2SK1637, 2SK2422

Silicon N-Channel MOS FET

HITACHI

Application

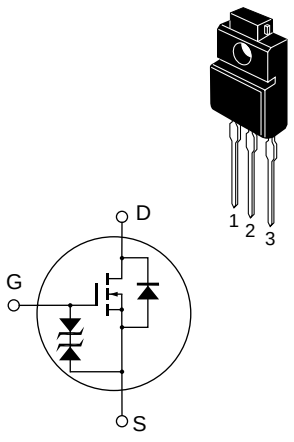
High speed power switching

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

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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_C = 25°C

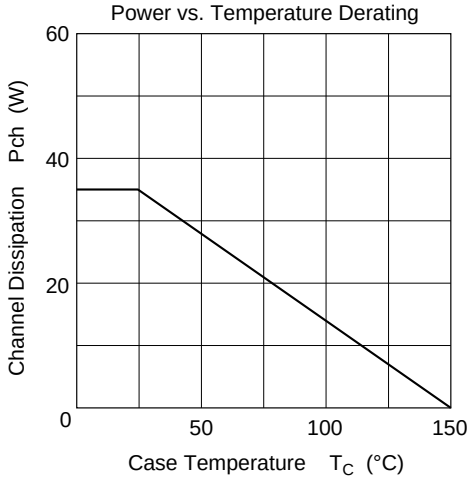
Electrical Characteristics (Ta = 25°C)

Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1637	$V_{(BR)DSS}$	600	—	—	V	I_D = 10 mA, V_{GS} = 0
	2SK2422		650				
Gate to source breakdown voltage		$V_{(BR)GSS}$	±30	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current		I_{GSS}	—	—	±10	µA	V_{GS} = ±25 V, V_{DS} = 0
Zero gate voltage drain current	2SK1637	I_{DSS}	—	—	250	µA	V_{DS} = 500 V, V_{GS} = 0
	2SK2422						V_{DS} = 550 V, V_{GS} = 0
Gate to source cutoff voltage		$V_{GS(off)}$	2.0	—	3.0	V	I_D = 1 mA, V_{DS} = 10 V
Static Drain to source on state resistance	2SK1637	$R_{DS(on)}$	—	1.8	2.4	Ω	I_D = 2 A, V_{GS} = 10 V *[1]
	2SK2422		—	2.0	2.6		
Forward transfer admittance		|yfs|	2.2	3.5	—	S	I_D = 2 A, V_{DS} = 10 V *[1]
Input capacitance		Ciss	—	600	—	pF	V_{DS} = 10 V, V_{GS} = 0, f = 1 MHz
Output capacitance		Coss	—	140	—	pF	
Reverse transfer capacitance		Crss	—	25	—	pF	
Turn-on delay time		$t_{d(on)}$	—	8	—	ns	I_D = 2 A, V_{GS} = 10 V, R_L = 15 Ω
Rise time		t_r	—	30	—	ns	
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 A, V_{GS} = 0
Body to drain diode reverse recovery time		t_{rr}	—	300	—	ns	I_F = 4 A, V_{GS} = 0, di_F/dt = 100 A/µs

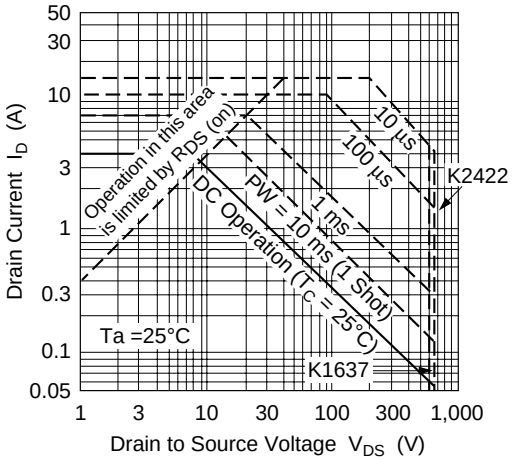
Note 1. Pulse test

See characteristics curves of 2SK1402, 2SK1402A.

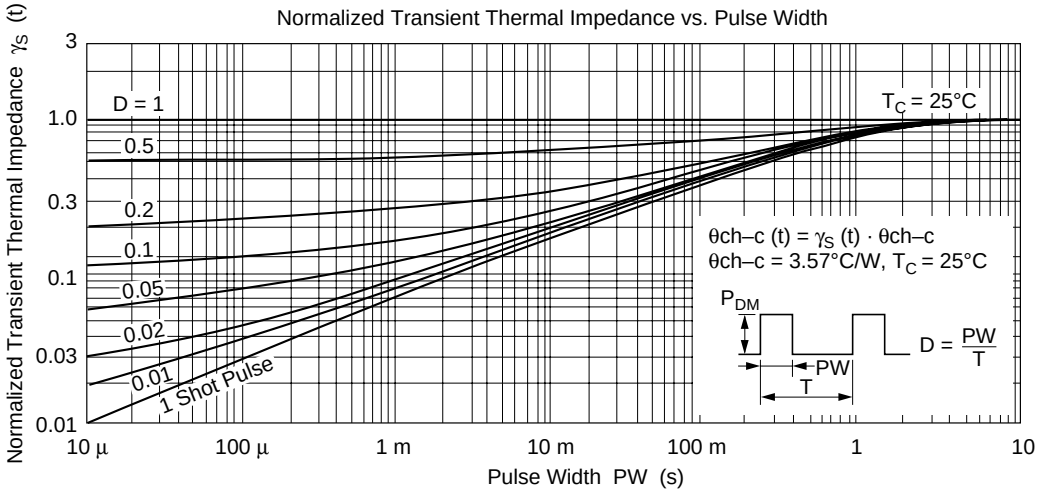
Power vs. Temperature Derating



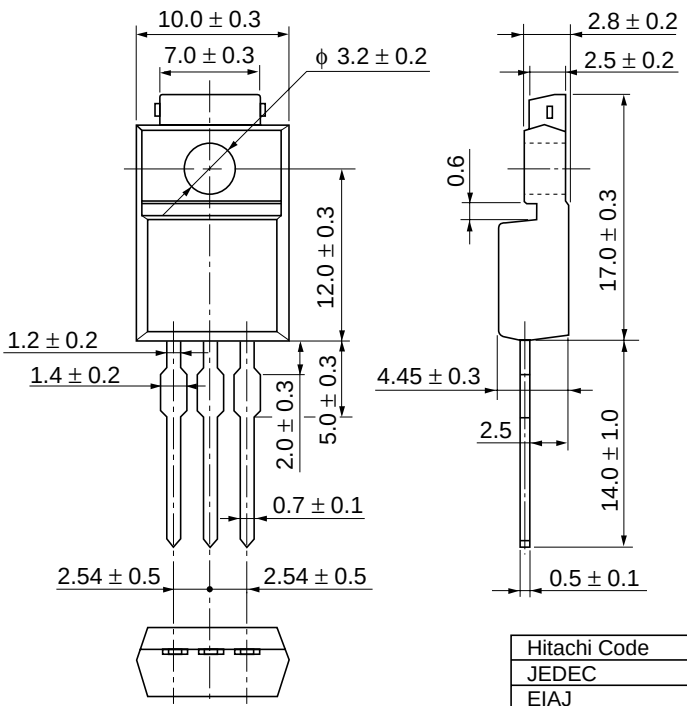
Maximum Safe Operation Area

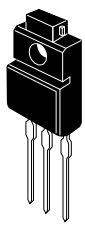


Normalized Transient Thermal Impedance vs. Pulse Width



Unit: mm





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

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