

2SK1151(L)(S), 2SK1152(L)(S)

Silicon N-Channel MOS FET

HITACHI

ADE-208-1245 (Z)

1st. Edition

Mar. 2001

Application

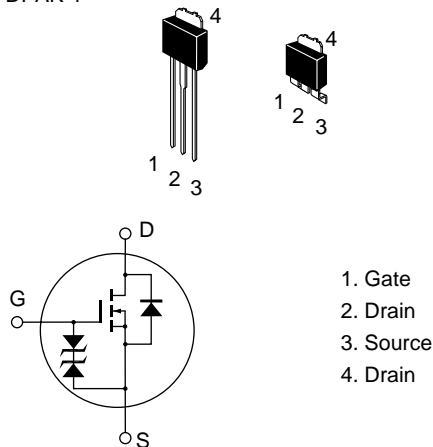
High speed power switching

Features

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

Outline

DPAK-1



2SK1151(L)(S), 2SK1152(L)(S)

Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1151	V_{DSS}	450	V
	2SK1152		500	
Gate to source voltage		V_{GSS}	±30	V
Drain current		I_D	1.5	A
Drain peak current		$I_{D(pulse)}$ ^{*1}	6	A
Body to drain diode reverse drain current		I_{DR}	1.5	A
Channel dissipation		P_{ch} ^{*2}	20	W
Channel temperature		T_{ch}	150	°C
Storage temperature		T_{stg}	-55 to +150	°C

Notes: 1. PW 10 μs, duty cycle 1%

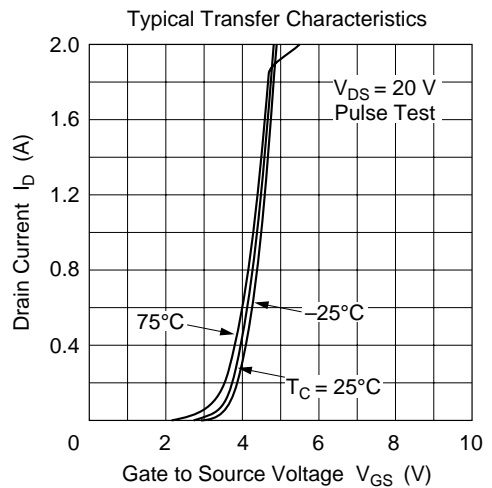
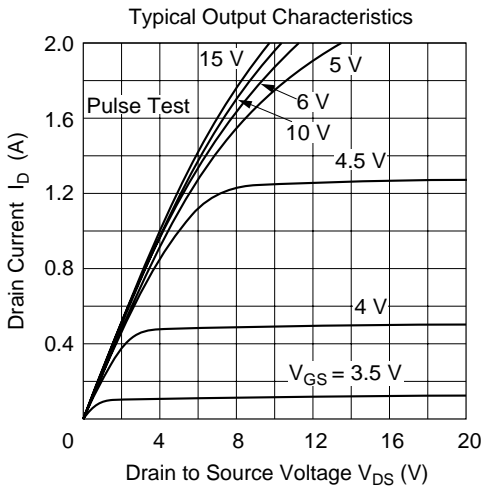
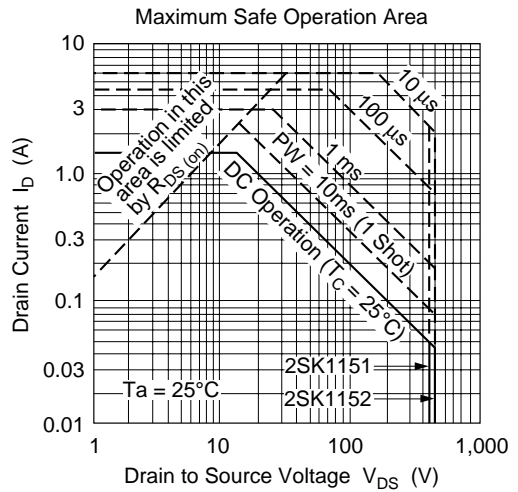
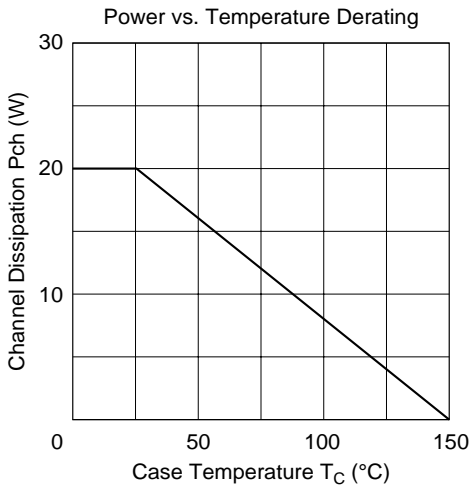
2. Value at $T_c = 25^\circ\text{C}$

Electrical Characteristics (Ta = 25°C)

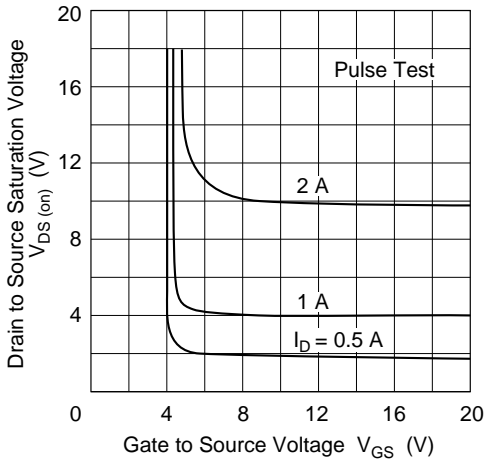
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1151 $V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
	2SK1152	500				
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \text{ } \mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	2SK1151 I_{DSS}	—	—	100	μA	$V_{DS} = 360 \text{ V}, V_{GS} = 0$
	2SK1152					$V_{DS} = 400 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static Drain to source on statesesistance	2SK1151 $R_{DS(on)}$	—	3.5	5.5		$I_D = 1 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
	2SK1152	—	4.0	6.0		
Forward transfer admittance	yfs	0.6	1.1	—	S	$I_D = 1 \text{ A}, V_{DS} = 20 \text{ V}^{*1}$
Input capacitance	Ciss	—	160	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	Coss	—	45	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	Crss	—	5	—	pF	
Turn-on delay time	$t_{d(on)}$	—	5	—	ns	$I_D = 1 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	t_r	—	10	—	ns	$R_L = 30$
Turn-off delay time	$t_{d(off)}$	—	20	—	ns	
Fall time	t_f	—	10	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	$I_F = 1.5 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	220	—	ns	$I_F = 1.5 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 1. Pulse test

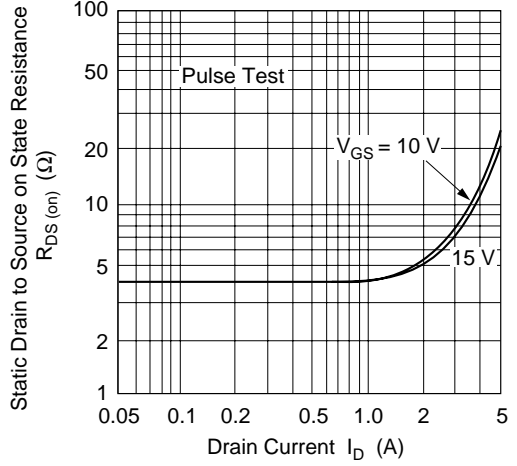
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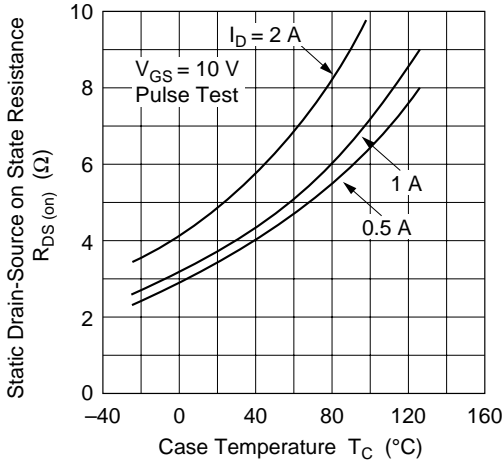
Drain to Source Saturation Voltage vs. Gate to Source Voltage



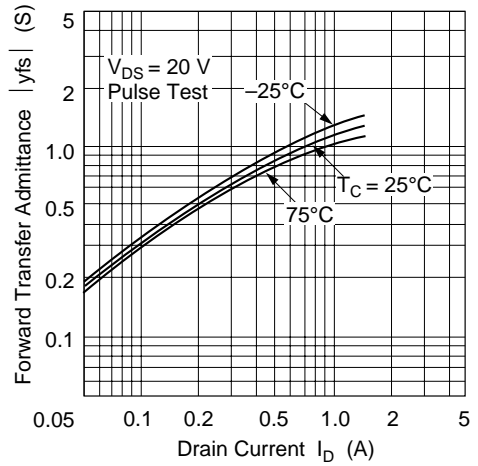
Static Drain to Source on State Resistance vs. Drain Current



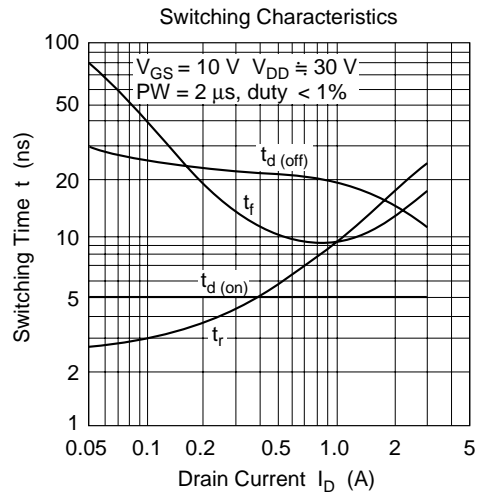
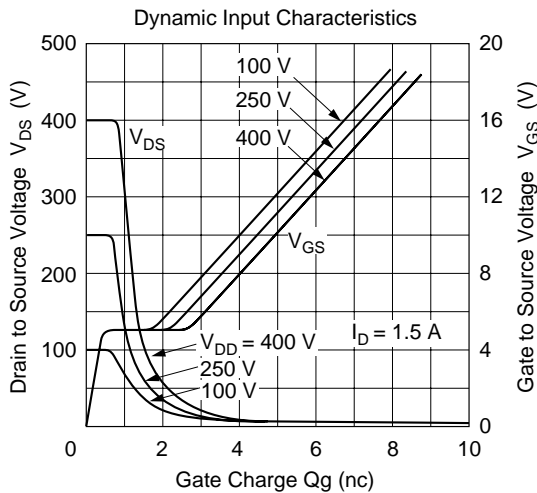
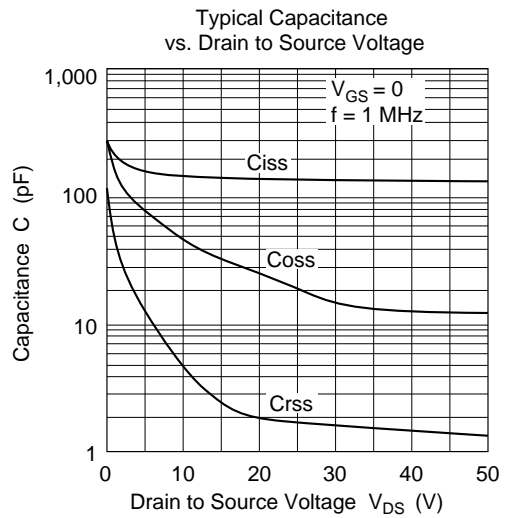
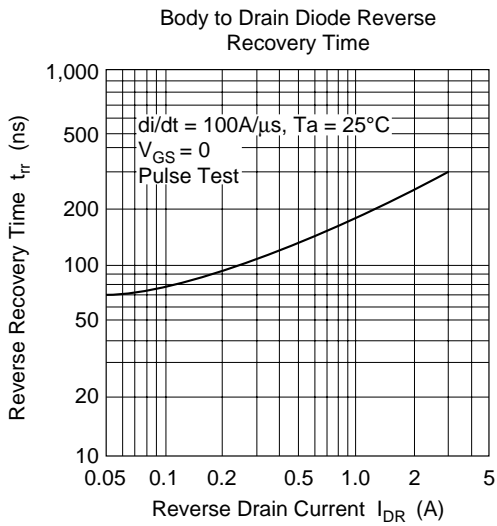
Static Drain to Source on State Resistance vs. Temperature



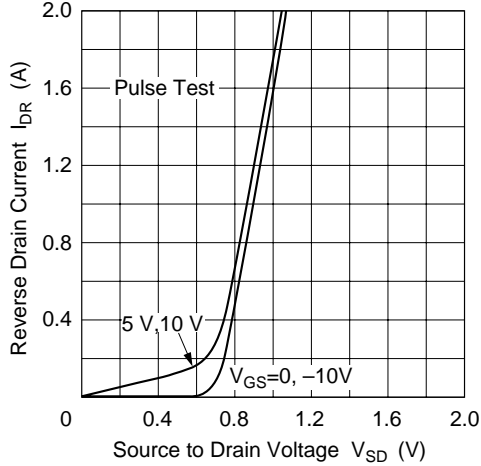
Forward Transfer Admittance vs. Drain Current



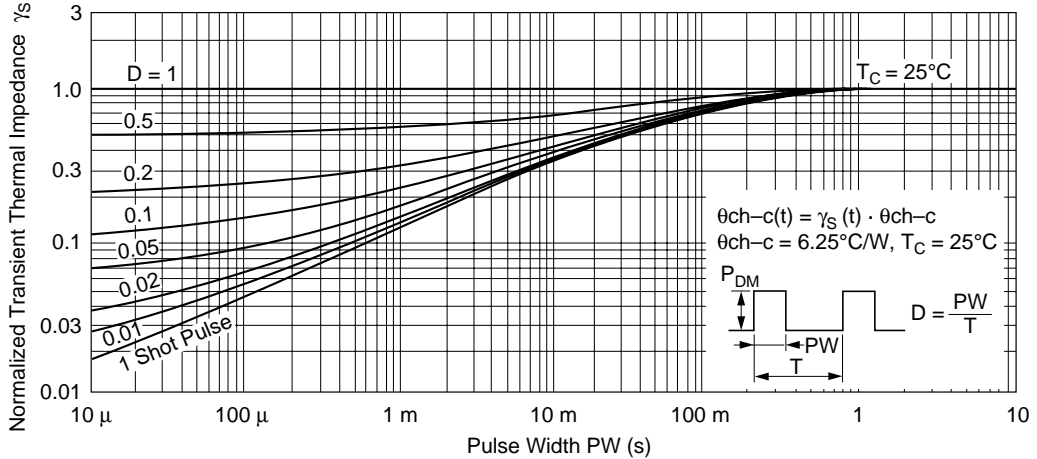
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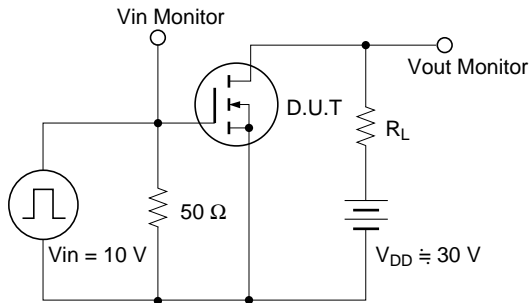
Reverse Drain Current vs. Source to Drain Voltage



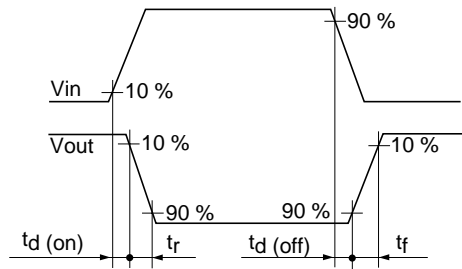
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveforms

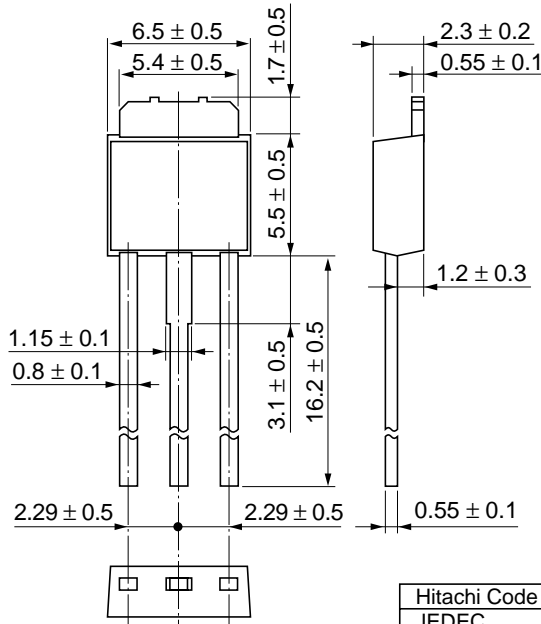


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Package Dimensions

As of January, 2001

Unit: mm



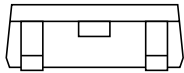
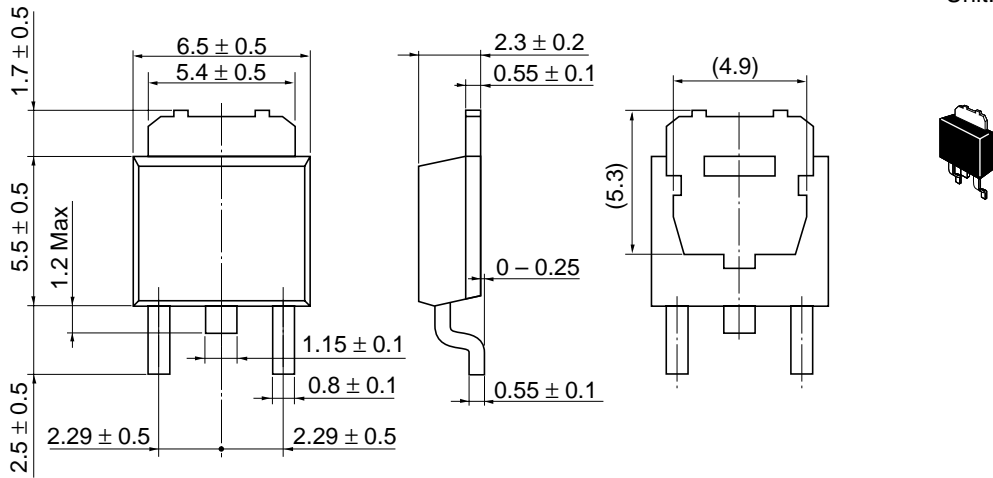
Hitachi Code	DPAK (L)-(1)
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.42 g

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As of January, 2001

Unit: mm

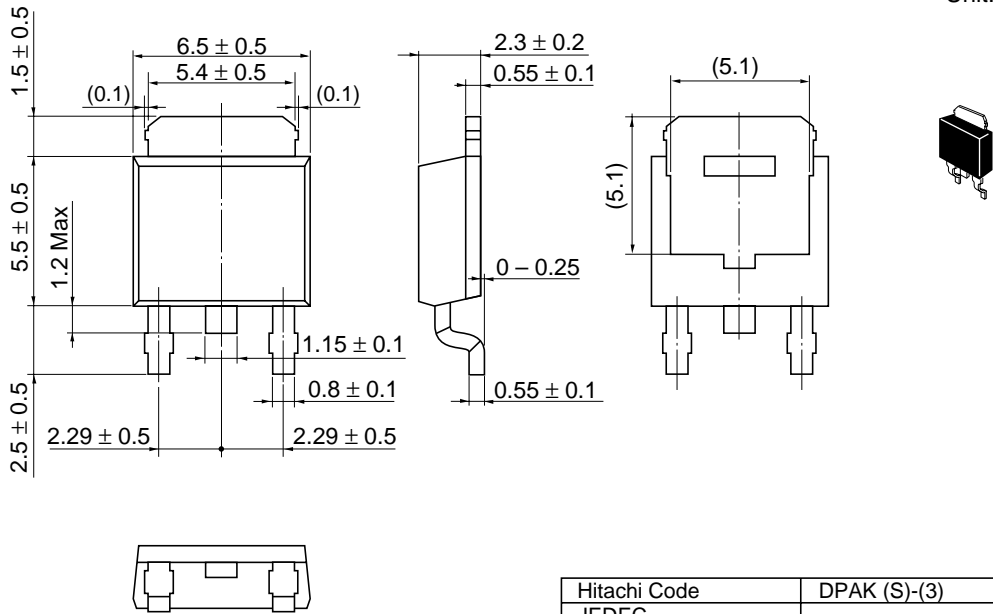


Hitachi Code	DPAK (S)-(1),(2)
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.28 g

2SK1151(L)(S), 2SK1152(L)(S)

As of January, 2001

Unit: mm



Hitachi Code	DPAK (S)-(3)
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.28 g

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