2SK1648(L), 2SK1648(S)

Silicon N-Channel MOS FET

HITACHI

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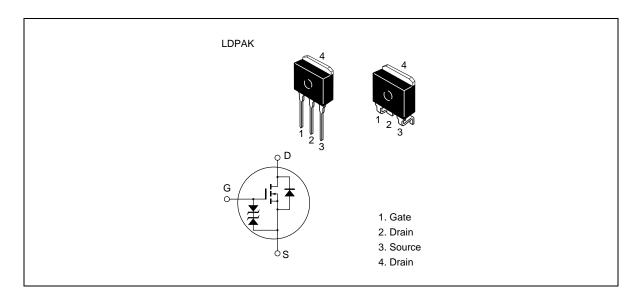
Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- 4 V gate drive device
 - Can be driven from 5 V source
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive

Outline



2SK1648(L), 2SK1648(S)

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	15	A
Drain peak current	l _{D(pulse)} *1	60	A
Body to drain diode reverse drain current	I _{DR}	15	A
Channel dissipation	Pch*2	40	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes 1. PW \leq 10 μ s, duty cycle \leq 1%

2. Value at $T_c = 25^{\circ}C$

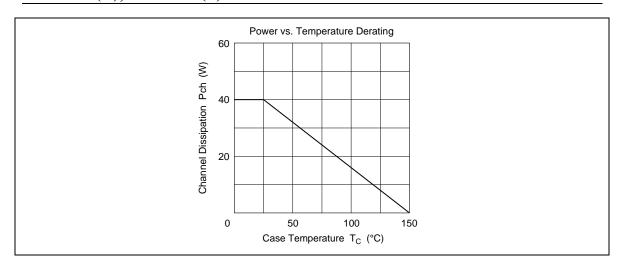
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Тур	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	_	_	V	$I_{D} = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	_	_	V	$I_{_{\rm G}} = \pm 100 \; \mu A, \; V_{_{\rm DS}} = 0$
Gate to source leak current	I _{GSS}	_	_	±10	μΑ	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I _{DSS}	_	_	250	μΑ	$V_{DS} = 50 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{\text{GS(off)}}$	1.0	_	2.0	V	$I_{D} = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static Drain to source on state resistance	R _{DS(on)}	_	0.055	0.065	Ω	$I_D = 8 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
		_	0.075	0.095	Ω	$I_D = 8 \text{ A}, V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	yfs	7	12	_	S	$I_D = 8 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	_	860	_	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$ f = 1 MHz
Output capacitance	Coss	_	450		pF	_
Reverse transfer capacitance	Crss	_	140	_	pF	_
Turn-on delay time	t _{d(on)}	_	10	_	ns	$I_D = 8 \text{ A}, V_{GS} = 10 \text{ V},$ $R_L = 3.75 \Omega$
Rise time	t _r		70		ns	_
Turn-off delay time	$\mathbf{t}_{d(off)}$		180	_	ns	_
Fall time	t _f	_	120	_	ns	
Body to drain diode forward voltage	V_{DF}	_	1.3	_	V	$I_{F} = 15 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t _{rr}	_	135	_	ns	$I_F = 15 \text{ A}, V_{GS} = 0,$ $di_F/dt = 50 \text{ A}/\mu\text{s}$
Note 4 Dides to st						

Note 1. Pulse test

See characteristic curves of 2SK971.

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