
2SJ541

Silicon P Channel MOS FET
High Speed Power Switching

HITACHI

ADE-208-590B (Z)

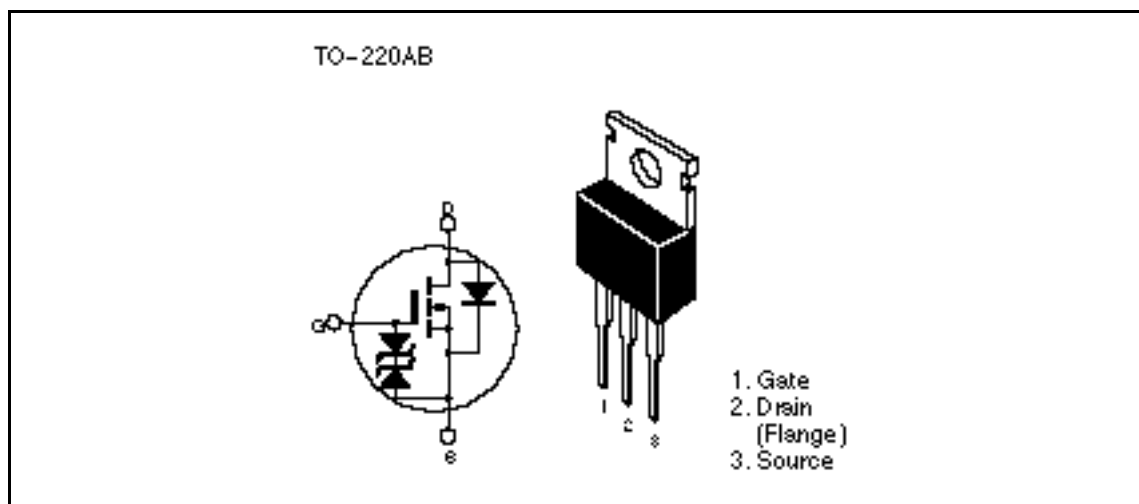
3rd. Edition

Jun 1998

Features

- Σ Low on-resistance
 $R_{DS(on)} = 0.075W_{typ.}$
- Σ Low drive current.
- Σ 4V gate drive devices.
- Σ High speed switching.

Outline



2SJ541

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	-60	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	-15	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	-60	A
Body-drain diode reverse drain current	I_{DR}	-15	A
Avalanche current	I_{AP} ^{Note3}	-15	A
Avalanche energy	E_{AR} ^{Note3}	19	mJ
Channel dissipation	P_{ch} ^{Note2}	50	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

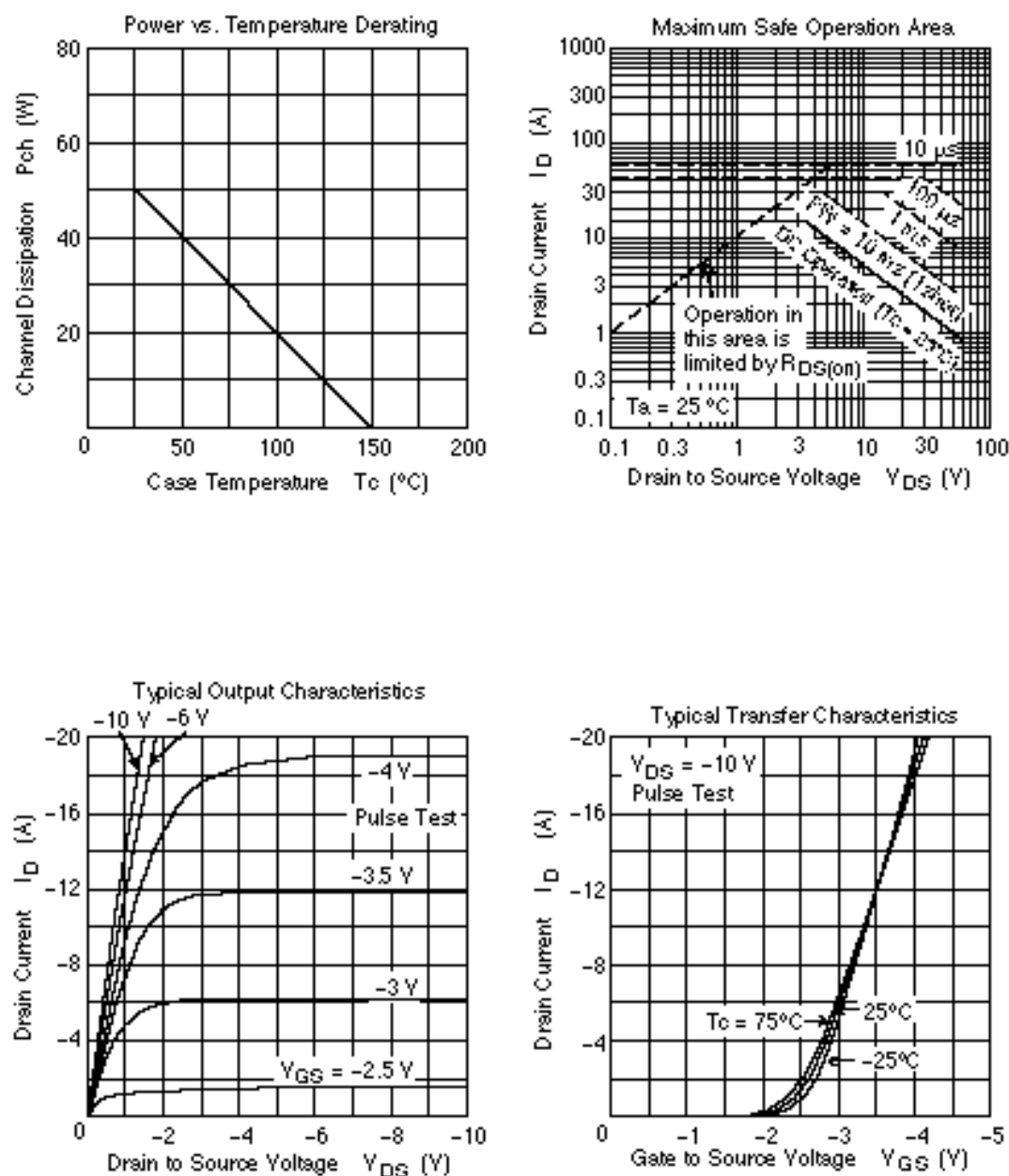
Note: 1. PW ≤ 10ms, duty cycle ≤ 1 %
 2. Value at Tc = 25°C
 3. Value at Tch = 25°C, Rg ≥ 50 W

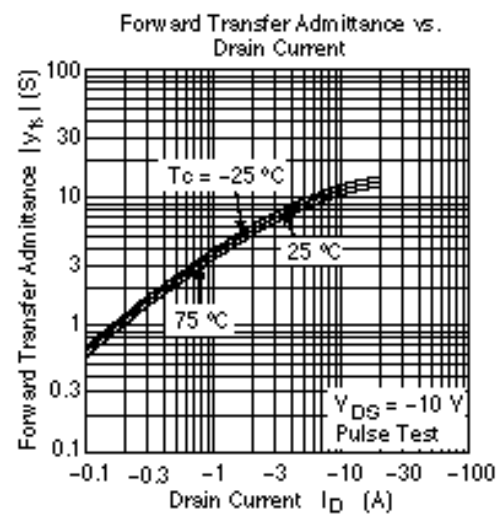
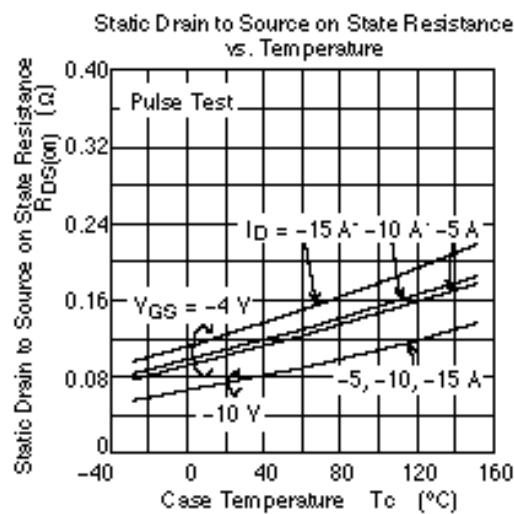
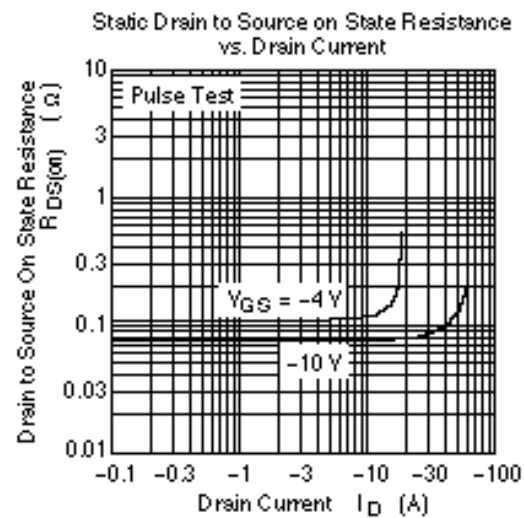
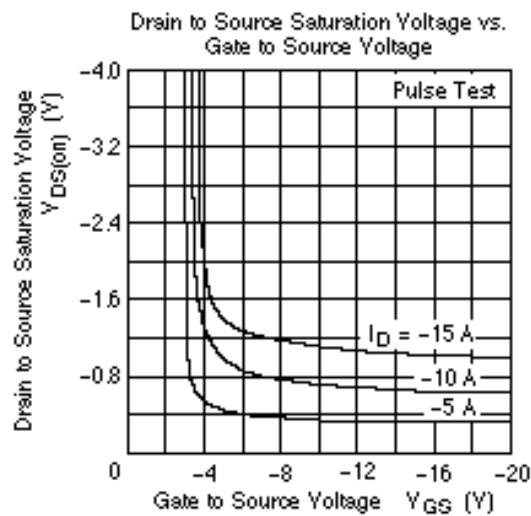
Electrical Characteristics (Ta = 25°C)

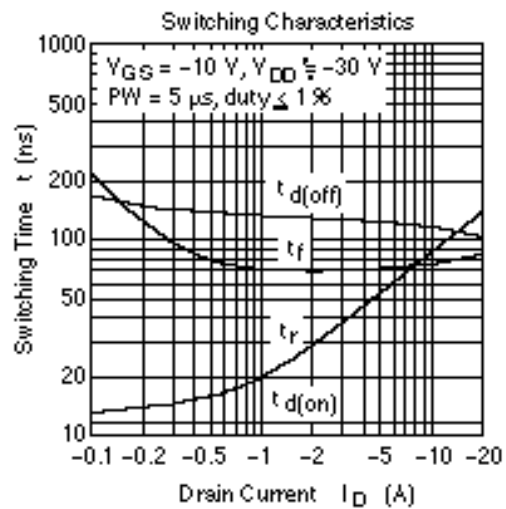
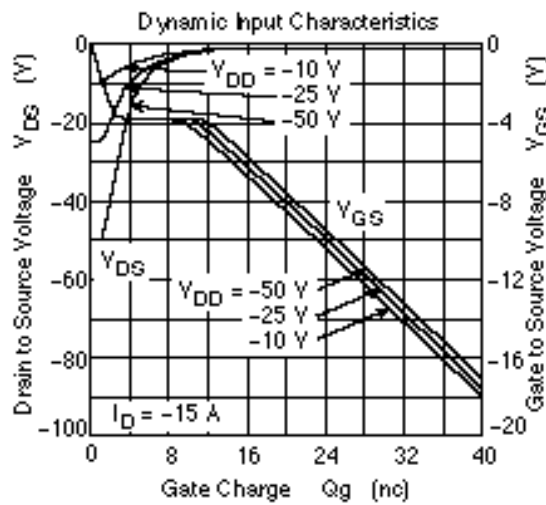
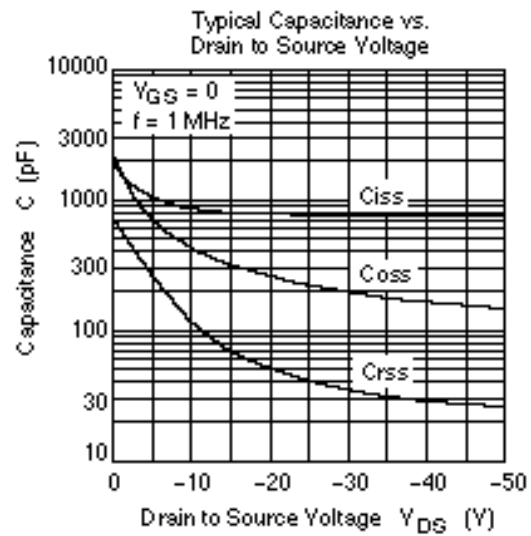
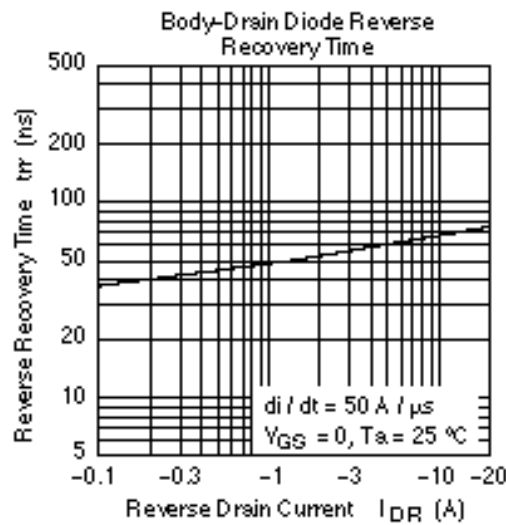
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-60	—	—	V	$I_D = -10mA, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = ±100mA, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-10	mA	$V_{DS} = -60V, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	mA	$V_{GS} = ±16V, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.0	V	$I_D = -1mA, V_{DS} = -10V$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.075	0.095	W	$I_D = -8A, V_{GS} = -10V$ ^{Note4}
	$R_{DS(on)}$	—	0.105	0.155	W	$I_D = -8A, V_{GS} = -4V$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	6.5	11	—	S	$I_D = -8A, V_{DS} = -10V$ ^{Note4}
Input capacitance	C_{iss}	—	850	—	pF	$V_{DS} = -10V$
Output capacitance	C_{oss}	—	420	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	110	—	pF	f = 1MHz
Turn-on delay time	$t_{d(on)}$	—	12	—	ns	$V_{GS} = -10V, I_D = -8A$
Rise time	t_r	—	75	—	ns	$R_L = 3.75W$
Turn-off delay time	$t_{d(off)}$	—	125	—	ns	
Fall time	t_f	—	75	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-1.1	—	V	$I_F = -15A, V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	70	—	ns	$I_F = -15A, V_{GS} = 0$ diF/ dt = 50A/μs

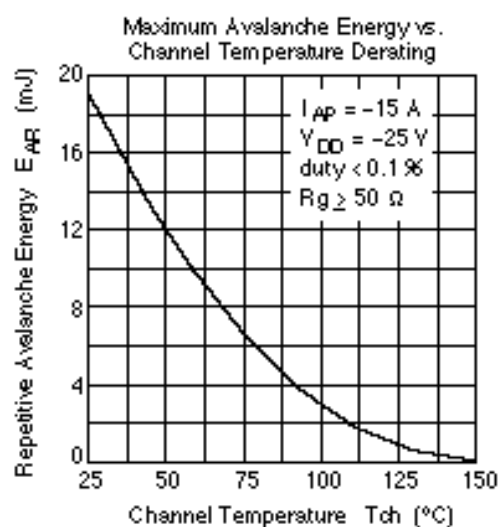
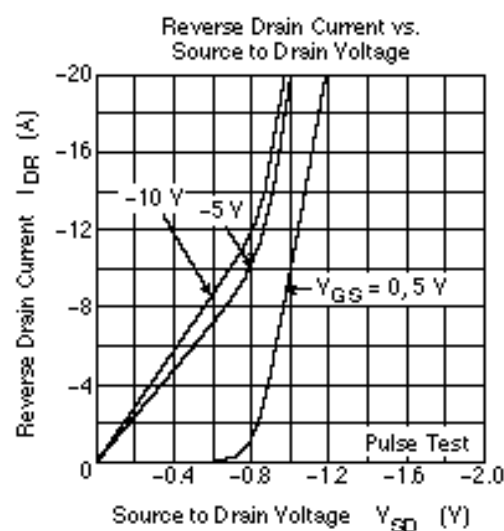
Note: 4. Pulse test

Main Characteristics

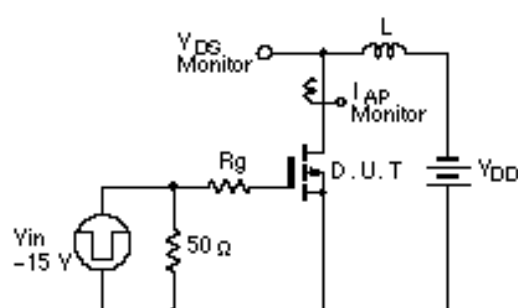




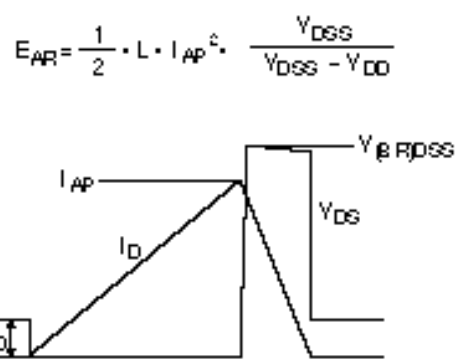


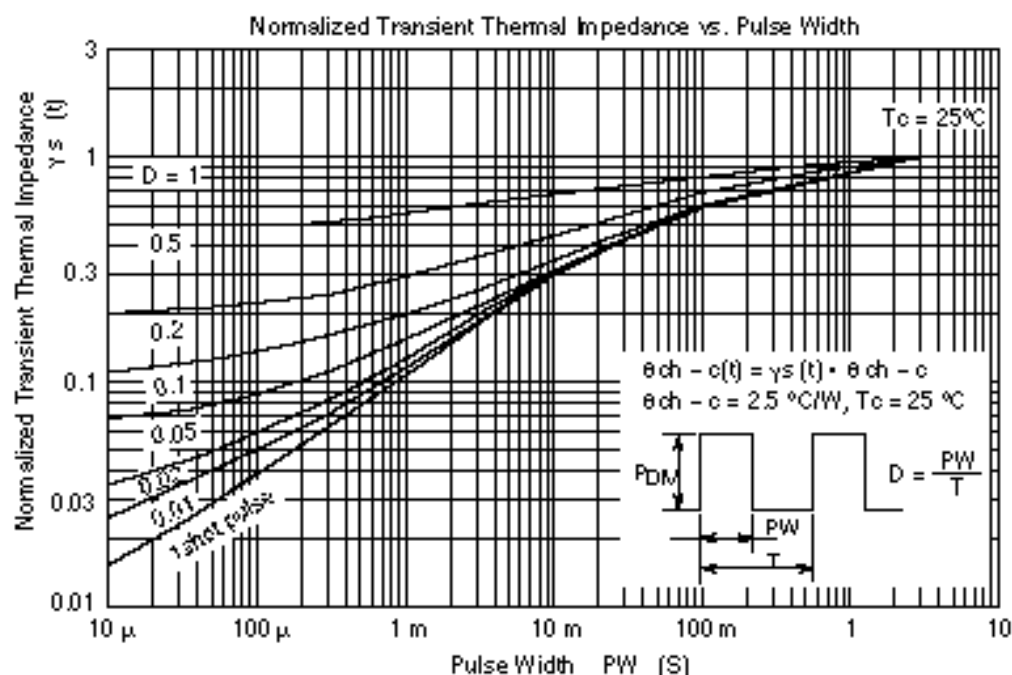


Avalanche Test Circuit

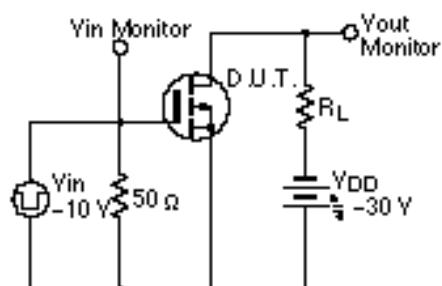


Avalanche Waveform

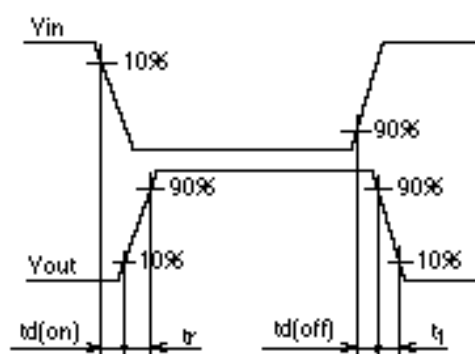




Switching Time Test Circuit



Waveform



Package Dimensions

The drawing shows the mechanical specifications for a TO-220AB package. The front view includes dimensions for the overall width (10.16 ± 0.2 mm), mounting tab width (9.5 mm), and lead spacing (2.54 ± 0.5 mm). The side view shows the package height (15.0 ± 0.3 mm) and lead length (14.0 ± 0.5 mm). The isometric view shows the package with a mounting tab and three leads.

Hitachi Code	TO-220AB
EIAJ	SC-46
JEDEC	—

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