

Thermal Impedance

Item	Symbol	Max. Value ^{Note4}	Unit
Channel to case thermal impedance	θ_{ch-c}	0.83	°C/W

Notes: 4. This data is the designed target maximum value on Renesas's measurement condition. (Not tested)

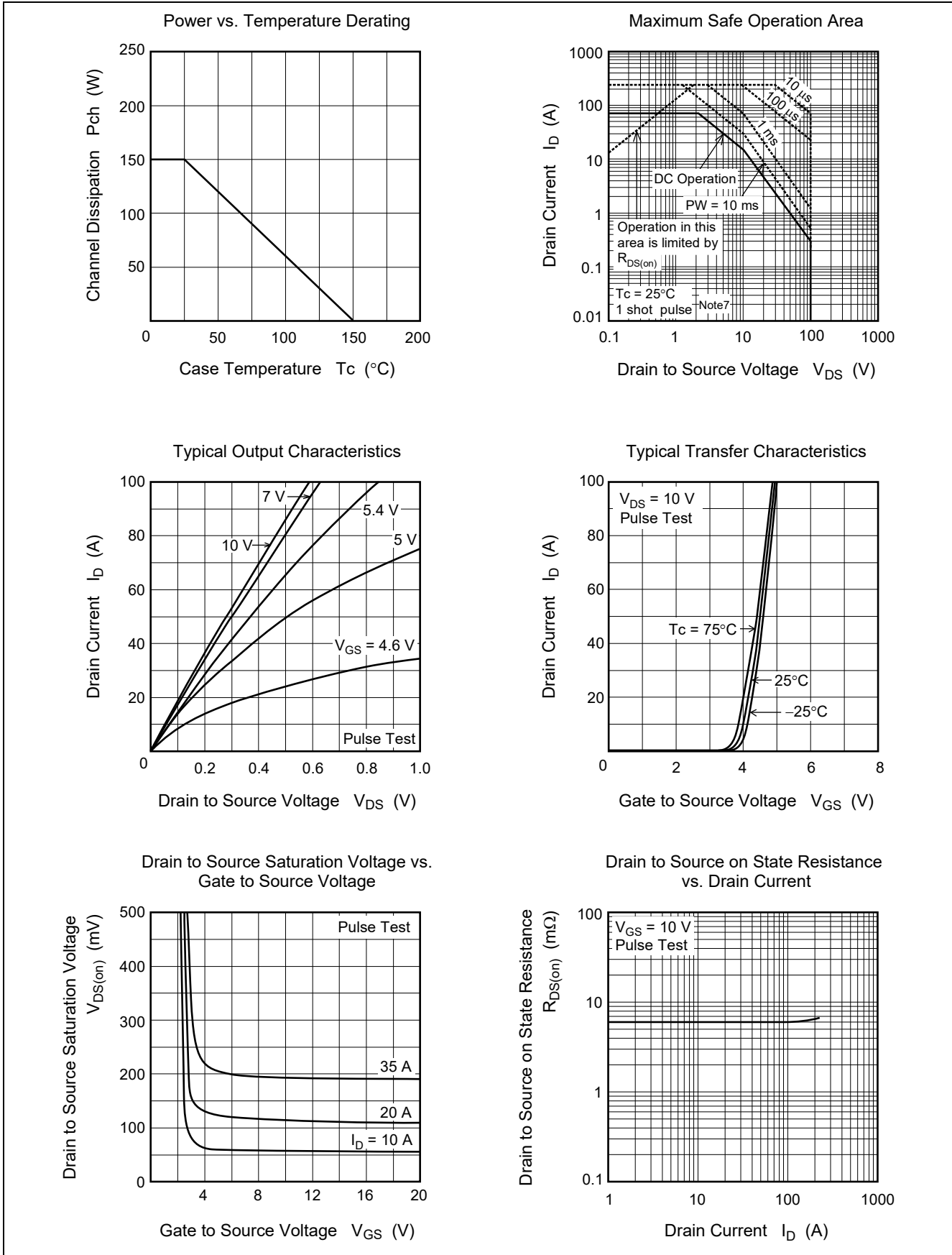
Electrical Characteristics

(Ta = 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 leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 100\text{V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	4.0	V	$V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	6.0	7.6	m Ω	$I_D = 35\text{A}$, $V_{GS} = 10\text{V}$ ^{Note5}
Forward transfer admittance	$ y_{fs} $	—	135	—	S	$I_D = 35\text{A}$, $V_D = 10\text{V}$ ^{Note5}
Input capacitance	C_{iss}	—	6450	—	pF	$V_{DS} = 10\text{V}$ $V_{GS} = 0$ $f = 1\text{MHz}$
Output capacitance	C_{oss}	—	1000	—	pF	
Reverse transfer capacitance	C_{rss}	—	240	—	pF	
Gate Resistance	R_g	—	1.5	—	Ω	
Total gate charge	Q_g	—	94	—	nC	$V_{DD} = 50\text{V}$
Gate to source charge	Q_{gs}	—	33	—	nC	$V_{GS} = 10\text{V}$,
Gate to drain charge	Q_{gd}	—	19	—	nC	$I_D = 35\text{A}$
Turn-on delay time	$t_{d(on)}$	—	40	—	ns	$V_{GS} = 10\text{V}$
Rise time	t_r	—	13	—	ns	$I_D = 35\text{A}$
Turn-off delay time	$t_{d(off)}$	—	80	—	ns	$V_{DD} \cong 30\text{V}$
Fall time	t_f	—	13	—	ns	$R_g = 4.7\ \Omega$
Body-drain diode forward voltage	V_{DF}	—	0.85	1.5	V	$I_F = 70\text{A}$, $V_{GS} = 0$ ^{Note5}
Body-drain diode reverse recovery time	t_{rr}	—	65	—	ns	$I_F = 70\text{A}$, $V_{GS} = 0$ $di_F/dt = 100\text{A}/\mu\text{s}$

Notes: 5. Pulse test

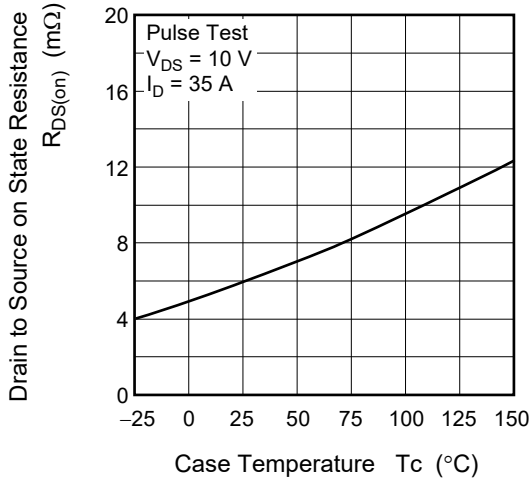
Typical Characteristics ^{Note6}



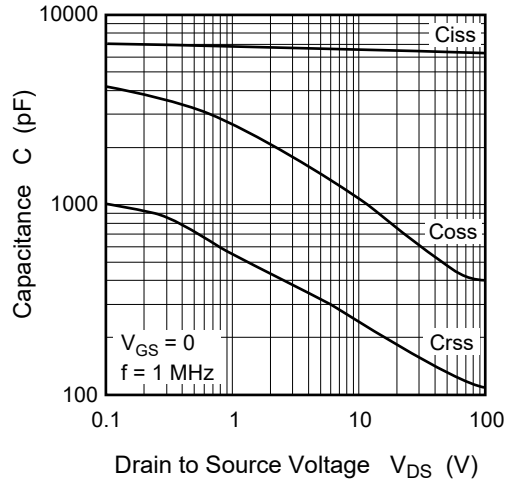
Notes: 6. Designed target value on Renesas measurement condition.

7. This data is the designed value on Renesas's measurement condition. Renesas recommends that operating conditions are designed according to a document "Power MOSFET/IGBT Attention of Handling Semiconductor Devices (R07ZZ0010)".

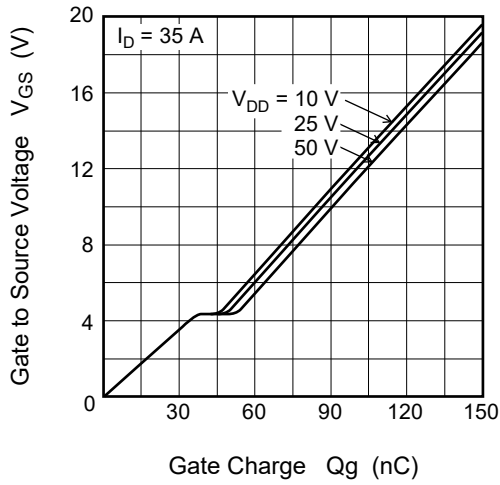
Drain to Source on State Resistance vs. Temperature



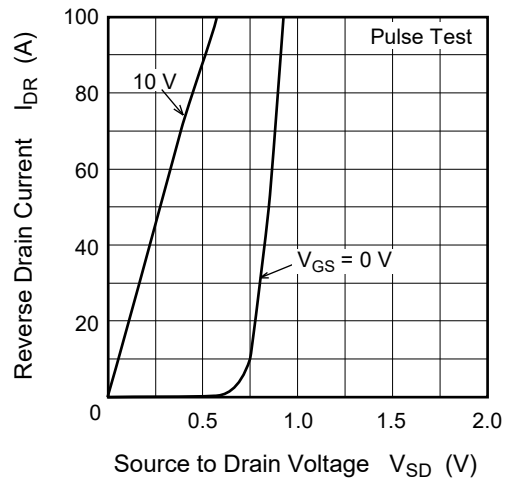
Typical Capacitance vs. Drain to Source Voltage



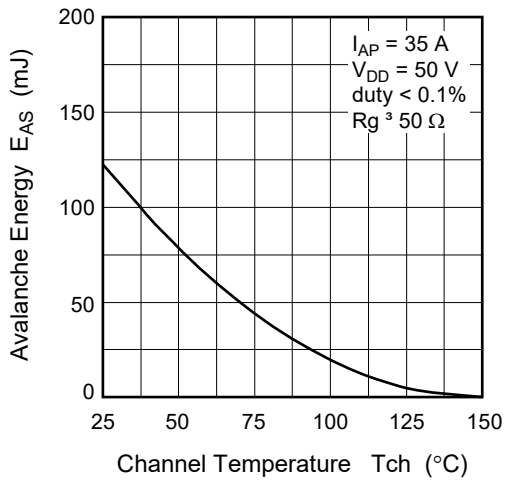
Dynamic Input Characteristics



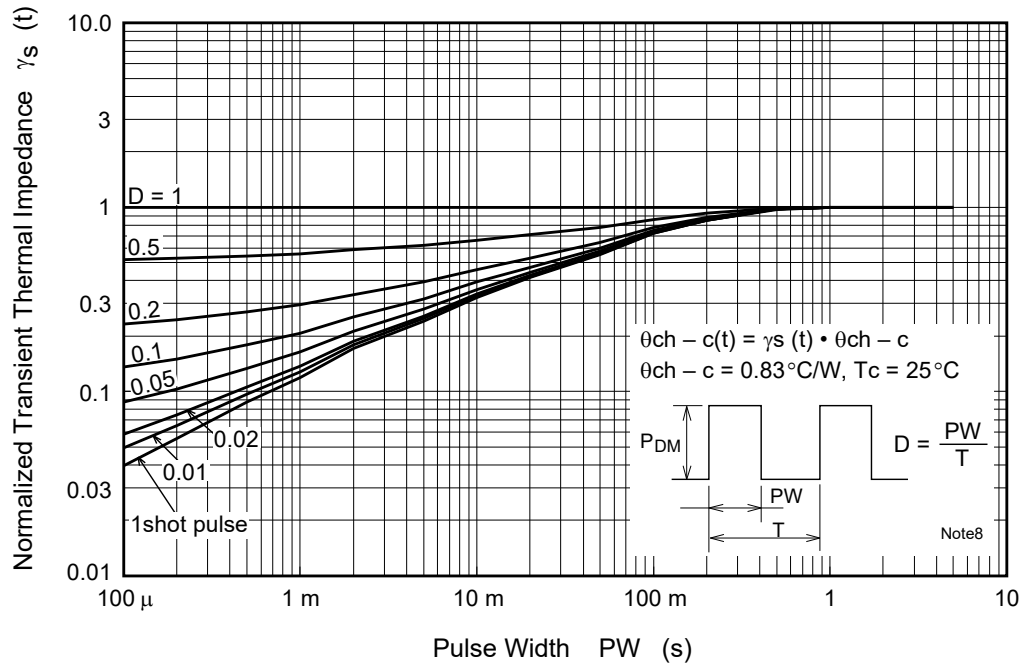
Reverse Drain Current vs. Source to Drain Voltage



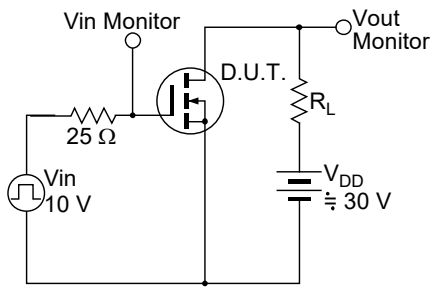
Maximum Avalanche Energy vs. Channel Temperature Derating



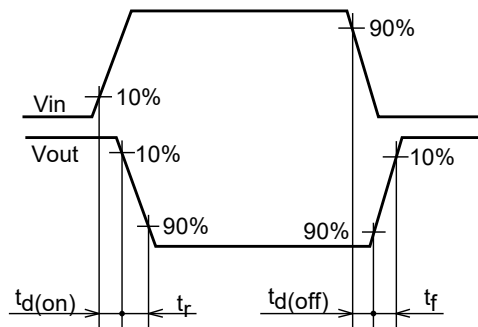
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveform

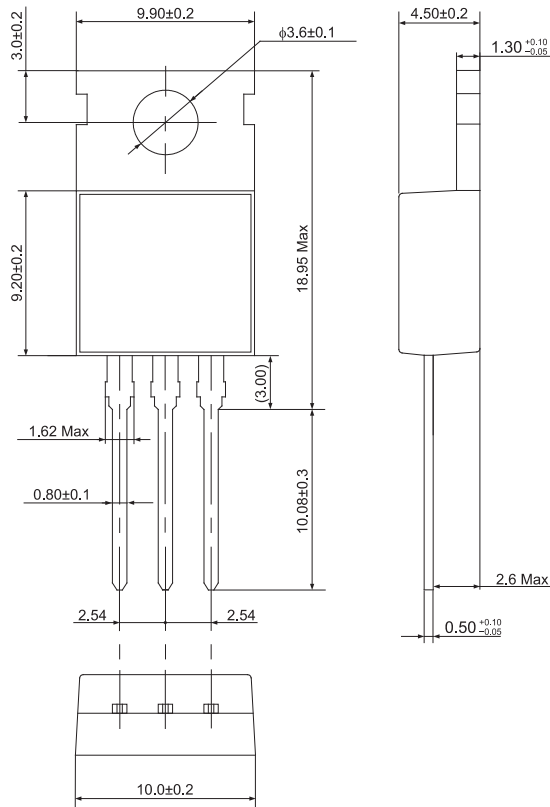


Notes: 8. This data is the designed target maximum value on Renesas's measurement condition.

Package Dimensions

Package Name	JEDEC Package Code	RENESAS Code	Previous Code	MASS (Typ) [g]
TO-220ABA	TO-220AB	PRSS0004AT-A	TO-220ABA	2.1

Unit: mm



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJK1002DPN-A0-T2	50 pcs	Magazine (Tube)

Note: The symbol of 2nd "-" is occasionally presented as "#".

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(Rev.4.0-1 November 2017)



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