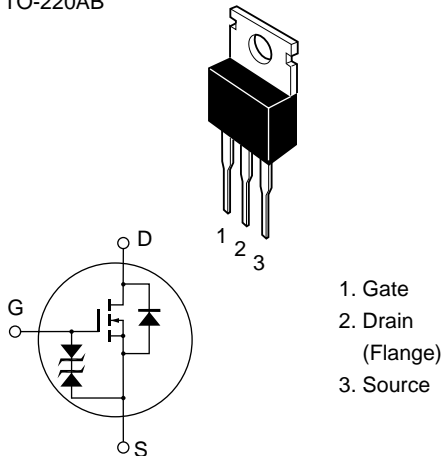
High speed power switching

## Features

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

## Outline

TO-220AB



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

Item	Symbol	Rated	Unit
Drain to source voltage	$V_{DSS}$	250	V
Gate to source voltage	$V_{GSS}$	±30	V
Drain current	$I_D$	7	A
Drain peak current	$I_{D(pulse)}^{*1}$	28	A
Body to drain diode reverse drain current	$I_{DR}$	7	A
Channel dissipation	$Pch^{*2}$	50	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

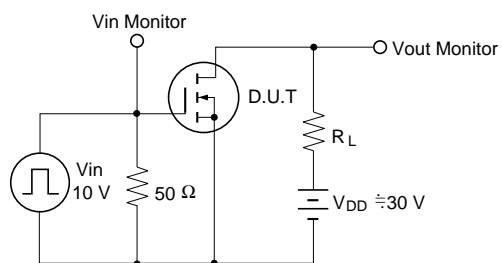
Notes 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$   
 2. Value at  $T_C = 25^\circ C$

## Electrical Characteristics (Ta = 25°C)

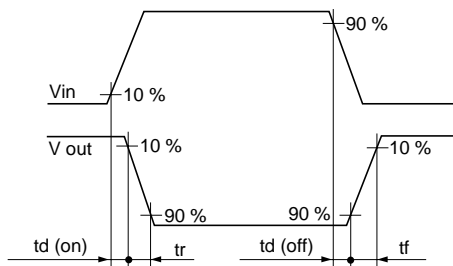
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	μA	$V_{DS} = 200 \text{ V}$ , $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.4	0.55	Ω	$I_D = 4 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	3.0	5.0	—	S	$I_D = 4 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	$C_{iss}$	—	690	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ ,
Output capacitance	$C_{oss}$	—	265	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	$C_{rss}$	—	45	—	pF	
Turn-on delay time	$t_{d(on)}$	—	13	—	ns	$I_D = 4 \text{ A}$ , $V_{GS} = 10 \text{ V}$ ,
Rise time	$t_r$	—	55	—	ns	$R_L = 7.5 \Omega$
Turn-off delay time	$t_{d(off)}$	—	65	—	ns	
Fall time	$t_f$	—	37	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	1.0	—	V	$I_F = 7 \text{ A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	180	—	ns	$I_F = 7 \text{ A}$ , $V_{GS} = 0$ , $di_F/dt = 100 \text{ A}/\mu s$

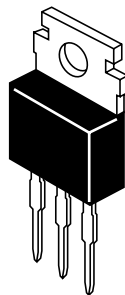
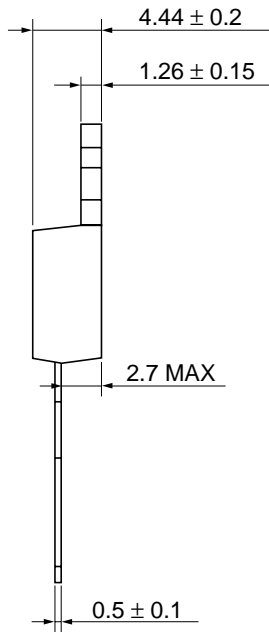
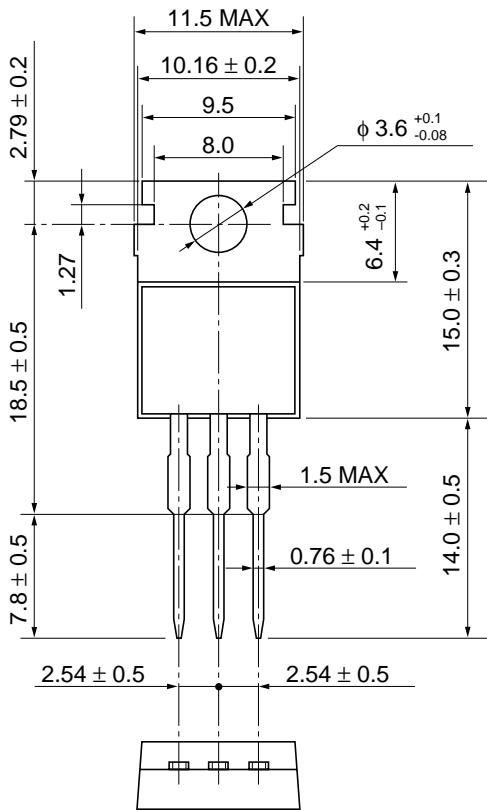
Note 1. Pulse test

## Switching Time Test Circuit



## Waveforms





Hitachi Code	TO-220AB
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.8 g