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# 2SJ130(L), 2SJ130(S)

Silicon P-Channel MOS FET

# HITACHI

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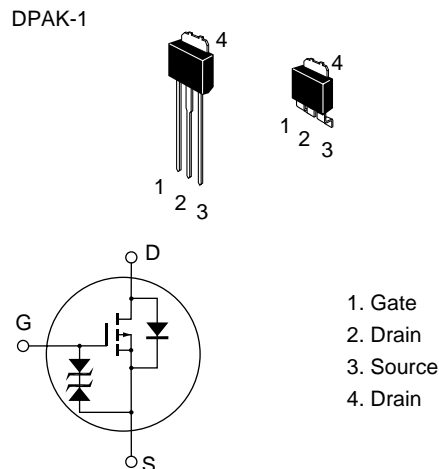
## Application

High speed power switching

## Features

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

## Outline



# 2SJ130(L), 2SJ130(S)

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

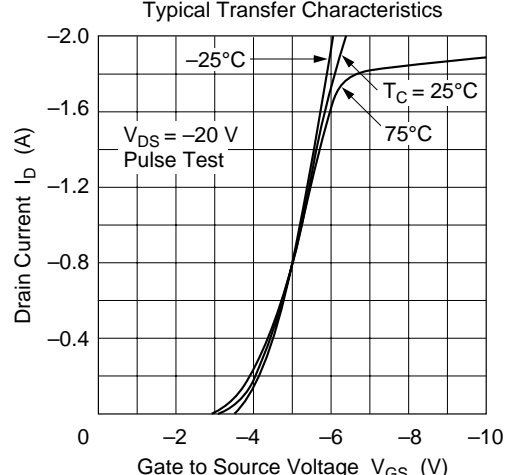
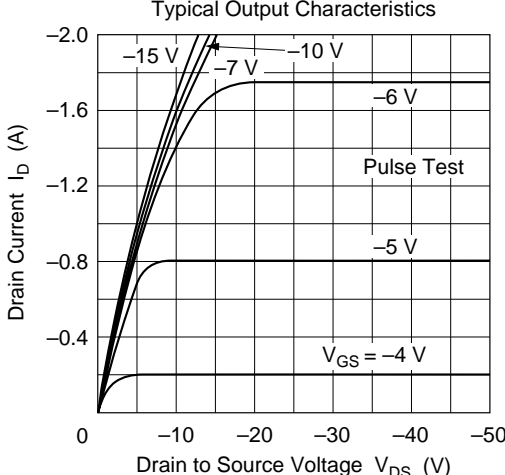
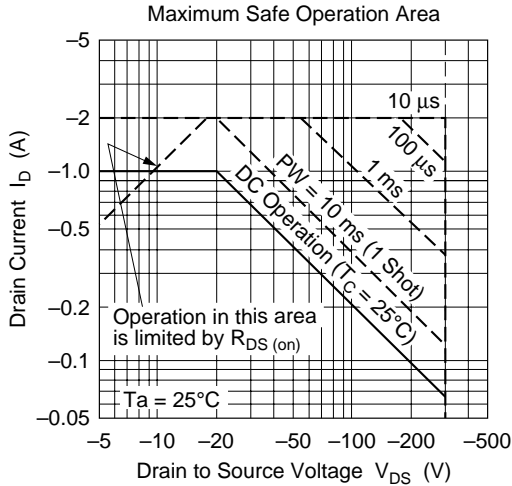
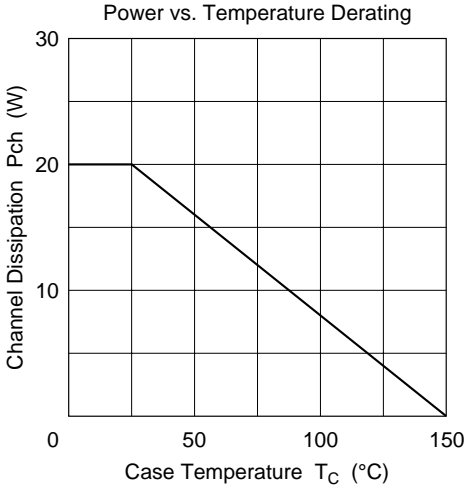
Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	-300	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	-1	A
Drain peak current	I <sub>D(pulse)</sub>	-2	A
Body to drain diode reverse drain current	I <sub>DR</sub>	-1	A
Channel dissipation	Pch*1	20	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Note: 1. Value at T<sub>C</sub> = 25°C

## Electrical Characteristics (Ta = 25°C)

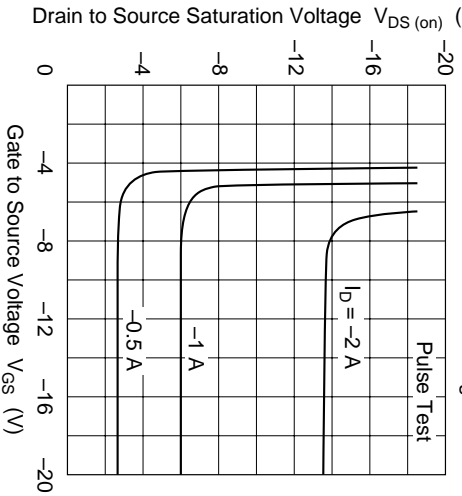
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	-300	—	—	V	I <sub>D</sub> = -10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±20	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	-100	μA	V <sub>DS</sub> = -240 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	-2.0	—	-4.0	V	I <sub>D</sub> = -1 mA, V <sub>DS</sub> = -10 V
Static drain to source on state resistance	R <sub>DS(on)</sub>	—	6.0	8.5	Ω	I <sub>D</sub> = -0.5 A, V <sub>GS</sub> = -10 V*1
Forward transfer admittance	y <sub>fs</sub>	0.25	0.4	—	S	I <sub>D</sub> = -0.5 A, V <sub>DS</sub> = -20 V*1
Input capacitance	Ciss	—	235	—	pF	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = 0,
Output capacitance	Coss	—	65	—	pF	f = 1 MHz
Reverse transfer capacitance	Crss	—	16	—	pF	
Turn-on delay time	t <sub>d(on)</sub>	—	10	—	ns	I <sub>D</sub> = -0.5 A, V <sub>GS</sub> = -10 V,
Rise time	t <sub>r</sub>	—	25	—	ns	R <sub>L</sub> = 60 Ω
Turn-off delay time	t <sub>d(off)</sub>	—	35	—	ns	
Fall time	t <sub>f</sub>	—	45	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	-0.9	—	V	I <sub>F</sub> = -1 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	200	—	ns	I <sub>F</sub> = -1 A, V <sub>GS</sub> = 0, di <sub>F</sub> /dt = 50 A/μs

Note: 1. Pulse test

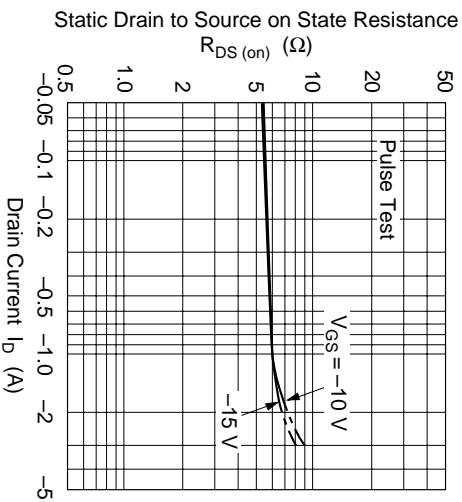


# 2SJ130(L), 2SJ130(S)

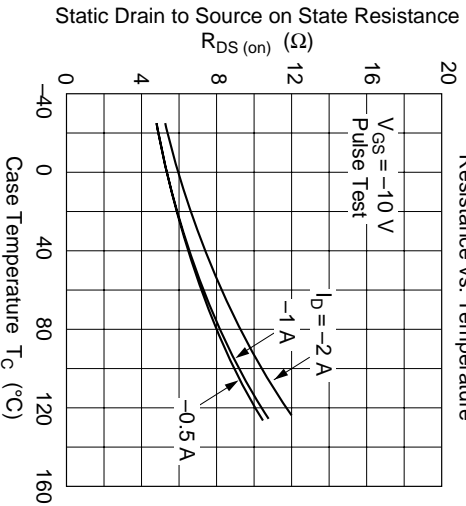
Drain to Source Saturation Voltage  $V_{DS(on)}$  (V)  
vs. Gate to Source Voltage  $V_{GS}$



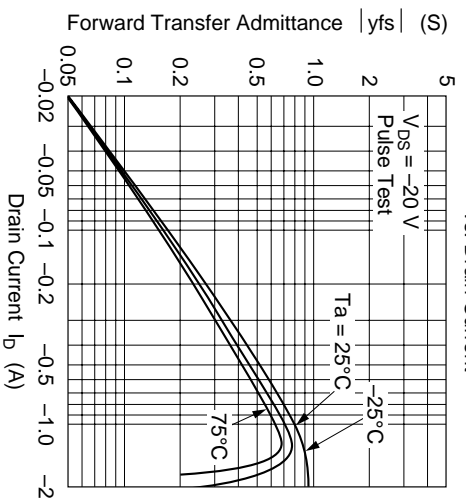
Static Drain to Source on State Resistance vs. Drain Current



Static Drain to Source on State Resistance vs. Temperature

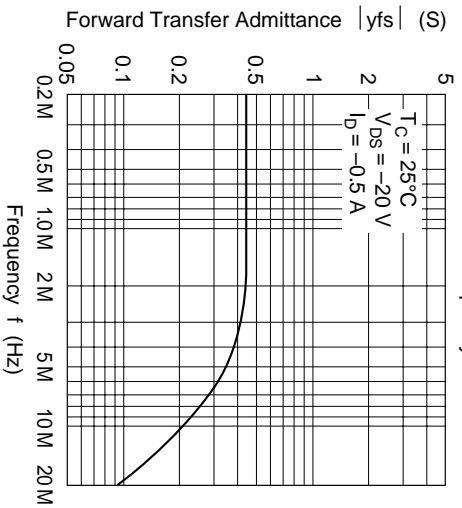


Forward Transfer Admittance vs. Drain Current

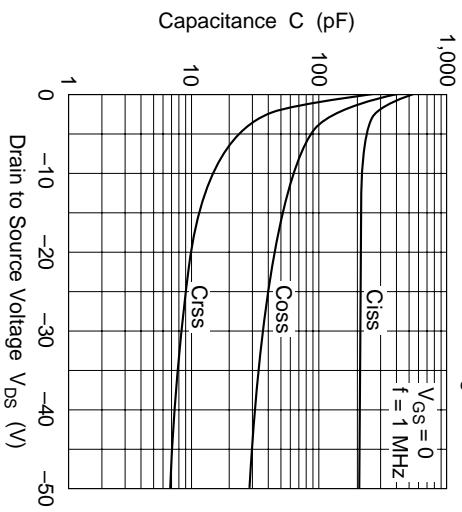


# 2SJ130(L), 2SJ130(S)

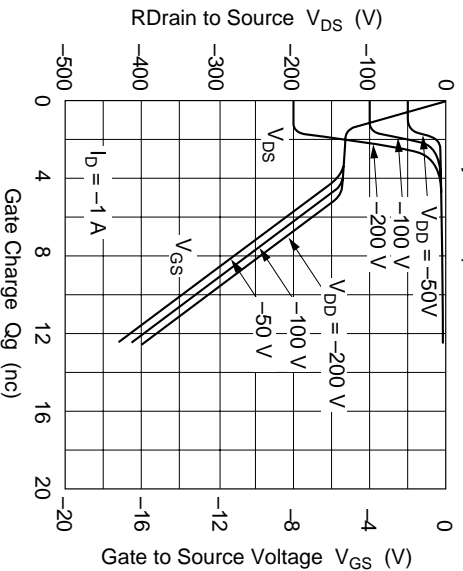
Forward Transfer Admittance  
vs. Frequency



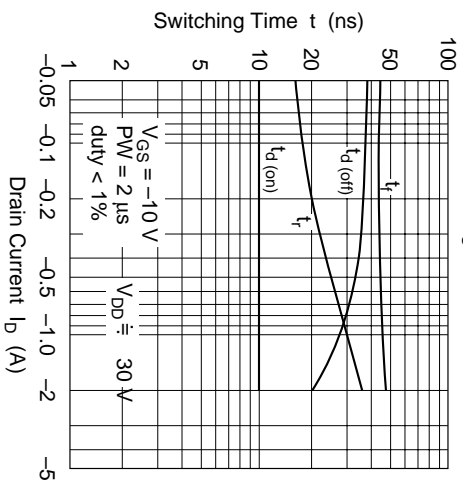
Typical Capacitance vs.  
Drain to Source Voltage



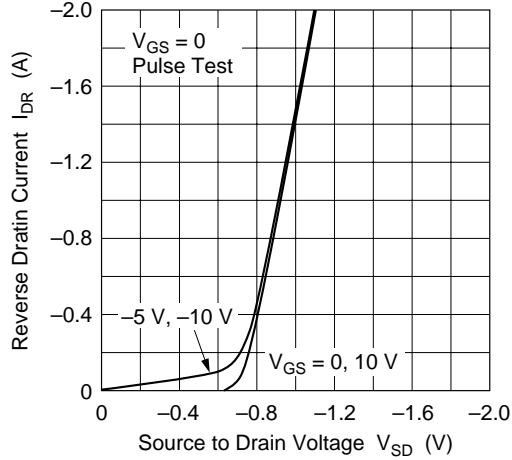
Dynamic Input Characteristics



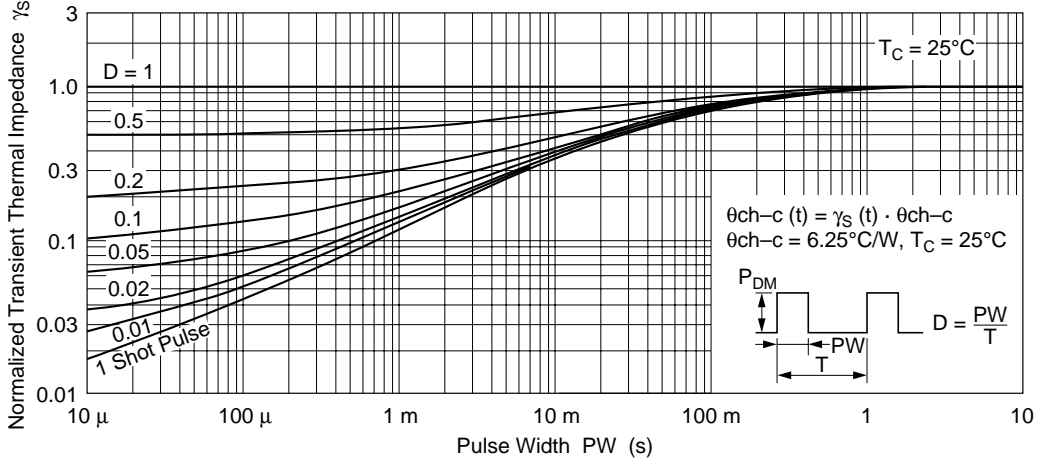
Switching Characteristics



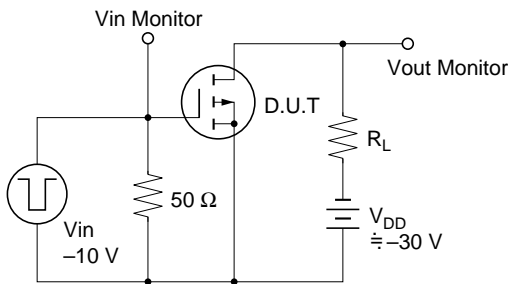
Reverse Drain Current vs. Source To Drain Voltage



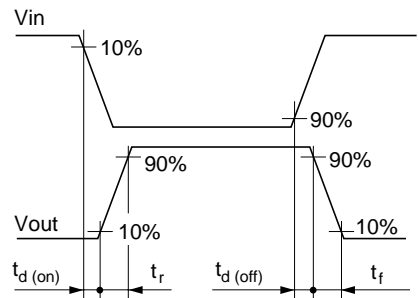
Normalized Transient Thermal Impedance vs. Pulse Width

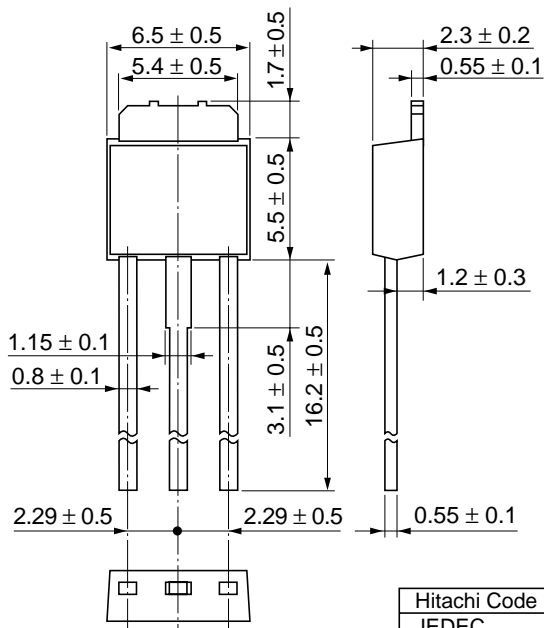


Switching Time Test Circuit



Waveforms





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

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