

2SJ555

Silicon P Channel MOS FET
High Speed Power Switching

HITACHI

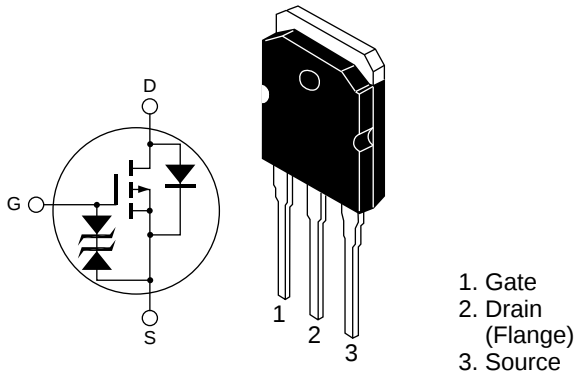
ADE-208-634A (Z)
2nd. Edition
Jun 1998

Features

- Low on-resistance
 $R_{DS(on)} = 0.017\Omega$ typ.
- Low drive current.
- 4V gate drive devices.
- High speed switching.

Outline

TO-3P



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	−60	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	−240	A
Body-drain diode reverse drain current	I_{DR}	−60	A
Avalanche current	I_{AP} ^{Note3}	−60	A
Avalanche energy	E_{AR} ^{Note3}	308	mJ
Channel dissipation	P_{ch} ^{Note2}	125	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

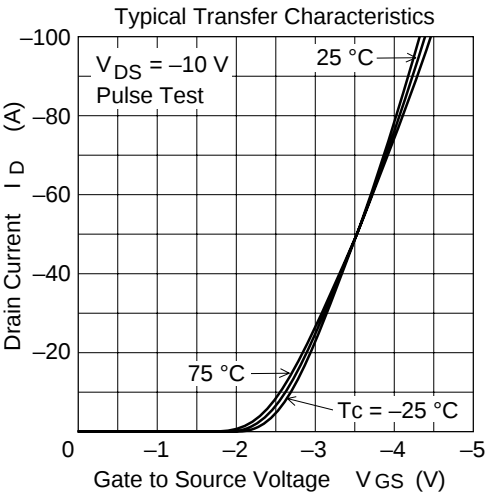
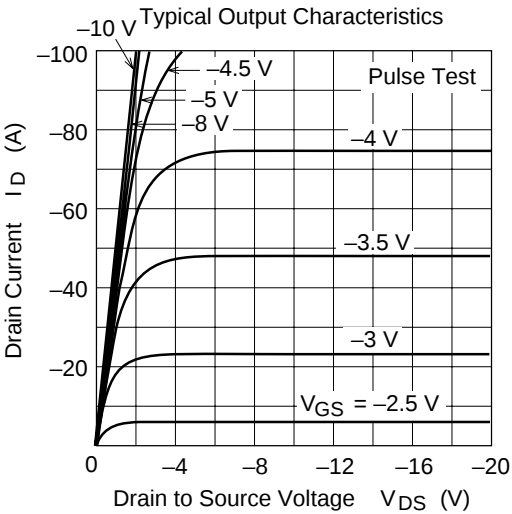
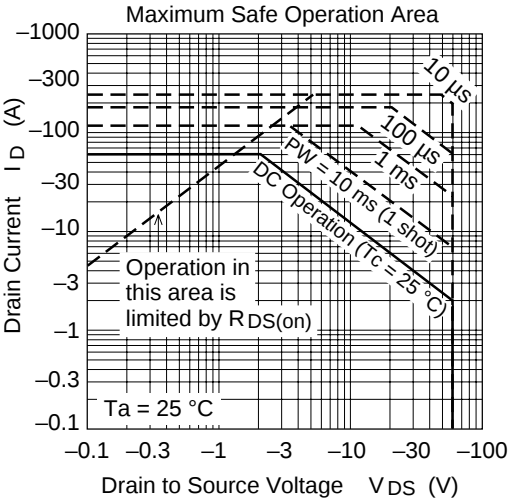
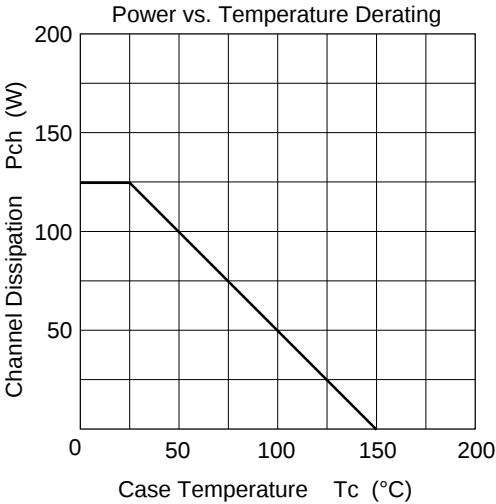
Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ C$
3. Value at $T_{ch} = 25^\circ C$, $R_g \geq 50\ \Omega$

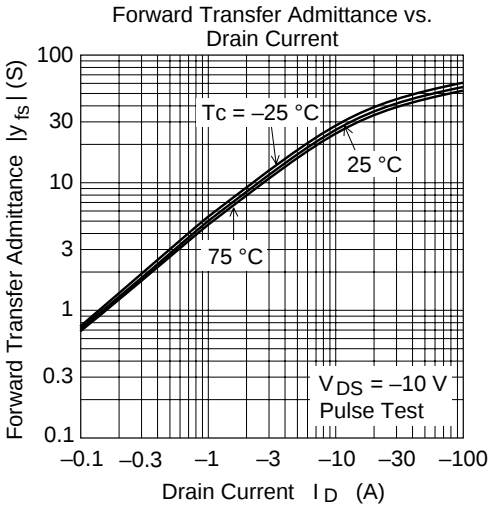
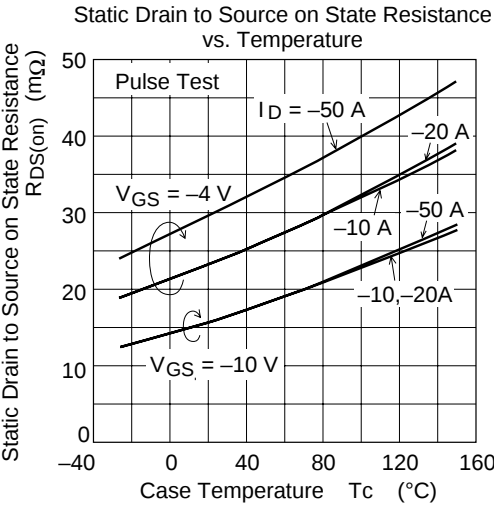
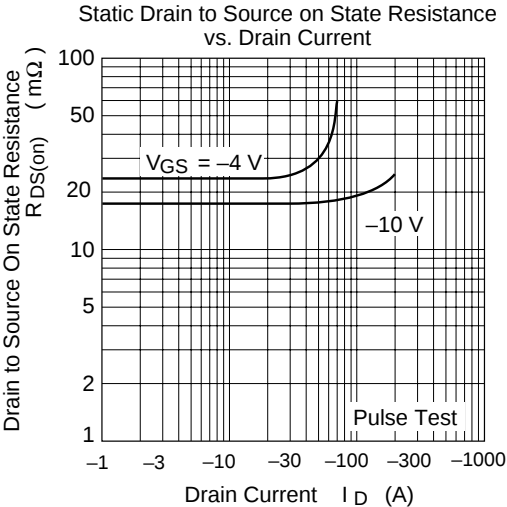
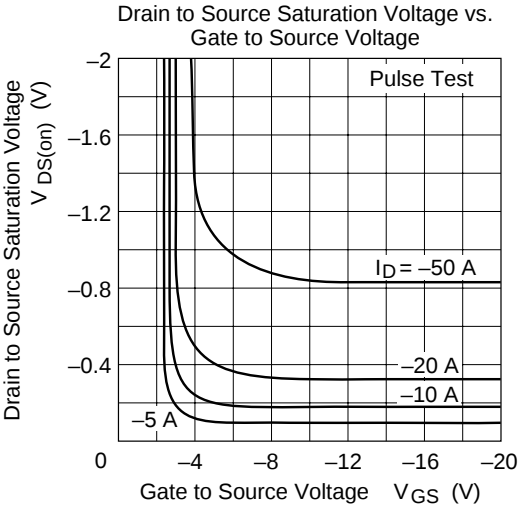
Electrical Characteristics (Ta = 25°C)

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	$I_G = \pm 100\mu A$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	−10	μA	$V_{DS} = -60\ V$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16V$, $V_{DS} = 0$
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	$R_{DS(on)}$	—	0.017	0.022	Ω	$I_D = -30A$, $V_{GS} = -10V$ ^{Note4}
	$R_{DS(on)}$	—	0.024	0.036	Ω	$I_D = -30A$, $V_{GS} = -4V$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	27	45	—	S	$I_D = -30A$, $V_{DS} = -10V$ ^{Note4}
Input capacitance	C_{iss}	—	4100	—	pF	$V_{DS} = -10V$
Output capacitance	C_{oss}	—	2100	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	450	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	32	—	ns	$V_{GS} = -10V$, $I_D = -30A$
Rise time	t_r	—	270	—	ns	$R_L = 1\Omega$
Turn-off delay time	$t_{d(off)}$	—	570	—	ns	
Fall time	t_f	—	360	—	ns	
Body–drain diode forward voltage	V_{DF}	—	−1.1	—	V	$I_F = -60A$, $V_{GS} = 0$
Body–drain diode reverse recovery time	t_{rr}	—	115	—	ns	$I_F = -60A$, $V_{GS} = 0$ $di_F/dt = 50A/\mu s$

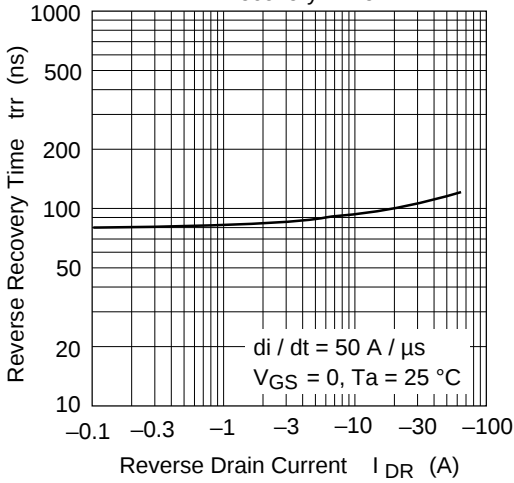
Note: 4. Pulse test

Main Characteristics

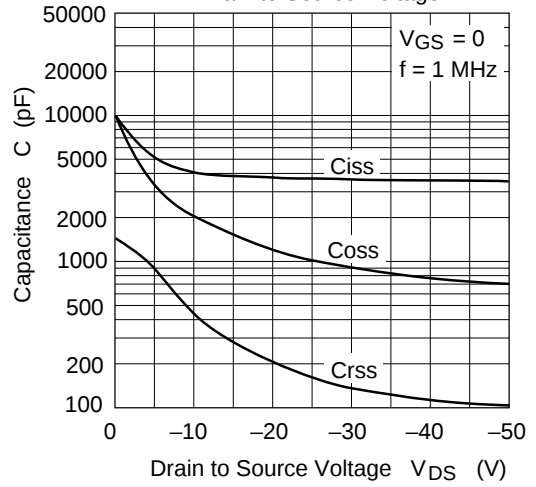




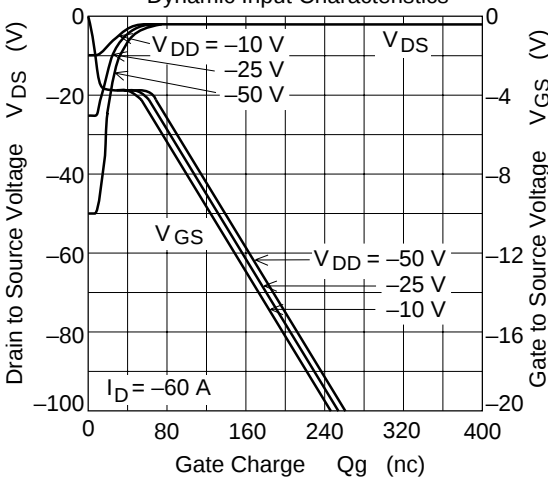
Body-Drain Diode Reverse Recovery Time



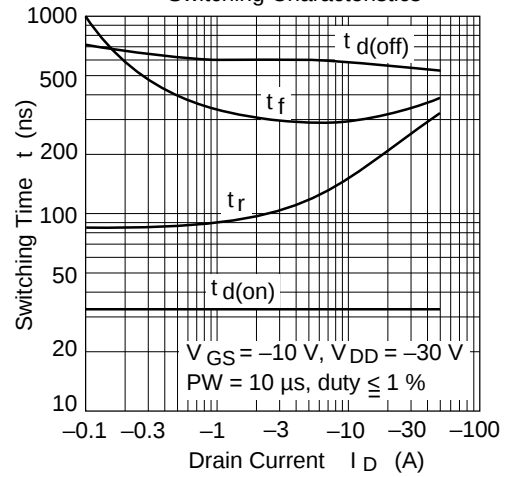
Typical Capacitance vs. Drain to Source Voltage

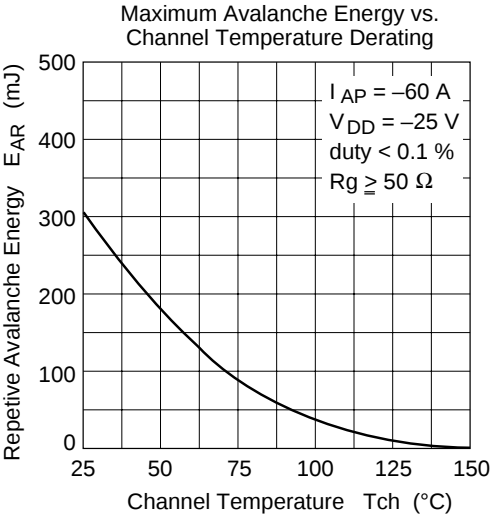
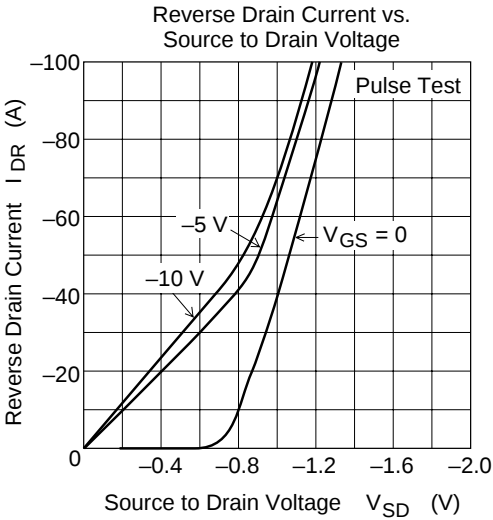


Dynamic Input Characteristics

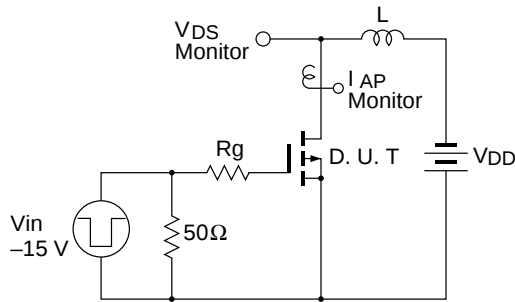


Switching Characteristics



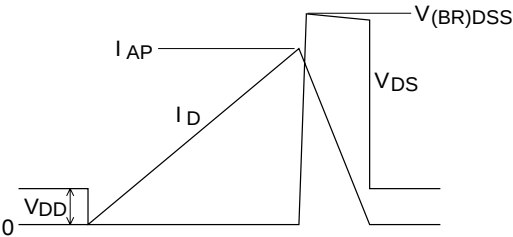


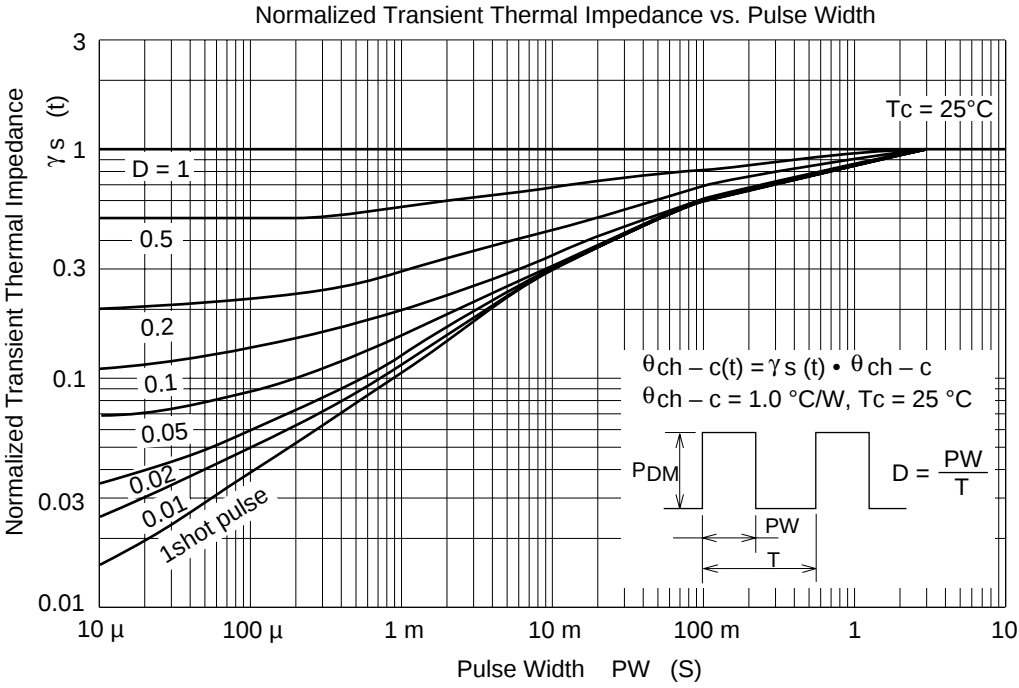
Avalanche Test Circuit



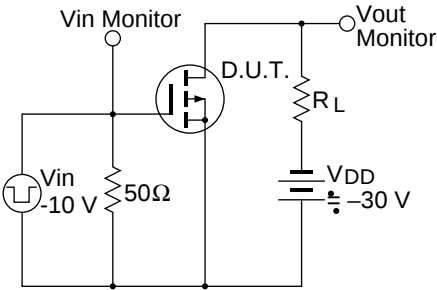
Avalanche Waveform

$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$

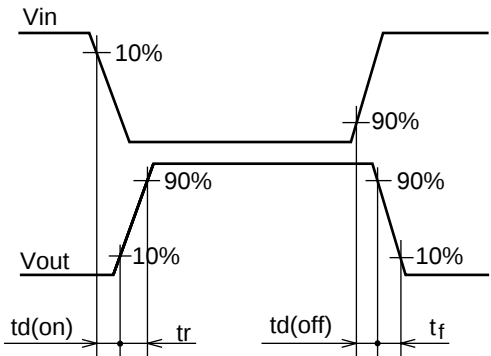




Switching Time Test Circuit

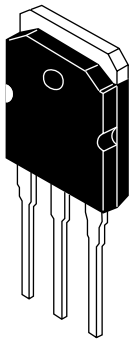
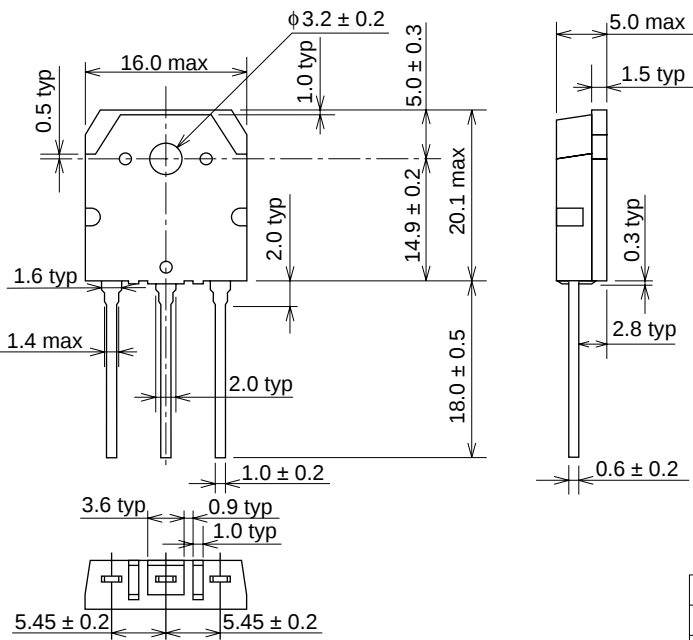


Waveform



Package Dimensions

Unit: mm



Hitachi Code	TO-3P
EIAJ	SC-65
JEDEC	—

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