

RJK0226DNS

Silicon N Channel Power MOS FET with Schottky Barrier Diode Power Switching

R07DS0260EJ0100

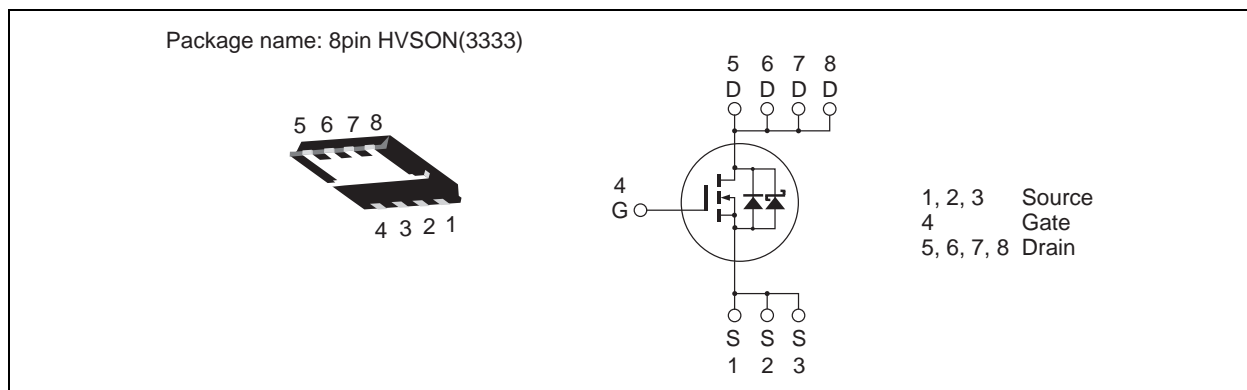
Rev.1.00

Jan 17, 2011

Features

- High speed switching
- Capable of 4.5 V gate drive
- Low drive current
- High density mounting
- Low on-resistance
 $R_{DS(on)} = 2.3 \text{ m}\Omega$ typ. (at $V_{GS} = 8 \text{ V}$)
- Pb-free
- Halogen-free

Outline



Absolute Maximum Ratings

($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	25	V
Gate to source voltage	V_{GSS}	± 12	V
Drain current	I_D	40	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	160	A
Body-drain diode reverse drain current	I_{DR}	40	A
Avalanche current	I_{AP} ^{Note 2}	14.7	A
Avalanche energy	E_{AR} ^{Note 2}	27	mJ
Channel dissipation	P_{ch} ^{Note3}	30	W
Channel to case thermal impedance	θ_{ch-c} ^{Note3}	4.17	$^\circ\text{C/W}$
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

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

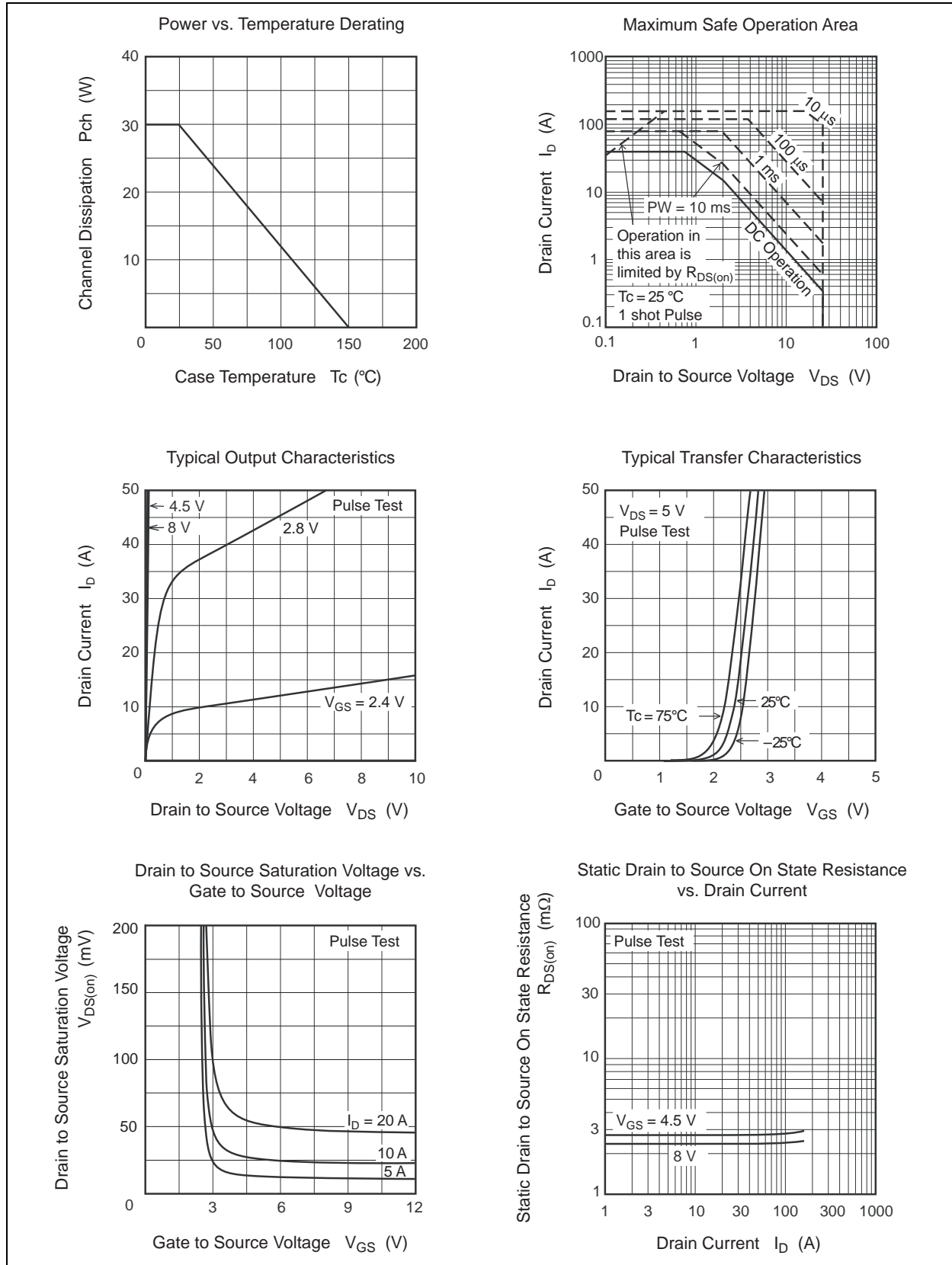
Electrical Characteristics

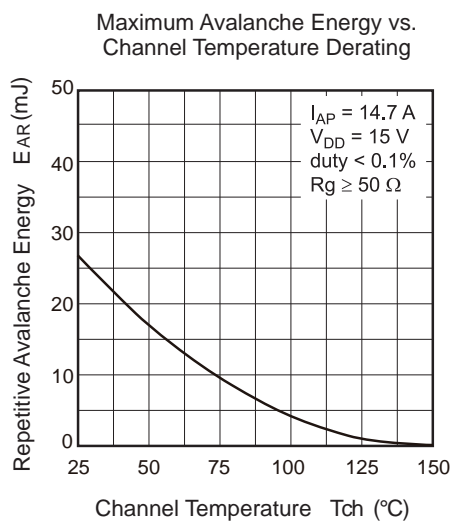
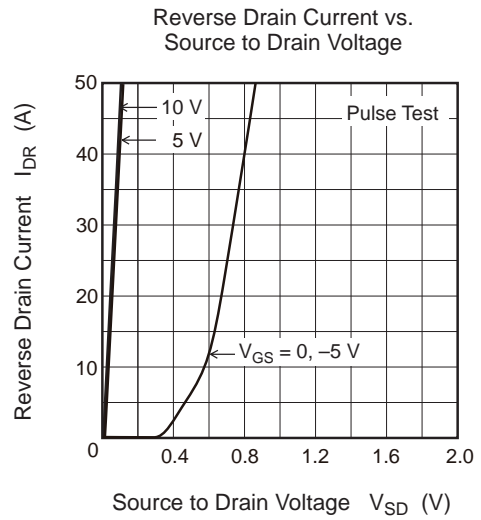
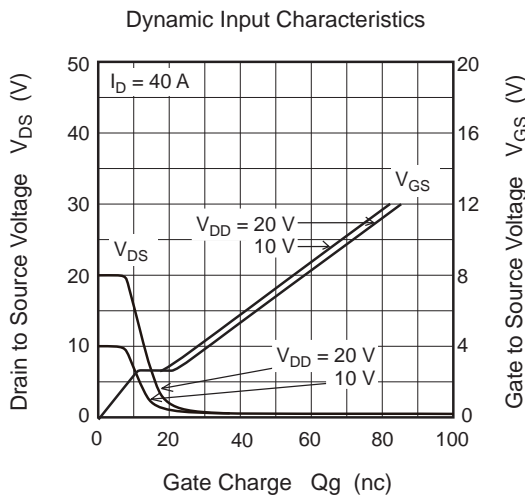
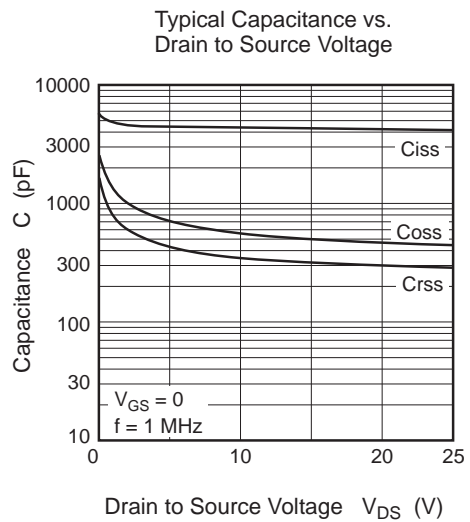
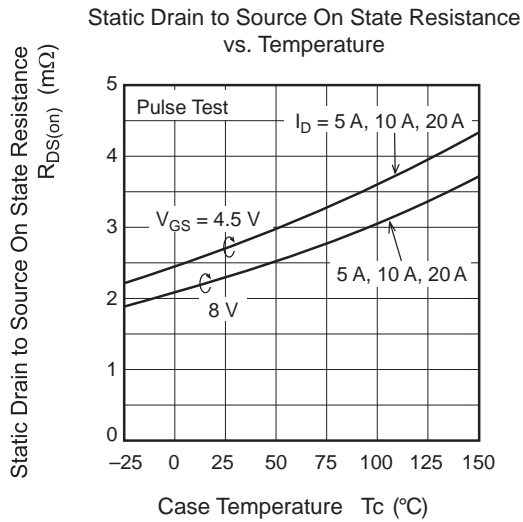
(T_a = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	25	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±12 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	mA	V _{DS} = 25 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.2	—	2.5	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DS(on)}	—	2.3	2.8	mΩ	I _D = 20 A, V _{GS} = 8 V ^{Note4}
	R _{DS(on)}	—	2.7	3.4	mΩ	I _D = 20 A, V _{GS} = 4.5 V ^{Note4}
Forward transfer admittance	y _{fs}	—	115	—	S	I _D = 20 A, V _{DS} = 5 V ^{Note4}
Input capacitance	C _{iss}	—	4300	6020	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	565	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	340	—	pF	f = 1 MHz
Gate Resistance	R _g	—	2.6	4.5	Ω	
Total gate charge	Q _g	—	31	—	nC	V _{DD} = 10 V
Gate to source charge	Q _{gs}	—	11	—	nC	V _{GS} = 4.5 V
Gate to drain charge	Q _{gd}	—	8	—	nC	I _D = 40 A
Turn-on delay time	t _{d(on)}	—	18.6	—	ns	V _{GS} = 8 V, I _D = 20 A
Rise time	t _r	—	8.7	—	ns	V _{DD} ≅ 10 V
Turn-off delay time	t _{d(off)}	—	65	—	ns	R _L = 0.5 Ω
Fall time	t _f	—	13	—	ns	R _g = 4.7 Ω
Body-drain diode forward voltage	V _{DF}	—	0.39	—	V	I _F = 2 A, V _{GS} = 0 ^{Note4}
Body-drain diode reverse recovery time	t _{rr}	—	28	—	ns	I _F = 40 A, V _{GS} = 0 di _F / dt = 100 A/ μs

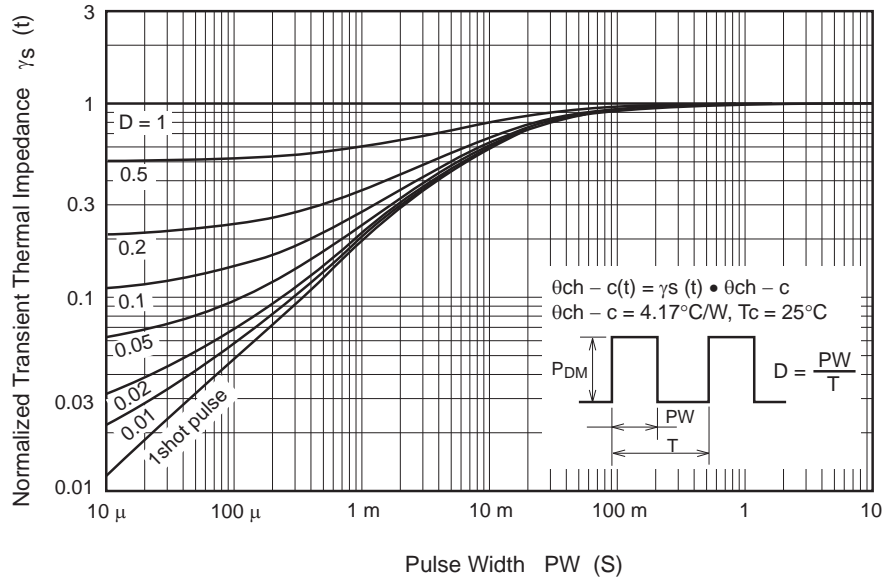
Notes: 4. Pulse test

Main Characteristics

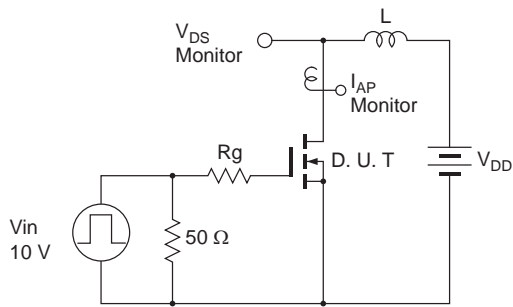




Normalized Transient Thermal Impedance vs. Pulse Width

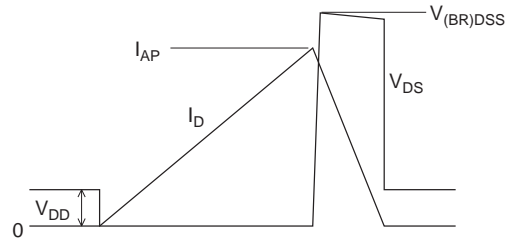


Avalanche Test Circuit

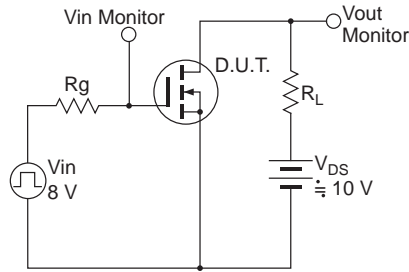


Avalanche Waveform

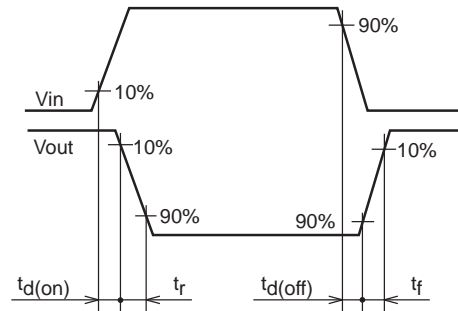
$$E_{AR} = \frac{1}{2} L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



Switching Time Test Circuit

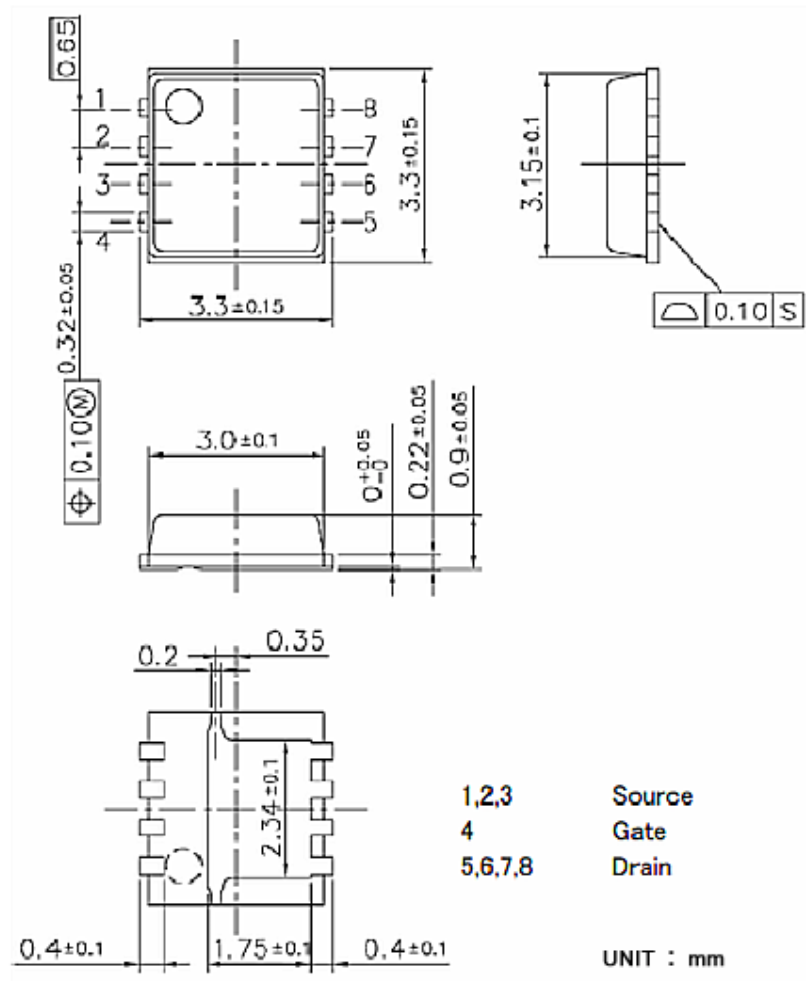


Switching Time Waveform



Package Dimensions

- 8pin HVSON(3333)



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJK0226DNS-00-J5	3000 pcs	Taping

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