
2SK1301

Silicon N-Channel MOS FET

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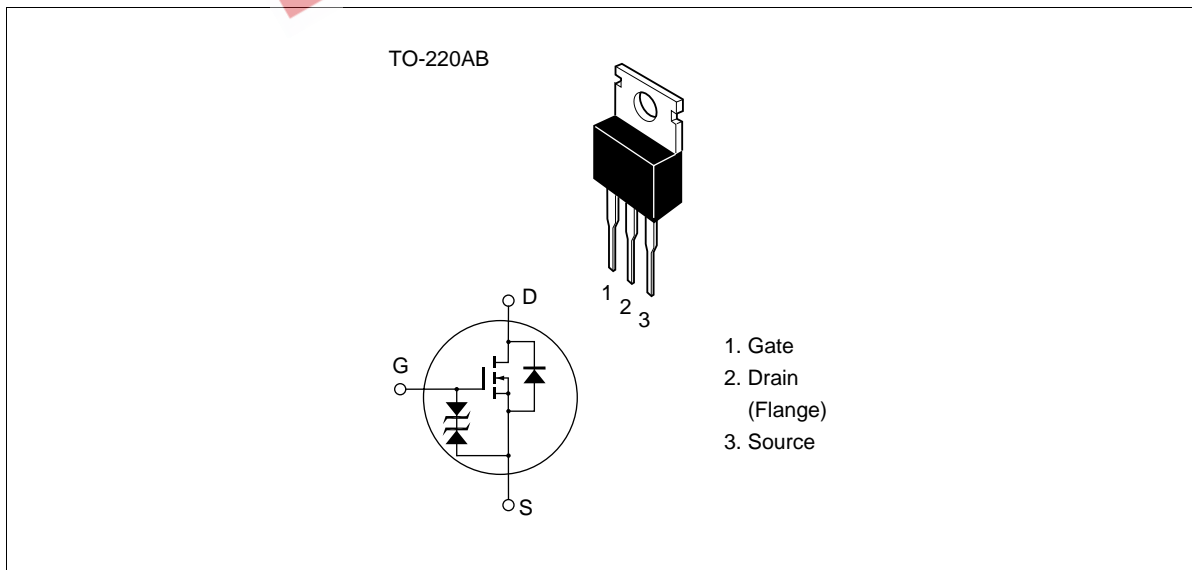
Application

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 motor drive, DC-DC converter, power switch and solenoid drive

Outline



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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	100	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	15	A
Drain peak current	I _{D(pulse)} *1	60	A
Body to drain diode reverse drain current	I _{DR}	15	A
Channel dissipation	Pch*2	50	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T_c = 25°C

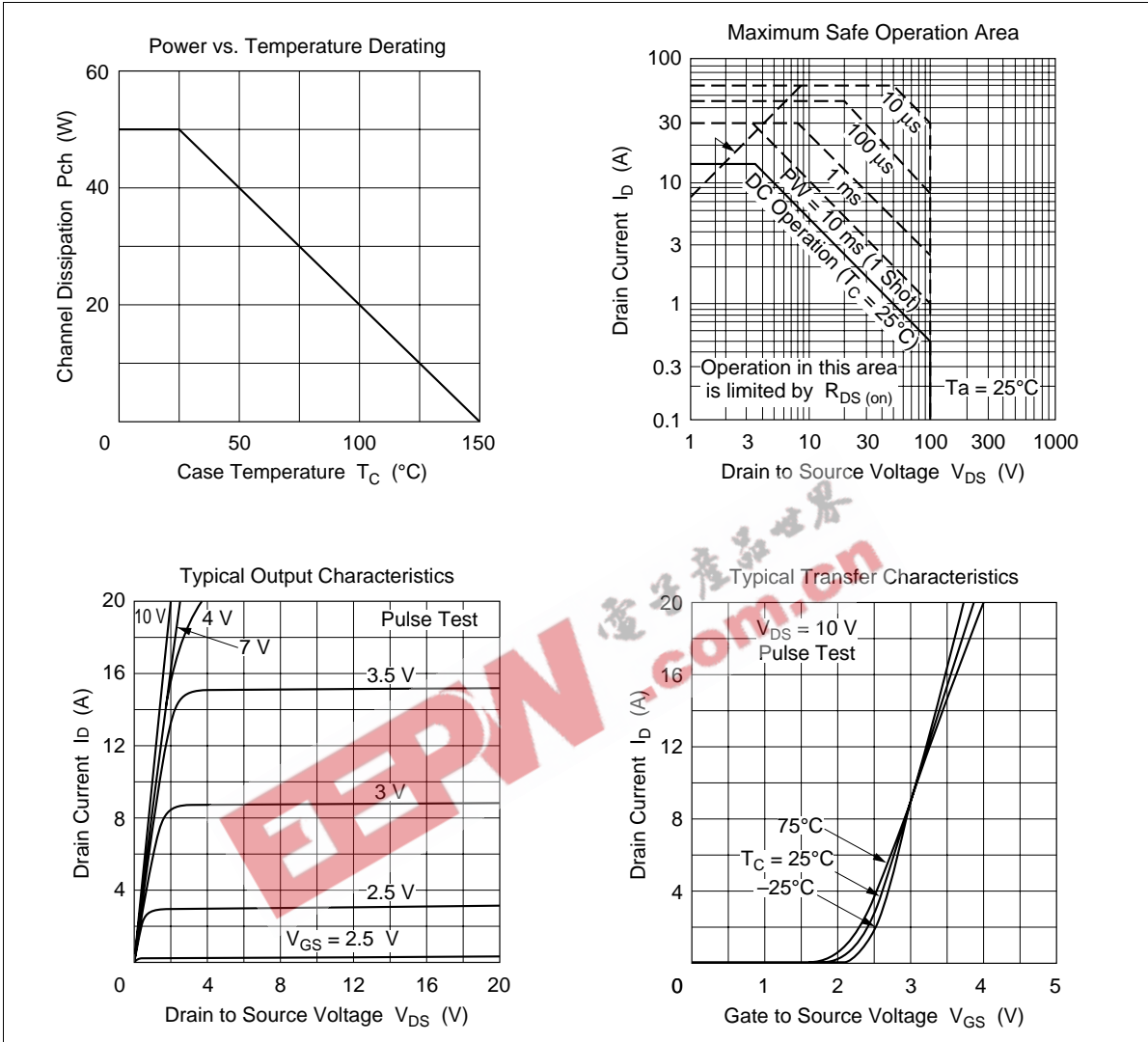
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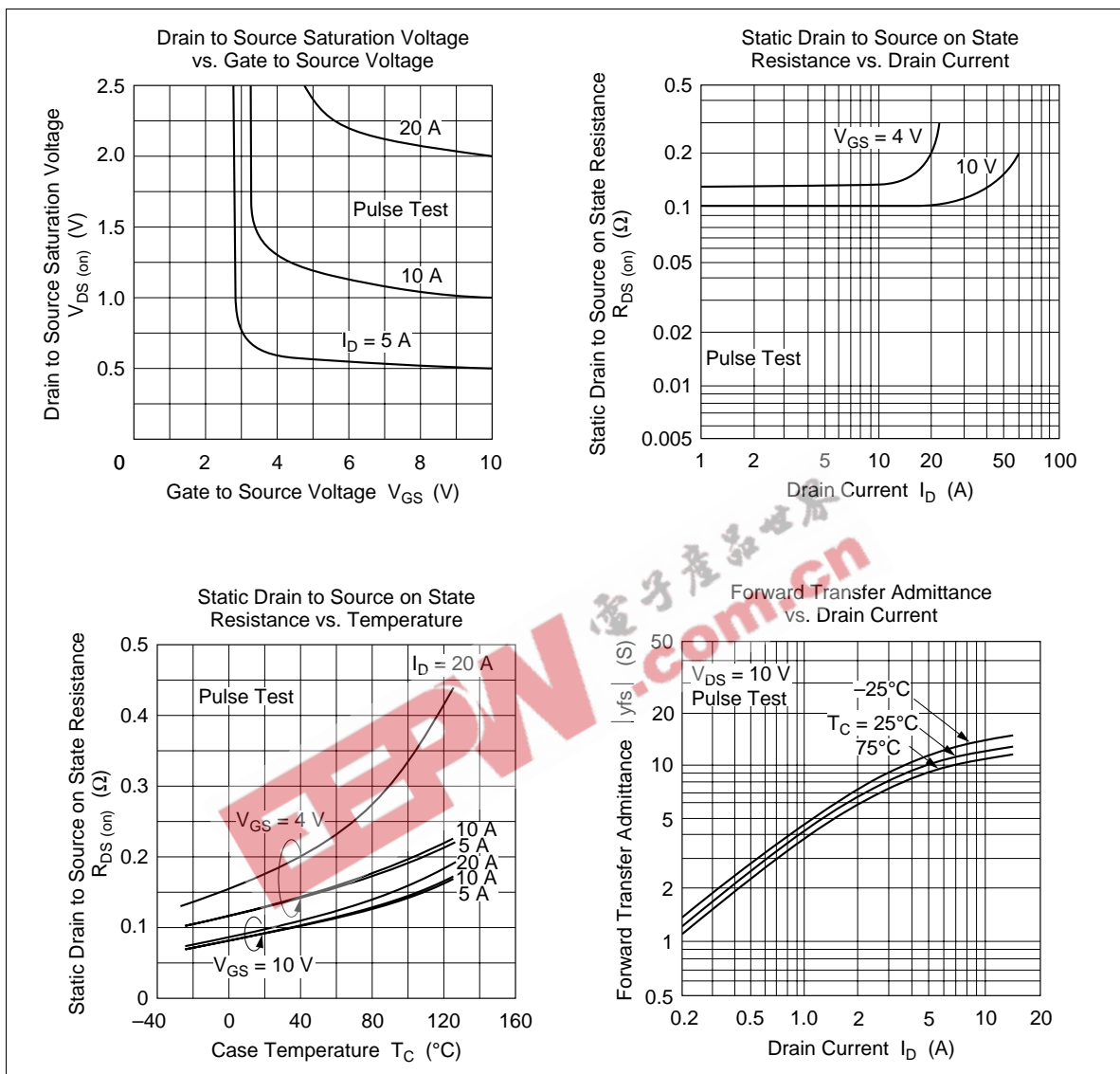
Electrical Characteristics (T_a = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	100	—	—	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}	—	—	250	μA	$V_{DS} = 80 \text{ V}, V_{GS} = 0$
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	$R_{DS(on)}$	—	0.10	0.13	Ω	$I_D = 8 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
		—	0.13	0.18	Ω	$I_D = 8 \text{ A}, V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	y _{fs}	7	11	—	S	$I_D = 8 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C _{iss}	—	860	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	C _{oss}	—	340	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	C _{rss}	—	100	—	pF	
Turn-on delay time	t _{d(on)}	—	10	—	ns	$I_D = 8 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	t _r	—	70	—	ns	$R_L = 3.75 \text{ } \Omega$
Turn-off delay time	t _{d(off)}	—	180	—	ns	
Fall time	t _f	—	100	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.3	—	V	$I_F = 15 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t _{rr}	—	250	—	ns	$I_F = 15 \text{ A}, V_{GS} = 0,$ $di_F/dt = 50 \text{ A}/\mu\text{s}$

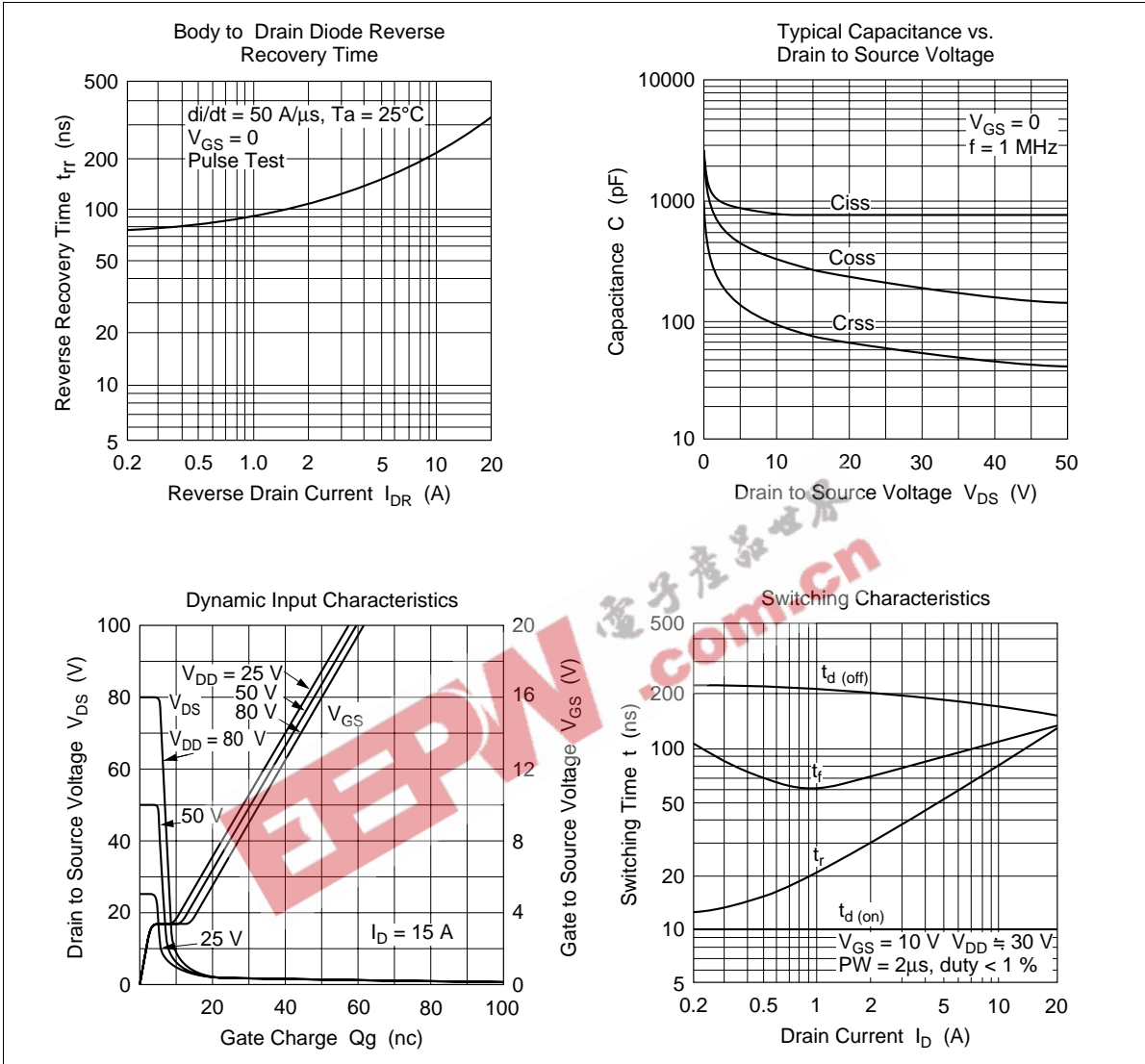
Note: 1. Pulse test

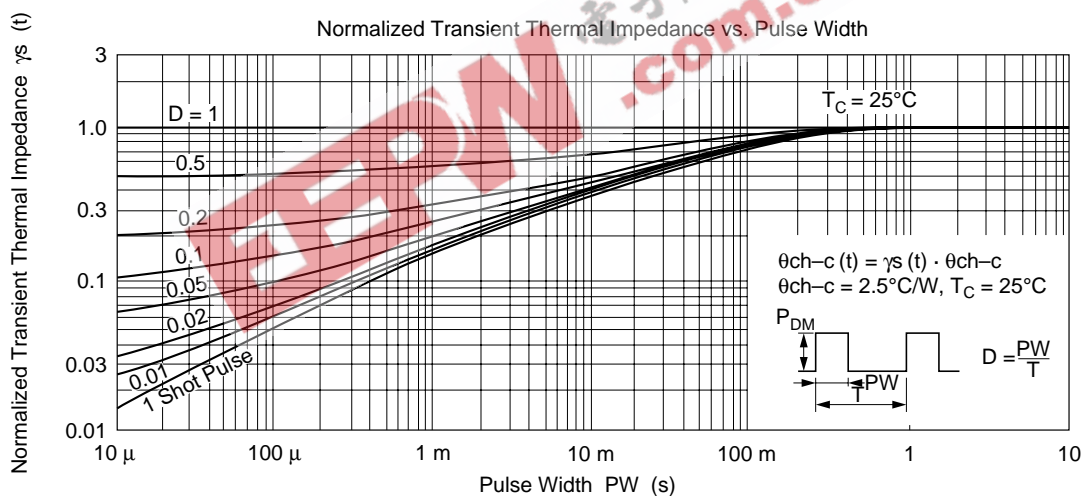
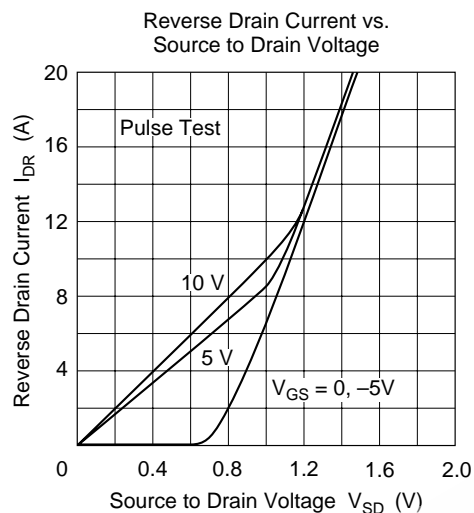
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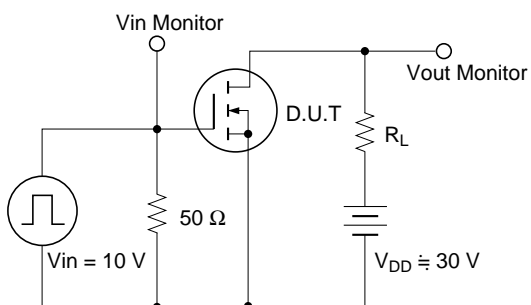


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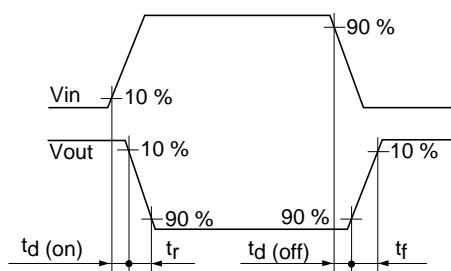




Switching Time Test Circuit

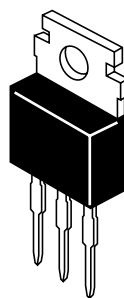
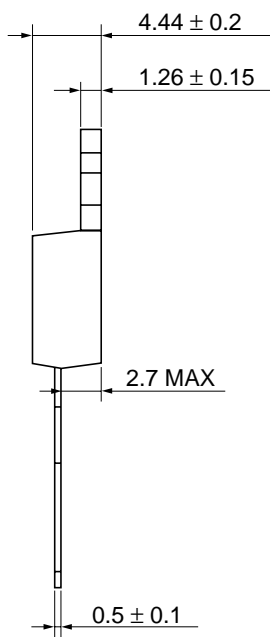
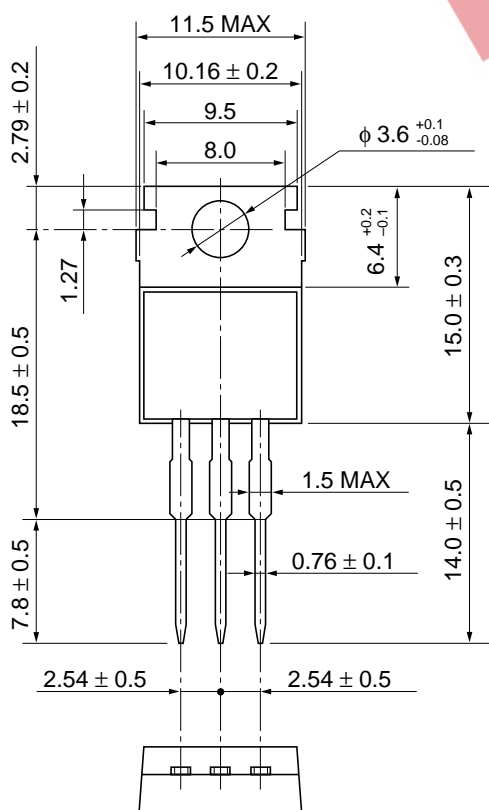


Waveforms



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Unit: mm



Hitachi Code	TO-220AB
JEDEC	Conforms
EIAJ	Conforms
Weight (reference value)	1.8 g

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