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# 2SJ332(L), 2SJ332(S)

Silicon P-Channel MOS FET

## HITACHI

November 1996

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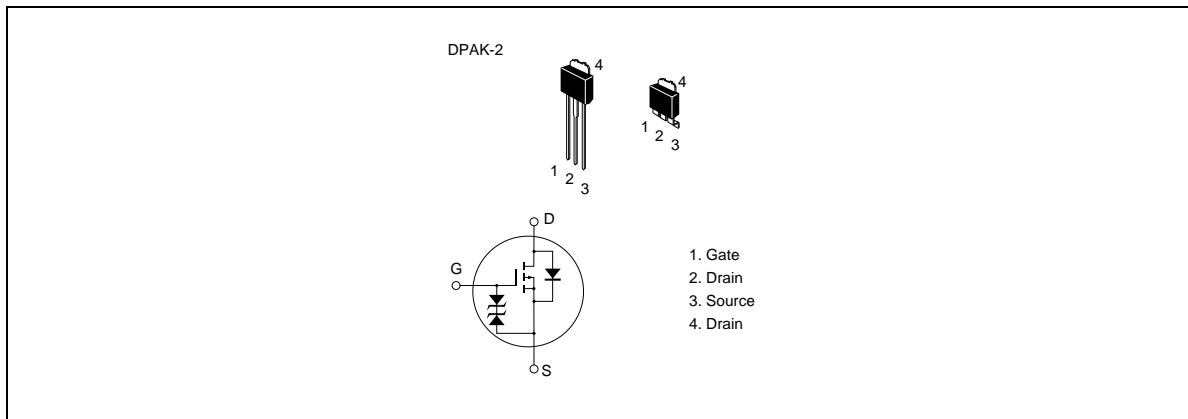
### Application

High speed power switching

### Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device can be driven from 5 V source
- Suitable for switching regulator, DC-DC converter

### Outline



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**Absolute Maximum Ratings** (Ta = 25°C)

<b>Item</b>	<b>Symbol</b>	<b>Ratings</b>	<b>Unit</b>
Drain to source voltage	$V_{DSS}$	-20	V
Gate to source voltage	$V_{GSS}$	±20	V
Drain current	$I_D$	-10	A
Drain peak current	$I_{D(pulse)}^{*1}$	-40	A
Body to drain diode reverse drain current	$I_{DR}$	-10	A
Channel dissipation	$Pch^{*2}$	20	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$   
 2. Value at  $T_c = 25^\circ C$

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**2SJ332(L), 2SJ332(S)**

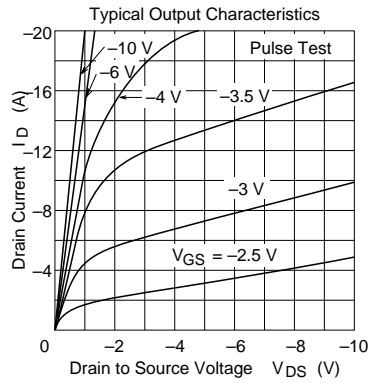
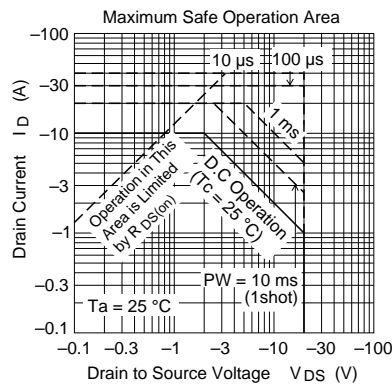
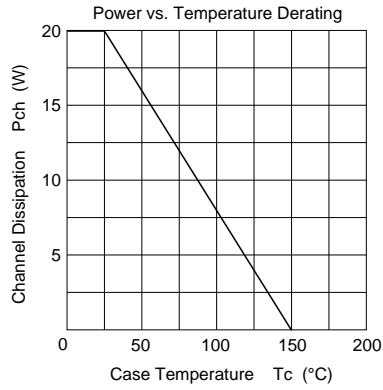

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**Electrical Characteristics (Ta = 25°C)**

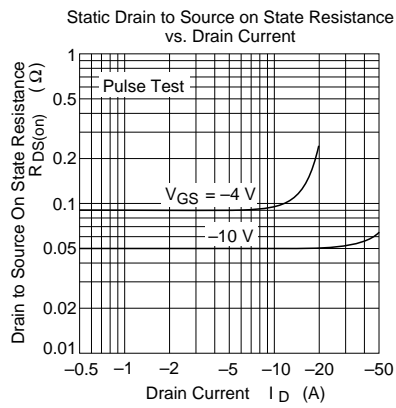
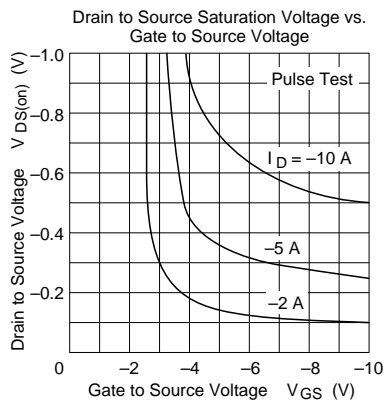
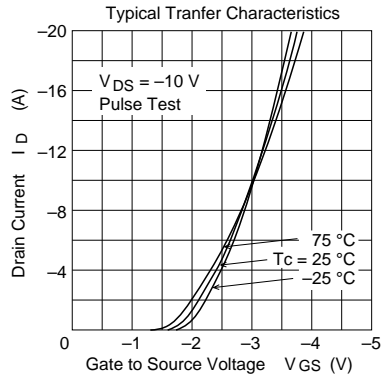
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-20	—	—	V	$I_D = -10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	-100	$\mu\text{A}$	$V_{DS} = -16 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.5	V	$I_D = -1 \text{ mA}, V_{DS} = -10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.05	0.08	$\Omega$	$I_D = -5 \text{ A}, V_{GS} = -10 \text{ V}^{*1}$
		—	0.09	0.14	$\Omega$	$I_D = -5 \text{ A}, V_{GS} = -4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	6	9	—	S	$I_D = -5 \text{ A}, V_{DS} = -10 \text{ V}^{*1}$
Input capacitance	$C_{iss}$	—	730	—	pF	$V_{DS} = -10 \text{ V}, V_{GS} = 0,$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	680	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	260	—	pF	
Turn-on delay time	$t_{d(on)}$	—	13	—	ns	$I_D = -5 \text{ A}, V_{GS} = -10 \text{ V},$ $R_L = 2 \text{ }\Omega$
Rise time	$t_r$	—	110	—	ns	
Turn-off delay time	$t_{d(off)}$	—	90	—	ns	
Fall time	$t_f$	—	110	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	-1.2	—	V	$I_F = -10 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	50	—	$\mu\text{s}$	$I_F = -10 \text{ A}, V_{GS} = 0,$ $di_F/dt = 50 \text{ A}/\mu\text{s}$

Note 1. Pulse test

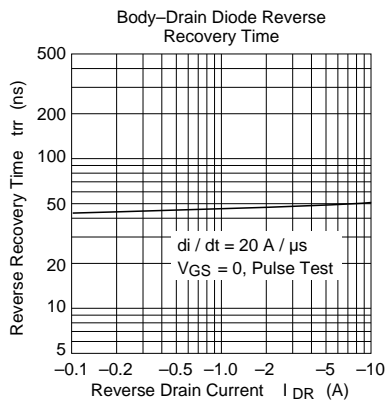
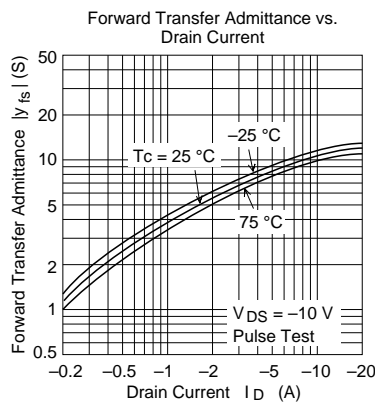
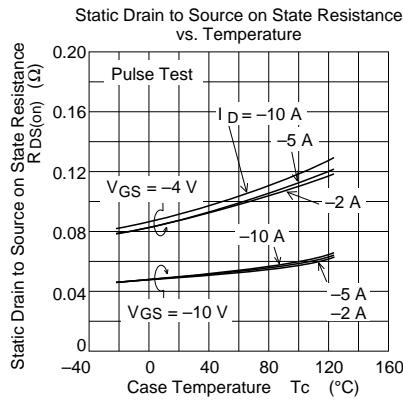
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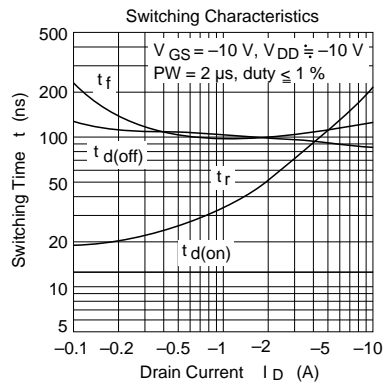
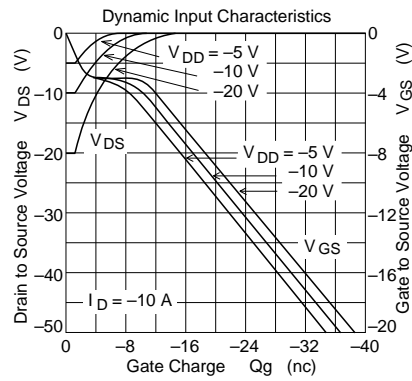
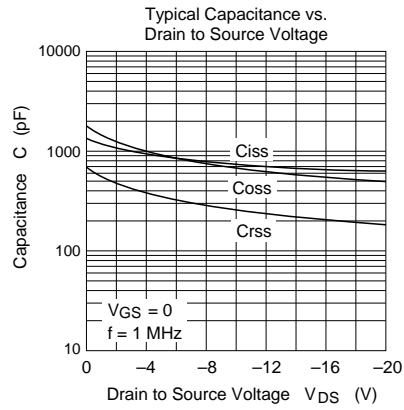
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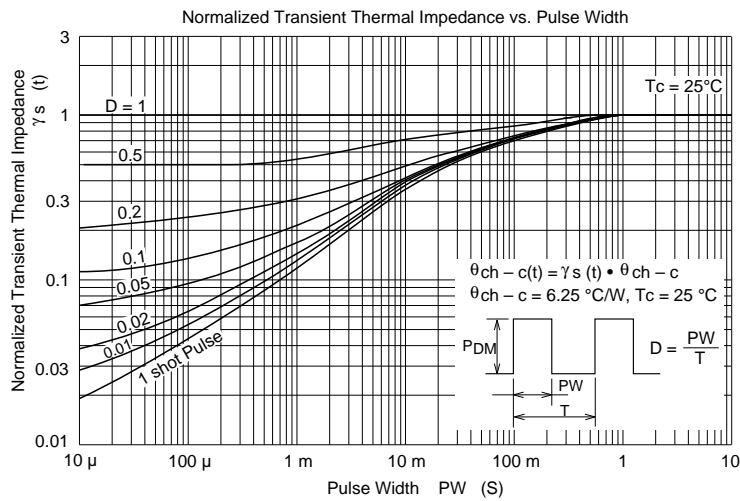
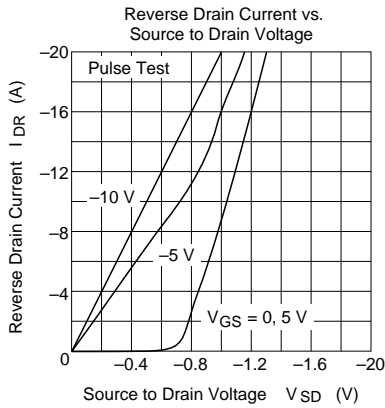
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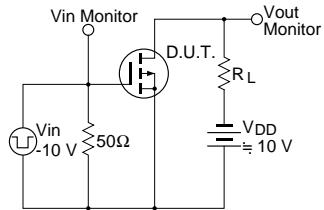
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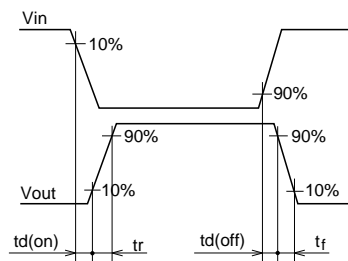
## 2SJ332(L), 2SJ332(S)



Switching Time Test Circuit



Waveforms





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**2SJ332(L), 2SJ332(S)**

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