2SK3159

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

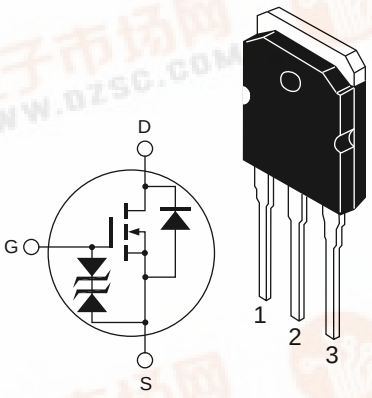
ADE-208-774 (Z)
Target Specification
1st. Edition
February 1999

Features

- Low on-resistance
  R_{DS} = 23 mΩ typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

Outline

TO–3P



1. Gate
2. Drain
   (Flange)
3. Source

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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	150	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	50	A
Drain peak current	$I_{D(pulse)}$ Note1	200	A
Body-drain diode reverse drain current	I_{DR}	50	A
Avalanche current	I_{AP} Note3	50	A
Avalanche energy	E_{AR} Note3	187	mJ
Channel dissipation	Pch Note2	125	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Note: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. Value at Tch = 25°C, Rg ≥ 50 Ω

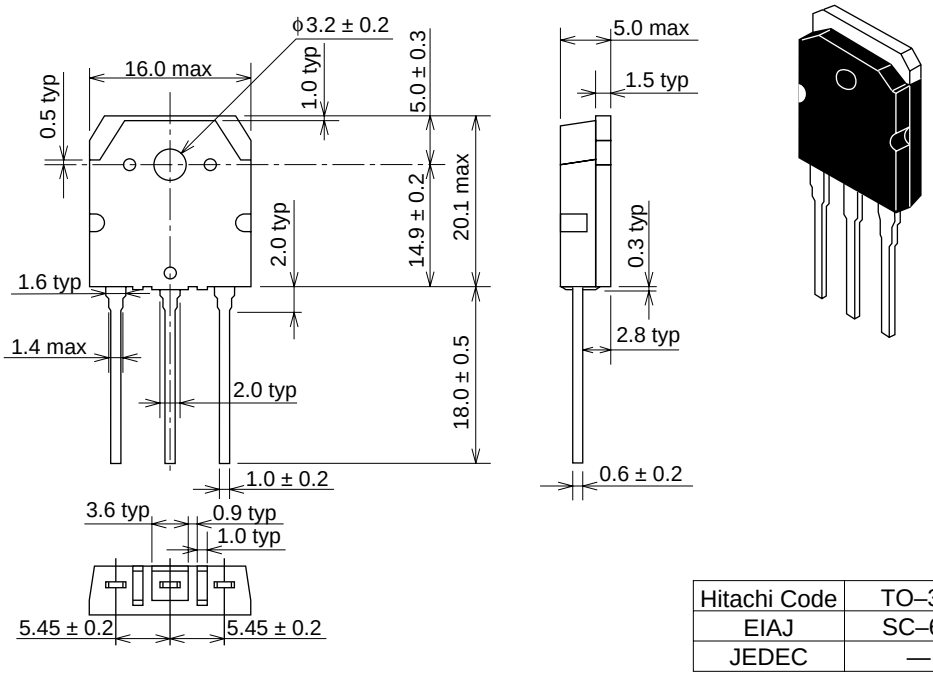
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±16 V, V_{DS} = 0
Zero gate voltege drain current	I_{DSS}	—	—	10	µA	V_{DS} = 150 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	I_D = 1 mA, V_{DS} = 10 V
Static drain to source on state resistance	$R_{DS(on)}$	—	23	30	mΩ	I_D = 25 A, V_{GS} = 10 V Note4
	$R_{DS(on)}$	—	28	48	mΩ	I_D = 25 A, V_{GS} = 4 V Note4
Forward transfer admittance	$\|y_{fs}\|$	27	45	—	S	I_D = 25 A, V_{DS} = 10 V Note4
Input capacitance	Ciss	—	4000	—	pF	V_{DS} = 10 V
Output capacitance	Coss	—	1650	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	590	—	pF	f = 1 MHz
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	I_D = 25 A, V_{GS} = 10 V
Rise time	t_r	—	280	—	ns	R_L = 1.2 Ω
Turn-off delay time	$t_{d(off)}$	—	830	—	ns	
Fall time	t_f	—	450	—	ns	
Body–drain diode forward voltage	V_{DF}	—	0.95	—	V	I_F = 50 A, V_{GS} = 0
Body–drain diode reverse recovery time	t_{rr}	—	200	—	ns	I_F = 50 A, V_{GS} = 0 diF/ dt = 50 A/ µs

Note: 4. Pulse test

Package Dimensions

Unit: mm



Hitachi Code	TO–3P
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