
4AK19

Silicon N Channel MOS FET
High Speed Power Switching

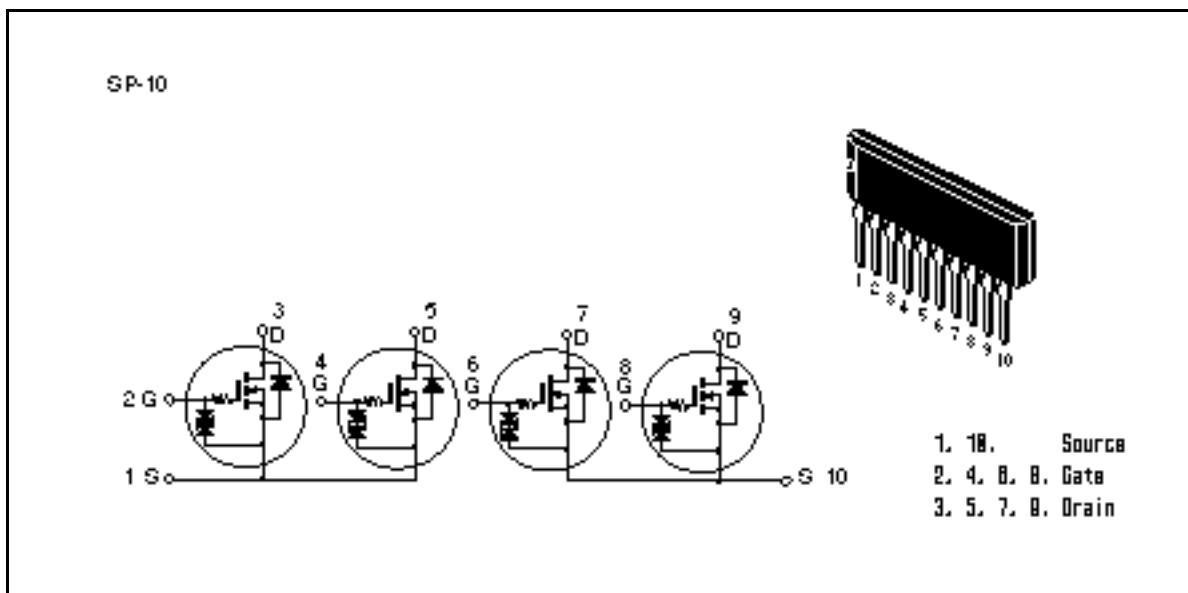
HITACHI

ADE-208-727 (Z)
1st. Edition
January 1999

Features

- Low on-resistance
N Channel : $R_{DS(on)} = 0.5$, $V_{GS} = 10V$, $I_D = 2.5A$
 $R_{DS(on)} = 0.6$, $V_{GS} = 4V$, $I_D = 2.5A$
- 4V gate drive devices.
- High density mounting

Outline



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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	120	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	5	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	10	A
Body-drain diode reverse drain current	I_{DR}	5	A
Channel dissipation	$P_{ch}(T_c=25^\circ C)$ ^{Note2}	28	W
Channel dissipation	P_{ch} ^{Note2}	3.5	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Note: 1. PW 10μs, duty cycle 1 %
2. 4 devices poeration

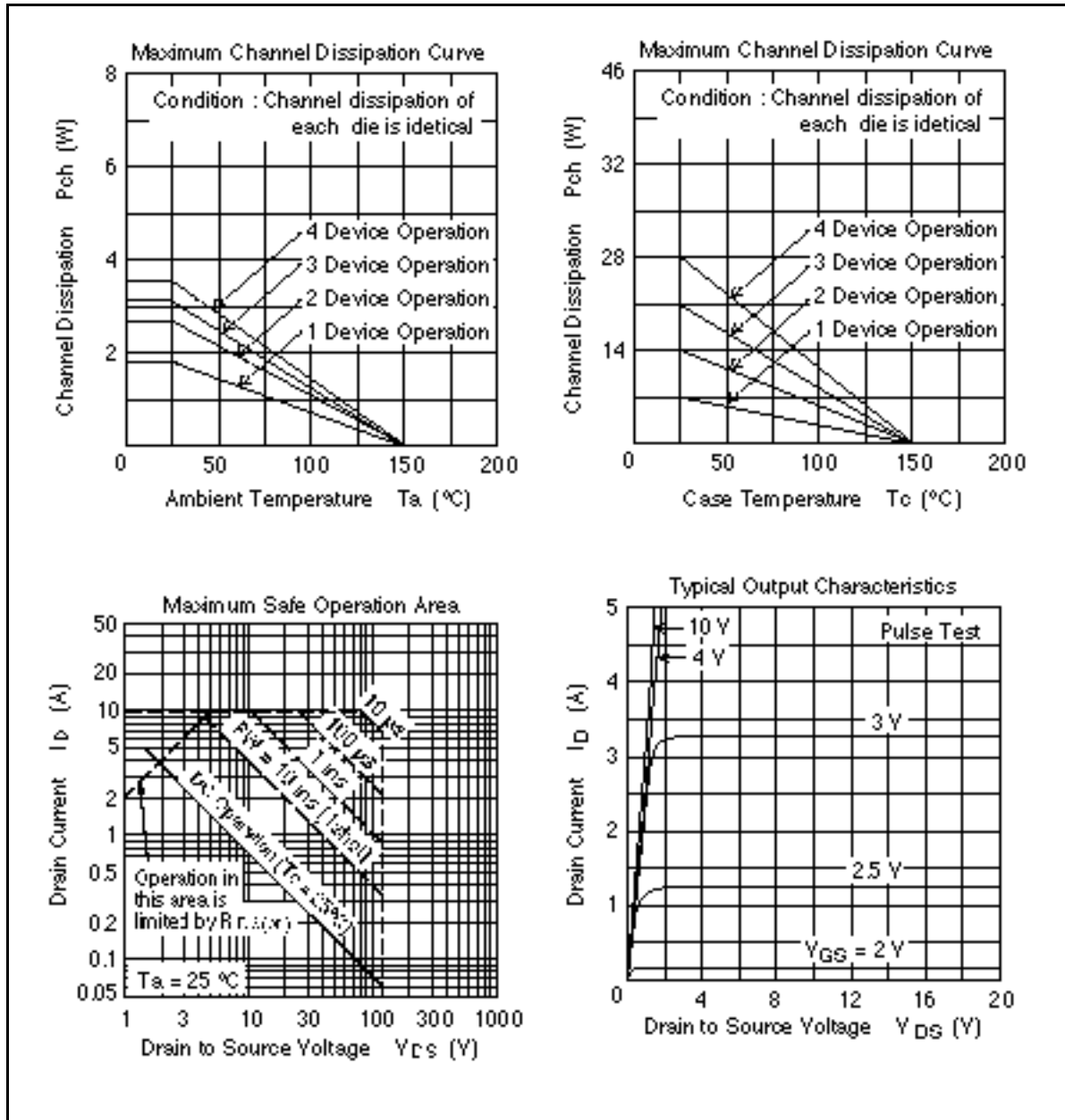
Electrical Characteristics (Ta = 25°C)

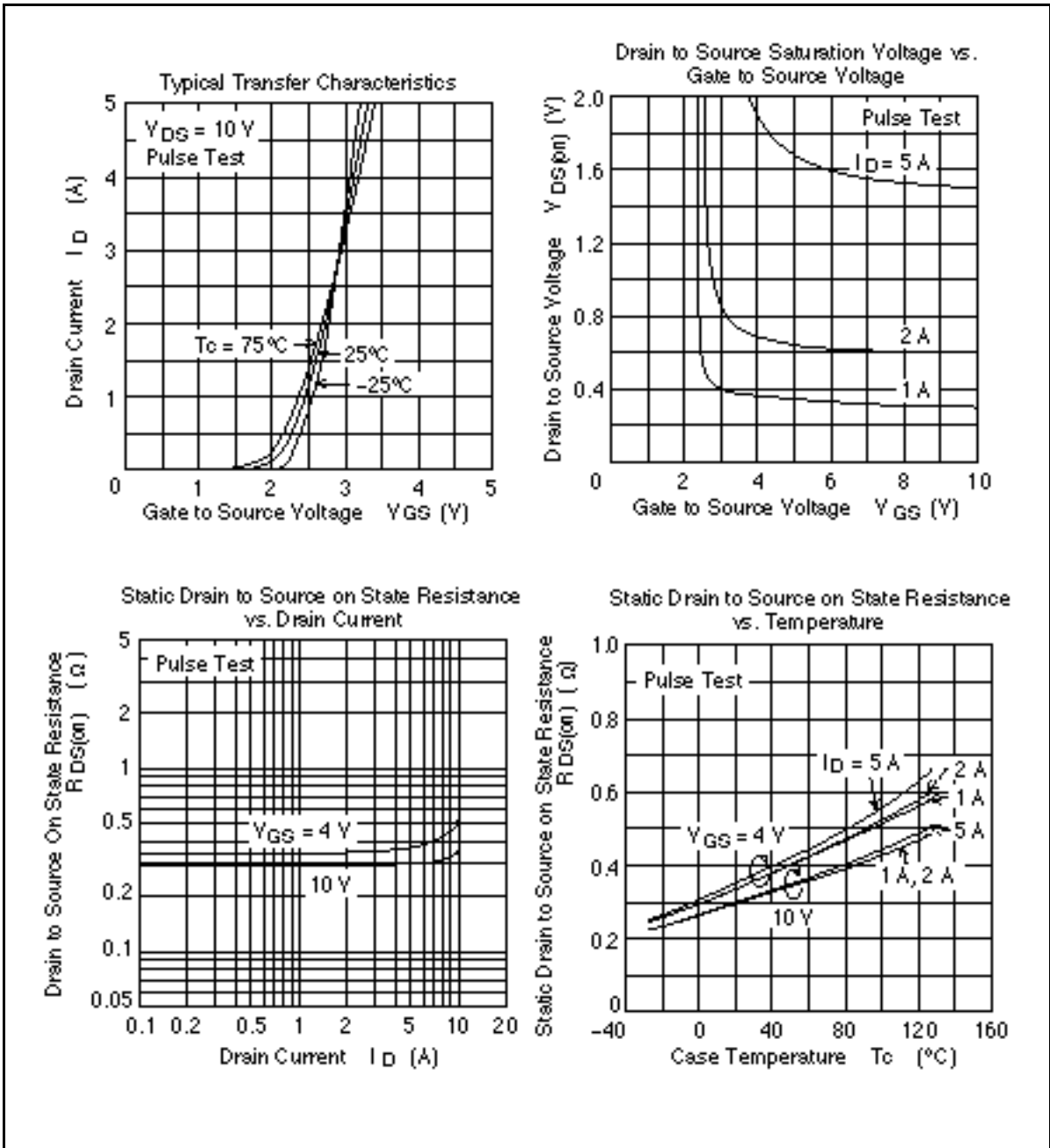
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	120	—	—	V	$I_D = 10\text{mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100\mu\text{A}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 100\text{V}, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16\text{V}, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1\text{mA}, V_{DS} = 10\text{V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.3	0.5		$I_D = 2.5\text{A}, V_{GS} = 10\text{V}^{\text{Note3}}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.35	0.6		$I_D = 2.5\text{A}, V_{GS} = 4\text{V}^{\text{Note3}}$
Forward transfer admittance	$ y_{fs} $	3	5	—	S	$I_D = 2.5\text{A}, V_{DS} = 10\text{V}^{\text{Note3}}$
Input capacitance	C_{iss}	—	25	—	pF	$V_{DS} = 10\text{V}$
Output capacitance	C_{oss}	—	140	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	3	—	pF	$f = 1\text{MHz}$
Gate series resistance	R_g	—	2.5	—	k	$V_{DS} = 0, V_{GS} = 0, f = 1\text{MHz}$
Turn-on delay time	$t_{d(on)}$	—	0.3	—	μs	$V_{GS} = 10\text{V}, I_D = 2.5\text{A}$
Rise time	t_r	—	0.45	—	μs	$R_L = 12$
Turn-off delay time	$t_{d(off)}$	—	6.6	—	μs	
Fall time	t_f	—	1.4	—	μs	
Body-drain diode forward voltage	V_{DF}	—	1.1	—	V	$I_F = 5\text{A}, V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	600	—	ns	$I_F = 5\text{A}, V_{GS} = 0$ $di_F/dt = 50\text{A}/\mu\text{s}$

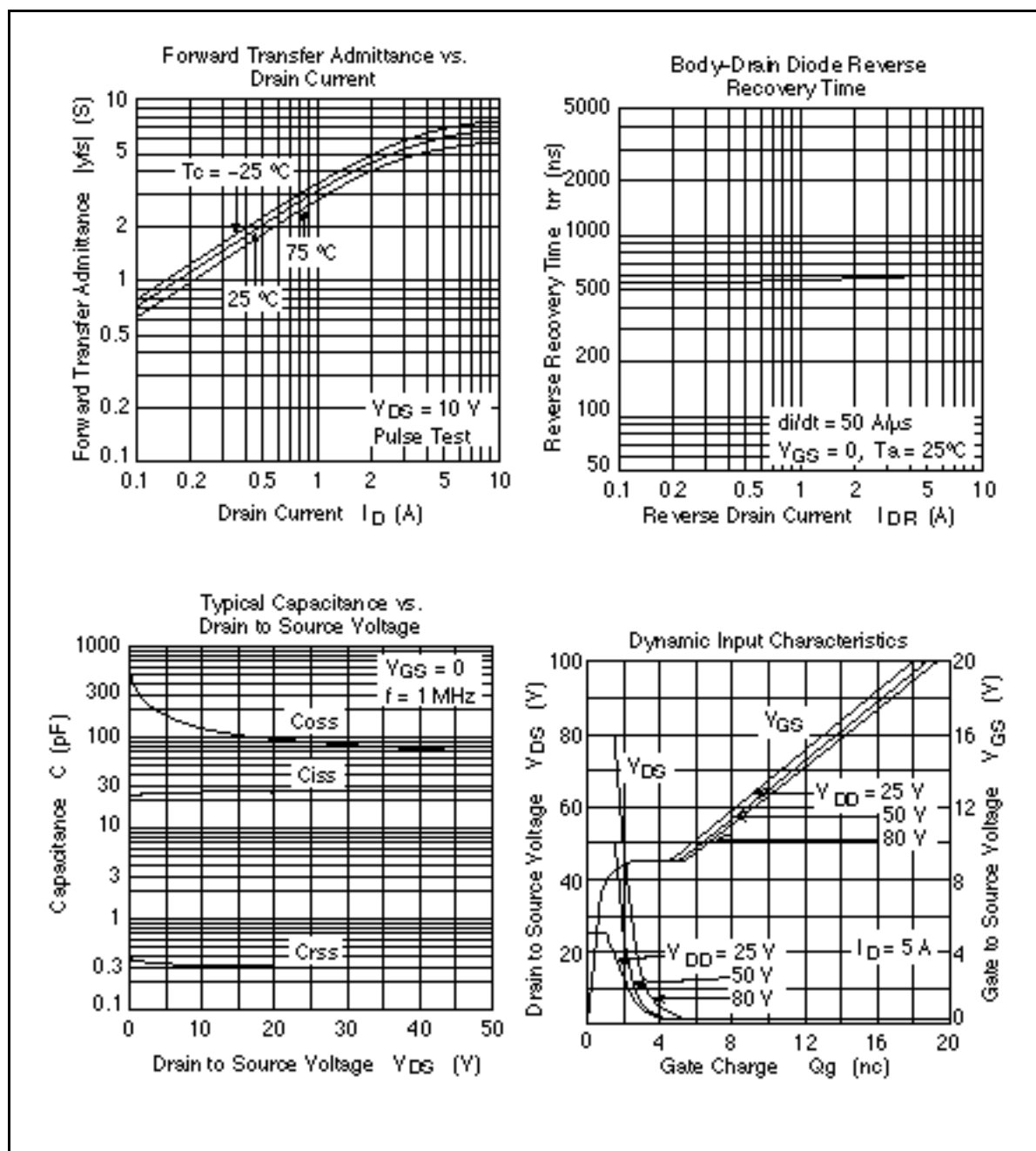
Note: 3. Pulse test

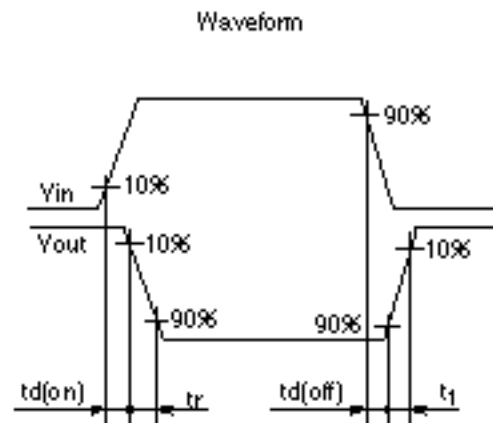
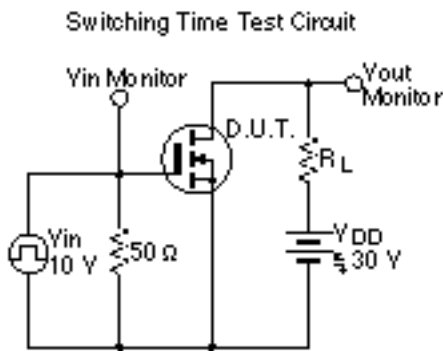
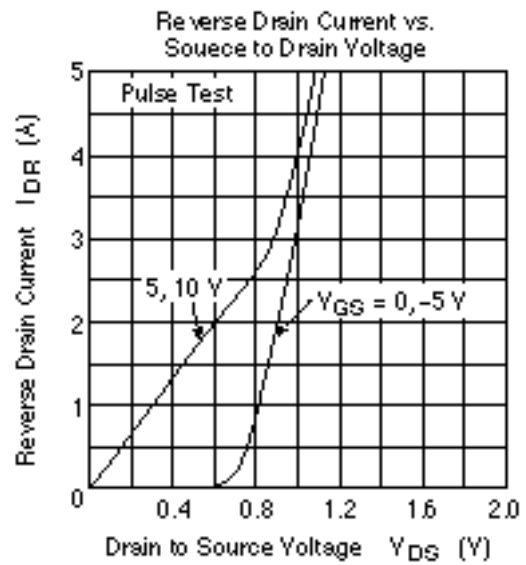
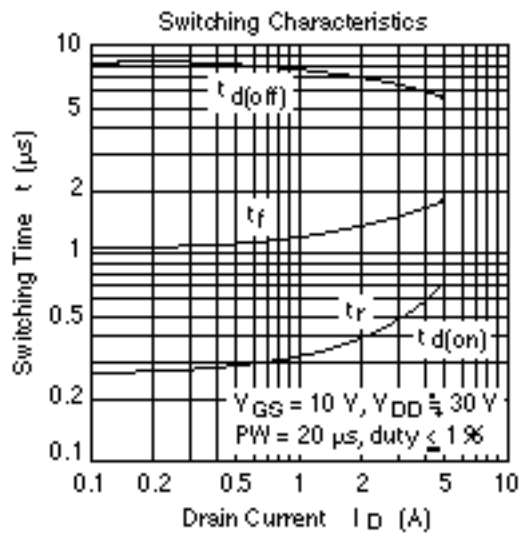
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Main Characteristics









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