

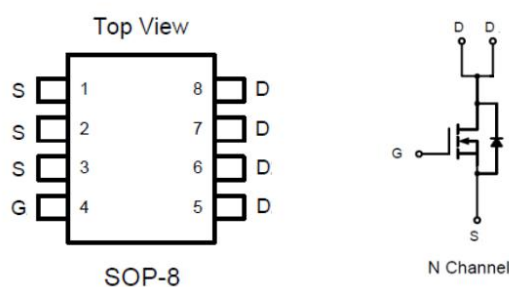


GENERAL DESCRIPTION

The RZC0014S is the high cell density trench N-Channel MOSFET, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The RZC0014S meet the ROHS and Green Product requirement with full function reliability approved.

PIN CONFIGURATION



FEATURES

- 100V/11A, $R_{DS(ON)} = 14m\Omega$ @ $V_{GS} = 10V$ (TPY.)
- 100% EAS Guaranteed
- Green Device Available
- Supper Low Gate Charge
- Excellent $C_{dv/dt}$ effect decline
- Advanced high cell density Trench technology
- SOP-8 package design

APPLICTIONS

- Power Management in Notebook Computer
- Portable Equipment
- Battery Powered Systems

ORDERING INFORMATION

Part Number	Package	Top Marking	Packing
RZC0014S	SOP-8	S0014	3000PCS/Real

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

Parameter	Symbol	Value	Units
Drain to Source Voltage	V_{DSS}	100	V
Gate to Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current (note 1)	I_{D}	25 $^{\circ}\text{C}$ 11	A
		85 $^{\circ}\text{C}$ 8	A
Pulsed Drain Current (note 2)	$I_{\text{D(pulse)}}$	50	A
Maximum Power Dissipation	$P_{\text{D(25}^{\circ}\text{C)}}$	1.5	W
Single Pulse Avalanche Energy	EAS	101	mJ
Operating Junction Temperature	T_{J}	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55-+150	$^{\circ}\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T_{L}	260	$^{\circ}\text{C}$

**ELECTRICAL CHARACTERISTICS** (TA = 25°C)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX	Units
Drain-Source Breakdown Voltage	BVDSS	VGS=0V, IDS=250uA	100			V
Zero Gate Voltage Drain Current	IDSS	VDS=80V, VGS=0V TJ=25°C			1	uA
		VDS=80V, VGS=0V TJ=55°C			5	uA
Gate Leakage Current	IGSS	VGS=±20V, VDS=0V			±100	nA
Gate threshold voltage	VGS(TH)	VDS=VGS, ID=250μA	1.2	1.5	2.5	V
Drain to Source On-state Resistance ^(note 2)	RDS(ON)	VGS=10V, ID=10A		14	16	mΩ
Gate Resistance	Rg	VDS=0V, VGS=0V, f=1MHz		0.7		Ω
Input Capacitance	Ciss	VDS=25V, VGS=0V, f=1MHz		4708		pF
Output Capacitance	Coss			326		pF
Reverse Transfer Capacitance	Crss			247		pF
Total Gate Charge (10V)	QG	VDD=80V, VGS=10V, ID=10A		75		nC
Gate-Source Charge	QGS			16		nC
Gate-Drain Charge	QGD			20		nC
Turn-On Delay Time	Td(on)	VDD=40V, VGS=10V RG=3.3Ω, ID=10A		18.5		nS
Rise Time	Tr			9		
Turn-Off Delay Time	Td(off)			59		
Fall Time	Tf			16		

DIODE CHARACTERISTICS

Parameter	Symbol	Test Conditions	MIN	TYP	MAX	Units
Drain-Source Diode Forward Voltage	VSD	IS=1A, VGS=0V			1.2	V
Continuous Source Current ^{1,3}	IS	VG=VD=0V, Force Current			11	A
Reverse Recovery Time	trr	IF=10A, TJ=25°C di/dt=100A/us,		28		nS
Reverse Recovery Charge	Qrr			50		nC

Note:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. The EAS data shows Max.rating. The test condition is VDD=25V, VGS=10V, L=0.1mH, IAS=45A.
4. The data is theoretically the same as ID and IDM, in real applications, should be limited by total power dissipation.



TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

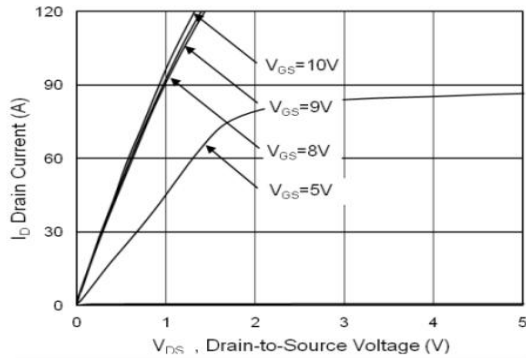


Fig 2. On-Resistance VS. VGS

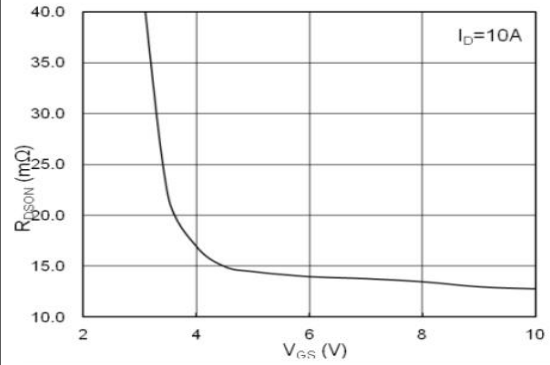


Fig 3. Forward Characteristics of Reverse

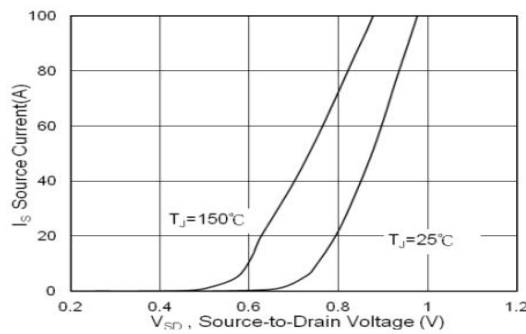


Fig 4. Gate-Charge Characteristics

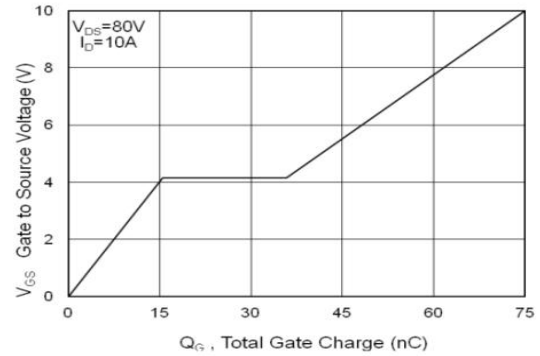


Fig.5 Normalized VGS(TH) VS. TJ

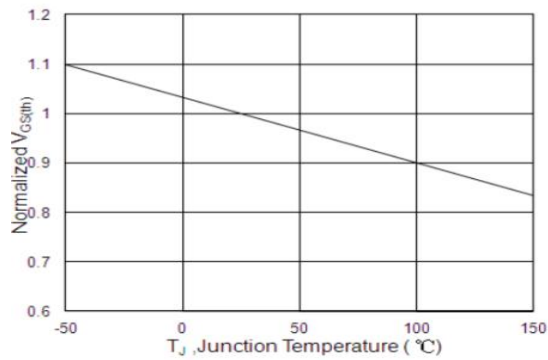


Fig.6 Normalized RDS(ON) VS. TJ

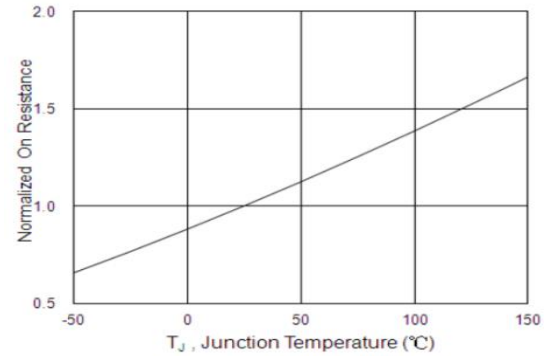


Fig.7 Capacitance

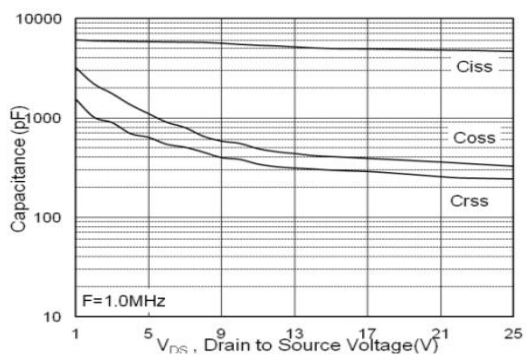


Fig.8 Safe Operation Area

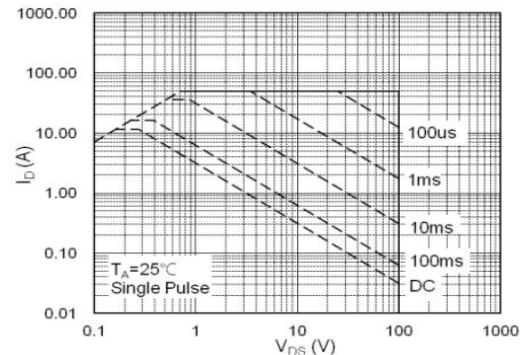
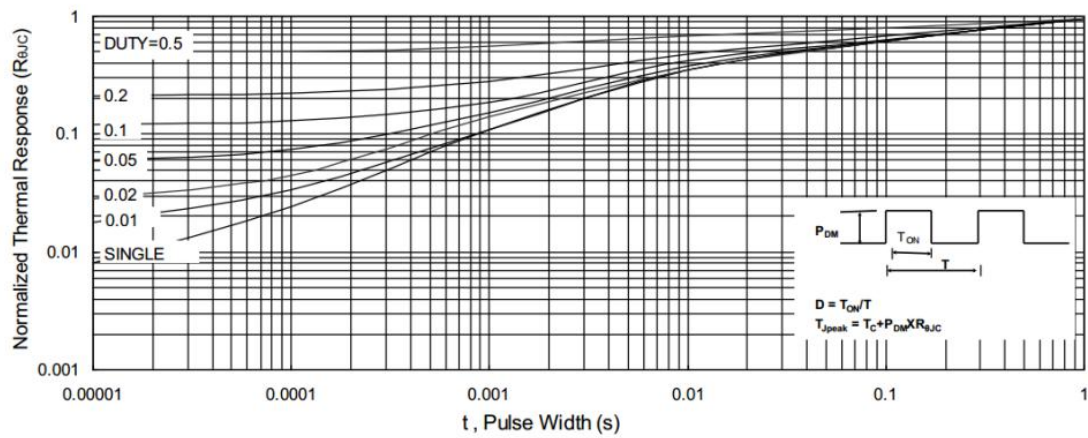
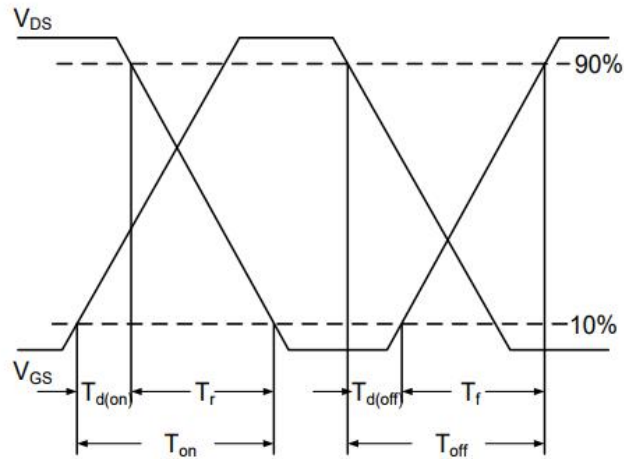




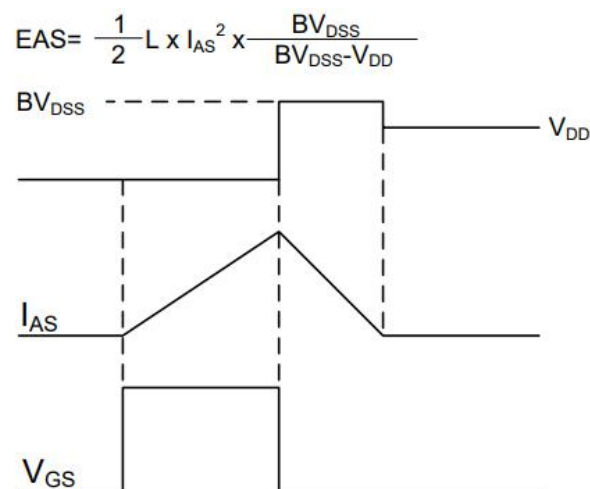
Fig.9 Normalized Maximum Transient Thermal Impedance



Switching Time Waveform



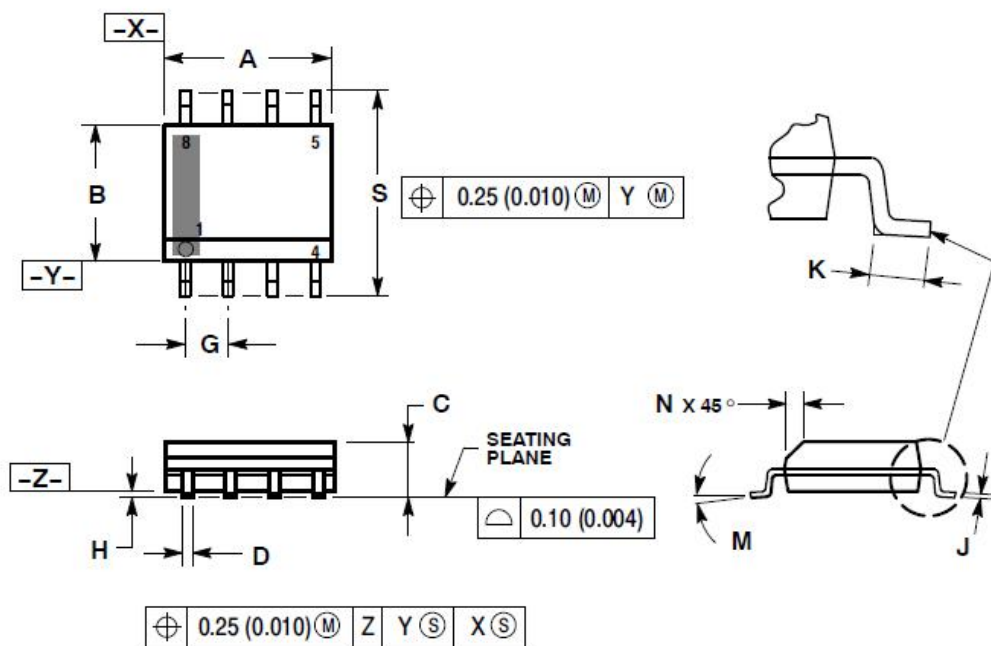
Unclamped Inductive Switching Waveform



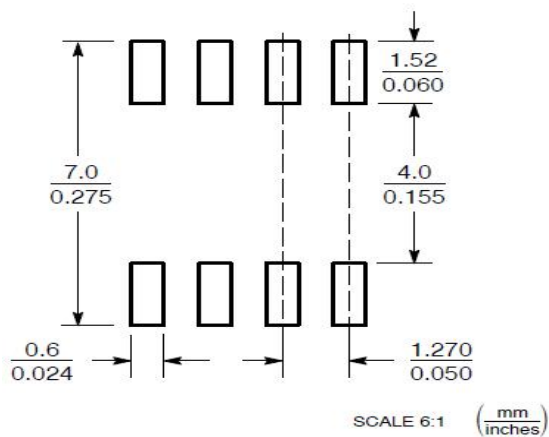


PACKAGE DIMENSIONS

SOP-8



SOLDERING FOOTPRINT*



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.197
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0°	8°	0°	8°
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244