

HAT3015T

Silicon N/P Channel Power MOS FET
High Speed Power Switching

REJ03G0405-0200

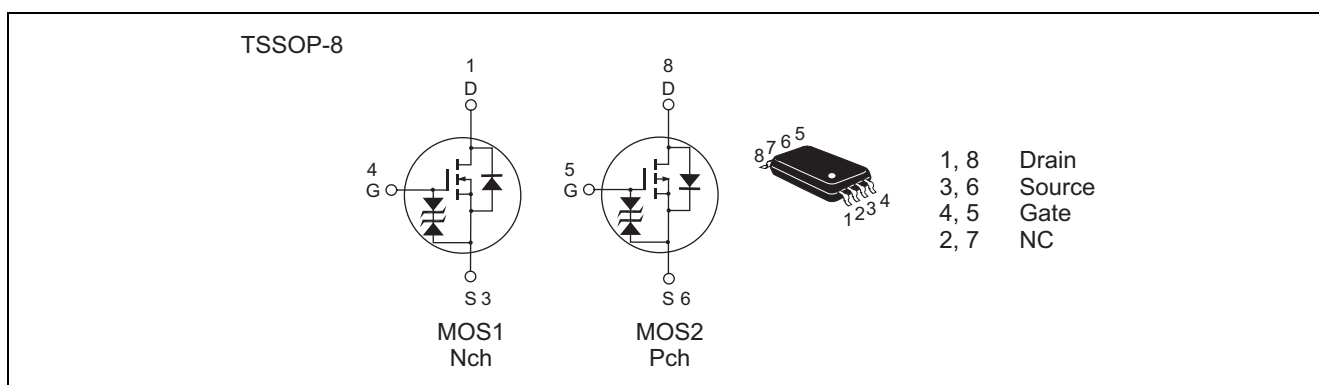
Rev.2.00

Sep.07.2004

Features

- Low on-resistance
- Capable of 4 V gate drive
- High density mounting

Outline



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings		Unit
		Nch	Pch	
Drain to Source voltage	V _{DSS}	200	-200	V
Gate to Source voltage	V _{GSS}	±15	±15	V
Drain current	I _D	0.5	-0.25	A
Drain peak current	I _{D(pulse)} ^{Note1}	2	-1	A
Body-Drain diode reverse drain current	I _{DR}	0.5	-0.25	A
Channel dissipation	P _{ch} ^{Note2}	1	1	W
	P _{ch} ^{Note3}	1.5	1.5	W
Channel temperature	T _{ch}	150	150	°C
Storage temperature	T _{stg}	-55 to +150	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1 %

2. 1 Drive operation; When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW ≤ 10 s

3. 2 Drive operation; When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW ≤ 10 s

Electrical Characteristics

(Ta = 25°C)

• N Channel

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to Source breakdown voltage	$V_{(BR)GSS}$	± 15	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to Source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 12 \text{ V}$, $V_{DS} = 0$
Zero Gate voltage Drain current	I_{DSS}	—	—	5	μA	$V_{DS} = 200 \text{ V}$, $V_{GS} = 0$
Gate to Source cutoff voltage	$V_{GS(off)}$	1.0	—	2.1	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static Drain to Source on state resistance	$R_{DS(on)}$	—	1.6	2.2	Ω	$I_D = 0.5 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	1.9	2.7	Ω	$I_D = 0.5 \text{ A}$, $V_{GS} = 4 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	2.4	5.5	Ω	$I_D = 2 \text{ A}$, $V_{GS} = 5 \text{ V}$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	0.56	0.86	—	S	$I_D = 0.5 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	120	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	29	—	pF	
Reverse transfer capacitance	C_{rss}	—	10	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$V_{GS} = 5 \text{ V}$, $I_D = 0.5 \text{ A}$ $V_{DD} \cong 30 \text{ V}$
Rise time	t_r	—	14	—	ns	
Turn-off delay time	$t_{d(off)}$	—	24	—	ns	
Fall time	t_f	—	9	—	ns	
Body-Drain diode forward voltage	V_{DF}	—	0.9	1.4	V	$I_F = 0.5 \text{ A}$, $V_{GS} = 0$ ^{Note4}

Notes: 4. Pulse test

• P Channel

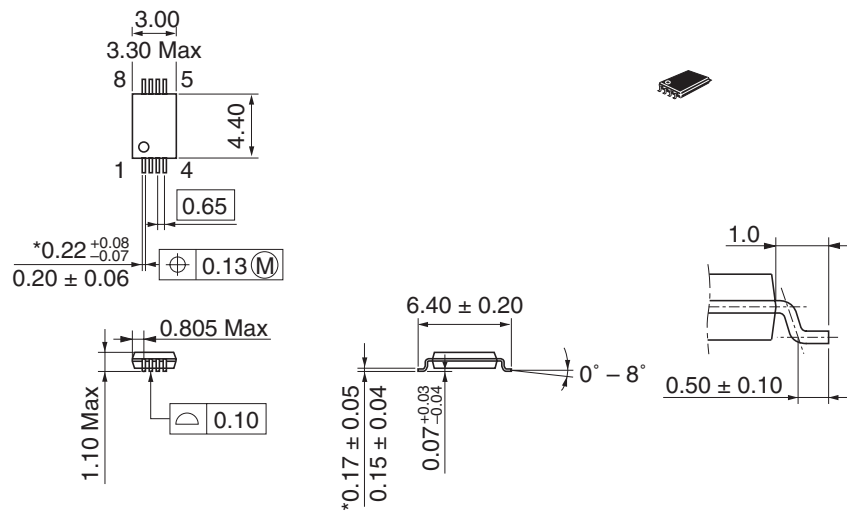
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to Source breakdown voltage	$V_{(BR)DSS}$	-200	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to Source breakdown voltage	$V_{(BR)GSS}$	± 15	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to Source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 12 \text{ V}$, $V_{DS} = 0$
Zero Gate voltage Drain current	I_{DSS}	—	—	-5	μA	$V_{DS} = -200 \text{ V}$, $V_{GS} = 0$
Gate to Source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.0	V	$V_{DS} = -10 \text{ V}$, $I_D = -1 \text{ mA}$
Static Drain to Source on state resistance	$R_{DS(on)}$	—	5.0	6.2	Ω	$I_D = -0.25 \text{ A}$, $V_{GS} = -10 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	6.0	7.5	Ω	$I_D = -0.25 \text{ A}$, $V_{GS} = -4 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	7.0	10.0	Ω	$I_D = -1 \text{ A}$, $V_{GS} = -5 \text{ V}$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	0.29	0.45	—	S	$I_D = -0.25 \text{ A}$, $V_{DS} = -10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	140	—	pF	$V_{DS} = -10 \text{ V}$, $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	37	—	pF	
Reverse transfer capacitance	C_{rss}	—	10	—	pF	
Turn-on delay time	$t_{d(on)}$	—	12	—	ns	$V_{GS} = -5 \text{ V}$, $I_D = -0.25 \text{ A}$ $V_{DD} \cong -30 \text{ V}$
Rise time	t_r	—	9	—	ns	
Turn-off delay time	$t_{d(off)}$	—	25	—	ns	
Fall time	t_f	—	15	—	ns	
Body-Drain diode forward voltage	V_{DF}	—	-0.9	-1.4	V	$I_F = -0.25 \text{ A}$, $V_{GS} = 0$ ^{Note4}

Notes: 4. Pulse test

Package Dimensions

As of January, 2003

Unit: mm



*Dimension including the plating thickness
Base material dimension

Package Code	TTP-8D
JEDEC	—
JEITA	—
Mass (reference value)	—

Ordering Information

Part Name	Quantity	Shipping Container
HAT3015T-EL-E	3000 pcs	Taping

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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