
2SK2084(L), 2SK2084(S)

Silicon N-Channel MOS FET

HITACHI

November 1996

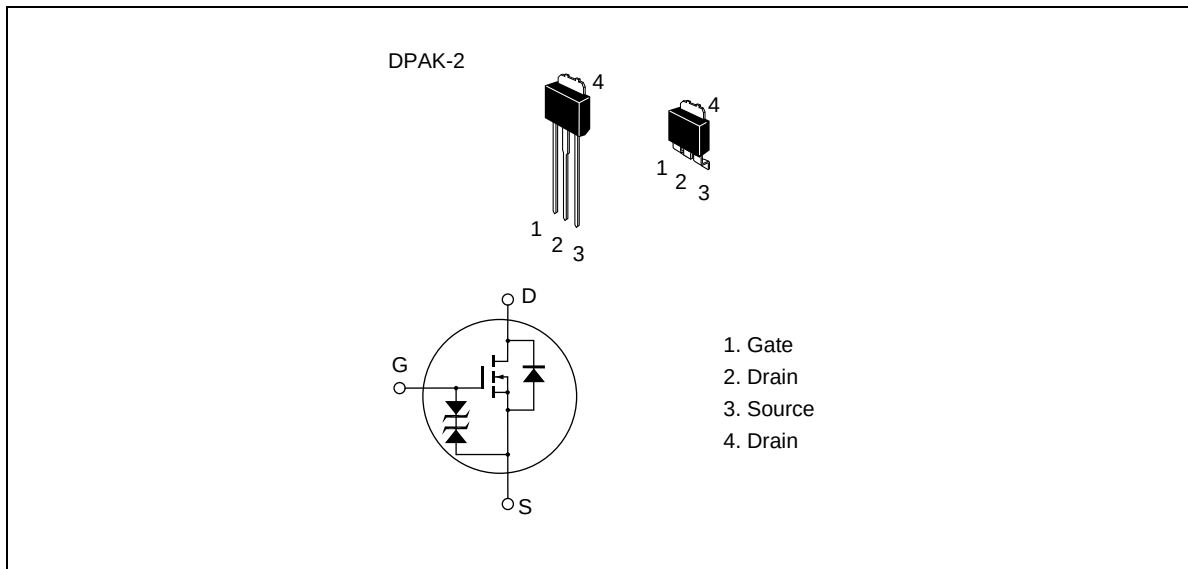
Application

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)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	20	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	7	A
Drain peak current	I _{D(pulse)} ^{*1}	28	A
Body to drain diode reverse drain current	I _{DR}	7	A
Channel dissipation	Pch ^{*2}	20	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes 1. PW ≤ 10 μs, duty cycle ≤ 1 %
2. Value at Tc = 25°C

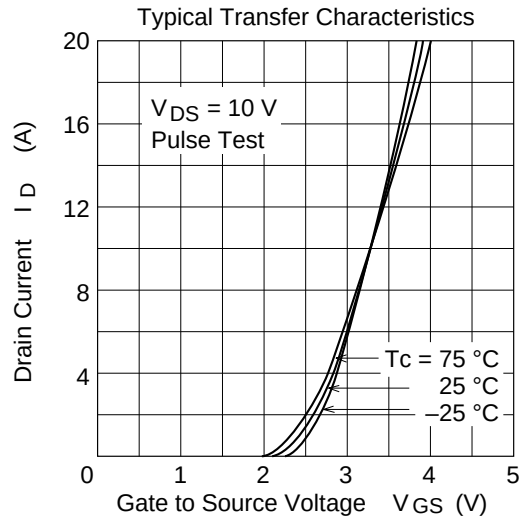
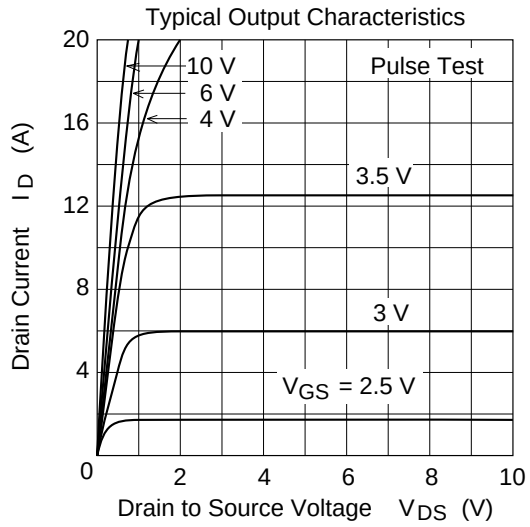
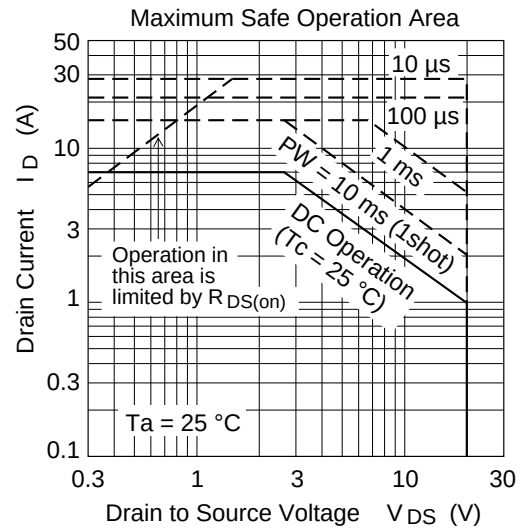
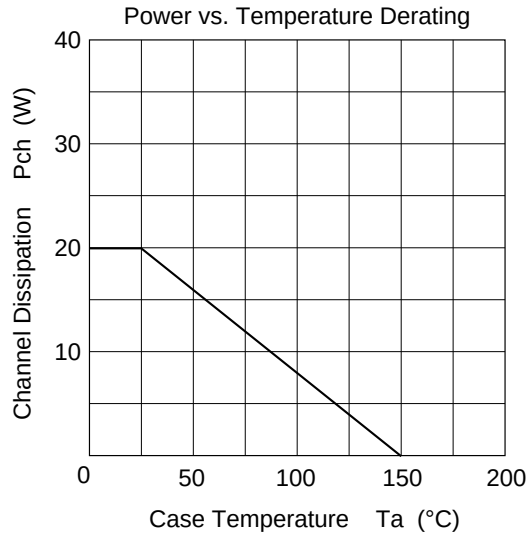
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Electrical Characteristics (Ta = 25°C)

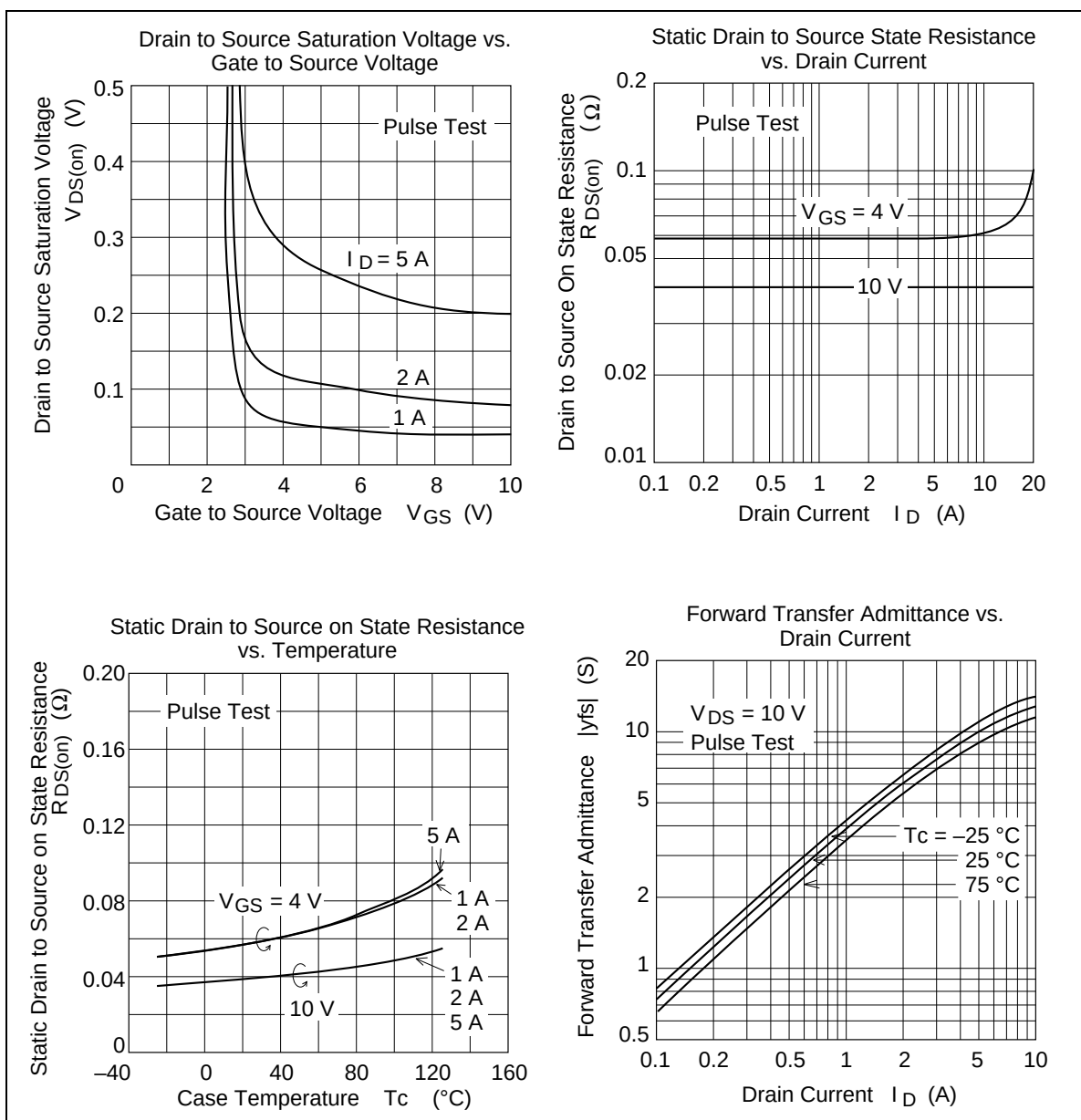
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 16 \text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.04	0.053	Ω	$I_D = 4 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$
		—	0.058	0.075	Ω	$I_D = 4 \text{ A}$ $V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	5	9	—	S	$I_D = 4 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	800	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	680	—	pF	
Reverse transfer capacitance	C_{rss}	—	165	—	pF	
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = 4 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 5 \text{ }\Omega$
Rise time	t_r	—	60	—	ns	
Turn-off delay time	$t_{d(off)}$	—	100	—	ns	
Fall time	t_f	—	80	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_F = 7 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	80	—	ns	$I_F = 7 \text{ A}$, $V_{GS} = 0$, $diF / dt = 20 \text{ A} / \mu\text{s}$

Note 1. Pulse Test

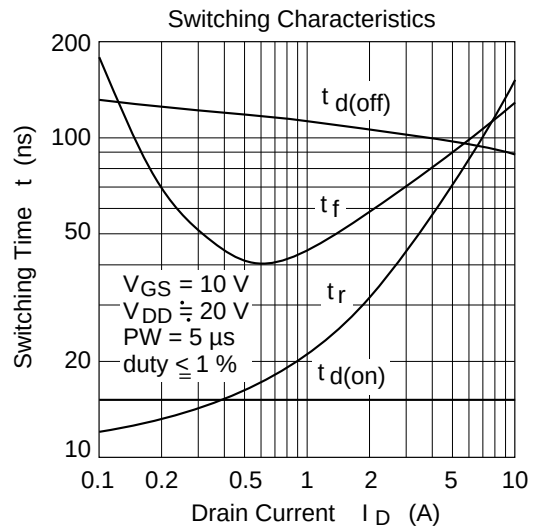
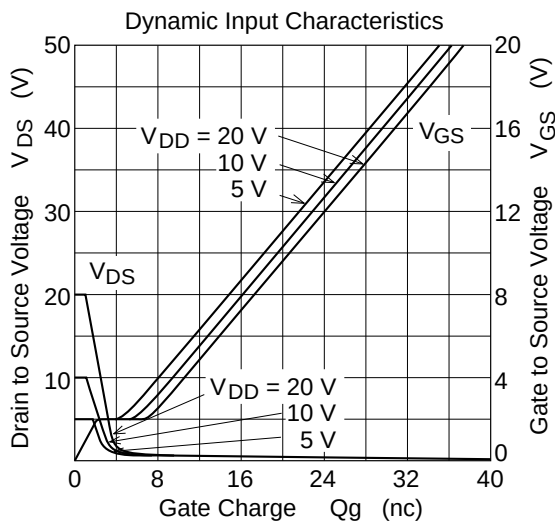
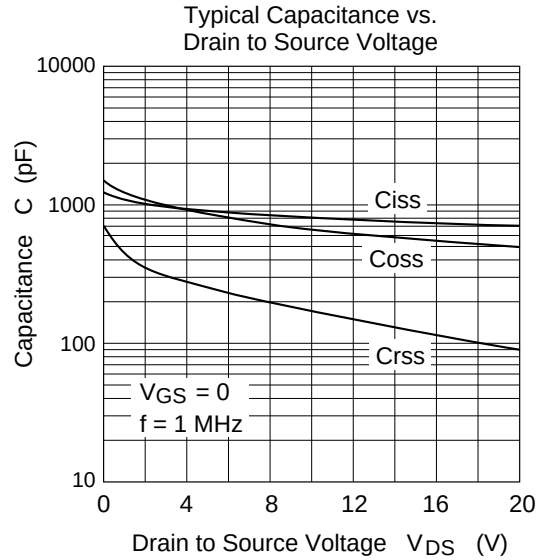
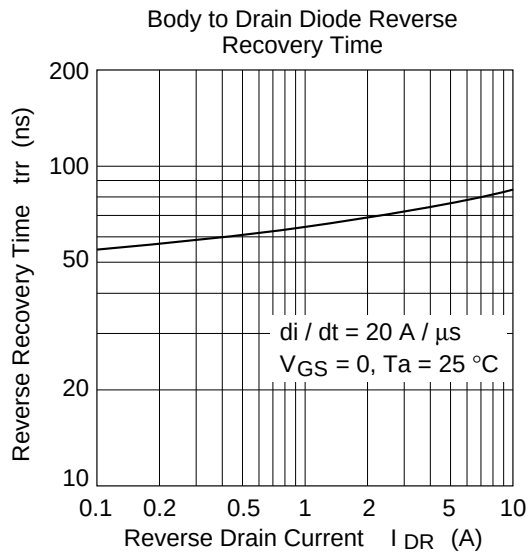
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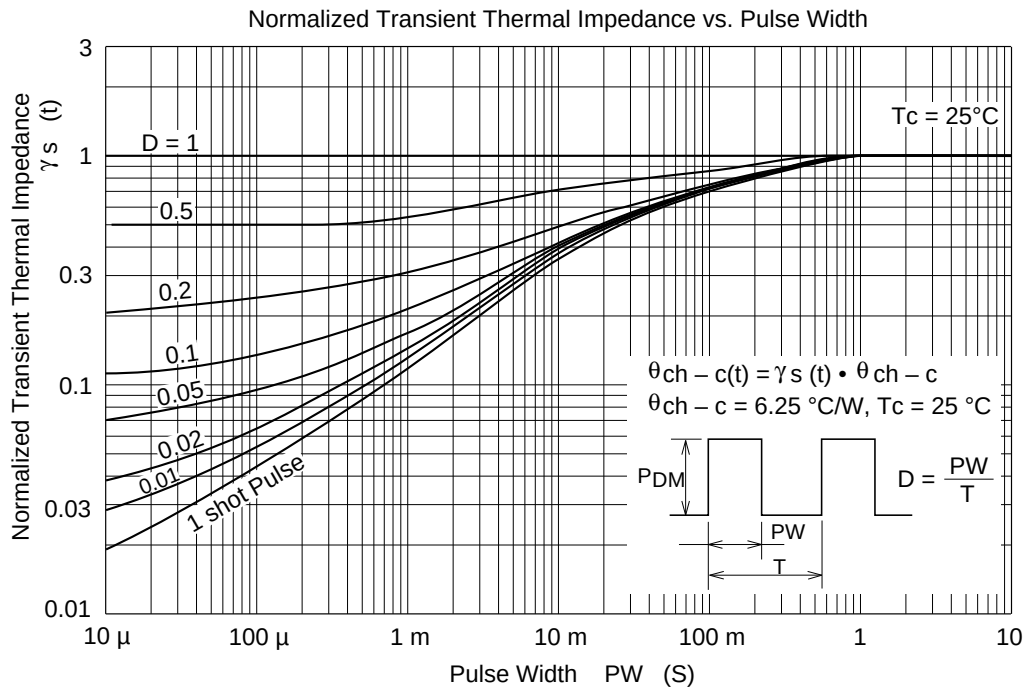
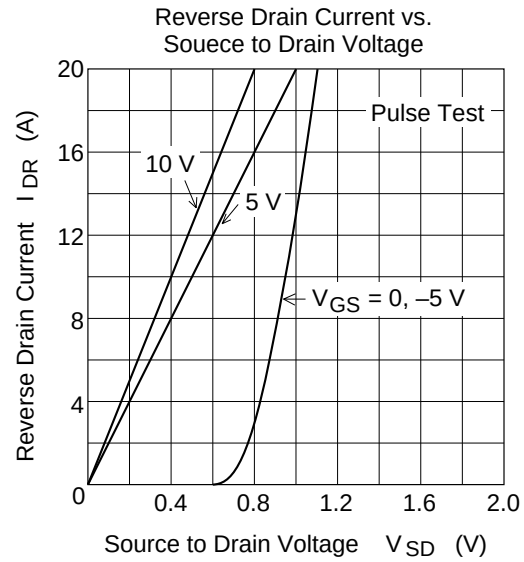
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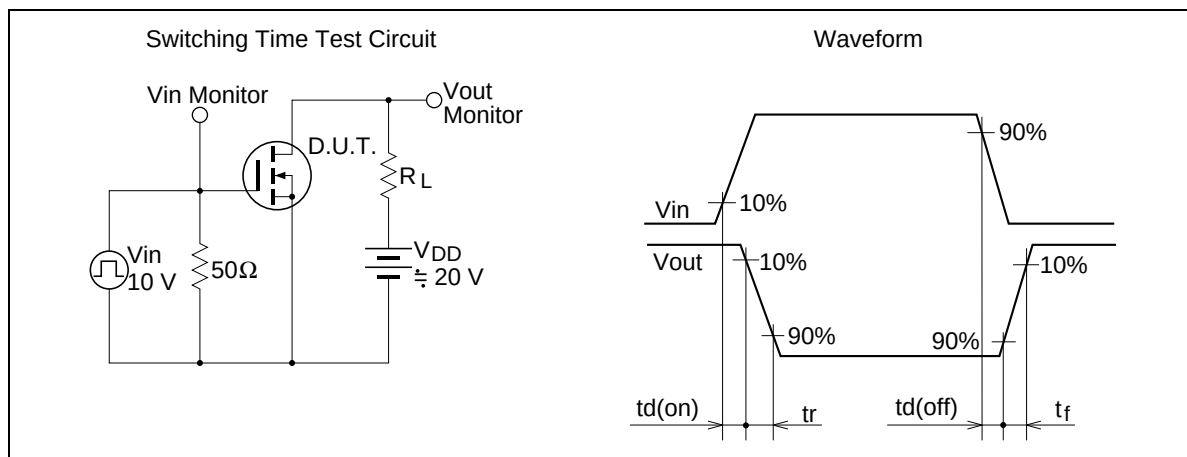
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