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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

Cautions

Keep safety first in your circuit designs!

1. Renesas Technology Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage.

Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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2SK1515, 2SK1516

Silicon N-Channel MOS FET

RENESAS

ADE-208-1286 (Z)
1st. Edition
Mar. 2001

Application

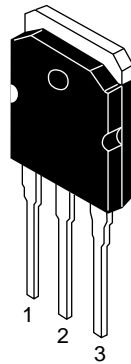
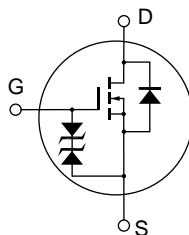
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- Built-in fast recovery diode ($t_{rr} = 120 \text{ ns}$)
- Suitable for motor control, switching regulator, DC-DC converter

Outline

TO-3P



1. Gate
2. Drain
(Flange)
3. Source

2SK1515, 2SK1516

Absolute Maximum Ratings (Ta = 25°C)

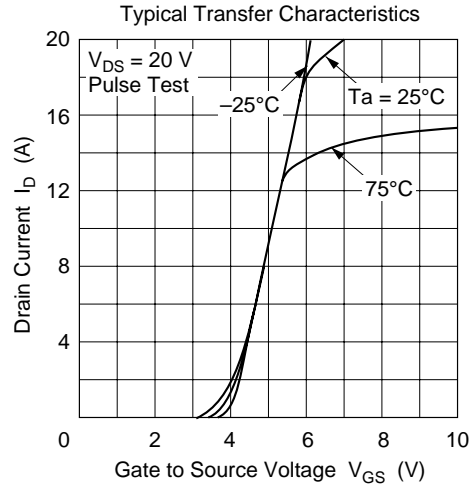
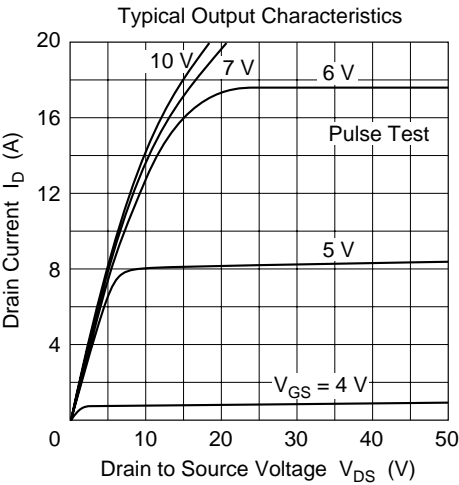
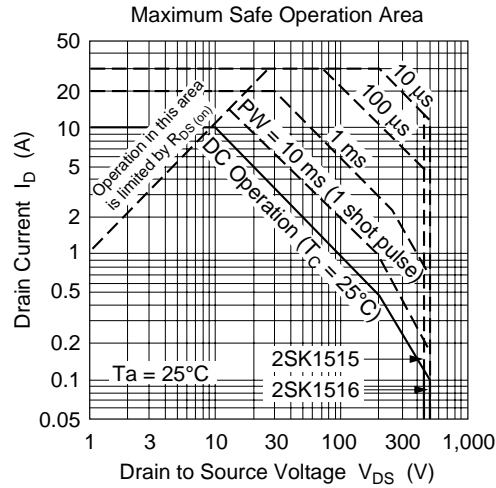
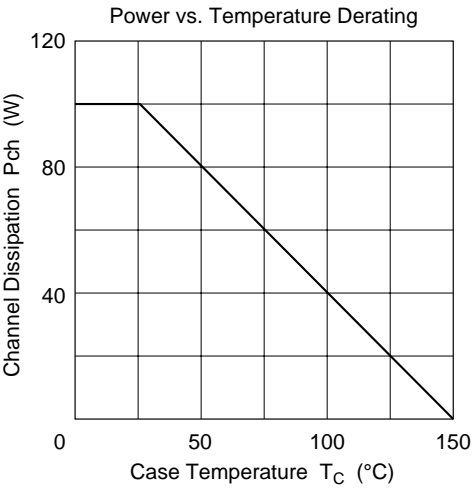
Item		Symbol	Ratings	Unit
Drain to source voltage	2SK1515	V_{DSS}	450	V
	2SK1516		500	
Gate to source voltage		V_{GSS}	±30	V
Drain current		I_D	10	A
Drain peak current		$I_{D(pulse)}^{*1}$	30	A
Body to drain diode reverse drain current		I_{DR}	10	A
Channel dissipation		Pch^{*2}	100	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55 to +150	°C

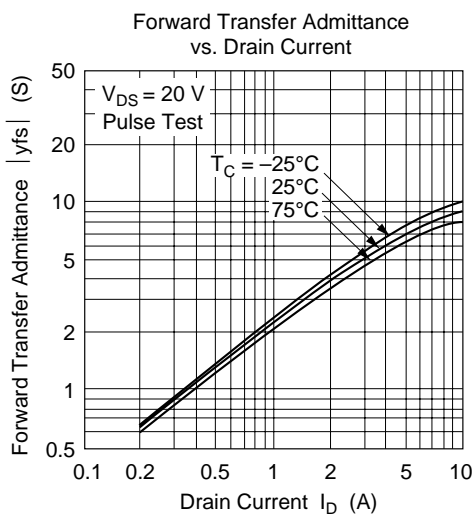
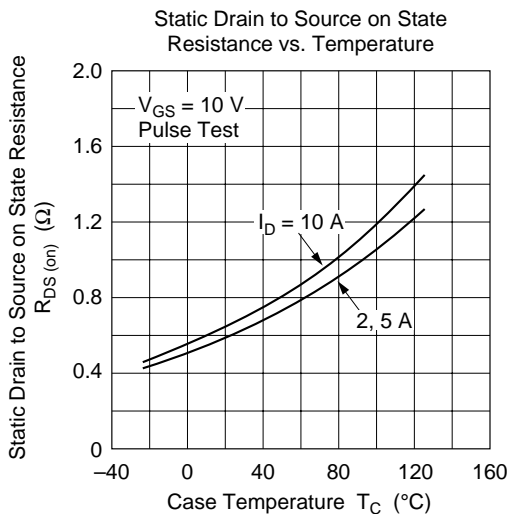
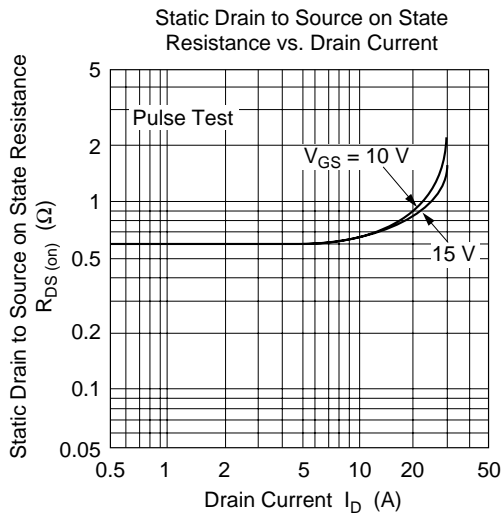
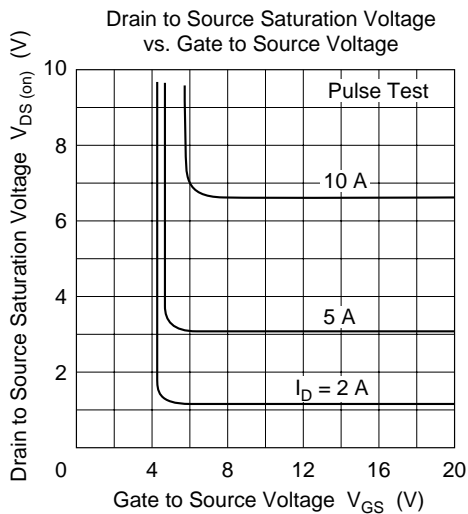
Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$
2. Value at $T_C = 25^\circ C$

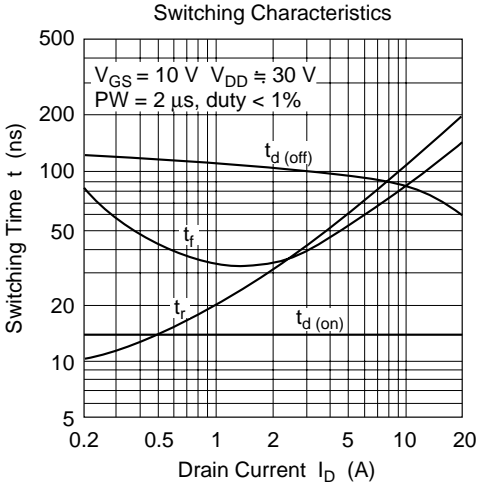
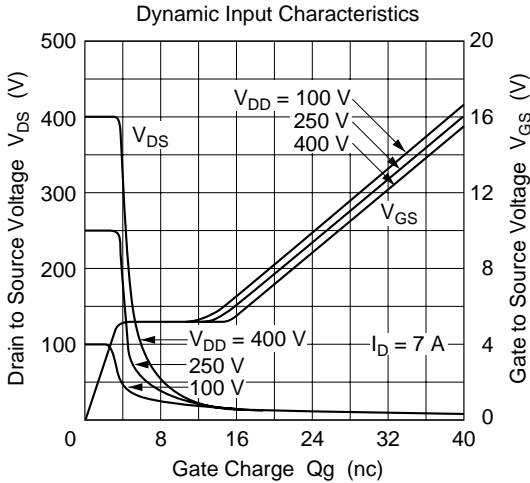
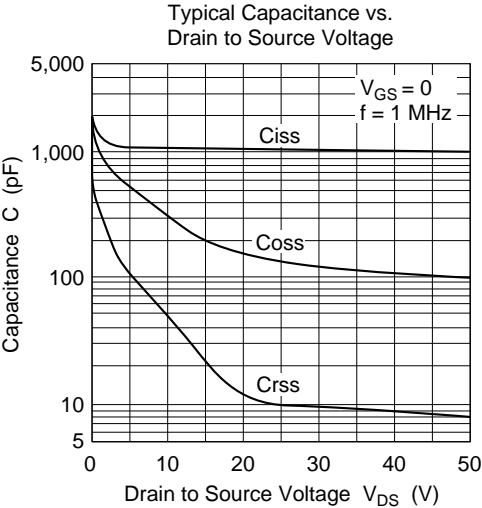
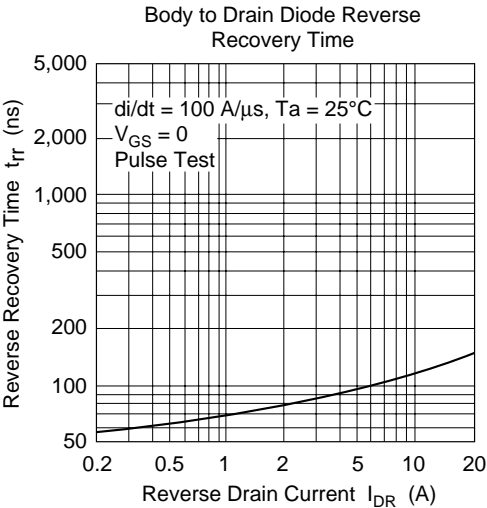
Electrical Characteristics (Ta = 25°C)

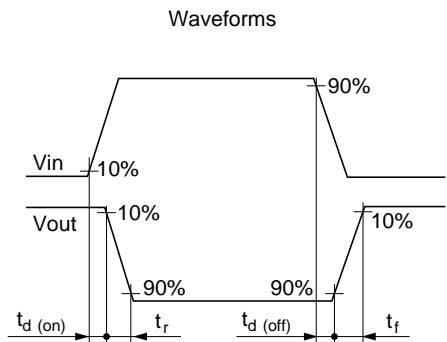
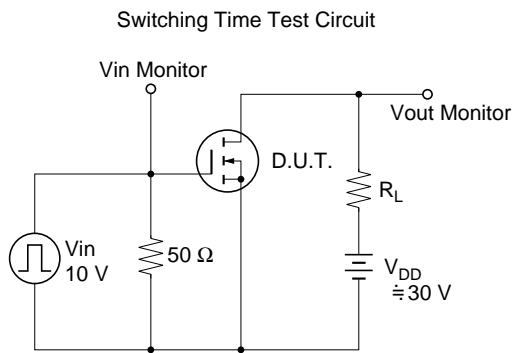
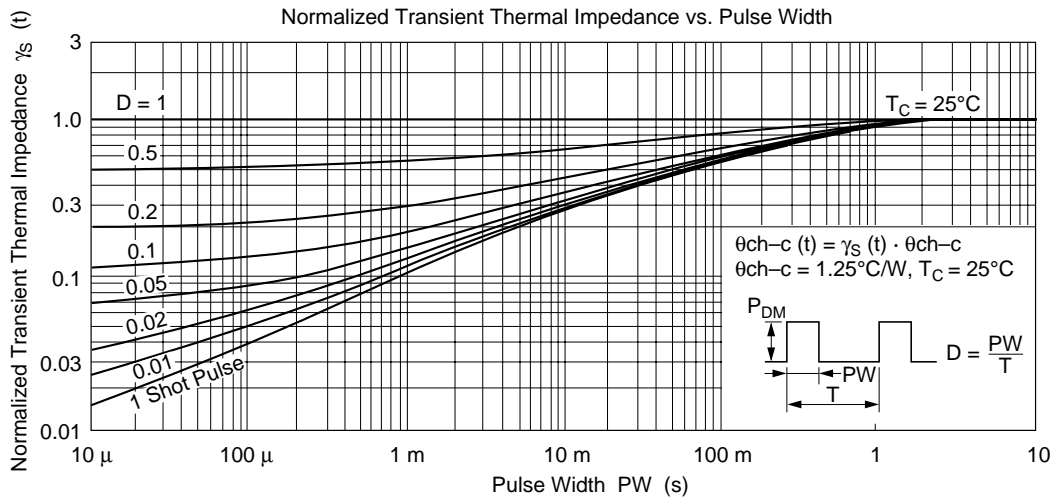
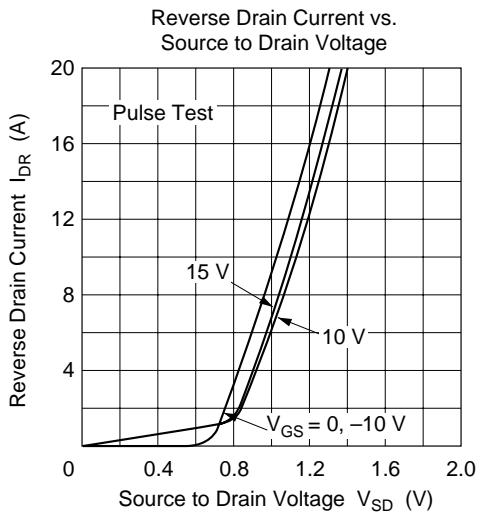
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1515 2SK1516	$V_{(BR)DSS}$	450 500	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage		$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100 \mu\text{A}$, $V_{DS} = 0$
Gate to source leak current		I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	2SK1515 2SK1516	I_{DSS}	—	—	250	μA	$V_{DS} = 360 \text{ V}$, $V_{GS} = 0$ $V_{DS} = 400 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage		$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static Drain to source on state resistance	2SK1515 2SK1516	$R_{DS(on)}$	— —	0.6 0.7	0.8 0.9	Ω	$I_D = 5 \text{ A}$, $V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance		$ y_{fs} $	4.0	7.0	—	S	$I_D = 5 \text{ A}$, $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance		C_{iss}	—	1100	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$,
Output capacitance		C_{oss}	—	310	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance		C_{rss}	—	50	—	pF	
Turn-on delay time		$t_{d(on)}$	—	15	—	ns	$I_D = 5 \text{ A}$, $V_{GS} = 10 \text{ V}$,
Rise time		t_r	—	65	—	ns	$R_L = 6 \Omega$
Turn-off delay time		$t_{d(off)}$	—	95	—	ns	
Fall time		t_f	—	55	—	ns	
Body to drain diode forward voltage		V_{DF}	—	1.0	—	V	$I_F = 10 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time		t_{rr}	—	120	—	ns	$I_F = 10 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 1. Pulse test



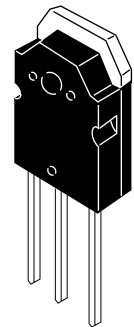
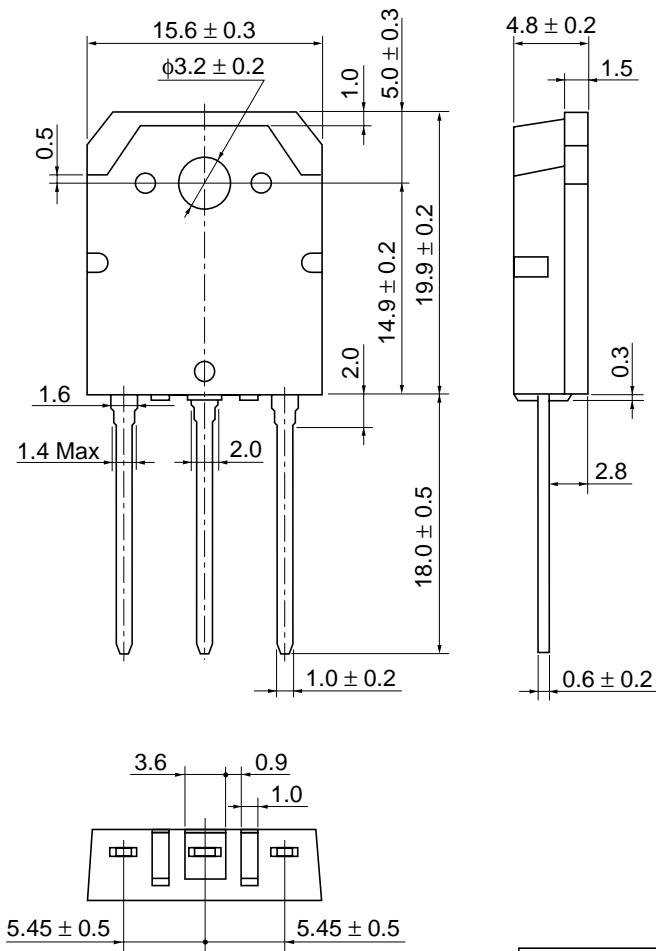






Package Dimensions

As of January, 2001
Unit: mm



Hitachi Code	TO-3P
JEDEC	—
EIAJ	Conforms
Mass (reference value)	5.0 g

Cautions

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