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# 2SJ181(L), 2SJ181(S)

Silicon P-Channel MOS FET

# HITACHI

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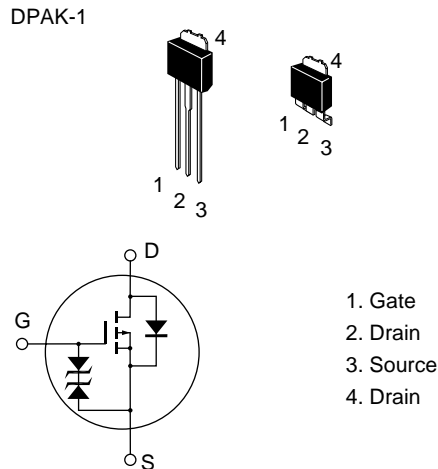
## Application

High speed power switching

## Features

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

## Outline



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

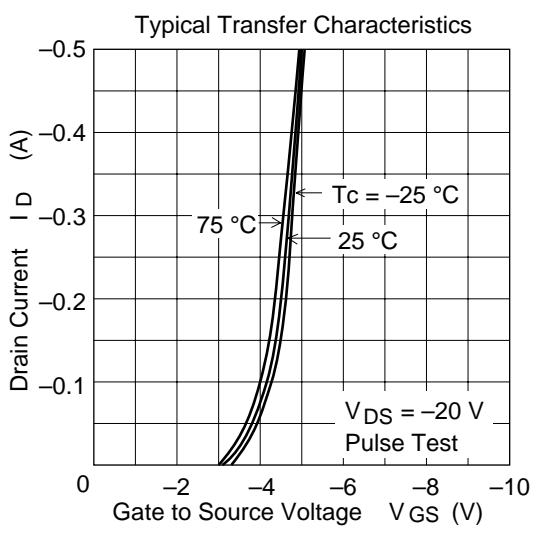
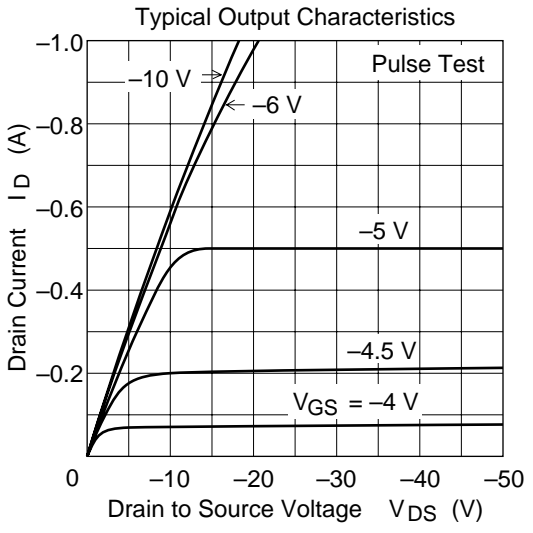
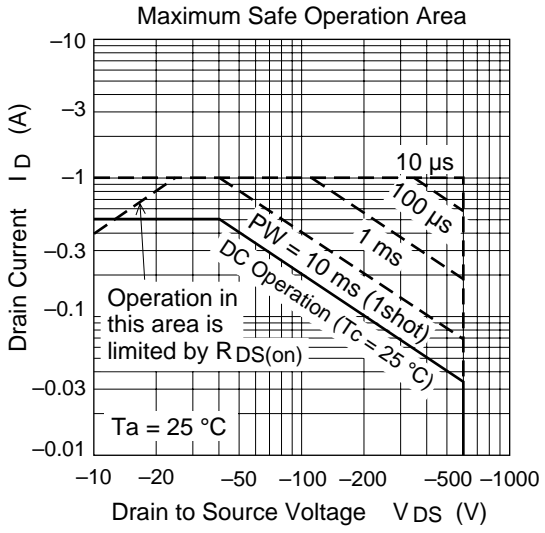
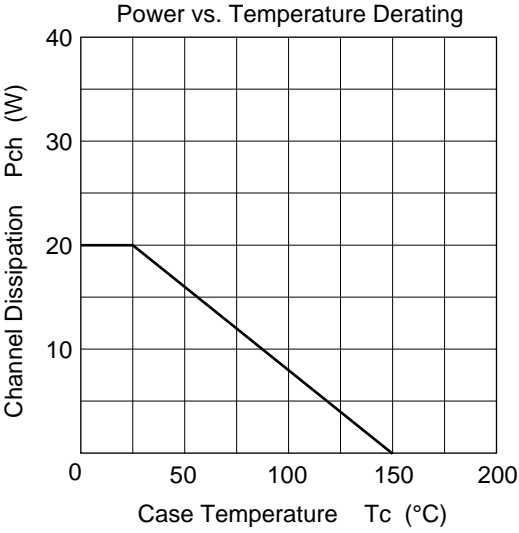
Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	-600	V
Gate to source voltage	$V_{GSS}$	±15	V
Drain current	$I_D$	-0.5	A
Drain peak current	$I_{D(pulse)}^{*1}$	-1.0	A
Body to drain diode reverse drain current	$I_{DR}$	-0.5	A
Channel dissipation	$Pch^{*2}$	20	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

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

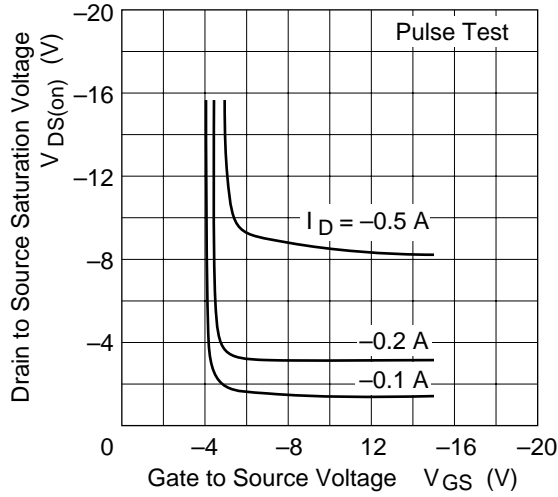
### Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-600	—	—	V	$I_D = -10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±15	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 12 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	-100	μA	$V_{DS} = -500 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-2.0	—	-4.0	V	$I_D = -1 \text{ mA}$ , $V_{DS} = -10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	15	25	Ω	$I_D = -0.3 \text{ A}$ , $V_{GS} = -10 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	0.3	0.45	—	S	$I_D = -0.3 \text{ A}$ , $V_{DS} = -20 \text{ V}^{*1}$
Input capacitance	$C_{iss}$	—	220	—	pF	$V_{DS} = -10 \text{ V}$ , $V_{GS} = 0$ ,
Output capacitance	$C_{oss}$	—	55	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	$C_{rss}$	—	13	—	pF	
Turn-on delay time	$t_{d(on)}$	—	7	—	ns	$I_D = -0.3 \text{ A}$ , $V_{GS} = -10 \text{ V}$ ,
Rise time	$t_r$	—	20	—	ns	$R_L = 100 \Omega$
Turn-off delay time	$t_{d(off)}$	—	35	—	ns	
Fall time	$t_f$	—	35	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	-0.85	—	V	$I_F = -0.5 \text{ A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	230	—	ns	$I_F = -0.5 \text{ A}$ , $V_{GS} = 0$ , $di_F/dt = 50 \text{ A}/\mu s$

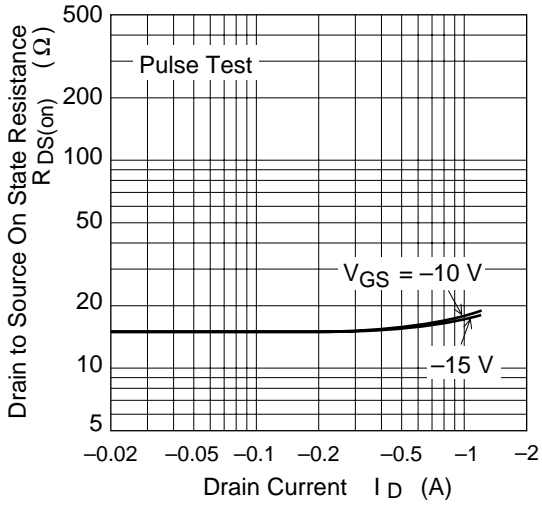
Note: 1. Pulse test



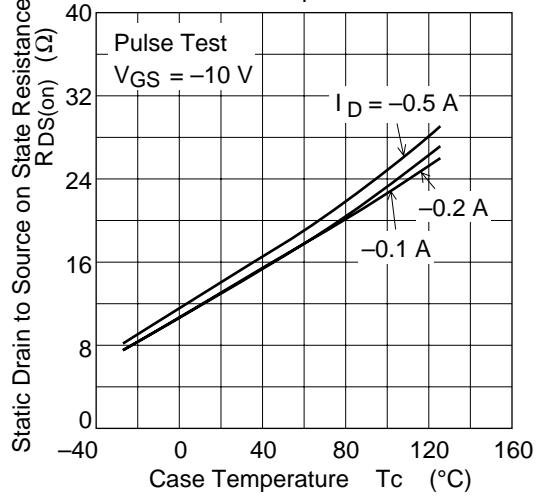
Drain to Source Saturation Voltage vs. Gate to Source Voltage

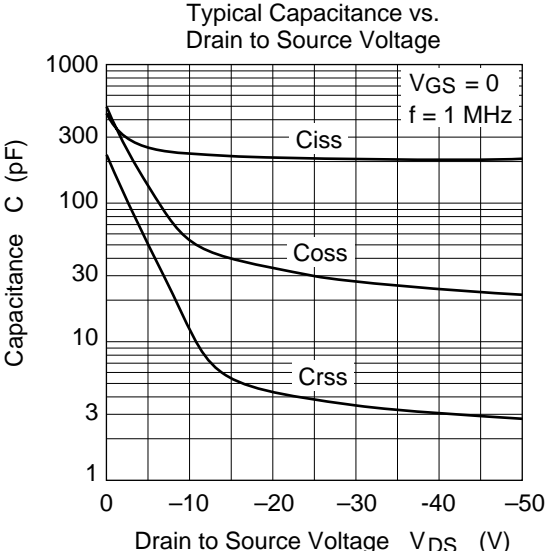
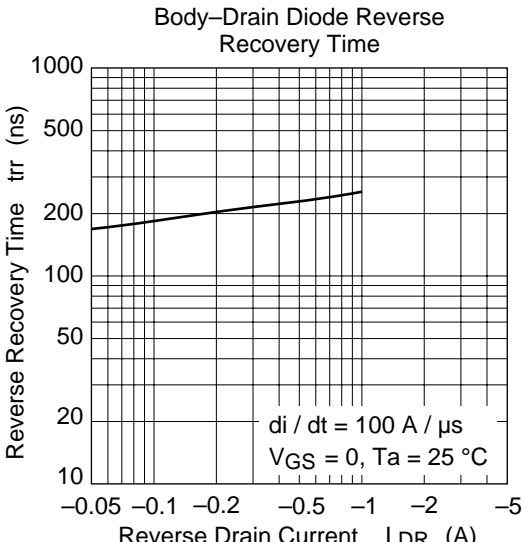
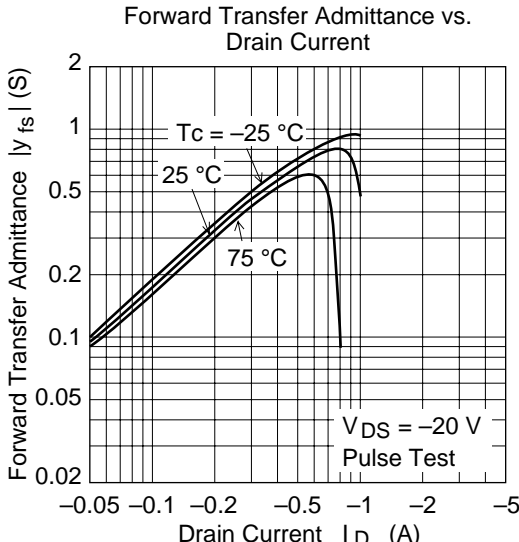


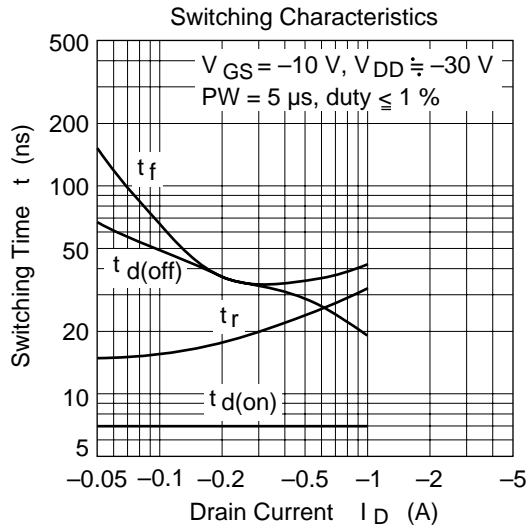
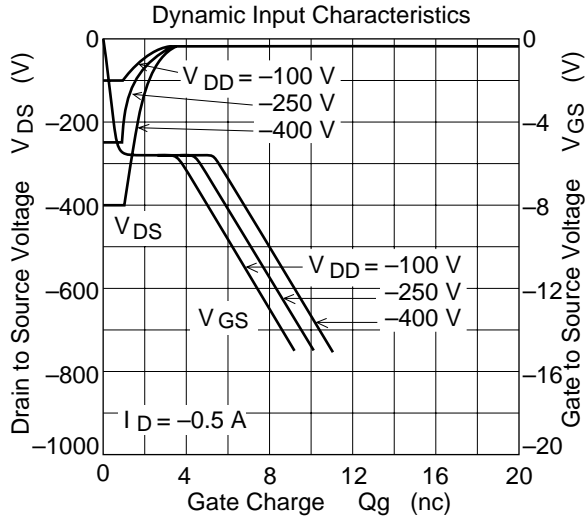
Static Drain to Source on State Resistance vs. Drain Current

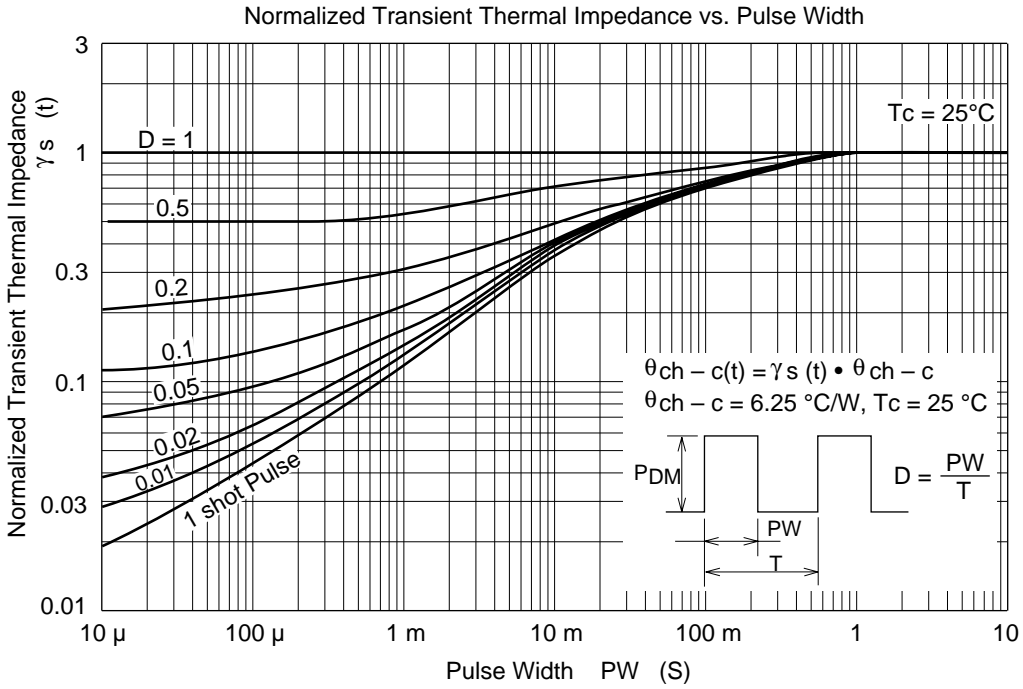
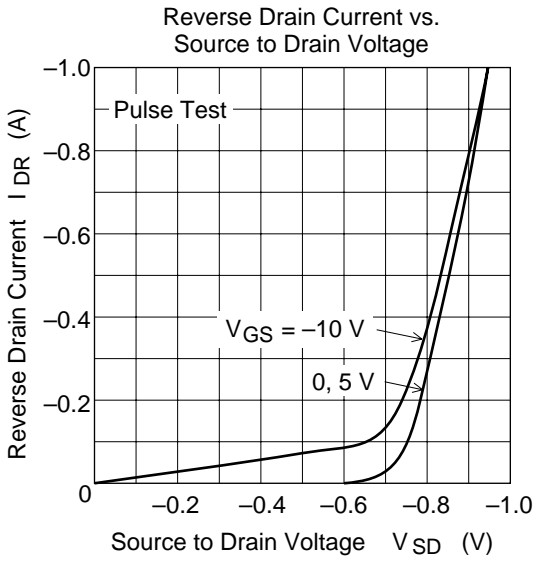


Static Drain to Source on State Resistance vs. Temperature



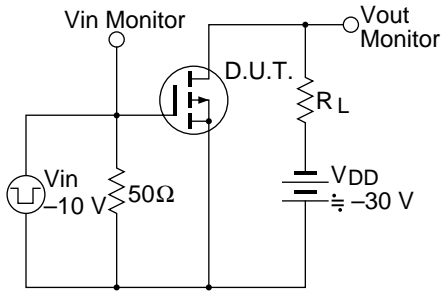




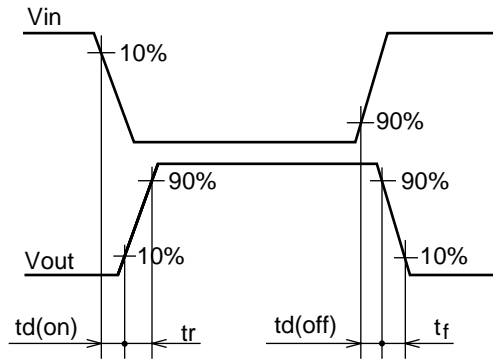


# 2SJ181(L), 2SJ181(S)

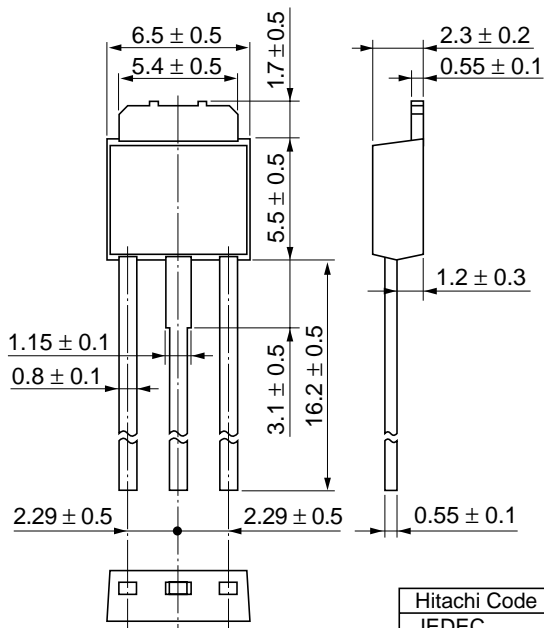
Switching Time Test Circuit



Waveforms







Hitachi Code	DPAK (L)-(1)
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.42 g

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