2SK1831, 2SK1832

Silicon N-Channel MOS FET

HITACHI

Application

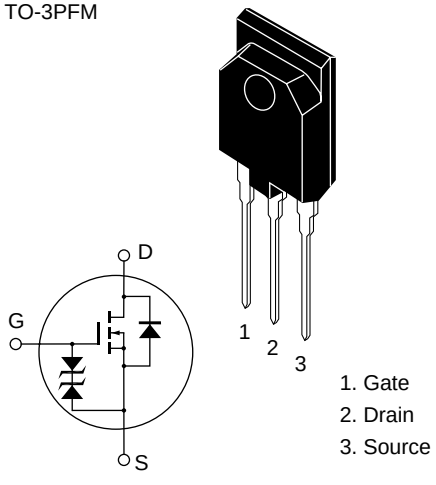
High speed power switching

Features

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

Outline

TO-3PFM



1. Gate
2. Drain
3. Source

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Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	K1831	V_{DSS}	450	V
	K1832		500	
Gate to source voltage		V_{GSS}	±30	V
Drain current		I_D	10	A
Drain peak current		$I_{D(pulse)}$*[1]	30	A
Body to drain diode reverse drain current		I_{DR}	10	A
Channel dissipation		Pch*[2]	50	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	–55 to +150	°C

Notes 1. PW ≤ 10 µs, duty cycle ≤ 1 %
2. Value at Tc = 25 °C

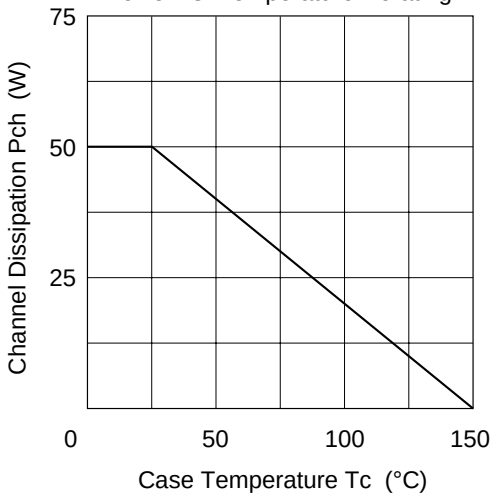
Electrical Characteristics (Ta = 25°C)

Item		Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	K1831	$V_{(BR)DSS}$	450	—	—	V	I_D = 10 mA, V_{GS} = 0
	K1832		500	—	—		
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	K1831	I_{DSS}	—	—	250	µA	V_{DS} = 360 V, V_{GS} = 0
	K1832						V_{DS} = 400 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	K1831	$R_{DS(on)}$	—	0.6	0.8	Ω	I_D = 5 A
	K1832		—	0.7	0.9		V_{GS} = 10 V*[1]
Forward transfer admittance		$\|y_{fs}\|$	4.0	7.0	—	S	I_D = 5 A V_{DS} = 10 V*[1]
Input capacitance		Ciss	—	1050	—	pF	V_{DS} = 10 V
Output capacitance		Coss	—	280	—	pF	V_{GS} = 0
Reverse transfer capacitance		Crss	—	40	—	pF	f = 1 MHz
Turn-on delay time		$t_{d(on)}$	—	15	—	ns	I_D = 5 A
Rise time		t_r	—	60	—	ns	V_{GS} = 10 V
Turn-off delay time		$t_{d(off)}$	—	90	—	ns	R_L = 6 Ω
Fall time		t_f	—	45	—	ns	
Body to drain diode forward voltage		V_{DF}	—	1.0	—	V	I_F = 10 A, V_{GS} = 0
Body to drain diode reverse recovery time		t_{rr}	—	350	—	ns	I_F = 10 A, V_{GS} = 0, di_F / dt = 100 A / µs

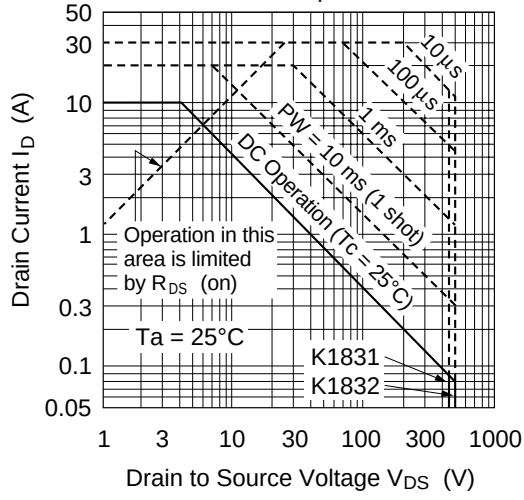
Notes 1. Pulse Test

See characteristic curves of 2SK1157, 2SK1158

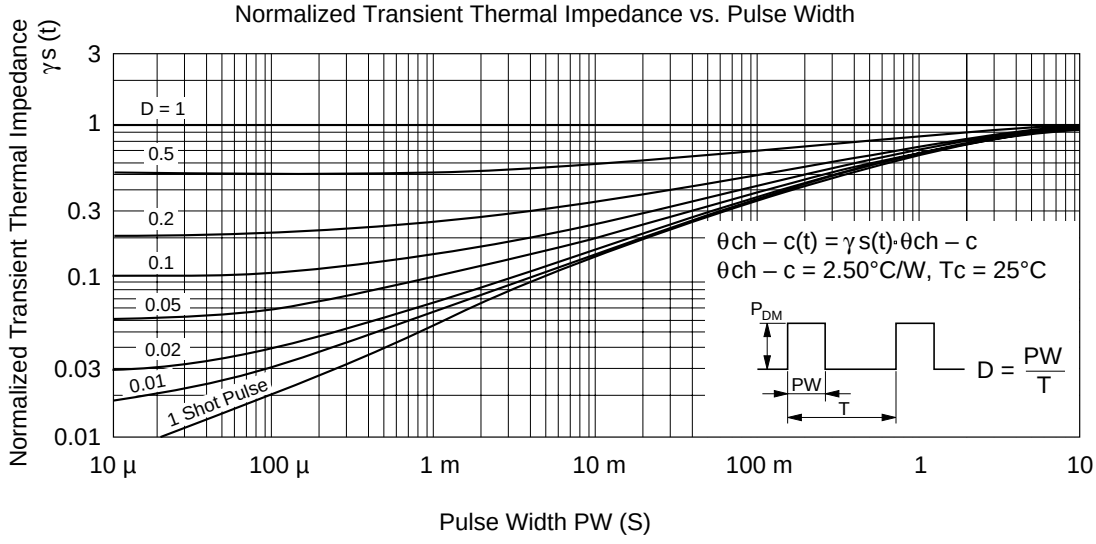
Power vs. Temperature Derating



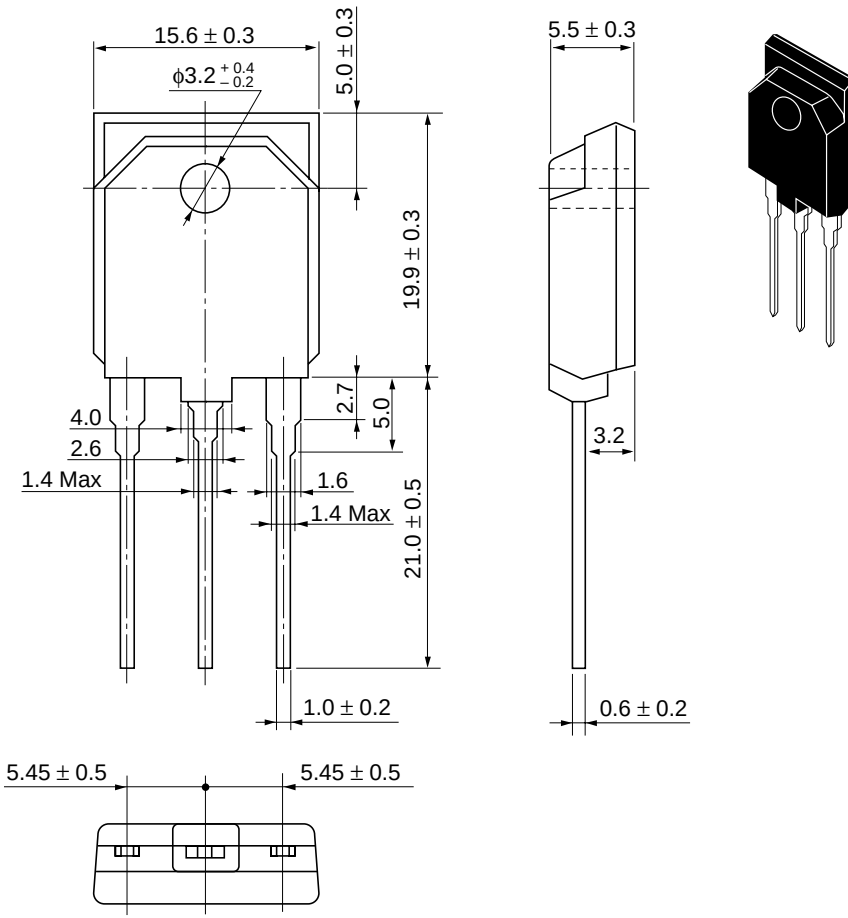
Maximum Safe Operation Area



Normalized Transient Thermal Impedance vs. Pulse Width



Unit: mm



Hitachi Code	TO-3PFM
JEDEC	—
EIAJ	—
Weight (reference value)	5.6 g

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